Doc Code: PA..
Document Description: Power of Attorney

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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	
Filing Date	
First Named Inventor	Guillermo Macias
Title	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY
Art Unit	
Examiner Name	
Attorney Docket Number	12-10060-CIP2

SIGNATURE of Applicant or Patent Practitioner

Signature	/David L. Hoffman/	Date (Optional)	03/30/2017
Name	David L. Hoffman	Registration Number	32,469
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☑ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: PA..
Document Description: Power of Attorney

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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 36212

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☐ The address associated with the above-mentioned Customer Number

OR

☑ The address associated with Customer Number: 36212

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

☑ Inventor or Joint Inventor (title not required below)

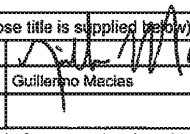
☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☐ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	3-30-21
Name	Guillermo Macias		
Title			

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☑ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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POWER OF ATTORNEY BY APPLICANT

No more than ten (10) patent practitioners total may be appointed as set forth below by name and registration number. This page need not be submitted if appointing the Patent Practitioner(s) associated with a Customer Number (see form PTO/AIA/82B):

Name	Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal					
Application Number:					
Filing Date:					
Title of Invention:	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY				
First Named Inventor/Applicant Name:	Guillermo MACIAS				
Filer:	David L. Hoffman				
Attorney Docket Number:	12-10060-CIP2				
Filed as Small Entity					
Filing Fees for **Utility under 35 USC 111(a)**					
Description	**Fee Code**	**Quantity**	**Amount**	**Sub-Total in USD($)**	
Basic Filing:					
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	70	70	
UTILITY SEARCH FEE	2111	1	300	300	
UTILITY EXAMINATION FEE	2311	1	360	360	
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**730**

Electronic Acknowledgement Receipt	
EFS ID:	28804934
Application Number:	15476410
International Application Number:	
Confirmation Number:	8635
Title of Invention:	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY
First Named Inventor/Applicant Name:	Guillermo MACIAS
Customer Number:	36212
Filer:	David L. Hoffman
Filer Authorized By:	
Attorney Docket Number:	12-10060-CIP2
Receipt Date:	31-MAR-2017
Filing Date:	
Time Stamp:	17:06:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$730
RAM confirmation Number	040317INTEFSW17070800
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	aia0014ApplicationDataSheet.pdf	1823111 f9e57c2216fe15607c93586ee978c026ad1cead1	no	9
Warnings:					
Information:					
2		1210060CIP2SpecClaimsAbstFinalCUTE.pdf	241923 eadc440fe15fd202aa0a3b970f2f677ac48a85b6	yes	58

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	53
Claims	54	57
Abstract	58	58

Warnings:					
Information:					
3	Drawings-only black and white line drawings	1210060CIP2DrawingsAsFiledCUTE.pdf	458359 b2a4a3b916b262d166e7428ce10531fb142b6ee5	no	13
Warnings:					
Information:					
4	Nonpublication request from applicant	sb0035NonpublicationRequestCUTE.pdf	170197 c0696f183db010f6c04ec9bec4773e4e0b6e3942	no	2
Warnings:					
Information:					
5	Oath or Declaration filed	DeclarationAIA01CUTE.pdf	508206 5bbb0ba7998e049cac03df8ae0ef91706cbb551c	no	2

Warnings:					
Information:					
6	Power of Attorney	TransmittalforPOACUTE.pdf	849450 b26d25a33b412b92164d25607878f1f5b6ad1e2d	no	4
Warnings:					
Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	34820 ad222c9910f15f74a1b550e34baf412c370adf00	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	4086066		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12-10060-CIP2
	Application Number	
Title of Invention	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Guillermo		Macias	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Santa Clarita	CA	US

Mailing Address of Inventor:

Address 1	19839 Ellis Henry Avenue		
Address 2			
City	Santa Clarita	**State/Province**	CA
Postal Code	91321	**Country**	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. — Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	36212		
Email Address	David@DLHpatent.com	Add Email	Remove Email

Application Information:

Title of the Invention	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY		
Attorney Docket Number	12-10060-CIP2	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	13	**Suggested Figure for Publication (if any)**	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12-10060-CIP2
	Application Number	
Title of Invention	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☒ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	36212		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Claims benefit of provisional	62146551	2015-04-13

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12-10060-CIP2
	Application Number	
Title of Invention	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY	

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation in part of	15096549	2016-04-12
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15096549	Claims benefit of provisional	62146551	2015-04-13
Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15096549	Continuation in part of	13896868	2013-05-17
Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
13896868	Claims benefit of provisional	61648554	2012-05-17
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.			Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.			Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12-10060-CIP2
	Application Number	
Title of Invention	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY	

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12-10060-CIP2
	Application Number	
Title of Invention	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12-10060-CIP2
	Application Number	
Title of Invention	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 — Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Applicant:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	12-10060-CIP2
	Application Number	
Title of Invention	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY	

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Docket No.
12-10060-CIP2

UTILITY APPLICATION

OF

Guillermo Macias

Santa Clarita, CA

FOR

U N I T E D S T A T E S P A T E N T

ON

MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

Docket Number:	12-10060-CIP2
Sheets of Drawings:	13
Sheets of Written Description:	58 (including the cover)

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CROSS REFERENCE TO RELATED APPLICATION

This nonprovisional patent application claims priority from and is a continuation-in-part of pending U.S. Patent Application No. 15/096,549, filed April 12, 2016, which is a nonprovisional application claiming priority from provisional application serial no. 62/146,551, filed April 13, 2015, and is also a continuation-in-part of and claims priority from pending U.S. Patent Application No. 13/896,868, filed May 17, 2013, which is a nonprovisional application of, and claims priority from U.S. Provisional Application No. 61/648,554, filed on May 17, 2012, all of which are incorporated by reference herein.

BACKGROUND

Field of the Invention

The present invention relates to a lighting system comprising a tube light with an improved LED array capable of producing light within at least two desired predetermined color temperature ranges, and preferably all colors in a color wheel.

Description of the Related Art

Fluorescent light bulbs or lamps have been used for a long time for various artificial lighting purposes, from residential to commercial lighting. Fluorescent lamps are gas-discharge lamps that use electricity to excite mercury vapor to produce short-wave ultraviolet light that then causes a phosphor to fluoresce, producing visible light. Many fluorescent bulbs are made in tubular form which contains the mercury vapor. As a result, larger fluorescent lamps require large elongated tube lamps to produce the desired amount of light.

While larger fluorescent lamps have been used mostly in commercial buildings or institutional buildings, they also have applications in the lighting industry such as TV, stage, auditorium, and/or film studio use, and/or other venues. However, fluorescent lamps must be used with caution in the lighting industry as the color temperature of fluorescent lamps may create unwanted visual effects for the viewer. Color temperature is a characteristic of visible light measured by the temperature of an ideal black body radiator that radiates light of comparable hue to that of the light source. Color temperature is conventionally stated in the unit of absolute temperature, Kelvin (K). Color temperatures over 5,000K are considered "cool" colors (blue-ish white), while lower color temperatures of 2,700 to 3,300 (or even lower) are considered "warm" colors (yellowish white through red).

The spectrum of light emitted from a fluorescent lamp is the combination of light directly emitted by mercury vapor, and light emitted by the phosphorescent coating. The spectral lines from the mercury emission and the phosphorescence effect give a combined distribution of light that is different from those produced by incandescent sources. Colored objects are perceived differently under light sources with differing spectral distributions. For example, some people find the color rendition produced by some fluorescent lamps to be harsh and displeasing, sometimes giving a greenish hue to skin tones giving people a sickly or unhealthy appearance. In addition, when used for lighting TV, studio, or film productions, the color temperature of the lighting often may need to be changed in order to match the scene or mood of the production. For example, recreating a scene taking place under sunlight with blue skies may require a color temperature of 9000 to 12000 Kelvin (K), while a scene taking place at sunrise or sunset may require a lighting color temperature of 3200 K or even substantially lower than 3200 K. The two most frequently used and desired color temperature ranges in the lighting industry for stage and

set lighting have been found to be, for example, 3050 to 3300 K for tungsten (warm white), and, for example, 5400 to 5600 K for daylight (cool white). Some system designers may prefer a somewhat a more narrow or wider ranges (e.g., warm white range down to 2700 K, and so on). These ranges represent ideal color temperature ranges for producing ideal lighting for TV, photography and film studio scenarios.

In such uses where accurate and suitable lighting color temperature is vital, lighting "gels" are often used in conjunction with fluorescent lamps to produce the desired color temperature. These lighting gels often consist of colored tube shaped sleeves made from a semi-transparent material to give the light the desired color effect. Although allowing for modification of the color temperature of light, techniques such as using color gels do not provide an easy method to change the lighting and so cause significant delays in production. For example, if shooting a daytime scene, production workers would need to manually remove and replace all of the colored gels on the fluorescent lamps being used, often a daunting task when faced with several banks of lamps, each bank consisting of numerous individual fluorescent lamps. Or without colored gels, a lighting crew must continually change the fluorescent lamps between daylight white (or day white) colored lamps and tungsten (or warm white) colored lamps, or if desired, other types of white/light or colored lamps.

Alternatively, LED (light emitting diode) lighting has been developed and has recently gained popularity. Since LEDs use very little energy and have a relatively long life, in recent years it has been popular to replace existing fluorescent bulbs with LEDs. LEDs present many advantages over incandescent or fluorescent light sources including lower energy consumption, longer lifetime, improved physical robustness, smaller size, and faster switching. There are two primary types of LED lighting used to create white light. One is to use individual LEDs that

emit three primary colors (red, green, and blue) and mix the colors to form white light. The other is to use a phosphor material to convert monochromatic light from a blue or ultraviolet LED to broad-spectrum white light, also referred to as phosphor based LEDs.

In order to match the tubular form of a fluorescent bulb, LEDs may be placed within a tube having the same form factor as a fluorescent lamp, such as a T8 or T12 size fluorescent bulb. One such bulb is made by Dialight and is called DuroSite™. For example, in size T8, the bulb in one form uses SMD LEDs in a four foot long tube and provides 1500 Lumens of Natural White light, using 17 Watts, 300 LEDs, with 90V-277V, and is ETL/UL Approved. However, such existing products cannot provide a lighting solution to create two different predetermined color temperature light outputs suitable for use in the stage lighting industry, for uses such as TV, stage, photography and studio lighting. Sufficient intensity of the light is preferably at least 1000 lux for such an application.

In U.S. Patent No. 8,203,260 to Li et al discloses an LED light (not made in a tubular form factor of a fluorescent light) and having color temperature which is tunable by blending adjacent pairs of LEDs by dimming one or both LEDs a customized amount to achieve the desired color. The control is complex and the temperature of the cold light is relatively high. The lighting is intended for street lights, vehicle headlights, and/or for other lights subject to moisture, fog, dust or smoke situations. These are clearly not applications that a tubular fluorescent form factor would be suitable. As is evident from Li's desired applications, a fog or moisture sensor or other sensor is preferably used with the device. Since the drive current to each of the different color LEDs must be reduced to achieve the desired blend of light, the intensity is not only reduced but is expected to vary quite a bit from color to color. There is no single source mode, and the light output is not suitable for studio use for several reasons. For example, the

light output at the high temperature range may be over 6000 K, which is too harsh. Also, the light is not disclosed to be broad spectrum, and CRI and green levels that meet studio requirements are not disclosed. Further, Li's applications such as street light and headlight need extremely high power and therefore will generate a lot of excess heat.

In U.S. Patent Application No. 2003/0072156 to Pohlert et al discloses a big light frame in the form of a wheel with a central opening for a camera. Daylight and tungsten LEDs may be mounted on the frame, and their relative intensities may be controlled. As stated in Pohlert's background section, "Proper illumination is necessary when filming movies, television shows, or commercials,…." (See, para. 0006) Perhaps most important, Pohlert states that "Fluorescent bulbs are generally tube-shaped, which can limit the lighting configuration or mounting options." (See, para. 0012) Pohlert does not want to use a fluorescent tube form factor because of the limited flexibility. Fig. 34 of Pohlert shows two different LED colors (tungsten and daylight LEDs 3403, 3404, respectively) that may be mounted on a ring frame or on a large rectangular frame (See, Fig. 35). Pohlert, while obviously aware of a fluorescent form factor, disfavors the fluorescent form factor because of the limited options when used with LEDs.

While LEDs have certain advantages, they also pose a number of design challenges that are well recognized by film and television lighting equipment designers. These challenges include, among other things, heat dissipation characteristics and electrical operation and control. Such challenges are particularly difficult in the field of entertainment lighting where color quality and consistency is of critical importance. Because LED color and brightness levels vary with temperature and age, larger mounting panels for heat dissipation has been seen as being required, given the critical nature of lighting sources "for lighting a subject for film, photography or video," which is the general field of the present invention.

As compared to Pohlert, a designer would have extremely limited circuit board space with the T12 or T8 linear tube form factor (no more than a one-and-a-half inch width) for heat sinking and for placing LEDs of different color temperatures.

As but one example, variable color temperature luminaire (with double (or more) the number of LEDs) can require up to twice (or more) the circuit board mounting space to accommodate electronically "selecting" between its sets of "predetermined" (e.g., daylight and tungsten) white light LEDs, yet such conventional T12 and smaller "tube" form factors have extremely limited circuit board topographical space for such multiple LED placement, as well as extremely limited available space for thermal heat sinking. For example, the long-standing T8 tube form factor has a mere one inch (1") system diameter, and T12 has a mere one and a half inch (1.5") system diameter, which would be perceived as highly problematic for a designer doing multiple color emitter film/TV luminaire.

A film/TV/video luminaire designer with ordinary skilled in the art readily understands how critical thermal design and management is. Without proper thermal design, the luminaire will suffer with inconsistent light level output (resulting in unintentional changes in light level output that can be catastrophic in a filming environment), undesirable color shifting, inconsistent color uniformity, reduced fixture life, and phosphor breakdown. In particular, for example, circa 2012, it would have been counterintuitive for a luminaire designer with ordinary skill in the art who is designing a multi-spectral LED emitter lighting fixture for film/TV/video usage (e.g., Bi-Color, RGBW, etc.) to choose such a highly restrictive linear tube form factor. In contrast to this narrow/restrictive tube form, an artisan of ordinary skill would naturally look instead to a larger form factor such as flat panels as taught by Pohlert, which provide, for example, far more circuit board "real estate" (room) to create a precision high-output light source with vastly superior

"LED spacing" thermal management properties. Such an optimized, light source can also provide higher light output levels and avoid "active" fan cooling. Avoiding active fan cooling (a highly desirable feature in a filming environment because sound is also normally recorded at the same time as filming) by better spreading apart the LEDs from one another without fan noise. Moreover, linear tube light sources typically have encapsulated clear or diffused outer sleeves, which only serves to further trap additional heat within their already thermally challenged narrow tube structures.

In light of such major design concerns, the skilled artisan designing a bi-color film/TV light with a high quantity of LEDs would not look in the direction of an "elongated and narrow surface" form factor. For example, in 2012 the industry's leading provider of fluorescent film/TV lighting fixtures, Kinoflo (based in Burbank, Ca.), abandoned the form factor of linear tubes when designing its own bi-color white light LED "Celeb" lighting fixture. Instead it chose the far more spacious "flat panel" form factor.

The "known disadvantages" of the legacy linear tube form are not limited to just thermal management issues. For example, it will also be readily understood by one of ordinary skill in the art, that LEDs exhibit maximum efficiency only when run at very low current, as the electrical-to-optical power conversion efficiency drops dramatically with higher LED input current. This so-called efficiency drop or droop represents a key challenge to solid-state lighting designer. System designers use a higher quantity of LEDs and drive them at fractionally lower currents in order to gain greatly enhanced system efficiency and avoid the efficiency droop. Yet such a standard designer's constraint of using a high quantity of LEDs driven at low current is not possible within the extremely limited topographical space available within narrow linear tube formats such as T8 and T12. Restated, properly designed luminaires utilizing "more" LEDs with

the same overall system power therefore result in more light efficacy (i.e., more lumens per watt) and better system reliability.

In addition, higher lumens-per-watt are needed as many times luminaires are required to match or exceed local ambient light levels when filming in order to produce professionally looking imagery. The following analogy may help illustrate this point. Consider the relative fuel economy of a car travelling at 55 mph vs a car travelling at travelling at 100 mph. As is readily understood, the car travelling at 55 mph will have substantially better fuel economy. It is the same in the LED world, where driving LEDs closer to their maximum current results in less lumen efficiency (less lumens-per-watt). In addition to being less efficient, operating LEDs at higher electric currents creates higher heat levels which those of ordinary skill in the art avoid because high heat levels compromise consistent light levels, color fidelity and lifetime of the LED.

What is desired is a lighting solution suitable for the lighting industry implementing the advantages of LED lights which allows for evenly dispersed light controllable within specific color temperature parameters without the need to physically switch out colored gels or lamp modules to achieve the desired color temperature light. It is also desirable to maintain the shape and interface of a traditional fluorescent lamp so as to allow maximum usability in the lighting industry without requiring expensive and time consuming equipment overhaul and upgrades.

SUMMARY OF THE INVENTION

Some exemplary embodiments of the invention include apparatus and system for producing light using LED lighting with outputs of at least two predetermined desired color

temperatures. In one preferred embodiment, an LED light system includes a tubular LED lamp having substantially the same physical form as a traditional fluorescent lamp tube. The term "LED lamp" or "bulb" as used herein refers to a unitary light module construction utilizing LEDs with a physical shape and form the same as or substantially similar to a traditional fluorescent lamp tube, such as a T8 or T12 form factor.

A preferred embodiment further includes a plurality of LEDs arranged in a matrix formation on a surface provided within the LED lamp. The term "LEDs", as used herein refers to a single light source utilizing LED lighting technology, including a single LED unit, as well as a single grouping having or consisting of trichromatic LED units configured and arranged to work together to produce a single color (for example, a grouping of red, green, and blue LED bulbs configured to create white light.)

In the preferred embodiment, the LEDs may be arranged in arrays of four emitters or lamps preferably in a tube in one direction perpendicular to a main axis of the tube and facing in one direction, by many rows of such LEDs, e.g., at least four rows (for a total of sixteen LEDs). A preferred embodiment may include at least ten or twenty rows of LED arrays, or even twenty-five or more rows (equaling 100 or more LEDs). The number of rows may vary depending on the size of the LED lamp used for the lighting fixture. For example, in a three foot long tube there will be fewer LEDs than a four foot long tube light device, in a linear variance given the same diameter and number of LEDs in each LED array.

A preferred embodiment has a mixture of at least two types of LEDs interspersed in one matrix arrangement. A first type of LED may be configured to produce light in a first predetermined color temperature range, and a second type of LED may be configured to produce light in a second predetermined color temperature range. In the preferred embodiment, the first

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predetermined color temperature range extends, for example, between 5400 and 5600 K for rendering daylight color temperature, and the second predetermined color temperature range extends, for example, between 3050 and 3300 K for rendering tungsten color temperature light. The color ranges may be predetermined based on the desirable appearance of a person's skin during commercial video or image recording.

The first and second types of LEDs are preferably arranged within the matrix in a checkerboard pattern, a row of LEDs alternating between the first type and the second type of LEDs. Another preferred embodiment may include various other uniform arrangements having dispersed and/or arrayed patterns of the two types of LEDs within the matrix. In all embodiments, the arrangements of the two types of LEDs are predetermined such that the grouping of the first type of LEDs and the grouping of the second type of LEDs each provide an evenly dispersed light. Maximum driving current to each of the first type of LED, when the LED bulb is on (all first type of LEDs are lit), is preferably the same or substantially the same as driving current to each second type of LED when the second type of bulb is on (all second type of LEDs are lit).

Preferably the intensity output is at least about 1000 lumens (e.g., at four feet). A preferred embodiment may also include a first driver and a second driver for providing driving currents to trigger the first and second types of LED bulbs respectively. The system may also include a controller connected to the at least two drivers for generating a plurality of output signals and outputting the output signals to the drivers in response to a predetermined setting by the user. In another embodiment, there are multiple lamps for stage or set lighting. In a further embodiment, there is a control unit for selectively turning on and off the lamps and, preferably,

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for selectively dimming and for selecting between the first and second type of LEDs, e.g., daylight (cool white light) and tungsten (warm white light).

Because the lamps are LEDs, no ballast is needed.

Moreover, in another embodiment, instead of providing light of two colors, the two colors may be provided along with other colors to produce a multiplicity of colors. In this situation, it is most preferred to use four (or more) LEDs or LED chips per column of LEDs in the array of LEDs or LED chips. There may be the same number of rows of LEDs or LED chips as in the previous embodiment, or some other desired number.

In another variation of the invention, at each end of the tubular LED lights, there are end caps, which are provided with male and/or female USB connectors or DMX connectors or other equivalent connector capable of carrying a DMX signal or signals, e.g., CAT5 or five pin XLR. The connectors may be connected to the ends of the light tubes by cords, or may be formed in the ends of the light tubes, or one connector, such as the female connector, may be corded and the other, such as the male connector, may be formed in the ends. Also, the connectors could just be at one end.

The USB connection(s) may provide the power source. Alternatively, the power source may be as in the first embodiment, or may be provided by one voltage adaptor/LED driver that contains a cord and plug, and an adaptor piece designed to connect to (electrically receive) two conductive prongs extending from the end of the tubular LED lights (like in a standard elongate fluorescent light bulb).

In a most preferred embodiment, the LEDs or LED chips may be controlled by digital signals transmitted along USB cable to the USB connector(s) on the tubular LED lights. These signals preferably correspond to DMX lighting control signals sent from a standard DMX control

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signal source, e.g., a computer console such as GrandMA2 control console and/or ETC Gio or ETC Ion, or Whole Hog 4, or other comparable lighting control boards with color picker software and can send DMX signals or other comparable control signals may be used. If the signals from the device's color picker software are not DMX, then they may be converted into DMX signals using standard software, via an App on a smart phone or tablet computer, or software using a laptop or desktop computer, or other suitable digital device.

On the lighting tube, in addition to the LED array, there is an LED driver or drivers (which is or are connected to each row of LEDs and/or LED chips to provide the appropriate DC voltage to drive the LEDs and/or LED chips in each row), an optional microprocessor (receiving the DMX or other control signals) and controlling the LED driver or drivers, and if line voltage is used, a transformer or AC to DC converter.

A control for providing signals to the LED driver or drivers is set so that in response to a signal level such as a DMX signal in a designated channel or channels, one of preferably five LED colors in an RGBAW array (red, green, blue, amber and white, preferably) will light at a desired level between zero (off) and 255 (full on). The driver or drivers are built to respond in increments of a little under 0.4% (rather than standard 1% increments) so that there are 255 or 256 increments (corresponding to the different values of an 8 bit DMX signal). By use of the RGBAW LEDs, the matrices of such LEDs as disclosed herein, and the LED driver increments in a little under 0.4%, the system can provide all 255 colors of a standard entertainment industry lighting color wheel.

In a variation, there is also an on-board DMX decoder (or code) having a control knob (on the housing behind of the lighting tube that enables entry of a DMX code also known as a DMX address or DMX addressing (between 0 and 512 channels although actually can enter up to

999 or any other desired code). This enables changing the code or channel of the lighting tube without having to replace the lighting tube.

In a further embodiment, the lighting tube may be powered by a battery, which battery may be onboard the lighting tube or physically fixed thereto.

In a further version of the invention, there may be a wireless signal receiver on board the lighting tube, and the control signals may be provided wirelessly, e.g., by Bluetooth or other wireless protocol.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1A is a schematic view of a bulb in accordance with one embodiment, showing a matrix arrangement of daylight and tungsten LEDs.

Fig. 1B is a schematic view of a bulb in accordance with another embodiment, showing a diagonally alternating arrangement of daylight and tungsten LEDs.

Fig. 1C is a schematic view of a bulb in accordance with an additional embodiment, showing an alternating arrangement of columns of daylight and tungsten LEDs.

Fig. 1D is a schematic view of a bulb in accordance with a further embodiment, showing an alternating arrangement of groups of daylight and tungsten LEDs.

Fig. 2 is a perspective view of a portion of a bulb of the present invention.

Fig. 2A is a schematic view of various alternative switching mechanisms in accordance with an embodiment of the present invention.

Fig. 3 is a schematic view of a bulb of the present invention.

Fig. 4 is a schematic view of another embodiment of the present invention.

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Fig. 4A is a view of a fluorescent bulb receptacle which may be used with a bulb of the present invention.

Fig. 5 is a schematic view of an LED lamp system in an embodiment of the present invention.

Fig. 6 is a perspective view of a control box of an embodiment of the present invention.

Fig. 7 is a schematic view of a stage and various LED lamps used for lighting a set in an embodiment of the present invention.

Fig. 8 is a schematic view of an LED lamp with a reflector and a light diffuser in accordance with an embodiment of the present invention.

Fig. 9A is a schematic view of a LED light in accordance with one embodiment, showing a matrix arrangement of RGB, white, and amber LEDs.

Fig. 9B is a schematic view of a bulb in accordance with another embodiment, showing a alternating arrangement of RGB, white, and amber LEDs.

Fig. 9C is a schematic view of a LED light in accordance with an additional embodiment, showing an alternating arrangement of columns of RGB, white, and amber LEDs.

Fig. 9D is a schematic view of a LED light in accordance with a further embodiment, showing an offset arrangement of groups of RGB, white, and amber LEDs.

Fig. 9E is a schematic view of a LED light in accordance with an additional embodiment, showing an alternate arrangement of RGB, white, and amber LEDs.

Fig. 9F is a schematic view of a LED light in accordance with an additional embodiment, showing another arrangement of RGB, white, and amber LEDs.

Fig. 9G is a schematic view of a LED light in accordance with an additional embodiment, showing another arrangement of RGB, white, and amber LEDs.

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Fig. 9H is a schematic view of a LED light in accordance with an additional embodiment, showing another arrangement of RGB, white, and amber LEDs.

Fig. 10A is a schematic view of a LED light in accordance with one embodiment, showing a matrix arrangement of LEDs having different colors.

Fig. 10B is a schematic view of a bulb in accordance with another embodiment, showing a alternating arrangement of LEDs having different colors.

Fig. 10C is a schematic view of a LED light in accordance with an additional embodiment, showing an alternating arrangement of columns of LEDs having different colors.

Fig. 10D is a schematic view of a LED light in accordance with a further embodiment, showing an offset arrangement of groups of LEDs having different colors.

Fig. 11A shows a block diagram of an LED light configured for providing a wide spectral range.

Fig. 11B shows a block diagram of an LED light configured for providing a wide spectral range with individual LED control.

Fig. 12A shows a block diagram of a wired interface to an LED light.

Fig. 12B shows a block diagram of a wireless interface to an LED light.

Fig. 13 is a schematic view of an LED light with USB connections.

Fig. 14A shows a schematic view of two LED lights coupled together in a “daisy-chain” configuration powered with AC power.

Fig. 14B shows a schematic view of two LED lights coupled together in a “daisy-chain” configuration powered with DC power.

FIG. 15 shows a block diagram of a method for providing light.

FIG. 16 shows lighting system using LED lights.

FIG. 17A shows the spectrum output from a 2700K LED.

FIG. 17B shows a measured chromaticity diagram from the 2700K LED.

FIG. 18A shows the spectrum output from a 3200K LED.

FIG. 18B shows a measured chromaticity diagram from the 3200K LED.

FIG. 19A shows the spectrum output from a 4000K LED.

FIG. 19B shows a measured chromaticity diagram from the 4000K LED.

FIG. 20A shows the spectrum output from a 5500K LED.

FIG. 20B shows a measured chromaticity diagram from the 5500K LED.

FIGS. 21A and 21B are respective views of alternative end caps for the embodiments of Figs. 2-4 and 13-14B.

DESCRIPTION

BICOLOR EMBODIMENT(S)

In general, various embodiments of the invention relate to LED lighting systems configured to produce at least two different ranges of color temperature light, utilizing a first type of LED bulbs configured to provide a first color temperature range light and a second type of LED bulbs configured to provide a second color temperature range light. Embodiments of the invention may be used in conjunction with lighting fixtures and infrastructure traditionally used in conjunction with fluorescent light tube lamps. Alternatively, embodiments may be used with other mounting devices. Additionally, exemplary embodiments of the invention include a controller and a control interface box through which an operator is able to control the output signal output to the drivers of the LEDs. Embodiments may be powered by AC and other

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embodiments may be DC power. In either of these embodiments, there may be control signals received by the units as well. In other versions, the LED lamp preferably may include a switch determining the grouping of LEDs powered by the voltage, controllable by the user via the control interface box. In yet another embodiment, the user may be able to dim the output signal to the first type of LEDs and second type of LEDs. Preferably, the first type of LEDs are daylight white and the second type of LEDs are tungsten or warm white light.

Turning now to Figure 1A, a schematic diagram of LEDs are shown positioned in a matrix arrangement on a circuit board for use in a LED lamp or bulb in an embodiment of the present invention. There is a support structure 10 configured to receive and retain a plurality of LEDs 12 in a uniform and consistent position. The support structure 10 is preferably an elongated and narrow surface shaped to insert into a tubular transparent or diffusor shade such that the lamp construction is compatible with existing fixtures for traditional fluorescent lamp tubes. The LEDs 12 are positioned in a uniform and consistent directional position, and positioned in a matrix arrangement such that each LED is located equidistantly apart from surrounding LEDs 12. The support structure may be or may include a printed circuit board configured to connect a power source to the LEDs.

The preferred embodiment includes a first group of LEDs 12a (marked with D, for daylight white), and a second group of LEDs 12b (marked with T, for tungsten light), located on a surface of support structure 10. The D LEDs are configured to produce a light with color temperature in the range of 5400 to 5600 K (or about 5400 to 5600K) for daylight white light. The T LEDs are configured to produce a light with color temperature in the range of 3050 to 3300 K (or about this range) and most preferably 3200K or about 3200K for warm white light.

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Additional ranges that may be acceptable are 2800K to 3300K and 5000K to 5600K, but the above are more preferred. About means within 3 percent.

These ranges have been tested and used in numerous productions, and have been determined to be the preferred desired color temperature ranges for shooting television and film productions utilizing daylight and tungsten lighting to recreate day time and dusk/night time scenes.

In the embodiment as shown in Fig. 1A, the D and T LEDs may be arranged in an alternating checkerboard pattern to provide an even distribution of light on the subject. This arrangement is preferred to create an even lighting cast even when only one grouping of LEDs is being used at any given time. In the preferred embodiment, the circuit board of the LED lamp 8 (Fig. 2) is configured such that only one group of LEDs 12 can be turned on at a time. The D LEDs 12a and the T LEDs 12b are exclusively operated to produce either the daylight white lighting with the D bulbs, or the warm white lighting with the T bulbs. Since only one group of bulbs can be on at a single time, the arrangement of the two groups of LEDs may have a direct impact on the quality of the light produced by the LED lamp. Therefore, it may be advantageous to arrange the D and T bulbs in a consistently inter-dispersed matrix configuration as shown in Fig.1A to produce the highest quality, evenly cast lighting.

In another embodiment, it may be desirable to create lighting effects with more directional light or harsher light wherein the LEDs of the D or T groups are not inter-dispersed, but positioned closer together within a single group. Fig. 1B shows an embodiment depicting LEDs 22 on support 20. D LEDs 22a and T LEDs 22b are in an alternate diagonally alternating arrangement of D and T LEDs, and Fig. 1C shows yet another embodiment depicting LEDs 32

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on a support 30 having grouped alternating arrangement of columns of D and T LEDs 32a, 32b, respectively.

Fig. 1D shows a support 40 having LEDs 42 in alternating groups of columns of D LEDs 42a and T LEDs 42b. The LED arrangements are not limited to these embodiments and can vary based on the desired lighting effect for the particular use or scene being lit, but most preferably are individually alternating.

Fig. 2 is a perspective view of a portion of LED lamp 8, which is similar to a traditional fluorescent lamp tube. Each end of the LED lamp 8 includes a base 14 which includes a housing and which has an end cap which includes electrical connectors 16. This embodiment is configured with dimensions equivalent to a "T8" size traditional fluorescent tube, which is one inch in diameter, or a T12 size (one and a half inch diameter). The end cap and connectors 16 are configured to be compatible with traditional fluorescent lighting fixtures and mounts such that the LED lamp 8 may be installed into existing lighting fixtures (such as shown in Fig. 4A). There may be another end cap at the other end of the lamp 8. That end cap need not have connectors (or may have dummy connectors) since the lamp 8 is preferably powered from one side, having onboard electronics including an LED driver and an inverter or power supply. (In other embodiments, where the lamp 8 receives a DC input, that DC input may include power and control signal(s), as in the USB connector formed in the end cap embodiment(s) herein.)

A clear or semi-translucent or translucent diffusor shade tube 24 is also visible which acts to diffuse the light produced by the LEDs of the LED lamp. In the preferred embodiment, tube 24 is configured and sized with the same diameter as a traditional fluorescent tube lamp, such as a size T8 or T12. There may be various embodiments with varying tube diameters configured with the same diameter and dimensions of various other traditional fluorescent lamp sizes.

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Therefore, preferably the housing except for the end caps is the same length and the same or similar curvature to the diffusor shade tube 24. The diffusor shade tube fits on top of the housing. The electronics are housed in and/or mounted on the housing. The housing may preferably be metal, especially aluminum, for its heat sink properties. Preferably the LED light has substantial power and thus needs to dissipate substantial heat. For example, the LED light may be powered with one or two 110V AC current sources and may use about fifty watts of power or at least forty watts. The end caps may be part of but preferably mount to the housing.

Fig. 2A is a schematic view of various alternative switching mechanisms in accordance with an embodiment of the present invention. Switching mechanism 134 shows various options for switch 34 (see Fig. 3). It may be a manual switch such as manual switch 34a (see Fig. 4) or it may be a remote controlled switch having an RFID (radio frequency identification detector) 135 or infrared (IR) to receive remote controls to cause actual switch connector 134a, which switch 34 either way will toggle (electronically switch) between allowing current to drive the T LEDs or the D LEDs on circuit board 52 (PCB). Signals could also travel along the electrical connectors 16 by means of modulating an initial portion of the electrical power carried to connectors 16 (from, e.g., a control unit as in Figs. 5 and 6). The modulated signal could be a certain pulsing of power on and power off in an initial period of turning on the switch to send power to the lamp, e.g., two pulses, for switching to the T LEDs and e.g., four pulses, for switching to the D LEDs. The switches on the control unit could be three way switches, enabling selection between D LEDs on, T bulbs on, and no light, or two way switches enabling selection between D LEDs on and T LEDs on, and using a master power switch to switch off the lamp. The control unit in this case would include circuitry to provide the modulated power on signal. When a counter/relay/timer circuit receives the pulses, it signals the switch connector 134a to move to

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the appropriate position to power the T LEDs or D LEDs. Alternatively, the control unit may send separate control signals along a multipin connector, and the LED lamp switching circuit may be a microprocessor or the like for receiving the signals and performing the switching function. In such a case, a standard fluorescent receiver and the leads into the bulb may be modified to send and receive appropriate control signals in addition to current.

Fig. 3 is a schematic view of an LED lamp of Fig. 2 in more detail. Representations of the LED lamp 8, base 20, connectors 16, and connector wires 30 are shown. An AC (or DC) power source 33 such as an electrical grid, battery, or generator may be connected to the connector wires to provide power to the LED lamp 8. This embodiment may also include at least one LED driver 36 configured to provide appropriate power input to the various LEDs of the first and second types, respectively, depending on and in response to a switch 34. LED lamp 8 may include two LED drivers 36, a first driver to provide appropriate power input to the D LEDs, and a second driver to provide appropriate power input to the T LEDs.

In another preferred embodiment, the driver or drivers 36 are configured to provide dimmable control over the LEDs of the LED lamp. The LED lamp 8 may include the power input switch 34 configured to selectively provide power to either the grouping of D LEDs or the grouping of T LEDs. Preferably, the grouping of LEDs to be powered at a given time by the power source may be selected by the user. Also preferably, each lamp or bulb 8 may have arrayed LEDs on each side of support 10 (or 20, 30 or 40).

In an alternate embodiment as shown in Fig. 4, the LED lamp may include two sets of connectors 16, one set on each end of the LED lamp. One set of connectors may be electrically connected to provide power to one grouping of LED bulbs, and another to provide power to the other grouping. Each connector may be powered by distinct power sources. In another

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configuration, a power input switch 34a external to the LED lamp may be controllable by the user to selectively provide power to the desired grouping of LEDs. In an embodiment, the LED lighting system may include a wiring connector having at least sixteen pins, two of the pins being connected to the support structure to supply power to the first grouping of LEDs and the second grouping of LEDs. In the preferred embodiment, the LEDs are electrically connected to a power source by a printed circuit board (PCB) 52.

As shown in Fig. 4A, there is a fluorescent bulb receptacle 55 in which bulb 8 may be placed to connect to a power source in the same manner as a fluorescent bulb would be placed therein.

In Fig.4, there is an LED lamp 50 in an embodiment of the present invention. The lamp has multiple, e.g., four, LED lamps 57, 59, 61 and 63, each having LEDs in a matrix arrangement. LEDs 52 are positioned on a printed circuit board 54 (PCB) in a matrix arrangement. Two types of LEDs are utilized: there is a first group of LEDs configured to provide light with a color temperature between a predetermined range of 3050 and 3300 K, and a second group of LEDs configured to provide light between a predetermined range of 5400 to 5600 K. The two groups of LEDs are preferably arranged in an alternating matrix arrangement across the PCB as in Fig. 1A or may also be as in Fig. 1B, 1C or 1D. In an embodiment, the PCB is connected to sets of connectors on both ends of the PCB. In another embodiment, only one set of connectors is provided on one end of the PCB.

Each LED lamp 50 includes a clear, translucent or semi-translucent diffusor shade tube 24 configured to sleeve over the PCB and the LEDs. Preferably, the diffusor shade tube 24 is configured with the same size and dimensions as traditional fluorescent tube lamps, such as the T8 size (one inch diameter or if T12 then one and half inch diameter, etc.). The diffusor shade

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tube 24 may be constructed from glass or durable plastic with a white or neutral gray coloring so as to not affect the predetermined color temperature of the LED bulbs.

In Fig. 5, there is an LED lamp system 50 of the present invention. There is a power source 51 such as 110V AC current at 50 or 60 Hz. The power source is connected to control unit 53. From control unit 53, one or multiple cords or connectors 53A, 53B such as 16 pin connectors electrically connect the power source with the LED lamps 57, 59, 61, 63, such as if Figs. 3 or 4 with LED patterns such as in Fig. 1A or Figs. 1B, 1C or 1D. Specifically, the electrical wires in the connectors connect to leads 57a, 59a, 61a and 63a, respectively. Additional lamps may be connected as well, e.g. four per sixteen pin connector.

The drivers for each bulb could be connected to separate leads for each type of LED (D or T). More preferably, so that a fluorescent bulb receiver (e.g. receiver 55 of Fig. 4A) need not be modified, the driver may include circuitry (e.g. a relay or series of relays or a counter or other controller) to toggle between the D LEDs and the T LEDs when the power is on. A simpler way (to selectively toggle) is to have a switch, manual or remote control such as switch 34 of Fig. 3 or 34a of Fig. 4 that toggles between powering the D bulbs and the T bulbs. Lamp system 50 may be configured to be compatible or similar to traditional fluorescent tube lamp fixtures. Control unit 53 is controllable by the user to selectively provide power from power source 51 to a desired grouping of LED lamps or bulbs (57, 59 or 61, 63). In these embodiments, a manual switch (such as 34 or 34a or remote control or driver control) may be mounted on the support structure configured to enable selective operation of either the first type LEDs (D) or the second type LEDs (T).

Fig. 6 is a schematic view of control unit 53 of the present invention. The control unit 53 may include toggle switches S1 to S8 for controlling power input to the LED lamps 57, 59, 61,

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63 and any additional bulbs (e.g., two more per each cable 53A, 53B) connected to the control unit. The control unit may be configured and connected such that each switch may control one or a predetermined grouping of LEDs for one specific LED lamp of the present invention, toggling between an "On" and "Off" position for that particular grouping of LED bulbs. Alternatively, each switch may control a plurality of the same LEDs grouping across a plurality of LED lamps in a bank of lights. For example, switch S1 may control the On/Off toggle of D color temperature LEDs for a bank of lights comprising two, four or more LED lamps, and switch S2 may control the On/Off toggle of T color temperature LEDs for the same two, or four or more LED lamps.

In another preferred embodiment, each switch (e.g. S1) may be configured to simply control the power switch of the LED lamp to selectively provide power to the D or T grouping of LEDs of the LED lamps. In this configuration, the user is unable to toggle between an On/Off power configuration to a particular LED lamp, but instead is able to simply control the specific grouping of LEDs being powered at any particular point in time. Additionally, control unit 53 may include dimming switches 53C, 53D or knobs to control the power gain levels to the LED lamps to vary the brightness or LEDs and control lumens from the LED lamp. A power-on LED indicator 53E and 53F may be included for each bank of switches 65, 67, respectively. There may also be a master power switch S10 and another master power switch S9 for each switch bank 65, 67, respectively.

The control unit may be connected to the LED lamps via a standard quick connect interface. The quick connect interface may be connected to the LED lamps via industrial cables widely used in the lighting and commercial production industry.

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Spectrophotocolorimeter testing for an LED lamp of the present invention, maps color perception in terms of two parameters, x and y. The chromaticity coordinates map the color with respect to hue and saturation on the two-dimensional Commission Internationale de l'Eclairage (CIE) diagram. The testing of Daylight indicates a light color temperature of 5000 K. The color rendering index (CRI) is indicated as Ra which has been found to be at least about 92 to 93 percent.

A CIE test of tungsten had a light color temperature of about 2800K to about 3000 K. The color rendering index is indicated as Ra being at least about 93 percent. Flux has been found to be about or over 1000 lumens.

Light systems of the present invention are suitable for TV or studio production.

Fig.7 is a diagram of the system of the present invention being used for a commercial production. The diagram depicts a scene being shot for commercial uses inside of a large studio or production warehouse. There is a set or stage 100, subjects 1 and 2 on stage (people), and a backdrop are 102. A plurality of LED fixtures 103, 104, 106 and 108 are provided and mounted to direct desired lighting on the stage or set of the production. Each LED fixture 90 may include a plurality of LED lamps, as in prior embodiments, e.g., a bank of four T8 or T12 size bulbs or other desirable size. Each group is configured to provide lighting within a predetermined color temperature range. In the diagram, the lighting provided by the LED lamps are selectively daylight white, with a color temperature between the range of 5400 to 5600 K, and tungsten or warm white with a color temperature range of 3000 to 3300K, using control unit (or units) 110, which may be the same as shown in Figs. 5 and 6. Other temperature ranges as disclosed herein may be used.

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Each of the LED lamps is connected to control unit 110 via cables. The cables may be standard cables and wiring widely used in the lighting and commercial production industry. The cables may range from 50 to 100 feet in length, and may be extended to lengths of up to 200 feet, depending on production requirements. In many cases, the standard cables and wiring may be preexisting cables previously used with traditional fluorescent or halogen studio lighting. The compatibility of the LED lamps and fixtures of the present invention allow for use with traditional infrastructure and cables already in place. The cables may be connected to the control unit via a quick connect interface, which may include a secure screw-in connection. The quick connect interface may also be a standard connection interface widely used in the industry with traditional lighting equipment, which may be reused with the current invention. The control unit is connected via a quick connect interface to a power source, such as a power grid, generator, or large capacity battery, as in prior embodiments.

In the diagram, subjects S1 and S2 are being filmed on a film camera 112 during a scene. To recreate daylight lighting, control unit 110 is used to turn on power to only the daylight white LED bulbs of the LED lamps, which produces daylight white light with color temperature in the predetermined range of 5400 to 5600 K. The light is directed to hit the subject(s) and bounce off to give a predetermined color temperature based on the subjects' skin tone, which is then captured by the camera 112, giving the desired appearance and effect on film.

Examples:

Example 1:

A four foot long T12 (1.5" diameter) LED lamp was constructed with four rows of alternating LEDs of a daylight type and tungsten (warm light) type, using the pattern of Fig. 1A. The power consumption is quite low for the light output.

Color Temperature (Daylight Mode)	5500K ±100°K
Color Temperature (Tungsten Mode)	3200K ± 150°K
CRI (color rendering index)	90% +
Photo Color Correction (CC) Green	< 5G
Photo Color Correction (CC) Magenta	< 5M
Luminosity Daylight avg Lux/**FC**	3 ft: 549/51
	5 ft: 289/27
	10 ft: 80/7.4
	15 ft: 40/3.7
Luminosity Tungsten avg Lux/**FC**	3 ft: 530/49
	5 ft: 230/21
	10 ft: 66/6
	15 ft: 30/2.8
Power Consumption (@120V/60Hz)	0.35 amp 42 watts

Fluorescent lights range from a CRI (color rendering index) of about 50% for the basic types, up to about 90% for the best tri-phosphor type. The present invention can achieve a CRI as high as or higher than expensive fluorescent lights.

Spacing of the LEDs may, e.g., be one quarter inch apart or about one quarter inch apart from the middle of one LED to the middle of the next one. It can be less and can be more as desired. For example, in a T12 bulb that is four feet long (1198 mm without the leads and 1213 mm with leads; by diameter of 41 mm), there would be four LEDs over the width and 144 LEDs

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long, for a total of 576 LEDs. Some of the four foot length of the bulb is taken up by the leads and end caps, driver and switch. The LEDs are preferably SMD 3528 (and/or SMD 2835 may be used or other suitable size) single color LEDs. Such LEDs may be about 3.5 mm by 2.8 mm, or very roughly about a 1/8 inch square.

Example 2:

A four foot long T12 (1.5" diameter) LED lamp was constructed with four rows of alternating LEDs of a daylight type and tungsten (warm light) type, using the pattern of Fig. 1A. The power consumption is quite low for the light output. Other parameters are the same or substantially the same as in Example 1.

Color Temperature (Day white Mode)	5000 to 5500K
Color Temperature (Warm white Mode)	2700-3200K
CRI (color rendering index)	>91
Photo Color Correction (CC) Green	< 5G
Photo Color Correction (CC) Magenta	< 5M
Luminosity Daylight (day white) avg	1170 ± 10%
Luminosity Tungsten (warm white) avg	1010 ± 10%
Power Consumption (@110V)	20 watts each color
Type	Dimmable
Control	Selectable between warm white and day white

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At one foot the output can be over 1000 lumens, and therefore the light is suitable for stage uses. Therefore, with the same number of light bulbs as high quality fluorescent light to light a stage or set, which bulbs must be changed out for different scenes when different colors are required, use of the bulbs in accordance with the present invention achieves suitable light for the stage or set without having to change any bulbs, whether a scene is to be shot at warm white light or at daylight white.

Therefore, a method of a preferred embodiment of the invention, would be to light a stage or set to be filmed or photographed with a set of bulbs in accordance with the invention, and continue to light the stage or set with the same set of bulbs, selectively switching the bulbs between warm white light and daylight white for different scenes and/or different parts of scenes.

Example 3:

A four foot long T12 (1.5" diameter) LED lamp was constructed with four rows of alternating LEDs of a daylight type and tungsten (warm light) type, using the pattern of Fig. 1A. The power consumption is quite low for the light output. Other parameters are the same or substantially the same as in Example 1.

Color Temperature (Day white Mode)	5000 to 5500K
Color Temperature (Warm white Mode)	2800 to 3200K
CRI (color rendering index)	>92
Photo Color Correction (CC) Green	< 5G
Photo Color Correction (CC) Magenta	< 5M
Luminosity Daylight (day white) avg	1200 lumens ± 10%
Luminosity Tungsten (warm white) avg	1050 lumens ± 10%

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Power Consumption (@110V)	20 watts each color
Type	Dimmable
Control	Selectable between warm white and day white

Again, luminosity is at least 1000 lumens. Lifespan in Examples 1, 2 and 3 is estimated at 40,000 hours.

To create the LED lamps, in each of the above examples, LEDs in the desired color ranges are selected which provide at least about 1000 lumens. The LEDs are tested to provide the desired light, e.g., with CRI of at least about 90 percent or more, flux of at least about 1000 lumens or more, and purity of color. Preferably, purity of light includes no more than about three percent green, no more than about three percent yellow and no more than about three percent magenta tones. In addition, in more preferred embodiments, the LEDs for the T (warm white light) type are selected in the ranges of 2800 to 3300K or about 2800 to 3300K, and more preferably 3050 to 3300K or about 3050 to 3300K, and the D (daylight white light) type are selected to be 5000 to 5800K or about 5000 to 5800K, and more preferably 5000 to 5500K or about 5000 to 5500K and most preferably 5200 to 5400K or about 5200 to 5400K. Alternatively, they may be selected in other ranges disclosed herein.

Fig. 8 is a schematic view of an LED lamp 89 which may be used in the embodiment of Fig. 7. The lamp has a reflector 93 and a light diffuser 91 or gel in accordance with an embodiment of the present invention.

MULTICOLOR EMBODIMENT(S)

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In another embodiment, instead of providing light from just two LEDs of different color designations as described above, the LED light may be configured with a variety of LEDs to provide a lighting output that is adjustable over a wide visible spectral range. The term "lighting output" is meant to include the scope of lighting effects that a user would be able to achieve from the LED light, given the description herein. A capability to produce a complete range of lighting output may reduce or eliminate the need to use "gels" to provide desired lighting output, thus reducing or eliminating the time required to reconfigure a light for use. A widely varying photometric (visible light spectrum) light output may be provided by utilizing different individual LEDs and varying the output intensity from them, individually to achieve a desired light output. While the light output is primarily describable as an emitted light color resulting from the LED intensity combination selected, it is considered for purposes of studio and commercial lighting that the mixing of light from the plurality of LEDs would be understood from the point of view of its effect for a photographic or video recording or stage effect by a lighting technician. More specifically, lighting technicians may wish to be able to select light at various color temperatures from a wide range, i.e., a wide spectral range. Typical color temperatures may vary from 1700 K, i.e., the color temperature of a match flame, to 15000K, the color temperature of a clear blue sky. Light fixtures capable of providing light output at varying color temperatures allow light technicians to quickly configure lighted scenes with light that can simulate various environments.

An LED light configuration for generating light output in a wide spectral range may be accomplished with four or more LEDs in the array of LEDs. FIG. 9A shows a most preferred configuration of an LED array (also called a matrix) having a first row of RGB LEDs 212, a second row of white LEDs 214, a third row of amber LEDs 216 and a fourth row of RGB LEDs

212. The RGB LEDs are made of LED chips (also called dies) each capable of separate intensity output for each of the R, meaning red, G, meaning green and B meaning blue chips. These can be adjusted separately by control signals or as a group. Selection of the light output of the LED light is accomplished by controlling the output intensity of the LED and in the case of the RGB LEDs, controlling the output of each of the three R, G and B LED chips or LEDs. Control of the LEDs is described in additional detail below. The LEDs in Fig. 9A (and also as shown in Figs 9B and 9C) are in vertical columns (i.e., up and down the page).

The LED light configuration is not limited to using LEDs of the same color in the individual rows of the LED array (i.e., across the page). FIG. 9B shows the RGB LED 212 and the white LEDs 214 being alternated in the first and second row of the LED array. Similarly, the RGB LED 212 and the amber LEDs 216 are alternated in the third and fourth row of the LED array. This configuration may provide for better color mixing across the entire length of the LED light as in the exemplary fluorescent tube light form in one implementation of the invention, although wiring may be more complex than for the matrix of FIG. 9A.

FIG. 9C shows the RGB LED 212, the white LEDS 214, and the amber LEDs 216 grouped by columns rather than rows. That is, as shown in FIG. 9C, a first column has RGB LED , a second column has white LEDs 214, a third column has amber LEDs 216, and a fourth column has RGB LED 212. This pattern then repeats throughout the array of LEDs. This configuration may also provide for better color mixing across the entire length of the LED light and may also lower the cost and complexity of controlling the LEDs and fabricating the LED light.

FIG. 9D shows that the rows of individual LEDs may be offset from adjacent rows (defining diagonal columns). As shown in FIG. 9D, each LED 214 in the second row of white

LEDs 214 is offset from each LED 212 in the first row of RGB LEDs 212. The third and fourth rows are similarly offset. The offsetting can be described as providing a diagonal columned order within the matrix.

Other embodiments of the LED light are not limited to the row and column configurations depicted in FIGs. 9A – 9D. Other physical configurations, layouts, and distributions of the LEDs may also be used. For example, FIG. 9E shows the first and third row having RGB LEDs 212 while the second row is white LEDs 214 and the fourth row is amber LEDs 216. FIG. 9F shows the second and fourth row having RGB LEDs 212, the first row having white LEDs 214 and the third row having amber LEDs 216. FIG. 9G shows the second and third row having RGB LEDs 212, the first row having white LEDs 214 and the fourth row having amber LEDs 216. FIG. 9H shows the outer rows having RGB LEDs 212 while the inner rows have an alternating pattern of amber LEDs 216 and white LEDS 214. Also, as shown in Fig 9D in which the rows alternate offset of the columned order of Fig 9A, each of the other columned orders of Figs. 9B, 9C, 9E, 9F, 9G and 9H could be similarly offset and in each case define a diagonal columned order.

FIGs. 9A – 9H are presented as exemplary LED layouts of the present invention, while other configurations, layouts, and distributions not shown may achieve the same effects or substantially the same effects and may be used in accordance with the present invention, FIG. 9A is most preferred and believed to have the best effects. In particular, for the set of four LEDs described above, they can be seen as allowing an ordered distribution in a four-by-four matrix in which all variations can be achieved and in which in every case an RGB LED is adjacent to either a white LED or an amber LED. This is seen in the four rows in which selected orientation

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of the LEDs allows each RGB LED to be adjacent to one of the white LED or the amber LED and the other RGB LED to be adjacent to the other of the white LED or the amber LED.

Embodiments of the LED light providing a wide spectral range, though significantly less preferred, are not limited to the combination of RGB LEDs, amber LEDs and white LEDs depicted in FIGs. 9A – 9H. FIGs. 10A – 10D show various arrangements of LEDs having selected colors. These are arranged in vertical columns (Figs 10A, 10B and 10C) or in diagonal columns (Fig. 10D). As shown in FIG. 10A, the LED light may have a first row of LEDs 222 having color C1, a second row of LEDs 224 having color C2, a third row of LEDs 226 having color C3, and a fourth row of LEDs 228 having color C4. The colors C1, C2, C3, and C4 may be a single color or may be a selectable or configurable color. The colors C1, C2, C3, and C4 may also represent fewer than four individual colors, e.g., color C1 may be the same as color C4. FIGs. 10B – 10D show that the LEDs may be distributed in various configurations.

In the column and row configurations of Figs 9A-9H it can be seen that in each case the order or layout has each of the two RGB LEDs always adjacent either a white LED or an amber LED. This arrangement enables, particularly that of Fig. 9A, the light colors to mix so as to achieve the following:

The emitted light from the lighting tube appears uniform in color to the naked eye, which uniform appearance is due to the packing of the LEDs on a strip with a diffuser cover, as explained below with reference to the LED Strip Light. “Uniform in color” is thus defined herein as uniform in color to the naked eye. Yet, the LED controller operates to provide sufficient colors having sufficient light output (e.g., daylight of 5500 lumens across the whole lighting tube, and tungsten 3200 lumens across the whole lighting tube, as well as sufficient intensity for

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the colors of the color wheel, 255 or about 255 color hues) to be useful in a T12 form factor, four foot lighting tube that the entertainment industry may use it for lighting live or recorded shows.

As noted elsewhere herein, standard RGB lighting strips do not achieve a sufficient color spectrum for a color wheel usage. The use of the amber LED enables providing sufficient yellows and oranges to reach 255 color hues.

The use of the white LED, which appears to be redundant, helps boost the intensity of the light output to make the light sufficient for the entertainment industry usage.

Gels and filters are normally used to provide color lights in the entertainment lighting industry. DMX 512 controls are used to control the wheels (colored filters) to get 255 different color hues. One such color system is the SeaChanger Color Engine. Other systems use color scrollers. In an embodiment the layout of the RGB LED and the white and amber LEDs is applied preferably for a tubular light form format, that is for the florescent light form format as discussed above. However the basic embodiment is for combining those LEDs in any light configuration so as to provide the advantageous full spectral range. In this respect, in one or more embodiments, the invention resides in achievement of the color wheel of 255 colors (for 8 bit DMX signals). The light/colors are also preferably dimmable. Thus, a color scrolling wheel or the like may be used to control the lighting tube output. DMX512 (or currently DMX-512A) standard is maintained by ESTA (Entertainment Services and Technology Association), now Plasa. This standard is for digital communications networks used to control stage lighting (entertainment industry lighting) i.e., controllers such as lighting consoles and dimmers.

Embodiments of the multicolor LED light are not limited to LEDs having up to four different colors (R, G, B, A and W). Other configurations of the multicolor LED light may have LEDs having more than three or four different color type chips and/or LEDs, but those skilled in

the art recognize that such configurations may have increased fabrication costs or may require more complex control hardware and or software. It is preferred that the LED light providing the wide spectral range be provided in the fluorescent tube form factor described above and shown, for example in FIGs. 2 and 8. This form factor may also limit the selection of the number of colors for the LEDs or LED components.

FIG. 11A shows a block diagram of an LED light 300 configured for providing a wide spectral range. In FIG. 11, an interface 310 (such as a GUI having input devices such as a color wheel/scroll control and/or DMX 0 to 255 slide controller(s) for each DMX universe, e.g., four, six or eight lighting tubes per universe or other desired amounts) receives instructions for controlling the LED light. As described in additional detail below, this interface 310 may be a wired interface or a wireless interface. The interface 310 sends the instructions to a controller 320 that controls the light output from the LED light 300 based upon the received instructions. The controller 320 (preferably on board the LED light 300 but which may be external) will decode the instructions and provide controls to an LED driver 330 that energizes the LEDs 212, 214, 216.

As shown in FIG. 11A, the LEDs 212, 214, 216 may be wired together in a row configuration, such that the LED driver will provide the same control for all the LEDs 212, 214, 216 in that row. For example, FIG. 11A shows that the white LEDs 214 may be all wired together and the amber LEDs 216 may all be wired together, such that the LED Driver 330 provides the same control to all LEDs in that row. FIG. 11A also shows that the RGB LEDs 212 may receive separate controls for the red light, the green light, and the blue light in the RGB LEDs 212. The LED Driver 330 may then provide the same red light control to the red portions of all of the RGB LEDs 212. Similarly, the LED Driver 330 may then provide the same green

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light control to the green portions of all of the RGB LEDs 212. Finally, the LED Driver 330 may then provide the same green light control to the green portions of all of the RGB LEDs 212. The LEDs may be wired together in other groupings, such as the column-oriented grouping shown in FIGs. 9C and 9D. One may provide the same control for multiple LEDs or may provide for lower fabrication and component costs for the LED light. A configuration interface 360 provides for configuring the LED for specific applications or interfaces. The configuration interface 360 is described in additional detail below.

FIG. 11B shows a block diagram of an LED light 400 configured for providing a wide spectral range with individual control over the LEDs 212, 214, 216. As shown in Fig. 11B, an LED driver 331 is wired to each LED component or LED 212, 214, 216. Hence, the LED driver 331 is configured to receive control signals from the controller 320 that provide for individual control over each LED or LED component 212, 214, 216 in the LED light 400 and provide the appropriate /desired power level to each LED. The LEDs 212, 214, 216 may still be configured to operate in groups, e.g., rows or columns, but the controller 320 will provide the grouping, rather than physical wiring within the LED light 400. The configuration interface 360 may provide instructions for grouping the LEDs 212, 214, 216, or the grouping instructions may be received via the interface 310. Note also that the LED Driver 331 may also be configured to provide separate controls over the red, green and blue portions of the RGB LEDs. Note that while FIGs. 11A and 11B show a single box for the LED Driver 330 or LED Driver 331, the LED Driver 330 or LED Driver 331 may be implemented with one or more LED driver components. The controller 320 may be one or more processors for decoding instructions and providing control signals to the LED driver 330 or 331. The one or more processors may be

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processors known in the art, such as microprocessors, microcontrollers, digital signal processors, etc.

As mentioned above, the interface 310 may be a wired interface. One possible wired interface is a serial interface such as shown in FIG. 12A. FIG. 12A shows a serial input 311 to the interface 310 and a serial output 312. The serial input 311 may be coupled to an external lighting system controller 500 or to another LED light. The serial input 311 and serial output 312 may adhere to standard serial specifications known in the art., such as Universal Serial Bus (USB), Digital Multiplex (DMX) 512, Ethernet, etc. DMX 512 is of particular applicability, since the DMX512 standard is a well-known standard in the art used for controlling set or stage lighting and set or stage effects. The DMX512 signaling protocol may also be used with USB physical devices. The serial output 312 may be used to simply retransmit the signals received over the serial input 312 to allow for "daisy-chaining" of devices as described in additional detail below. Lighting controller 450 may include a color scroller or color wheel or DMX slide controllers, or a combination thereof.

In a variation, there is also an on-board DMX (or code) control knob (on the LED lighting tube's housing) that enables entry of a DMX code (between 1 and 512 channels although one may actually use a selector from zero (0) up to 999 or any other desired code). This enables changing the code or channel of the lighting tube without having to replace the lighting tube. This variation is also shown in FIGs. 21A and 21B, which are variations of the end caps for the lighting tubes shown in any embodiment herein. The end caps of FIGs. 21A and 21B preferably have USB connectors, e.g., each has a female USB connector, so that the lighting tubes may be daisy chained together by USB cables (e.g., having two male ends). In addition, one end cap has the DMX code selector. Accordingly, DMX code of any lighting tube may be changed at any

time, without having to rearrange the lighting tubes and/or recode the DMX signal. The other end cap may have a female DC power connector port.

Where USB connectors are used, it may be possible to power the lighting tubes via the power from the USB signal.

In another variation, there may be two or more DMX channels on each lighting tube, and thus two or more control knobs for selecting the DMX code(s) of the lighting tube. With five different color LEDs, one can use five channels per lighting tube to send a signal and each channel carries a signal indicative of the amount of power to send to each color LED. Setting the DMX address of a lighting tube may therefore correspond to the first channel of the tube, and the controller knows it will receive that channel and the next four channels after that, to control the LED driver signals to the RGBAW LEDs, respectively. The next LED light tube in the universe of lights receiving the DMX signals would be the next five channels, and so on. In some systems, one may want an addition channel for each light to control dimming or other effects, and so each light would receive six channels. If one wants additional control, e.g., to light only some of the LEDs of one color with one intensity and other LEDs of that same color with another intensity at the same time, one may provide additional DMX channels for that lighting tube.

It should be noted that instead of an RGB model, it may be possible to use an HSL or HSV color model.

The interface 310 may also be a wireless interface. FIG. 12B shows the interface 310 receiving wireless signals from a lighting system controller 450. The wireless signals may comply with well-known wireless standards such as WiFi or Bluetooth or other wireless protocol. In the wireless configuration, the interface may still be configured to receive signals

compliant with the DMX512 signaling protocol or other protocols adapted to provide for control of lighting devices.

FIG. 13 is a schematic view of an LED light 500 with USB connections. As shown in FIG. 13, a PCB board 510 containing the LEDs and interface, control and driver electronics is held within a form factor that is roughly equivalent to a T12 size fluorescent tube. The LED light has prongs 505 that are used to hold the LED light 500 within a fluorescent tube fixture. These prongs 505 may also be used to provide AC power to the PCB board 510. The LED light 500 also has a USB input connector 522 and a USB output connector 524. A rotary switch 532 may be used to provide for configuration settings on the LED light 500. The rotary switch 532 may be used to provide the configuration function shown in FIGs. 11A and 11B. Other devices may be used to set the configuration of the LED light. Other embodiments may not use a manual switch to set the configuration of the LED light. Such embodiments may use a computer interface such as a USB or Ethernet port, or the LED light may have a permanently set configuration, such as an Ethernet Internet Protocol (IP) address or Media Access Control (MAC) address.

As briefly described above, the LED light 500 shown in FIG. 13 has a PCB board 510 upon which the array of LEDs is mounted. When the LEDs are energized and light up, some mixing of the light from each LED is obtained. However, additional mixing or diffusion of the light may be desired. Therefore, the LED light 500 may also have a shade or diffuser mounted on it, such as the tube 24 shown in FIG. 2. Diffusion of the light from each LED serves to better combine the light that is directed onto the scene to be illuminated.

FIG. 14A shows a schematic view of two LED lights 500 coupled together in a “daisy-chain” configuration. The USB input connector 522 of the first LED light is coupled to a USB

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port on a lighting controller. The USB output connector 524 of the first LED light 500 is coupled to the USB input connector 522 of the second LED light 500. Subsequent LED lights can be coupled in this same fashion. The first LED light receives the USB commands and also passes the USB commands received from the lighting controller to the second light and the second light would pass the USB commands to a third light and so forth. The configuration setting set by the rotary switch 532 determines the USB commands for each LED light 500. FIG. 14A also shows that the LED lights are powered from an external AC power source 610. FIG. 14B shows a similar "daisy-chain" configuration, except that the LED lights 500 are powered from external DC power sources 620 through, for example, USB interfaces. In another embodiment, separate DC power sources 620 may not be used and the power for the LED lights obtained from the USB connection to the lighting controller. In other embodiments, a battery may be used as a power source, which battery may be onboard the lighting tube or physically fixed thereto (or separate).

The lighting controller may be a standard lighting console known in the art, such as the grandMA2 lighting console made by MA Lighting International GmbH (www.MALighting.com, Paderborn, Germany). The lighting controller may contain software that is specially designed to work with the individual LEDs or groups of LEDs in the LED lights 500. Alternatively, the controller within each LED light 500 may be designed to emulate other lighting devices, or a particular output thus eliminating or reducing the need for specialized programming in the lighting controller. Applying the foregoing, an advantageous embodiment for the selection and mounting of LEDs is the combination or cluster of two RGB LEDs, an amber LED and a white LED as shown and described above in various matrix arrangements. The aspect of use of these three types of LEDs in four rows in the fluorescent light fixture (or luminaire) format has been

found to be unexpectedly complete in allowing from a practical use standpoint the entire "color wheel" spectrum (preferably 255 color hues) for use in the lighting field with sufficient luminance for stage lighting/entertainment industry applications.

The matrix arrangement of LEDs can be connected to DMX incoming signals (carried, e.g., along DMX cords to DMX connectors or converted to or simply issued in USB format for USB wires and USB connectors) in the many variations that are made available from lighting consoles through DMX processors to provide for any desired variations. Present technology allows the setting of the four rows to selected variables in intensity for each of the four LEDs. An exemplary setting is that the RGB LEDs have a selected intensity, the white LED has a selected intensity and the amber LED has a selected intensity. Typically, in certain lighting systems there could be up to 255 settings (with 8-bit control per channel) and 512 channels, although even more are available with the variations now available in the lighting systems. In addition one or more channels can be set for manual adjustment by sliding controls at the console, so that a lighting condition can be varied as the scene progresses. In any of these whether pre-set channels or manual variation, each color of the LEDs (RGBA or W) would be set the same or varied together and each different color LED would have independent settings or variations from the settings of the other colors as desired to provide desired colors and intensities.

Testing has determined that this columnar arrangement into rows provides even color light emissions across the tube light for the complete spectrum defined by the standard color wheel. It is considered that the RGB LEDs provide the bulk of the color for the color wheel spectrum, the amber LEDs provide remaining hues of yellow and orange, and the white LEDs help provide sufficient luminance.

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Lighting technology is considered differently in different applications. In the "studio" or "film" lighting field, it is necessary (as discussed above) to get color temperatures for white light for cinematography, film/photography and broadcast quality applications in the daylight and tungsten temperature ranges discussed elsewhere herein, and most preferably as follows:

3200K indoor

5600K outdoor

Use of the amber LED in the RGB-A-W-RGB columnar arrangement may be controlled to provide white light sufficiently close to or about 3200K and very close to about 5600K.

Also, given that the RGB-A-W-RGB columnar arrangement produces the standard color wheel, the light fixture is useful for cinematographic, theatrical, aesthetic and architectural color uses.

Blending the partly fused or combined light output from this matrix is typically achieved by a diffuser such as in Fig. 2 and Fig. 3 (diffuser 24) and in Fig. 8 (diffuser 91).

In addition to providing the required light constraints and color spectrums, the light fixture can be made responsive to DMX signals, and fit the standard form factor of fluorescent lighting structures.

In particular implementation, the LEDs are configured so as to achieve the right intensities to blend to achieve the color spectrum for DMX control sufficient to provide the full range of 0 to 255 hues (and intensity) mixes on the color spectrum. The LEDs provide the following range of intensity adjustment which thereby allows for an output over a full spectral range:

R: 0 to 100 percent (intensity)

G: 0 to 100 percent (intensity)

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B: 0 to 100 percent (intensity)

A: 0 to 100 percent (intensity)

W: 0 to 100 percent (intensity)

It is considered that the RGB LEDs make white light and most of the colors in the 0 to 255 DMX color spectrum. It is further understood that full access to the color spectrum such as the color wheel spectrum can be achieved by inclusion of the amber LED which provides hues in the yellow and orange range so as to fill out the spectrum. It is also considered that inclusion of the white LED for providing increased white light intensity when combined with the amber LED and the RGB LEDs fills out the full spectrum with sufficient intensity.

FIG. 15 shows a block diagram of a method for providing light according to an embodiment of the present invention. A first step 601 is the determination of the light to be output. This determination can be based upon viewing the environment to be lit, upon a control setting from a control board, consultation from a lighting script, or various other methods or determinations. Once the light output is determined, light control commands to obtain the desired light are calculated as shown at step 603. A control console may be used to determine the light control commands. In other applications, a special purpose or general purpose microprocessor may be used. Still other applications may use other methods, techniques, computing hardware, machinery, etc. to calculate the light control commands. These light control commands are then directed to at least three sets of LEDs. The three sets of LEDs are controlled as shown in steps 621, 623, and 625. The light output from each of the three sets of LEDs is combined as shown in step 631. Combination of the light is achieved by locating all of the LEDs in the LED arrays as described above. Further combination of the light may be achieved by using light diffusers or other structures that act to combine the light from individual

LEDs. The light is then directed to the environment to be illuminated and the light observed in that environment as shown in step 641. The light may be measured or simple observation may be used to determine if the desired light output has been obtained. If the observed or measured light is not as desired, a modification of the desired light output is made as shown in step 651. This modification is then used to calculate new light control commands in step 603. The modification of the desired light output may be achieved in several ways. For example, simply rotating a dial or other adjustable setting on a control console may modify the desired light output or more complex programming commands and keyboard inputs may be used.

FIG. 16 shows a lighting system using LED lights according to the present invention. In FIG, 16 a lighting console 450 is used to control multiple lights 400, 1000. The lighting console may have a control board 453 and multiple displays 451. The control board 453 may be a simple keyboard or more complex control interfaces. The control board is coupled to a command interface 455 that is configured to provide lighting commands to multiple lighting devices. The command interface may utilize the DMX 512 protocol described above, other standard lighting protocols known in the art, or proprietary protocols. The command interface 455 may use other electrical interfaces, such as Ethernet, USB, etc. The lighting console 450 may be a commercial console known in the art, such as the grandMA2, or other such consoles.

The command interface 455 may be coupled to several lighting fixtures that may be configured in a daisy-chain configuration. FIG. 16 shows a first LED light 400 coupled to a second LED light 400 which is coupled to a generic light 1000. The generic light 1000 may be another LED light 400 according to the present invention or another type of lighting device. The LED light 400 may be configured to couple to many types of other lighting devices. FIG. 16 also shows a second daisy chain of lights 1000, which again may be LED lights 400 or other

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types of lighting devices. The LED light 400 may have the interface 310 that allows the light to receive and send light commands. The interface 310 is coupled to the LED light control 320 which provides control over the LEDs in the LED array 350. The interface 310 may utilize additional channels in DMX512 protocol so as to allow signals to the LEDs in such groupings as by row or column, or by type of LED, and even to the extent of allowing control of each LED individually. Additional signal channels such as through splitters can be established. An LED driver is used to power the LEDs in the LED array 350. A config function 360 provides the ability to configure the LED light 400 as discussed above. As shown in FIG. 16, the LED light 400 may be configured to work with existing lighting devices 1000 and consoles 450.

The LEDs herein are preferably formed as an LED Strip Light, defined as follows:

An LED Strip Light (also known as an LED tape or ribbon light) is a flexible strip of surface mounted light-emitting diodes that usually comes with an adhesive backing.

LED Strip Lights require a driver and typically operate on 12 or 24 volts of direct current from the driver. USB strip lights operate on the standard 5-volt direct current used by USB devices. Any customizations require an LED controller to adjust brightness, color, or individual LED activity.

The lighting tube of the present invention preferably uses LED Strip Lights with the constraints (although other constraints are possible), for a T12 fluorescent tube form factor having approximately a one inch diameter, that preferably:

a) the strip width is one inch or less than one inch;

b) the LEDs in each column are within the strip width, and preferably packed to two centimeters (2 cm) and most preferably to less than two centimeters (2 cms);

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c) that the strip is no less than 12 inches long and no more than 48 inches long (and most preferably less than 48 inches (e.g., approximately 45 inches plus or minus about two inches);

d) that there are preferably about 39 columns of LEDs per foot, and 144 columns of LEDs for the strip; and

e) the diffuser is a typical standard diffusing material, e.g., plastic translucent diffuser having a one inch diameter, and most preferably smooth (to avoid lines).

The T12 form factor has very limited space to achieve sufficient light output from LEDs, sufficient color output, and sufficient color uniformity to the naked eye, to achieve a light suitable for the entertainment industry. In another embodiment, the input voltage (e.g., if source is AC then by transformer/rectifier) is 48 volts DC.

One example of suitable LEDs for constructing such a lighting tube and achieving desired luminosity is shown below:

T12-RGBAW						
R Grayscale	**G Grayscale**	**B Grayscale**	**A Grayscale**	**W Grayscale**	**Power (W)**	**Luminous (lm)**
255	0	0	0	0	6.84	164.28
0	255	0	0	0	6.84	486.20
0	0	255	0	0	9.82	164.93
0	0	0	255	0	8.71	173.95
0	0	0	0	255	6.29	268.12
255	255	255	255	255	28.13	1222.20

Taking into account luminosity and power values for the RGBAW LEDs, one may calibrate an LED driver for a typical DMX color chart (signal level from 0 to 255), e.g., such as below:

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DMX Channel Value	Display Readout	Red Value	Green Value	Blue Value	White Value	Amber Value
000 – 005		000	000	000	000	000
006 – 013	C90Y	255	250	000	020	255
014 – 021	R11	255	213	000	020	255
022 – 028	R312	255	216	000	000	190
029 – 035	R03	240	129	002	072	255
036 – 043	R18	245	108	000	035	255
044 – 051	R20	255	109	000	000	255
052 – 059	R21	170	039	000	000	255
060 – 067	R26	245	002	000	000	031
068 – 075	R27	255	000	000	002	000
076 - 083	R33	042	000	000	245	234
084 - 091	R337	155	064	006	165	255
092 - 099	R38	226	154	024	045	255
100 – 107	R41	255	008	000	010	150
108 – 115	R42	255	006	000	024	055
116 – 121	R44	255	041	010	130	000
122 – 130	R349	255	027	024	000	000
131 – 138	R54	173	226	042	080	255
139 – 146	R64	000	255	062	099	215
147 – 154	R364	000	185	039	255	205
155 – 162	R65	000	239	062	205	000
163 – 170	R80	000	249	205	011	000
171 - 178	R81	000	248	117	108	000
179 – 186	R82	000	239	062	205	000
187 – 194	R382	020	000	255	000	000
195 – 202	R83	000	144	255	000	000
203 – 210	R383	000	034	255	031	000
211 – 218	R91	000	255	000	084	035
219 – 226	R92	043	255	003	255	055
227 – 234	R93	063	255	015	125	000
235 – 242	R393	000	255	022	070	000
243 – 250	R90	005	255	000	000	015
251 – 255		000	000	000	000	000

When using DMX, e.g., DMX 512, there are 512 channels. Each channel may have a signal value between 0 and 255. DMX is often used for dimming control of lighting devices. Lower DMX values refer to lower light level for a particular device. Each channel typically controls one device. Each device is assigned a particular DMX channel or channels. For example, a first device may have the first DMX channel assigned to it, a second device may have a second DMX channel assigned to it, and so on. The signal value in the corresponding channel then goes to a DMX decoder which then sends a control signal corresponding to the DMX value to control that device or LED color.

To use DMX, there is a DMX controller to issue the signals, a DMX cable or cables to carry the signals, a DMX decoder or decoders to receive the signals and send the particular signal intended to a particular device.

As noted above, the DMX value is between 0 and 255 (a one byte (eight bit) binary signal).

In addition to dimming, such DMX signals may be used to create colors from color lights. Usually one mixes different levels of Red, Green and Blue lights to achieve various different colors. If a red light is on DMX channel one, a green light is on DMX channel two, and a blue light is on DMX channel three, varying the DMX values in each of the channels to vary the intensity outputs of the red, green and blue lights will then vary the color mixing, and achieve different color outputs. A simple example is if the red light DMX signal value is 255, and green and blue are at a value of 0, the output will be red. If the green light DMX signal value is 255 and the other lights are at 0, the color output is green. If the blue light is at 255 and the other

lights are at 0, the color output is blue. Varying the signal levels between those amounts for each light will produce various colors.

Several existing computer programs handle the color mixing, such as QS DMX Color Configuration Tool by Lutron Electronics Co., Inc. of Coopersburg, Pennsylvania (see also www.Lutron.com). One may need to select what color lights are being mixed (Red, Green, Blue, or Red, Green, Blue, White, or Red, Green, Blue, Amber and White), and then enter some specifications for the light output of each color as is known in the art. The program will then issue the appropriate DMX signals from the controller to produce the selected colors on a color wheel.

In other words, the color mixing chart and formula is designed into lighting control panels (such as grandMA2) or obtained (such as from Lutron.com), so that the controller will issue DMX512 signals corresponding to the color wheel of 255 colors. Such control panels enable on the fly control of the lights, or programmed control. Operation of the grandMA2 and other lighting control panels is well known in the art.

The corresponding eight bit settings of each DMX signal to achieve each color is therefore known.

Each DMX channel is at 0 to 255 in values of the eight bit code for each individual color.

A normal LED driver drives LEDs at one percent increments for dimming and color mixing. The manufacturer of an LED color chip may provide the color specifications, i.e., the color mixing chart that shows the percentages of each color LED that are needed to achieve different colors. Color mixing of LEDs is not normally able to achieve the same color mixing as the DMX color mixing of nonLEDs.

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By arranging the LEDs in the inventive matrices and by using the full RGBAW array for that arrangement, the inventor found that the LEDs can be made to achieve the color spectrum of the color wheel used in DMX controllers.

Each of the 1 to 100 percent for dimming LEDs represents a signal level of 2.55 in the DMX protocol or system. Therefore, 100% in LED output level control equals 255 in DMX output level, and 0% in LED output level control equals 0 signal level in DMX. Therefore, 1/255 or 0.3921568% LED output signal level achieves 1 DMX increment. Using this relationship, an LED driver value for each color LED (RGBAW) may be determined that corresponds to each eight bit DMX value for each color (RGBAW). Therefore, one can build an LED driver to increment from 0% to 100% in increments of 0.3921568% (about 0.4%) in response to the appropriate or corresponding DMX signal value. Therefore, one can create an LED driver to match the DMX values and achieve the same color spectrum of 255 (or 256) colors as in a DMX controlled color light.

Each eight bit DMX signal carried on a channel represents a state of control of each corresponding LED. With five LEDs (RGBAW) on each lighting tube, five DMX channels are required to control the LEDs such tube.

So, the LED driver in accordance with the invention is made to move in more finite movements than a standard LED 1 to 100 driver, i.e., into 255 separate signals.

The color blends are determined by the color wheel, which in turn sends out the appropriate DMX signals to control the LEDs.

The total LED output intensities of the RGBAW are selected to achieve white light at full intensity of each LED.

Each lamp is individually addressable.

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Delivery of the lighting control information to the RGBAW lighting tube may, e.g., be via an input connector such as for data like a USB or a DMX input.

Data or DMX signals need to be delivered to the lighting tube, preferably using a three wire connection: 1 (common), 1- (Negative), 1+(Positive).

As noted above, there is also the ability to pass thru Data/DMX signal from one lighting tube to the next in a daisy chain manner.

One may use a USB, mini USB or a micro USB connector. Alternatively, the specific data carrying method to the lighting tube can vary, such as wireless (with a wireless onboard receiver) or other ways. There are many types of connectors that the Data/DMX signal to be transmitted or connected.

Additional variations to any and all of the above disclosed embodiments.

Although the invention has been described using specific terms, devices, and/or methods, such description is for illustrative purposes of the preferred embodiment(s) only. Changes may be made to the preferred embodiment(s) by those of ordinary skill in the art without departing from the scope of the present invention, which is set forth in the following claims. In addition, it should be understood that aspects of the preferred embodiment(s) generally may be interchanged in whole or in part.

CLAIMS

1. An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:

a support structure;

a housing for the support structure;

an array of LED emitting devices mounted on the support structure, wherein the array of LED emitting devices comprise: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; a fourth set of LED emitting elements configured to emit light of at a fourth color; and a fifth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range;

and

a controller coupled to the array of LED emitting devices and operable to receive commands for operating the LED emitting devices, and further comprising an LED driver, said LED driver configured to selectively provide electrical power to the array of LED emitting devices;

wherein the housing has a linear form factor substantially that of a fluorescent tube having a diameter of no greater than about one and a half inches, and further comprising an electrical input connection for receiving an AC power, wherein said input connection is in electrical communication with the LED driver.

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2. The LED lighting device of Claim 1, wherein the first, second, third and fourth sets of LED light emitting elements are evenly dispersed along the length of the lighting device.

3. The LED lighting device of Claim 1, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements to selectively produce at least 255 different colors from the lighting device.

4. The LED lighting device of Claim 3, wherein the LED driver is responsive to DMX signals to selectively produce the at least 255 different colors.

5. The LED lighting device of Claim 1, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements to selectively produce at least 255 different colors of a color wheel from the lighting device.

6. An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:
    a. a support structure;
    b. a housing for the support structure;
    c. an array of LED emitting devices mounted on the support structure, wherein the array of LED emitting devices comprise: a first set of LED emitting

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elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; and a fourth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range; and

d. a controller coupled to the array of LED emitting devices and operable to receive commands for operating the LED emitting devices, and further comprising an LED driver, said LED driver configured to selectively provide electrical power to the array of LED emitting devices,

e. wherein the housing has a linear form factor substantially that of a fluorescent tube having no greater than a length of four feet and a diameter of no greater than about one and one half inches, and further comprising an electrical input connection for receiving an AC power, wherein said input connection is in electrical communication with the LED driver.

7. The LED lighting device of Claim 6, wherein the first, second, third, fourth and fifth sets of LED light emitting elements are evenly dispersed along the length of the lighting device.

8. The LED lighting device of Claim 6, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set, fourth set and fifth set of LED emitting elements to selectively produce at least 255 different colors from the lighting device.

9. The LED lighting device of Claim 8, wherein the LED driver is responsive to DMX signals to selectively produce the at least 255 different colors.

10. The LED lighting device of Claim 6, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements to selectively produce at least 255 different colors of a color wheel from the lighting device.

ABSTRACT

Apparatus and system for producing light using LED lighting with output within a predetermined desired color temperature range for commercial lighting uses which may be bicolor or may be multicolored. A preferred embodiment includes a first and second group of LEDs arranged in an alternating matrix configuration, each group of LEDs configured to produce light in a predetermined color temperature range. In a preferred embodiment, an LED light system includes a tubular LED lamp having substantially the same size and dimensions as a traditional fluorescent lamp tube and a control box for controlling power input and power gain to the first, second, or both groups of LEDs.

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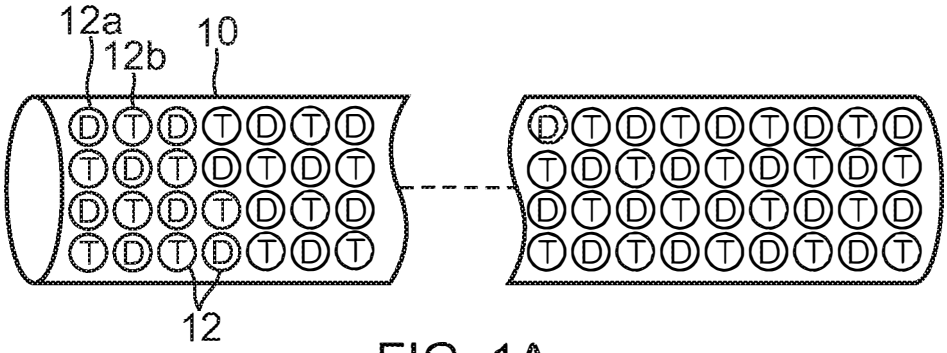


FIG. 1A

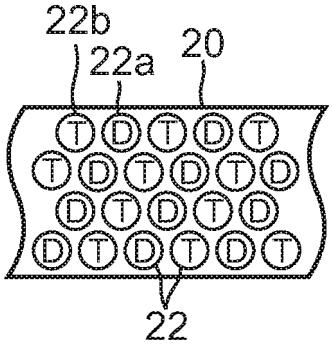


FIG. 1B

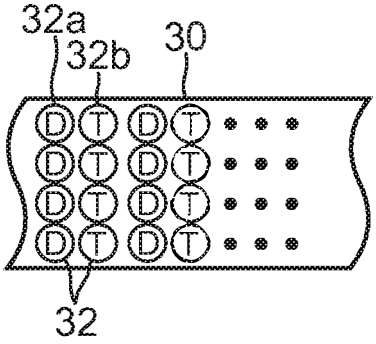


FIG. 1C

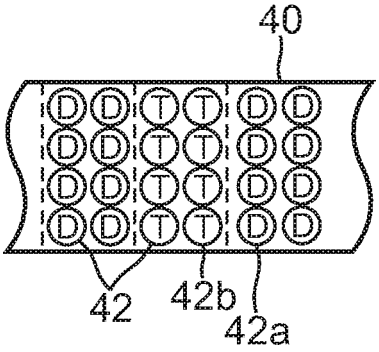


FIG. 1D

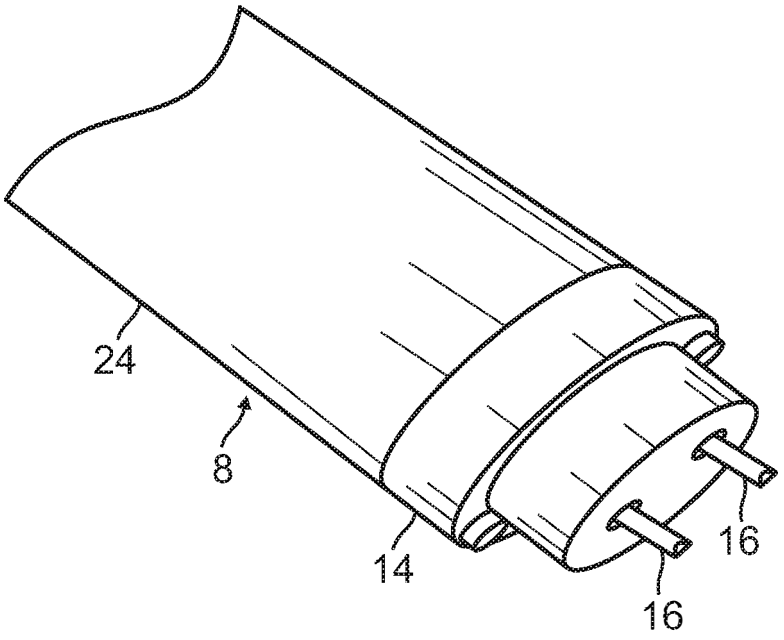

24
8
14
16
16

FIG. 2

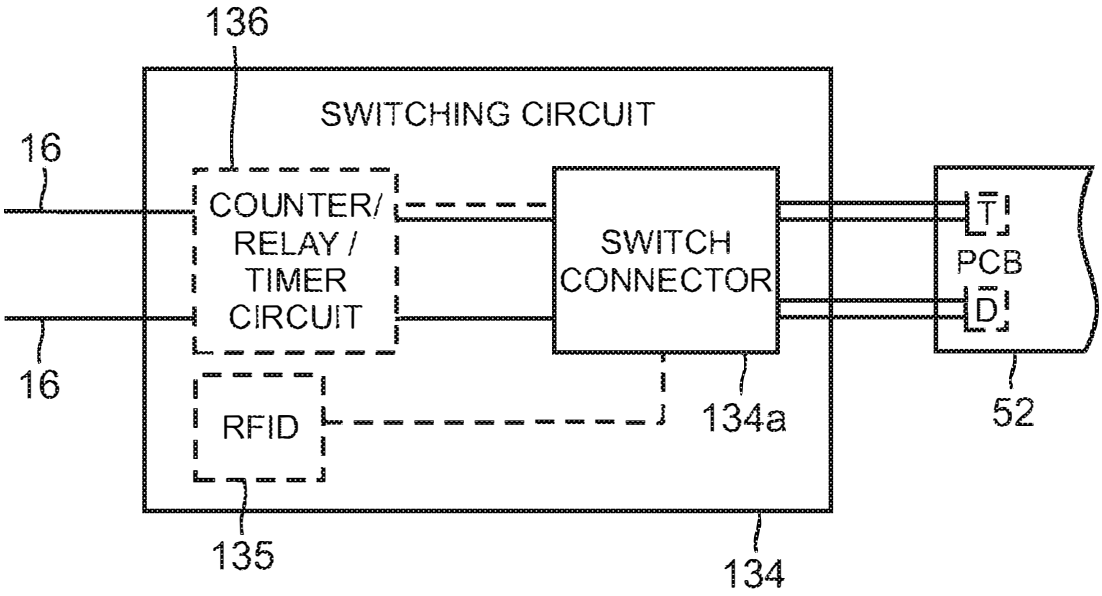

136
SWITCHING CIRCUIT
16
COUNTER/
RELAY /
TIMER
CIRCUIT
SWITCH
CONNECTOR
T
PCB
D
16
RFID
134a
52
135
134

FIG. 2A

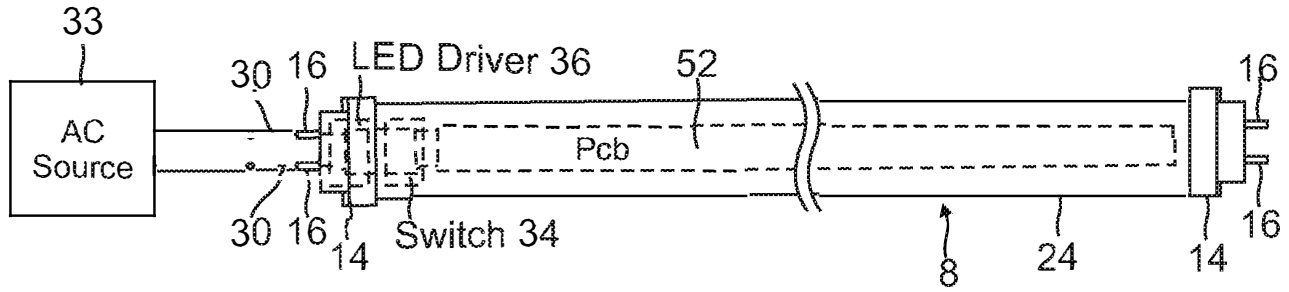


FIG. 3

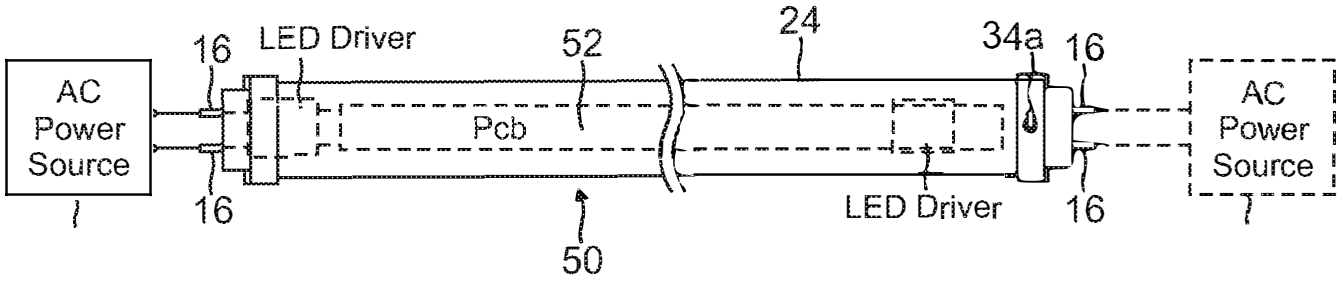


FIG. 4

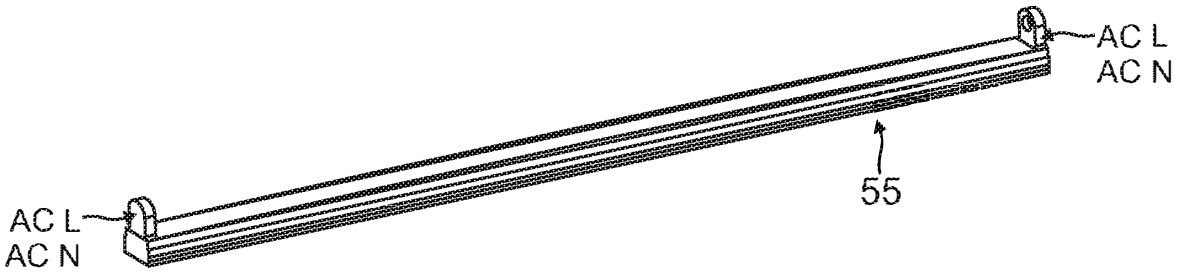


FIG. 4A

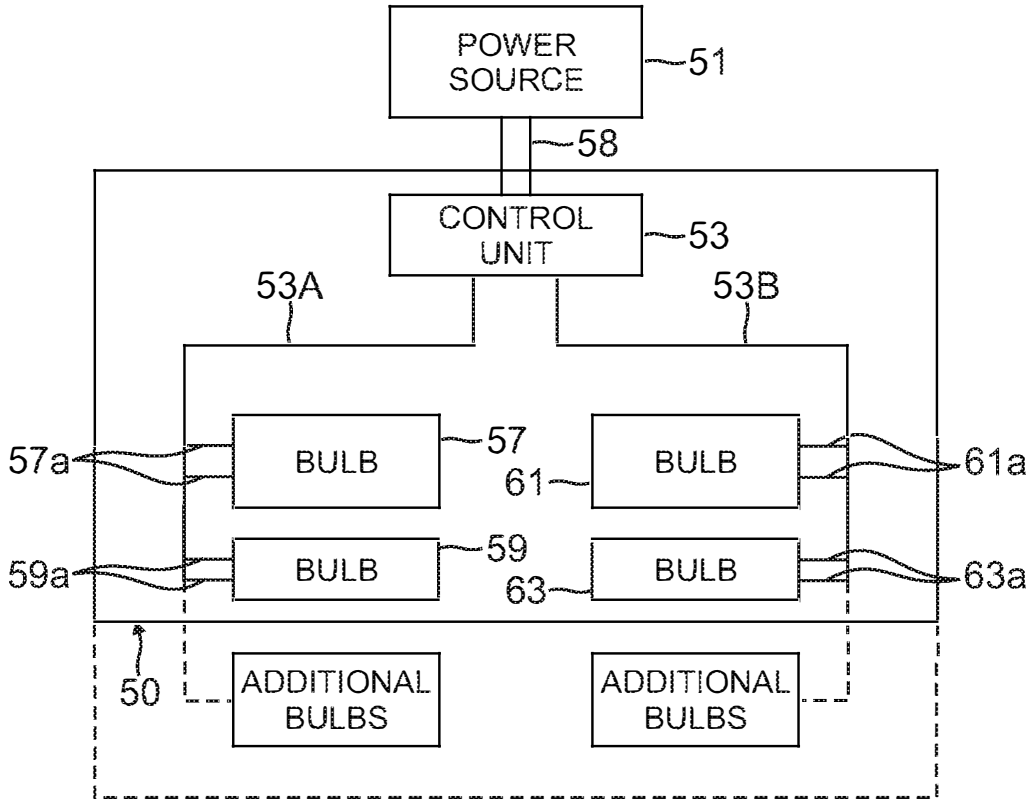

POWER SOURCE
51
58
CONTROL UNIT
53
53A
53B
57a
BULB
57
BULB
61
61a
59a
BULB
59
BULB
63
63a
50
ADDITIONAL BULBS
ADDITIONAL BULBS

FIG. 5

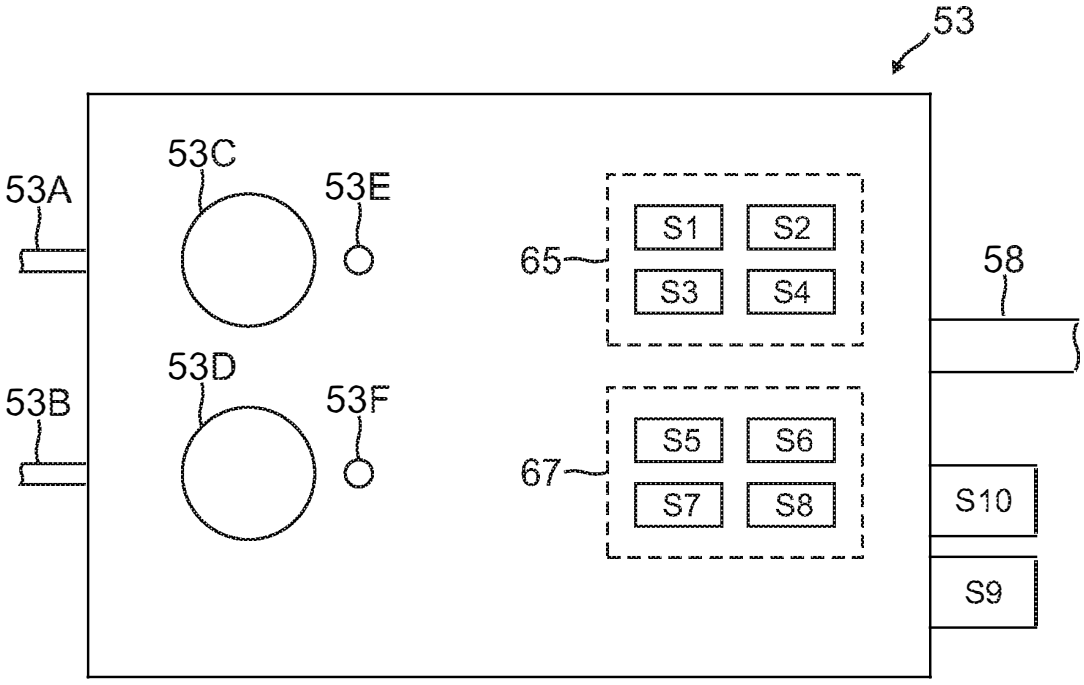

53
53A
53C
53E
53B
53D
53F
65
S1
S2
S3
S4
67
S5
S6
S7
S8
58
S10
S9

FIG. 6

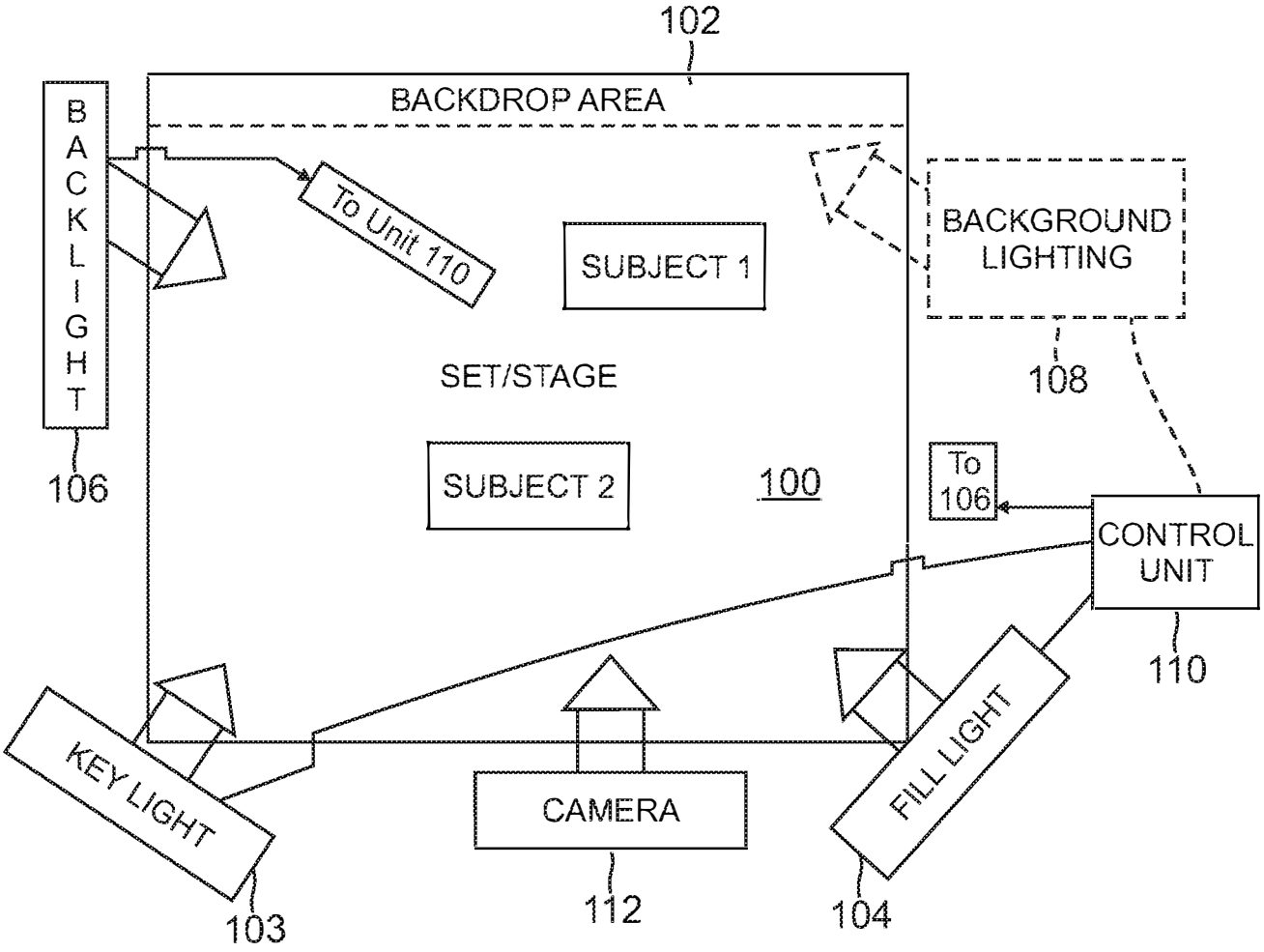

102
BACKDROP AREA
BACKLIGHT
106
To Unit 110
SUBJECT 1
BACKGROUND LIGHTING
108
SET/STAGE
SUBJECT 2
100
To 106
CONTROL UNIT
110
KEY LIGHT
103
CAMERA
112
FILL LIGHT
104

FIG. 7

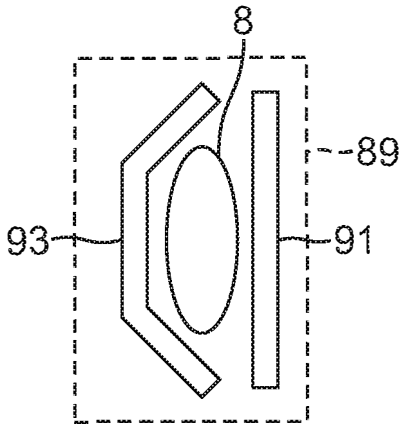

8
89
93
91

FIG. 8

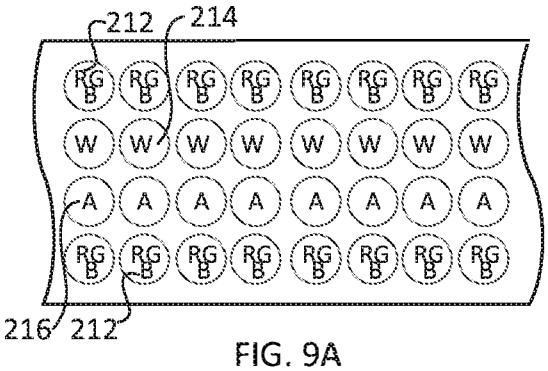


FIG. 9A

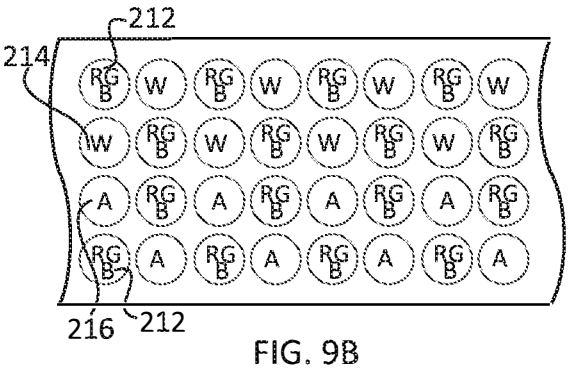


FIG. 9B

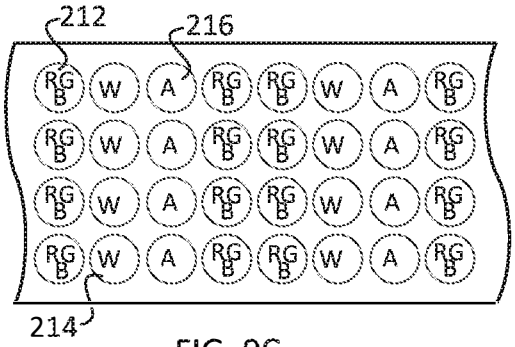


FIG. 9C

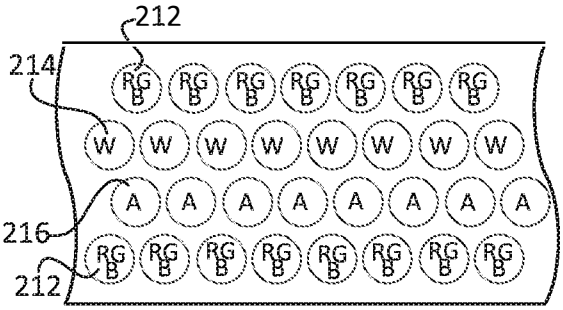


FIG. 9D

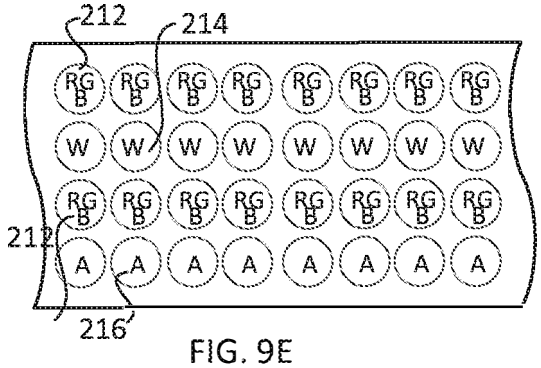


FIG. 9E

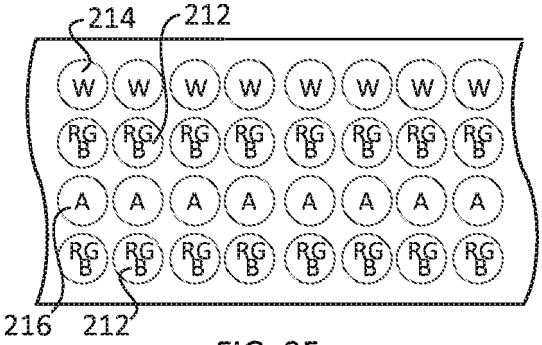


FIG. 9F

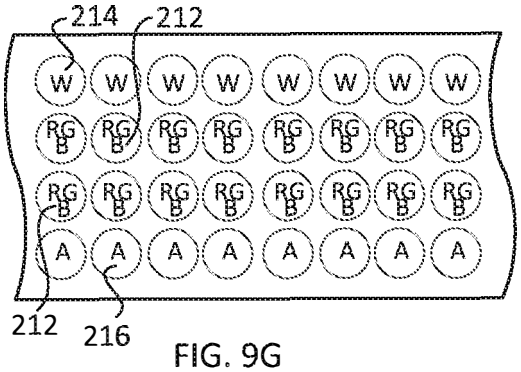


FIG. 9G

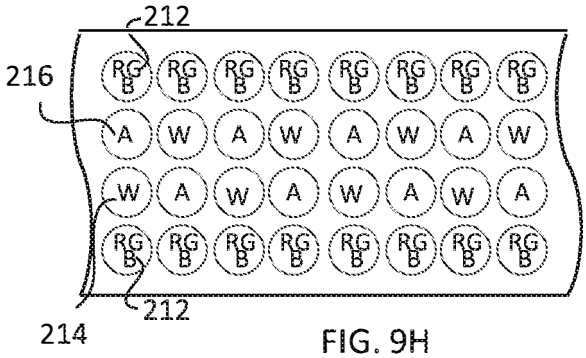


FIG. 9H

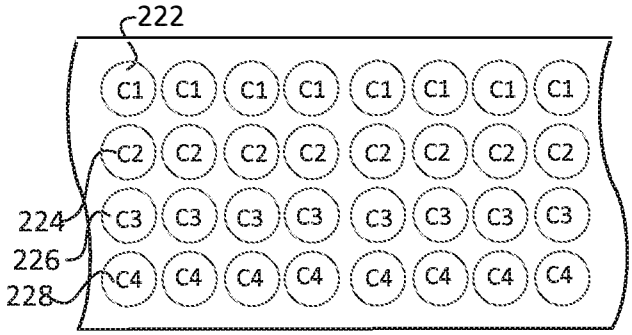


FIG. 10A

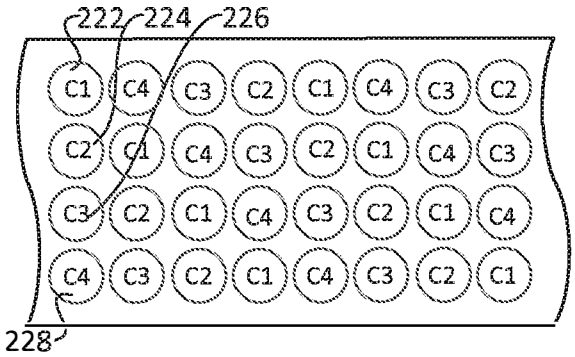


FIG. 10B

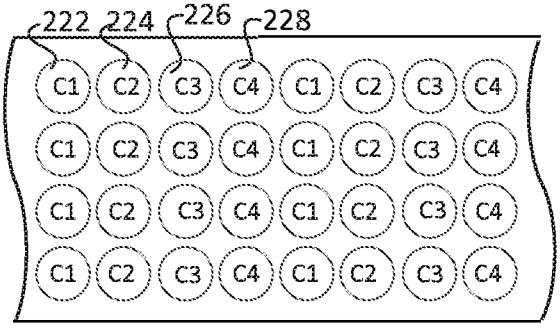


FIG. 10C

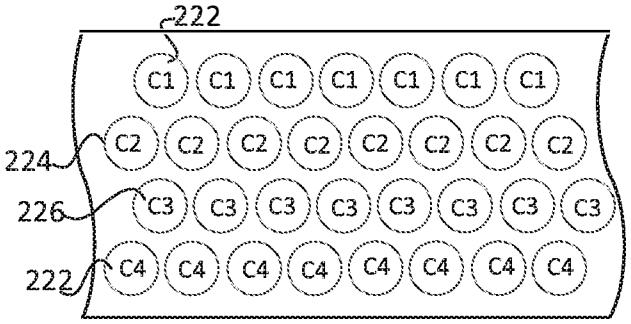


FIG. 10D

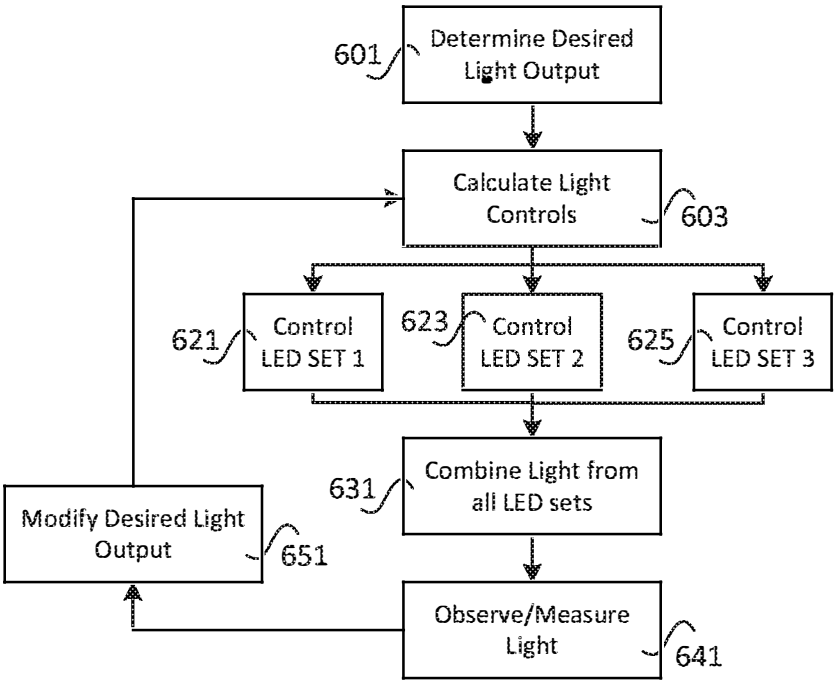


FIG. 15

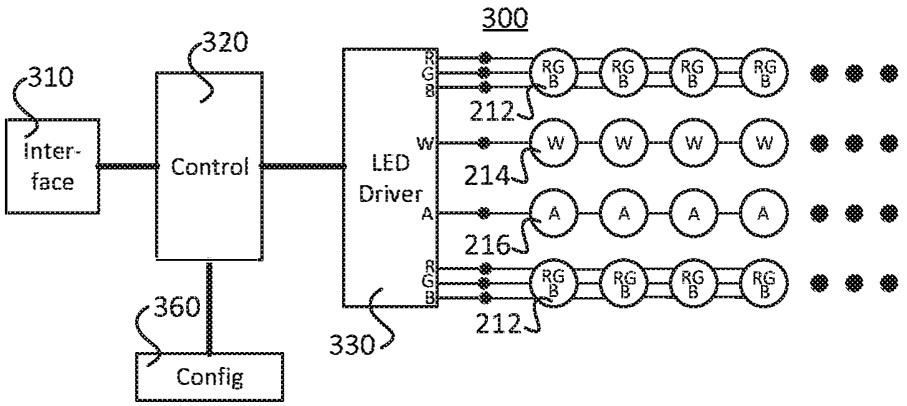


FIG. 11A

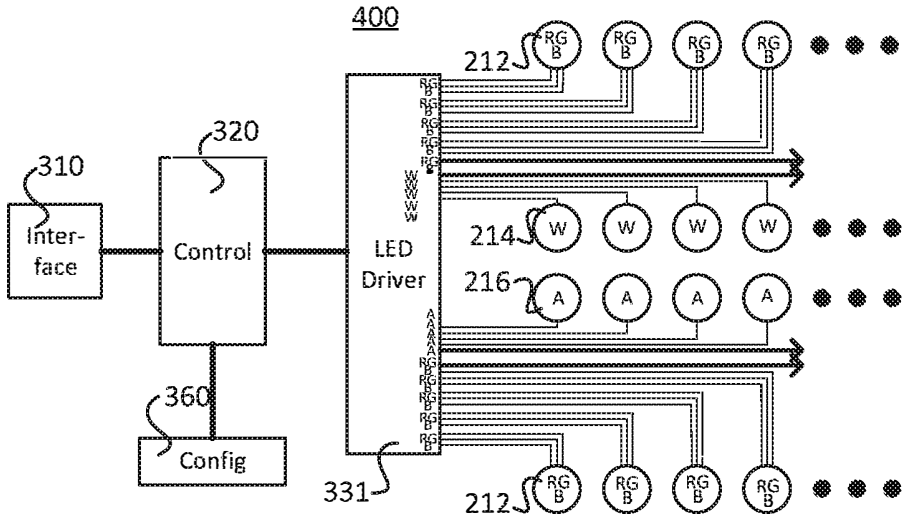


FIG. 11B

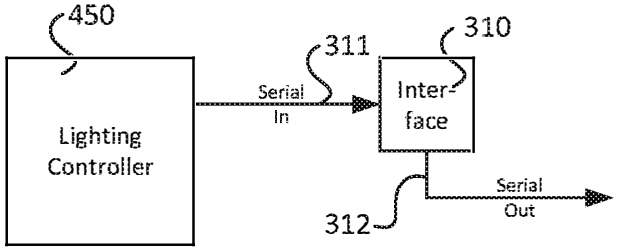


FIG. 12A

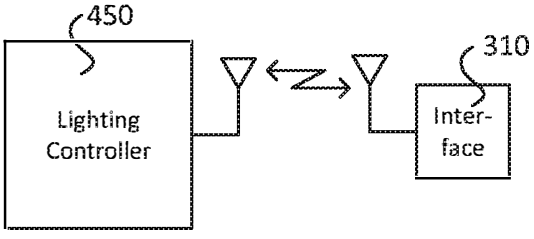


FIG. 12B

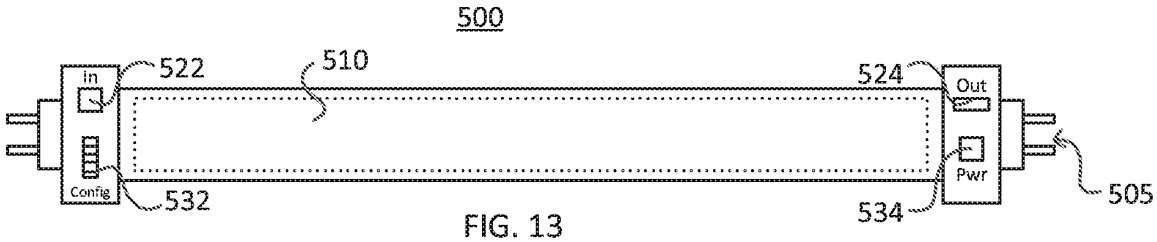


FIG. 13

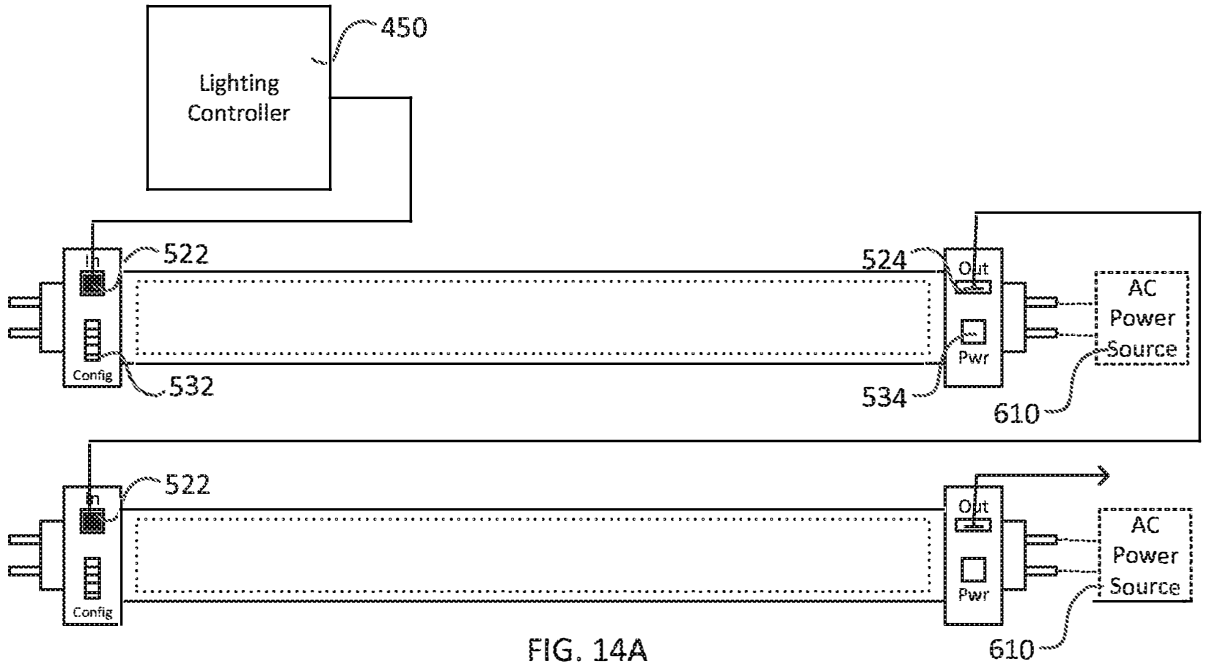


FIG. 14A

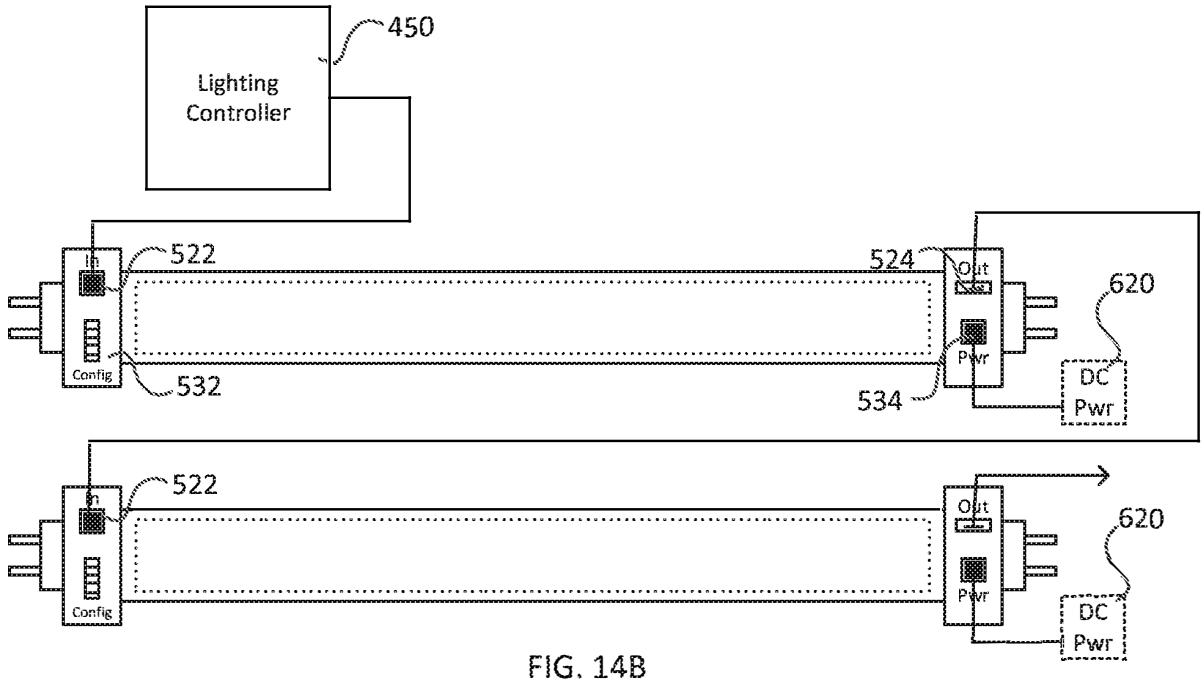


FIG. 14B

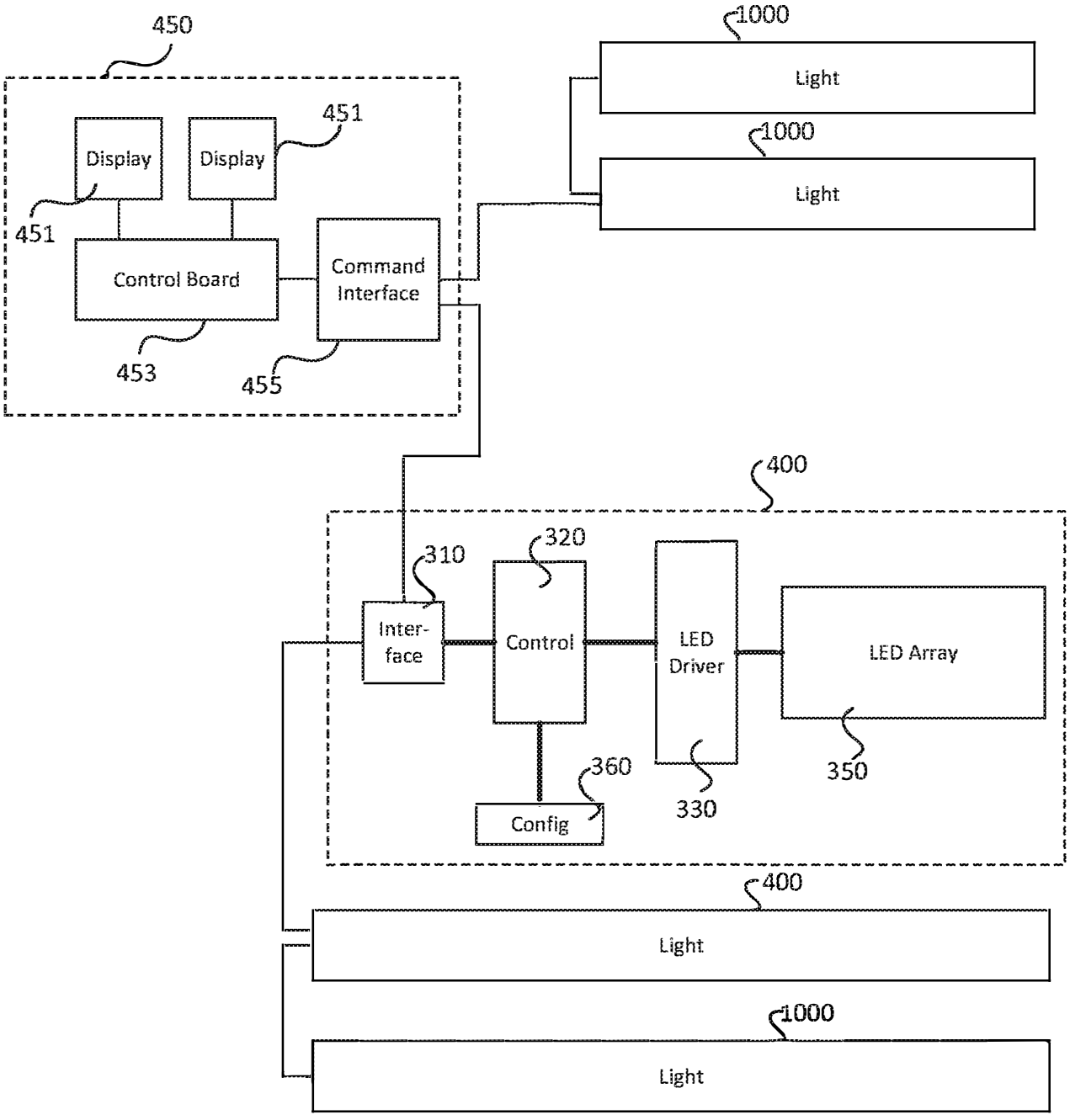

450
1000
Light
1000
Light
451
Display
Display
451
Control Board
Command Interface
453
455
400
310
320
Inter-face
Control
LED Driver
LED Array
350
360
Config
330
400
Light
1000
Light

FIG. 16

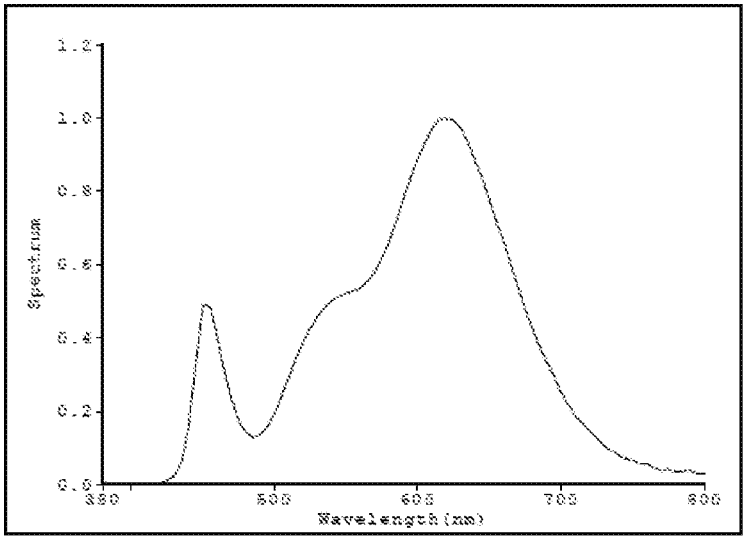


FIG. 17A

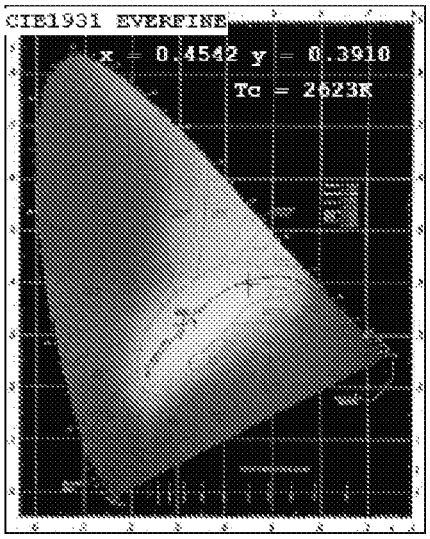


FIG. 17B

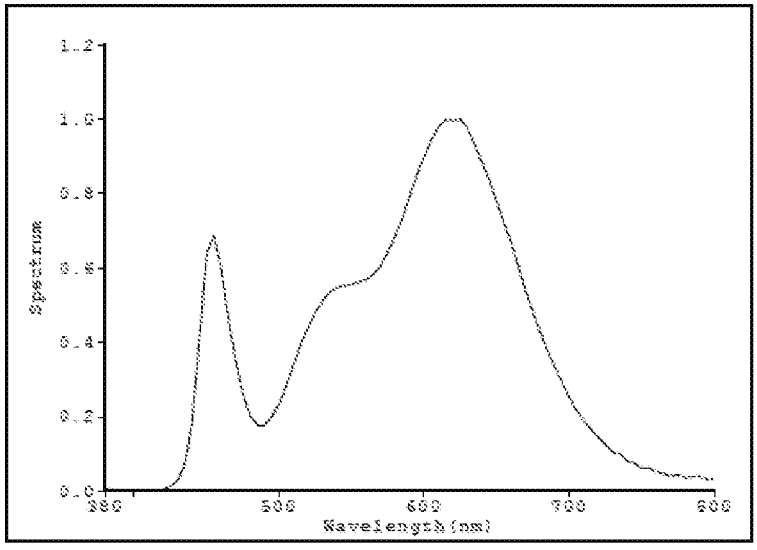


FIG. 18A

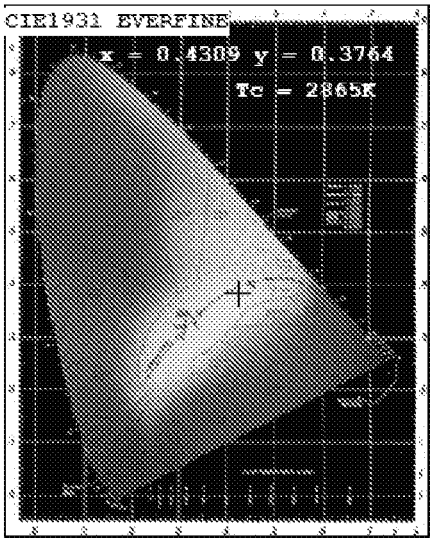


FIG. 18B

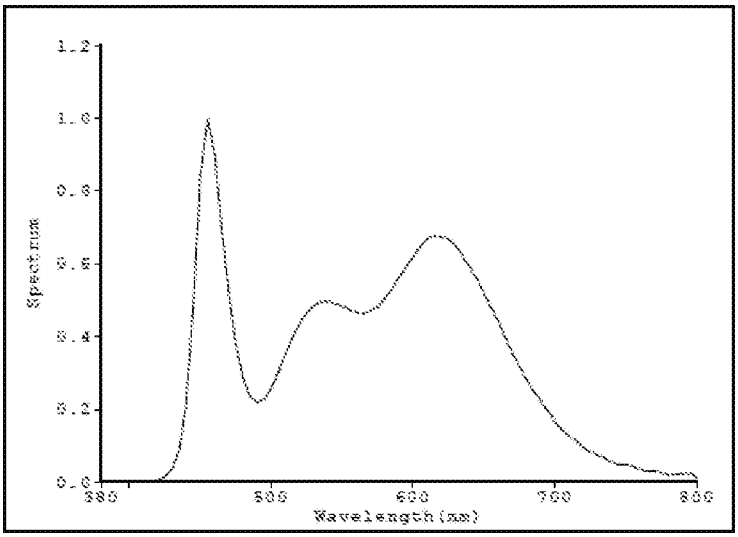


FIG. 19A

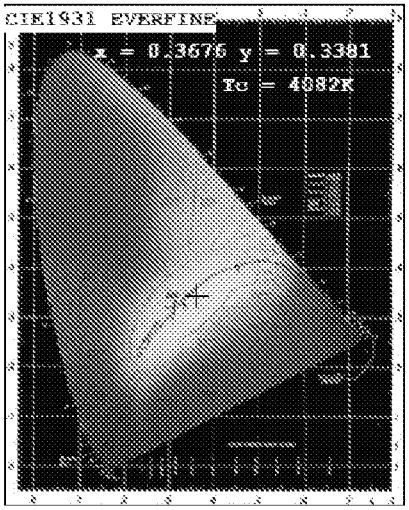


FIG. 19B

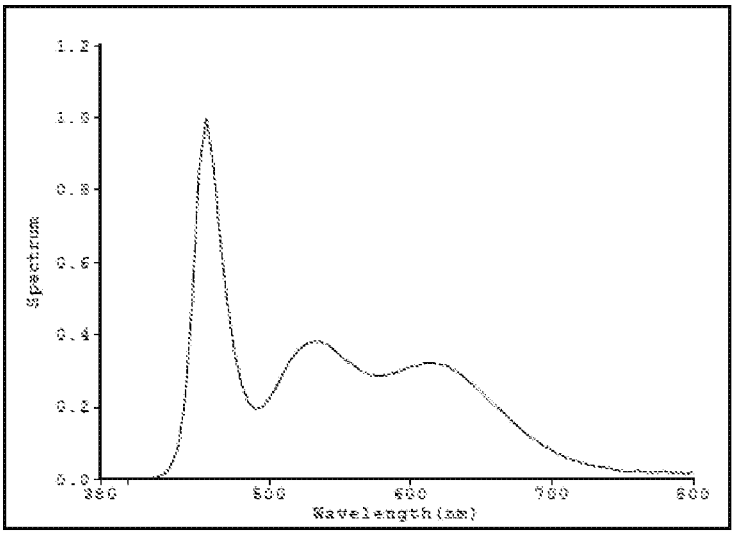


FIG. 20A

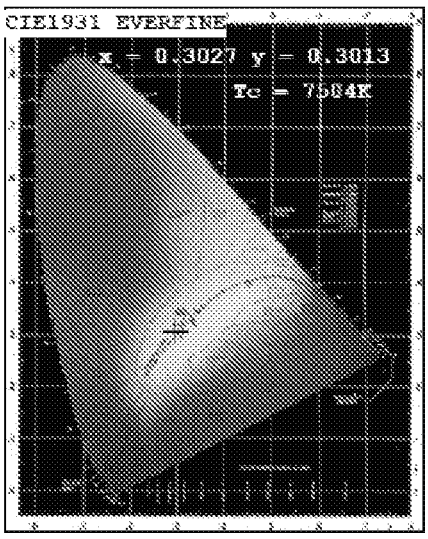
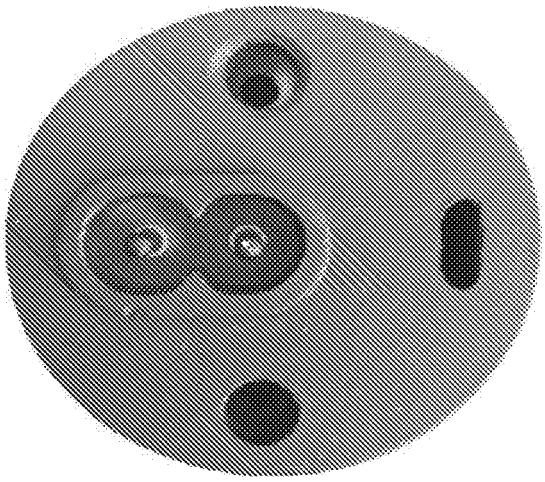


FIG. 20B

FIG. 21A



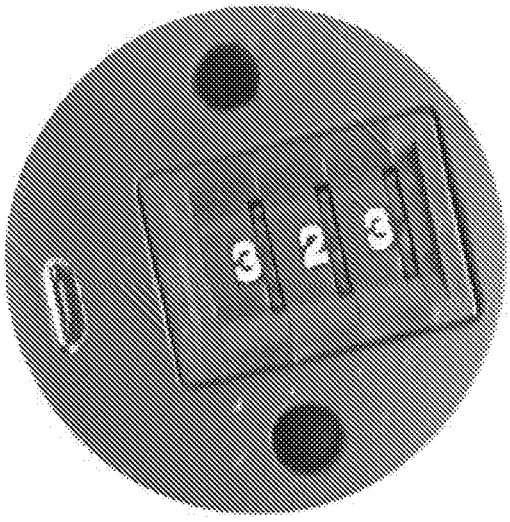


FIG. 21B

PTO/SB/35 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
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NONPUBLICATION REQUEST UNDER 35 U.S.C. 122(b)(2)(B)(i)		
	First Named Inventor	Guillermo Macias
	Title	MULTICOLORED TUBE LIGHT WITH IMPROVE
	Attorney Docket Number	12-10060-CIP2

I hereby certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

I hereby request that the attached application not be published under 35 U.S.C. 122(b).

/David L. Hoffman/	3/31/2017
Signature	Date
David L. Hoffman	32,469
Typed or printed name	Registration Number, if applicable
(661)775-0300	
Telephone Number	

This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application **upon filing.**

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under 35 U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant **must** notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. **Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).**

This collection of information is required by 37 CFR 1.213(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

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The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/AIA/01 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [■] The attached application, or
- [ ] United States application or PCT international application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Guillermo Macias Date (Optional): 3-30-12

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

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SCORE Placeholder Sheet for IFW Content

Application Number: 15476410 Document Date: 03/31/2017

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

- Drawings – Other than Black and White Line Drawings

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

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Form Revision Date: September 30, 2013

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)		
	Application Number	15476410
	Filing Date	2017-03-31
	First Named Inventor	Guillermo Macias
	Art Unit	
	Examiner Name	
	Attorney Docket Number	12-10060-CIP2

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6720745	B2	2004-04-13	Lys et al.	
	2	7180252	B2	2007-02-20	Lys et al.	
	3	7476003	B2	2009-01-13	Kim	
	4	8203260	B2	2012-06-19	Li et al.	
	5	9057493	B2	2015-06-16	Simon et al.	
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	1	20030072156	A1	2003-04-17	Pohlert et al.	

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	Examiner Name	
	Attorney Docket Number	12-10060-CIP2

	2	20040257007	A1	2004-12-23	Lys et al.	
	3	20070258240	A1	2007-11-08	Ducharme et al.	
	4	20090052204	A1	2009-02-26	Kawashima et al.	
	5	20090109668	A1	2009-04-30	Isobe	
	6	20100148673	A1	2010-06-17	Stewart et al	
	7	20100214779	A1	2010-08-26	Kao	
	8	20100289428	A1	2010-11-18	Frazier et al	
	9	20100315001	A1	2010-12-16	Domagala et al.	
	10	20110058365	A1	2001-03-10	Osawa	
	11	20110084608	A1	2011-04-14	Lin et al	
	12	20110163941	A1	2011-07-07	Li	

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	13	20110235318	A1	2001-09-29	Simon et al.	
	14	20110285292	A1	2011-11-24	Mollnow et al.	

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	1	Dimmable High Power Par38 White + Blue LED Aquarium Reef Corals Grow Light Bulb, www.Amazon.com, May 23, 2012	

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Art Unit	
	Examiner Name	
	Attorney Docket Number	12-10060-CIP2

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/David L. Hoffman/	Date (YYYY-MM-DD)	2017-04-03
Name/Print	David L. Hoffman	Registration Number	32469

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	15476410
Filing Date	2017-03-31
First Named Inventor	Guillermo Macias
Art Unit	
Examiner Name	
Attorney Docket Number	12-10060-CIP2

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6357893	B1	2002-03-19	Belliveau	
	2	7038399	B2	2006-05-02	Lys et al.	
	3	RE43017	E	2011-12-13	Belliveau	
	4	RE44903	E	2014-05-20	Belliveau	

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	1	Coloronix Colortainment! Controller Manual, by Coloronix, Inc., copyright notice 2011, 13 pages	
	2	Final Report of Laboratory Evaluation of Light-Emitting Diode (LED) T8 Replacement Lamp Products, Lighting Design Lab, Pacific Northwest National Laboratory, Seattle Washington, May 2011; 51 pages	
	3	Light-Based Technologies, Better Light, Facts about Dimming, www.LIGHTBASED.COM, as published in LED Professional Review, Jan/Feb 2011, Issue 23, 7 Pages	
	4	Coloronix Colorful Architectural Illumination, SCC6 Colortainment Ambx Controller, www.RGBW.COM, 1 page	

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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SIGNATURE

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Signature	/David L. Hoffman/	Date (YYYY-MM-DD)	2017-04-03
Name/Print	David L. Hoffman	Registration Number	32469

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt	
EFS ID:	28821092
Application Number:	15476410
International Application Number:	
Confirmation Number:	8635
Title of Invention:	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY
First Named Inventor/Applicant Name:	Guillermo Macias
Customer Number:	36212
Filer:	David L. Hoffman
Filer Authorized By:	
Attorney Docket Number:	12-10060-CIP2
Receipt Date:	03-APR-2017
Filing Date:	
Time Stamp:	19:46:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	updatedIDS.pdf	613001 aa7b1aff8715b12efbeb0e9265b327496091beb4	no	5
Warnings:					

Information:					
2	Non Patent Literature	DimmableHighPowerPar38WhiteBlueAquariumLightCUTE.pdf	2102230 dc6f6ff95d9f654ea7eee0f22919b2abc833dbc9	no	5
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	updatedIDS2.pdf	612699 33b28ad82fc86a0e97c3e64a599027404c6ec063	no	4
Warnings:					
Information:					
4	Non Patent Literature	01ColortainmentControllerManual2011CUTE.pdf	2370374 f04d4c282f6631b57800cb8b3dd804959357949b	no	13
Warnings:					
Information:					
5	Non Patent Literature	02DOE2011reportLEDTubeReplacementNoPaybackCUTE.pdf	12439322 cf1bef396e9e90c03e53aaf1b2770bd8edca8aaa	no	51
Warnings:					
Information:					
6	Non Patent Literature	03LBTFactsAboutDimmingCUTE.pdf	1643174 04c9083af94a20c6621aa1e685951e427d5a179f	no	7
Warnings:					
Information:					
7	Non Patent Literature	04SCC6specsheetforColoronixCUTE.pdf	59244 7d2fe57231166e0931d4990ebc4a0f3dafc513dc	no	1
Warnings:					
Information:					
		Total Files Size (in bytes):	19840044		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/476,410

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	10 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	730		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/476,410	03/31/2017	2875	730	12-10060-CIP2	10	2

CONFIRMATION NO. 8635

FILING RECEIPT

36212
HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355

OC000000090534049

Date Mailed: 04/12/2017

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Guillermo Macias, Santa Clarita, CA;

Applicant(s)

Guillermo Macias, Santa Clarita, CA;

Power of Attorney: The patent practitioners associated with Customer Number 36212

Domestic Priority data as claimed by applicant

This appln claims benefit of 62/146,551 04/13/2015
and is a CIP of 15/096,549 04/12/2016
which claims benefit of 62/146,551 04/13/2015
and is a CIP of 13/896,868 05/17/2013
which claims benefit of 61/648,554 05/17/2012

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

QUASAR SCIENCE LLC EXHIBIT 1002
Page 108 of 369

If Required, Foreign Filing License Granted: 04/10/2017

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/476,410**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No
**** SMALL ENTITY ****
Title

MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

Preliminary Class

362

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

QUASAR SCIENCE LLC EXHIBIT 1002
Page 109 of 369

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

36212 7590 02/01/2018
HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355

EXAMINER
SAWHNEY, HARGOBIND S

ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 02/01/2018

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/476,410	03/31/2017	Guillermo Macias	12-10060-CIP2	8635

TITLE OF INVENTION: MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0	$0	$500	05/01/2018

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

36212 7590 02/01/2018
HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/476,410	03/31/2017	Guillermo Macias	12-10060-CIP2	8635

TITLE OF INVENTION: MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0	$0	$500	05/01/2018

EXAMINER	ART UNIT	CLASS-SUBCLASS
SAWHNEY, HARGOBIND S	2875	362-011000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/476,410	03/31/2017	Guillermo Macias	12-10060-CIP2	8635

36212 7590 02/01/2018
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VALENCIA, CA 91355

EXAMINER	
SAWHNEY, HARGOBIND S	

ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 02/01/2018

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 02/11)

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/476,410	Applicant(s) MACIAS, GUILLERMO	
	Examiner HARGOBIND S. SAWHNEY	Art Unit 2875	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the appication filed on 3/31/2017.*

   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are *1-10.* As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

   ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 20180120.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date See Continuation Sheet
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/HARGOBIND S SAWHNEY/ Primary Examiner, Art Unit 2875	1/20/2018

Continuation of Attachment(s) 2. Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date: 4/3/2017 and 4/3/2017.

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Page 116 of 369

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following claimed features must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim 1, the features relating to the limitations recited in lines 3-12; and

Claim 6, the features relating to the limitations recited in lines 3-12.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Reasons for Allowance

2. Claims 1-10 are allowed.

The prior art, including US Patent No. 6,923,548 B2 (Lim) and US Patent No. 6,856,087 B2 (Lin et al.), of record does not show or suggest the applicant's invention as claimed. Specifically, the prior art of record does not teach an LED lighting device combining:

A linear housing of about one and a half inches diameter capable of receiving a support structure bearing an LED array of:

- a first set of LEDs capable of emitting light of a first color; a second set of LEDs capable of emitting light of a second color; a third set of LEDs capable of emitting light of a third color; a fourth set of LEDs capable of emitting light of a fourth color; a fifth set of LEDs capable of emitting a broad spectrum of white light with in the predetermined kelvin temperature range as recited in each of the independent claims 1 and 6.

Lim discloses an LED lighting device including a linear housing receiving: three LED rows, each including a plurality of LED sets each including a red LED, a blue LED and a green LED. However, Lin's LED lighting device does not include: five sets of LEDs with color emitting features claimed by the Applicant.

Lin et al. discloses an LED lighting device including an LED display comprising: two LED rows, each including a plurality of LED sets, each including a red LED, a blue LED and a green LED; and one set of white LEDs. However, Lin's LED lighting device does not include: five sets of LEDs with color emitting features claimed by the Applicant.

Thus, the prior art, including Lim and Lin et al. et al. does not meet the limitations of each of the independent claims 1 and 6.

Therefore, each of the independent claims 1 and 6 is allowed over prior art.

Claims 2-5 are necessarily allowed because of their dependency on the allowed independent claim 1.

Claims 7-10 are necessarily allowed because of their dependency on the allowed amended independent claim 6.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Hargobind S. Sawhney whose telephone number is 571 272 2380.

The examiner can normally be reached on 8:00 AM - 4:30 PM. If attempts to

reach the Examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Jong-Suk (James) Lee can be reached on 571 272 7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

7/13/2017

/Hargobind S Sawhney/

Primary Examiner, Art Unit 2875

Notice of References Cited	Application/Control No. 15/476,410	Applicant(s)/Patent Under Reexamination MACIAS, GUILLERMO	
	Examiner HARGOBIND S. SAWHNEY	Art Unit 2875	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,856,087 B2	02-2005	Lin; Ming-Der	G09F9/33	257/E25.02
*	B	US-6,923,548 B2	08-2005	Lim; Moo Jong	G02B6/0068	362/231
*	C	US-7,476,003 B2	01-2009	Kim; Bum Jin	G02F1/133603	362/219
*	D	US-8,147,091 B2	04-2012	Hsia; Chungho	F21V25/04	362/218
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	**Art Unit**
	HARGOBIND S SAWHNEY	2875

CPC						
Symbol					**Type**	**Version**
F21K		9	/	278	F	2016-08-01
F21V		23	/	005	I	2013-01-01
F21V		9	/	08	I	2013-01-01
F21K		9	/	272	I	2016-08-01
F21V		23	/	06	I	2013-01-01
H05B		33	/	0815	I	2013-01-01
H05B		33	/	0845	I	2013-01-01
H05B		33	/	0857	I	2013-01-01
F21V		3	/	02	I	2013-01-01
F21V		23	/	045	I	2013-01-01
F21Y		2113	/	13	A	2016-08-01
F21Y		2115	/	10	A	2016-08-01
F21Y		2103	/	10	A	2016-08-01
H04N		5	/	2354	A	2013-01-01
H04N		5	/	2256	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	10	
/HARGOBIND S SAWHNEY/ Primary Examiner.Art Unit 2875	1/20/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	**Art Unit**
	HARGOBIND S SAWHNEY	2875

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
		F	2	1	V	23 / 005						
CROSS REFERENCE(S)												
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	10	
/HARGOBIND S SAWHNEY/ Primary Examiner.Art Unit 2875	1/20/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	**Art Unit**
	HARGOBIND S SAWHNEY	2875

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1														
	2														
	3														
	4														
	5														
	6														
	7														
	8														
	9														
	10														

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	10	
/HARGOBIND S SAWHNEY/ Primary Examiner.Art Unit 2875	1/20/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2

U.S. Patent and Trademark Office Part of Paper No. 20180120

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	8	("20070074098" | "4492863" | "6856087" | "6923548").PN. OR ("7476003").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 20:29
L2	2	(US-6923548-$ or US-6856087-$).did.	USPAT	NEAR	ON	2018/01/20 20:32
L3	3	(US-8262249-$ or US-8147091-$ or US-7476003-$).did.	USPAT	NEAR	ON	2018/01/20 20:34
L4	5	2 or 3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 20:34
L5	19	("20030072156" | "20040257007" | "20070258240" | "20090052204" | "20090109668" | "20100148673" | "20100214779" | "20100289428" | "20100315001" | "20110058365" | "20110084608" | "20110163941" | "20110235318" | "20110285292" | "6720745" | "7180252" | "7476003" | "8203260" | "9057493").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 20:36
L6	4	4 not 5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 20:37
S1	19	("20030072156" | "20040257007" | "20070258240" | "20090052204" | "20090109668" | "20100148673" | "20100214779" | "20100289428" | "20100315001" | "20110058365" | "20110084608" | "20110163941" | "20110235318" | "20110285292" | "6720745" | "7180252" | "7476003" | "8203260" | "9057493").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 08:15
S2	1	15/473410	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:15
S3	20	S1 or S2	US-PGPUB; USPAT; USOCR; FPRS;	NEAR	ON	2018/01/20 08:15

			EPO; JPO; DERWENT; IBM_TDB			
S4	8	guillermo macias	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:16
S5	2	(US-9845924-$ or US-9719642-$).did.	USPAT	NEAR	ON	2018/01/20 08:18
S6	22	S3 or S5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:18
S7	22	S3 or S5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:18
S8	0	("15096549").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 09:13
S9	0	15/096549	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 09:14
S10	1	("9719642").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 09:17
S12	23	("20110285292" | "20110084608" | "20110163941" | "20110235318" | "20070258240" | "20100148673" | "7180252" | "8203260" | "9239134" | "20030072156" | "7476003" | "20110058365" | "20130127369" | "7507001" | "20040257007" | "20090052204" | "20090109668" | "20100214779" | "20100315001" | "9057493" | "9066405" | "20100289428" | "6720745").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 12:37
S13	19	("20030072156" | "20040257007" | "20070258240" | "20090052204" | "20090109668" | "20100148673" | "20100214779" | "20100289428" | "20100315001" | "20110058365" | "20110084608" | "20110163941" | "20110235318" | "20110285292" | "6720745" | "7180252" | "7476003" | "8203260" | "9057493").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 12:38
S14	23	S12 or S13	US-PGPUB;	NEAR	ON	2018/01/20

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			12:38
S15	3	(US-20090109668-$).did. or (US-9057493-$ or US-7476003-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 12:52
S16	1	("7507001").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 12:56
S17	2	(("7507001") or ("20030072156")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:02
S18	3	(("7507001") or ("20030072156") or ("20110235318")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:06
S20	5	(("7507001") or ("20030072156") or ("20110235318") or ("20100315001") or ("20100214779")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:10
S21	5	(("7507001") or ("20030072156") or ("20110235318") or ("20100315001") or ("20100214779")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:37
S22	8	((support or ((mounting (structure or element or surface)) or base)) with (array with (light with (diod$3 or chips)))) and ((linear or elongat$4) (housing or casing)) and (fluorescent tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:34
S23	122	((support or ((mounting (structure or element or surface)) or base)) with (array with (light with (diod$3 or chips)))) and ((linear or elongat$4) (housing or casing))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:35
S24	113	S23 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:36
S25	3	S22 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:36
S26	3	(US-20120086345-$).did. or (US-8547036-$ or US-8079731-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 14:37
S27	9	S23 not S24	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:40

S28	14	("20060056855" | "20080310850" | "20090196016" | "20100106306" | "20100141153" | "20100327766" | "20110069960" | "7580643" | "8150269" | "8547036").PN. OR ("9192030").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 14:41
S29	1	(US-20100106306-$).did.	US-PGPUB	NEAR	ON	2018/01/20 14:43
S30	153314	((((light with (diod$3 or chips)) or "LED") with tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:44
S31	14986	((((light with (diod$3 or chips)) or "LED") tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:45
S32	1003	S31 and (array with ((light with (diod$3 or chips)) or "LED"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:47
S33	566	S32 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:47
S34	1	S32 and @ad < "20120517" and (tubular housing) and control$4 and driver	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:49
S35	4	("20030142047" | "6448718" | "6583775" | "6593919").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 14:55
S36	170922	((F21K9/27 OR F21K9/272 OR F21K9/278 OR F21S4/28 OR F21S9/02 OR F21V7/005 OR F21V9/08 OR F21V23/005 OR F21V23/045 OR F21V23/06 OR F21Y2103/10 OR F21Y2105/10 OR F21Y2107/90 OR F21Y2113/13 OR F21Y2115/10 OR H05B33/0803 OR H05B33/0809 OR H05B33/0815 OR H05B33/0845 OR H05B33/0851 OR H05B33/0854 OR H05B33/0857 OR H05B33/086 OR H05B33/0863 OR H05B37/029).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:59
S37	1755	S33 AND S36	US-PGPUB; USPAT; USOCR;	NEAR	ON	2018/01/20 14:59

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S38	7	(US-20110121756-$ or US-20100176724-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-8115393-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:23
S39	7	(US-20110121756-$ or US-20100176724-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-8115393-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:23
S40	8	S23 and F21K9/$.CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:25
S41	3	S23 and F21V21/$.CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:25
S42	3	S23 and F21V23/$.CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:25
S43	11	S40 or S41 or S42	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:26
S44	1	15/473410	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S45	20	S13 or S44	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S46	2	(US-9845924-$ or US-9719642-$).did.	USPAT	NEAR	ON	2018/01/20 15:27
S47	22	S45 or S46	US-PGPUB; USPAT;	NEAR	ON	2018/01/20 15:27

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S48	34	S47 or S20 or S26 or S29 or S39	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S49	31	S48 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S50	13	(US-20110285292-$ or US-20110235318-$ or US-20110121756-$ or US-20110058365-$ or US-20100176724-$ or US-20100106306-$ or US-20090109668-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-7507001-$ or US-7476003-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:36
S51	13	(US-20110285292-$ or US-20110235318-$ or US-20110121756-$ or US-20110058365-$ or US-20100176724-$ or US-20100106306-$ or US-20090109668-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-7507001-$ or US-7476003-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:36
S52	1	S31 and (array with ((light with (diod$3 or chips)) or "LED")) and (red red and blue and white and green)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:44
S53	78	S30 and (array with ((light with (diod$3 or chips)) or "LED")) and (red red and blue and white and green)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:45
S54	54	S53 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:45
S55	406	S30 and (array with ((light with (diod$3 or chips)) or "LED")) and (red and blue and white and green and amber)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	NEAR	ON	2018/01/20 15:48

			DERWENT; IBM_TDB			
S56	269	S55 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:48
S57	34	S30 and (array with ((light with (diod$3 or chips)) or "LED")) and (first color) and (second color) and (third color) and (fourth color) and white	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:49
S58	26	S57 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:50
S59	0	S50 and (first color) and (second color) and (third color) and (fourth color) and white	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:59
S60	1	S50 and (array with ((light with (diod$3 or chips)) or "LED")) and (red and blue and white and green and amber)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 16:00
S61	2	((row or set) with ((light emitting diode) or "LED") with (first color)) and ((row or set) with ((light emitting diode) or "LED") with (second color)) and ((row or set) with ((light emitting diode) or "LED") with (third color)) and ((row or set) with ((light emitting diode) or "LED") with (fourth color)) and ((row or set) with ((light emitting diode) or "LED") with (white with kelvin))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 16:12
S62	0	(((light with (diod$3 or chips)) or "LED") with tube) and (((row or set) with ((light emitting diode) or "LED") with (first color)) and ((row or set) with ((light emitting diode) or "LED") with (second color)) and ((row or set) with ((light emitting diode) or "LED") with (third color)) and ((row or set) with ((light emitting diode) or "LED") with (fourth color)) and ((row or set) with ((light emitting diode) or "LED") with (white with kelvin)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 16:13
S63	0	((F21K9/27 OR F21K9/272 OR F21K9/278 OR F21S4/28 OR F21S9/02	US-PGPUB; USPAT;	NEAR	ON	2018/01/20 16:15

		OR F21V7/005 OR F21V9/08 OR F21V23/005 OR F21V23/045 OR F21V23/06 OR F21Y2103/10 OR F21Y2105/10 OR F21Y2107/90 OR F21Y2113/13 OR F21Y2115/10 OR H05B33/0803 OR H05B33/0809 OR H05B33/0815 OR H05B33/0845 OR H05B33/0851 OR H05B33/0854 OR H05B33/0857 OR H05B33/086 OR H05B33/0863 OR H05B37/029).CPC.) and ((((light with (diod$3 or chips)) or "LED") with tube) and (((row or set) with ((light emitting diode) or "LED") with (first color)) and ((row or set) with ((light emitting diode) or "LED") with (second color)) and ((row or set) with ((light emitting diode) or "LED") with (third color)) and ((row or set) with ((light emitting diode) or "LED") with (fourth color)) and ((row or set) with ((light emitting diode) or "LED") with (white with kelvin))))	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			

1/20/2018 9:26:32 PM
C:\Users\hsawhney\Documents\EAST\Workspaces\15476410 MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY.wsp

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BIB DATA SHEET

CONFIRMATION NO. 8635

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/476,410	03/31/2017 RULE	362	2875	12-10060-CIP2

APPLICANTS

INVENTORS

Guillermo Macias, Santa Clarita, CA;

**** CONTINUING DATA **************************

This appln claims benefit of 62/146,551 04/13/2015
and is a CIP of 15/096,549 04/12/2016
which claims benefit of 62/146,551 04/13/2015
and is a CIP of 13/896,868 05/17/2013 PAT 9719642
which claims benefit of 61/648,554 05/17/2012

**** FOREIGN APPLICATIONS **************************

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04/10/2017

Foreign Priority claimed	☐ Yes ☑ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☑ No		CA	13	10	2
Verified and Acknowledged	/HARGOBIND S SAWHNEY/ Examiner's Signature	Initials				

ADDRESS

HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355
UNITED STATES

TITLE

MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

FILING FEE RECEIVED	FEES: Authority has been given in Paper	
730	No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	15476410
Filing Date	2017-03-31
First Named Inventor	Guillermo Macias
Art Unit	2875
Examiner Name	H.S. SAWHNEY
Attorney Docket Number	12-10060-CIP2

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6720745	B2	2004-04-13	Lys et al.	
	2	7180252	B2	2007-02-20	Lys et al.	
	3	7476003	B2	2009-01-13	Kim	
	4	8203260	B2	2012-06-19	Li et al.	
	5	9057493	B2	2015-06-16	Simon et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030072156	A1	2003-04-17	Pohlert et al.	

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	Art Unit	2875
	Examiner Name	H.S. SAWHNEY
	Attorney Docket Number	12-10060-CIP2

	2	20040257007	A1	2004-12-23	Lys et al.	
	3	20070258240	A1	2007-11-08	Ducharme et al.	
	4	20090052204	A1	2009-02-26	Kawashima et al.	
	5	20090109668	A1	2009-04-30	Isobe	
	6	20100148673	A1	2010-06-17	Stewart et al	
	7	20100214779	A1	2010-08-26	Kao	
	8	20100289428	A1	2010-11-18	Frazier et al	
	9	20100315001	A1	2010-12-16	Domagala et al.	
	10	20110058365	A1	2001-03-10	Osawa	
	11	20110084608	A1	2011-04-14	Lin et al	
	12	20110163941	A1	2011-07-07	Li	

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	Attorney Docket Number	12-10060-CIP2

	13	20110235318	A1	2001-09-29	Simon et al.	
	14	20110285292	A1	2011-11-24	Mollnow et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Dimmable High Power Par38 White + Blue LED Aquarium Reef Corals Grow Light Bulb, www.Amazon.com, May 23, 2012	

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Art Unit	2875
	Examiner Name	H.S. SAWHNEY
	Attorney Docket Number	12-10060-CIP2

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/David L. Hoffman/	Date (YYYY-MM-DD)	2017-04-03
Name/Print	David L. Hoffman	Registration Number	32469

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	**Art Unit**
	HARGOBIND S SAWHNEY	2875

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	01/20/2018								
	1	=								
	2	=								
	3	=								
	4	=								
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	6	=								
	7	=								
	8	=								
	9	=								
	10	=								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	Art Unit
	HARGOBIND S SAWHNEY	2875

CPC- SEARCHED		
Symbol	Date	Examiner
F21K9/27; F21K9/278; F21S4/28; F21V9/08; F21V23/005; F21V23/045; F21V23/06; F21Y2103/10; F21Y2105/10; F21Y2113/13; F21Y2115/10; H05B33/0803; H05B33/0809; H05B33/0815; H05B37/029	1/20/2018	HSS

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Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB; Forward/ backward Text Search; Inventor name search, and Text search History Printout attached.	1/20/2018	HSS

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
Interference Search History printout is attached herewith.		1/20/2018	HSS

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
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Application Number	15476410
Filing Date	2017-03-31
First Named Inventor	Guillermo Macias
Art Unit	2875
Examiner Name	H.S. SAWHNEY
Attorney Docket Number	12-10060-CIP2

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6357893	B1	2002-03-19	Belliveau	
	2	7038399	B2	2006-05-02	Lys et al.	
	3	RE43017	E	2011-12-13	Belliveau	
	4	RE44903	E	2014-05-20	Belliveau	

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	Examiner Name	H.S. SAWHNEY
	Attorney Docket Number	12-10060-CIP2

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	1	Coloronix Colortainment! Controller Manual, by Coloronix, Inc., copyright notice 2011, 13 pages	
	2	Final Report of Laboratory Evaluation of Light-Emitting Diode (LED) T8 Replacement Lamp Products, Lighting Design Lab, Pacific Northwest National Laboratory, Seattle Washington, May 2011; 51 pages	
	3	Light-Based Technologies, Better Light, Facts about Dimming, www.LIGHTBASED.COM, as published in LED Professional Review, Jan/Feb 2011, Issue 23, 7 Pages	
	4	Coloronix Colorful Architectural Illumination, SCC6 Colortainment Ambx Controller, www.RGBW.COM, 1 page	

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Examiner Signature	/HARGOBIND S SAWHNEY/	Date Considered	01/20/2018

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.S.S/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15476410
	Filing Date	2017-03-31
	First Named Inventor	Guillermo Macias
	Art Unit	2875
	Examiner Name	H.S. SAWHNEY
	Attorney Docket Number	12-10060-CIP2

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/David L. Hoffman/	Date (YYYY-MM-DD)	2017-04-03
Name/Print	David L. Hoffman	Registration Number	32469

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.S.S/

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.S.S/

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	15476410	Filing Date	2017-03-31	Docket Number (if applicable)	12-10060-CIP2	Art Unit	2875
First Named Inventor	GUILLERMO MACIAS			Examiner Name	HARGOBIND S SAWHNEY		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☐ Other _____

☒ Enclosed

☒ Amendment/Reply

☒ Information Disclosure Statement (IDS)

☒ Affidavit(s)/ Declaration(s)

☒ Other Replacement drawing sheets (4) and annotated drawing sheet

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☐ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No _____

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

EFS - Web 2.1.15

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/David L. Hoffman/	Date (YYYY-MM-DD)	2018-02-15
Name	David L. Hoffman	Registration Number	32469

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ANNOTATED SHEET

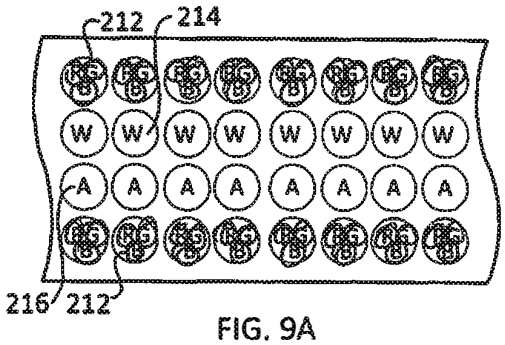


FIG. 9A

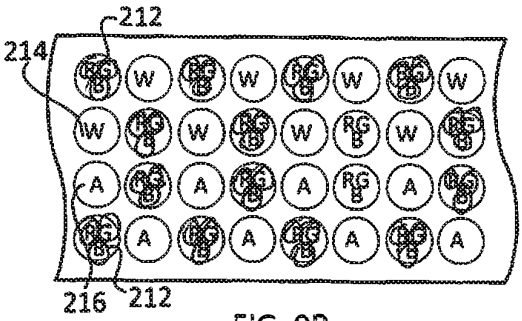


FIG. 9B

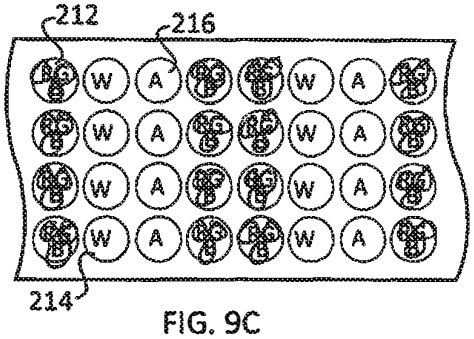


FIG. 9C

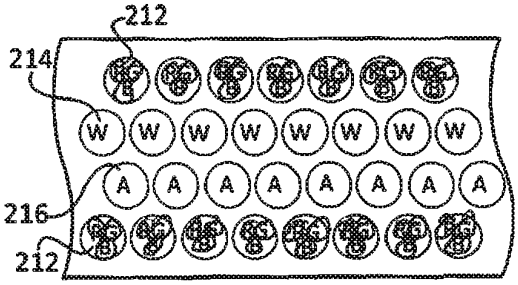


FIG. 9D

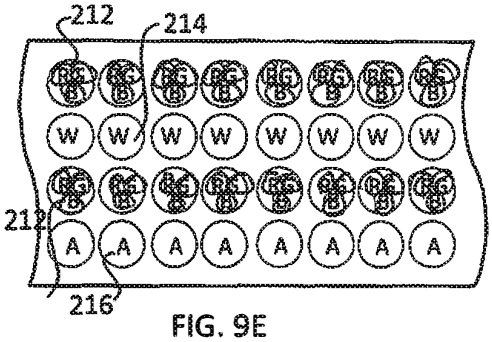


FIG. 9E

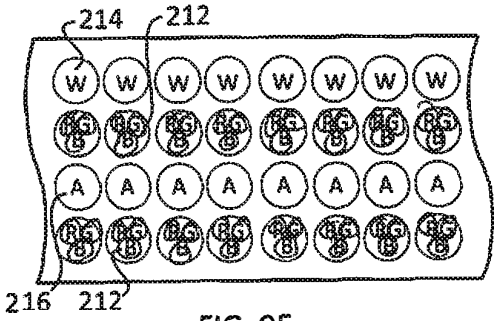


FIG. 9F

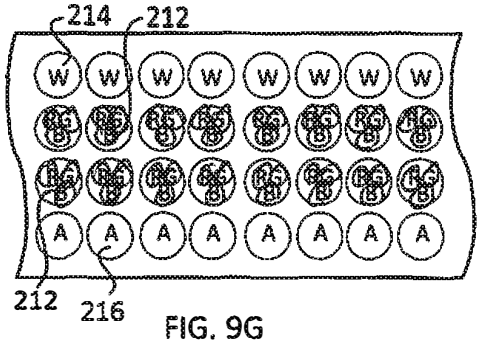


FIG. 9G

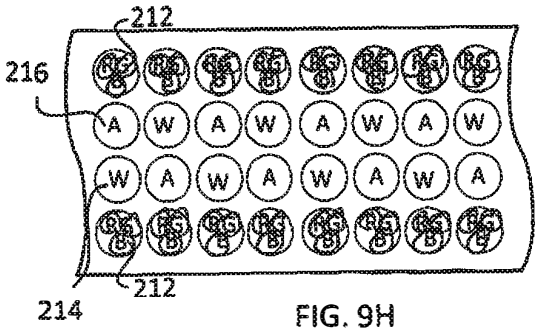


FIG. 9H

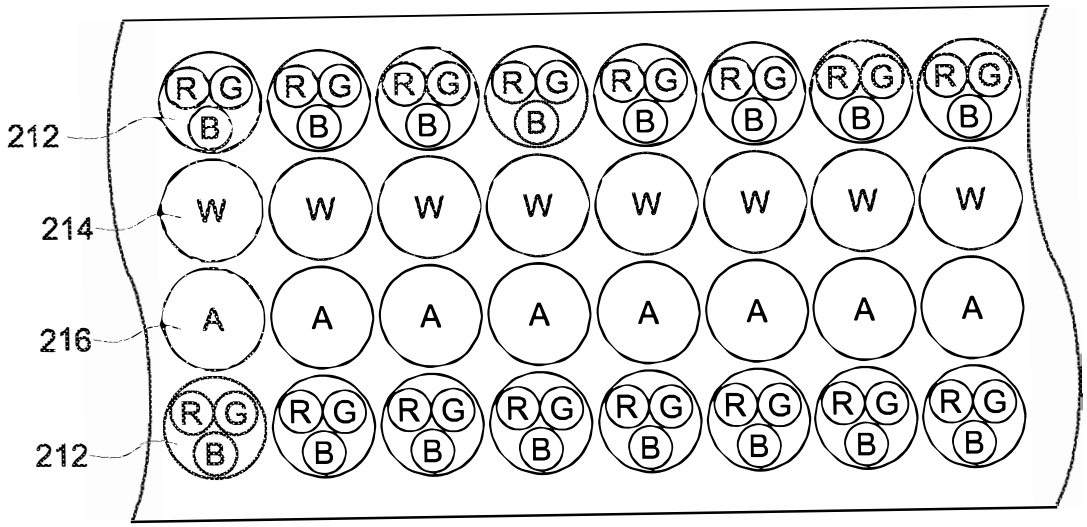


FIG. 9A

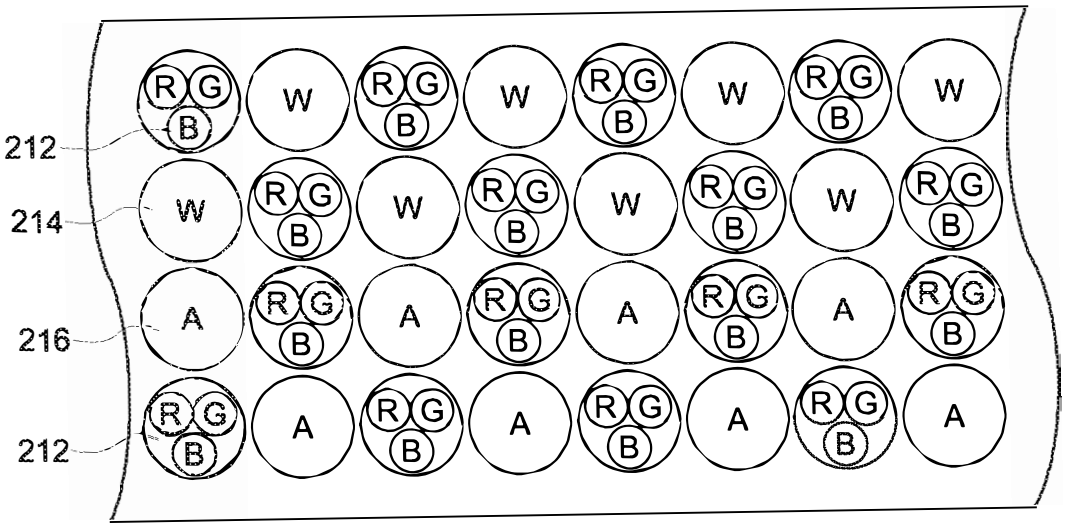


FIG. 9B

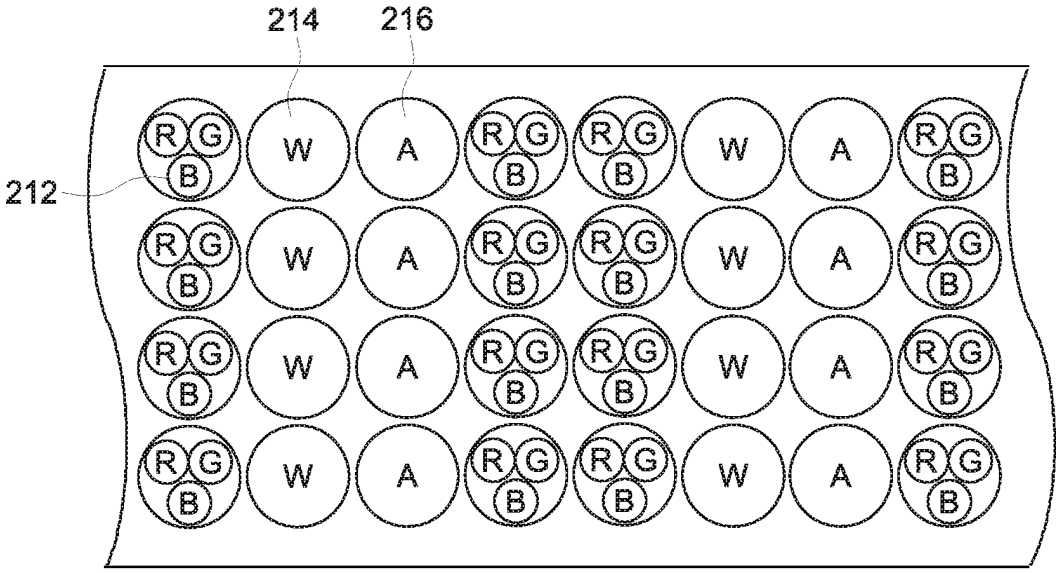


FIG. 9C

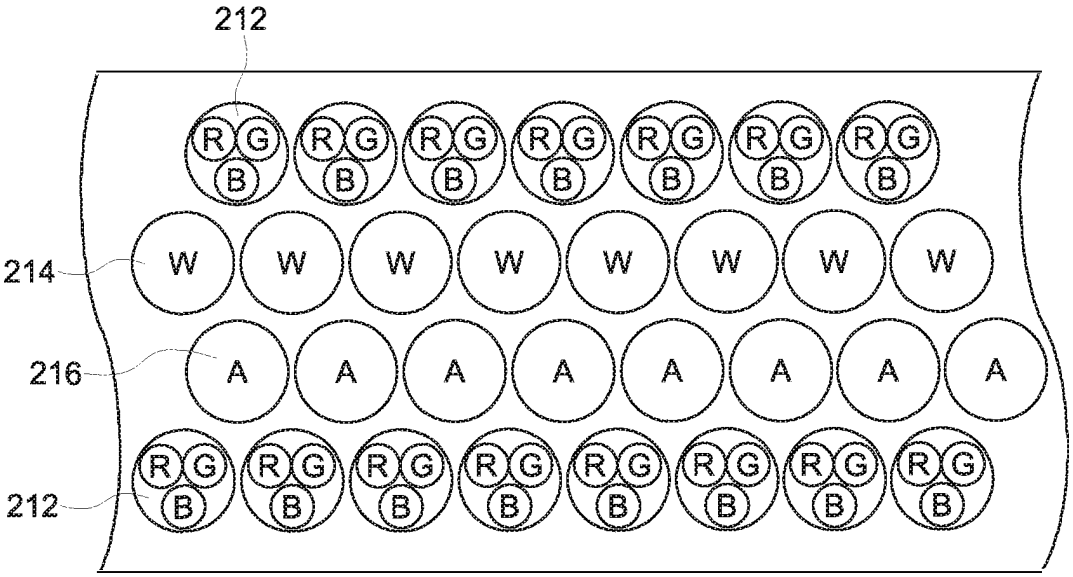


FIG. 9D

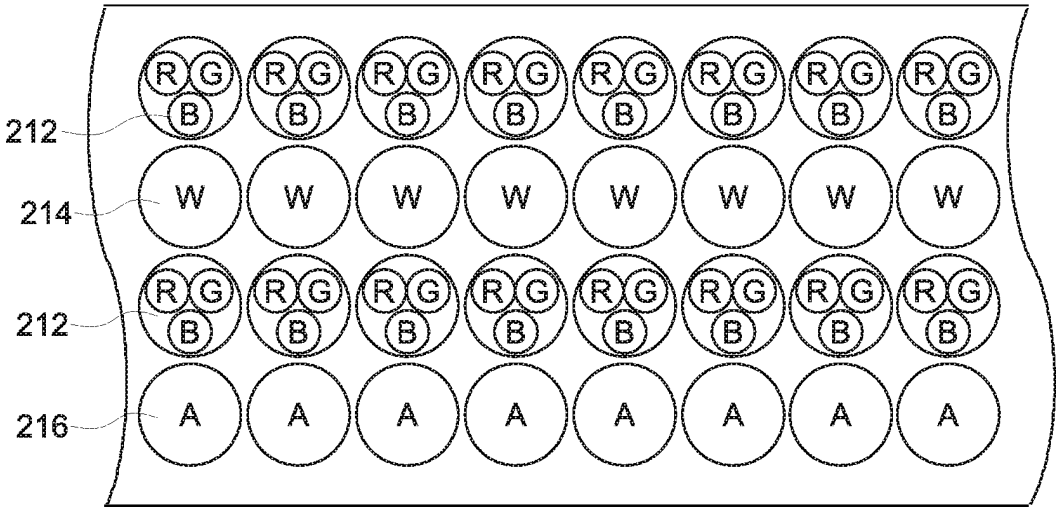


FIG. 9E

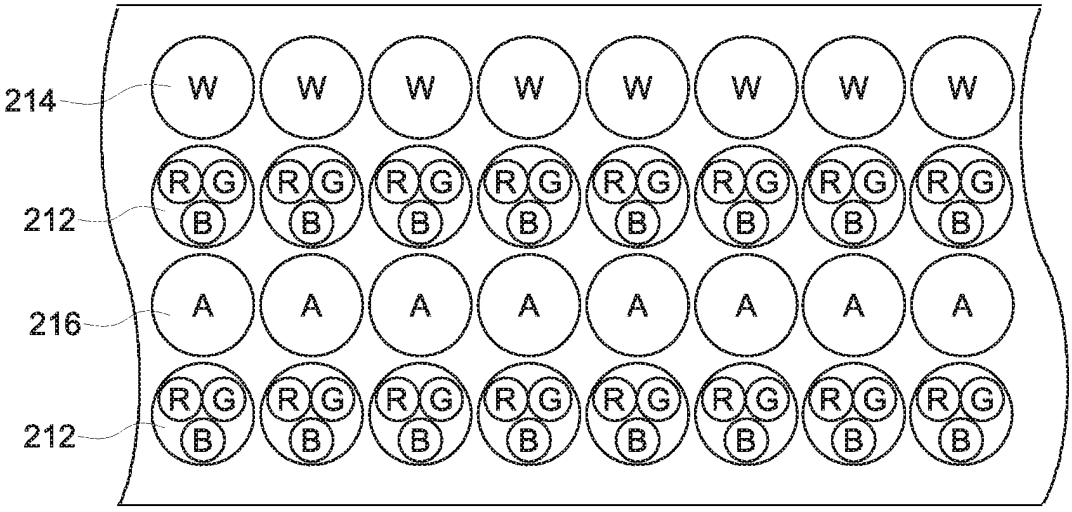


FIG. 9F

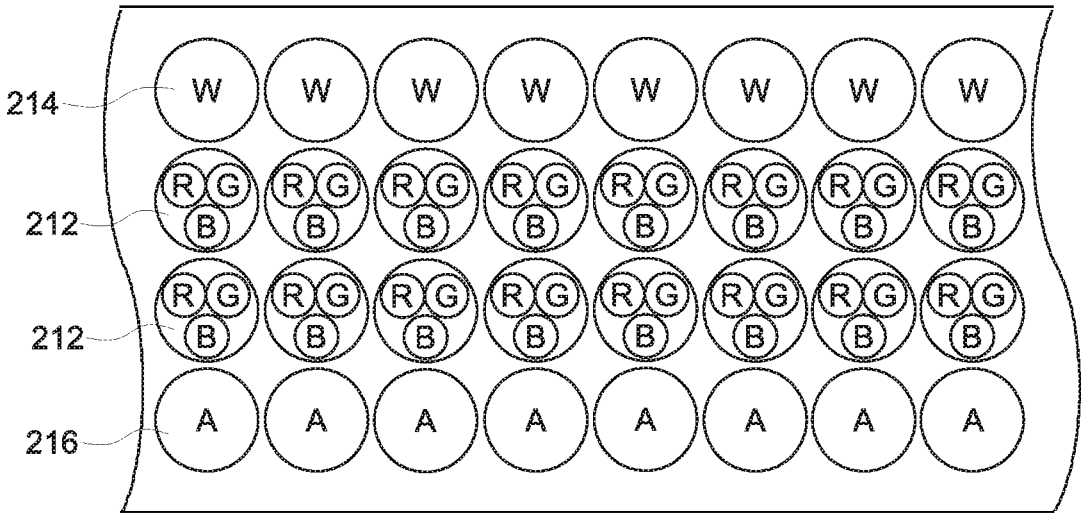


FIG. 9G

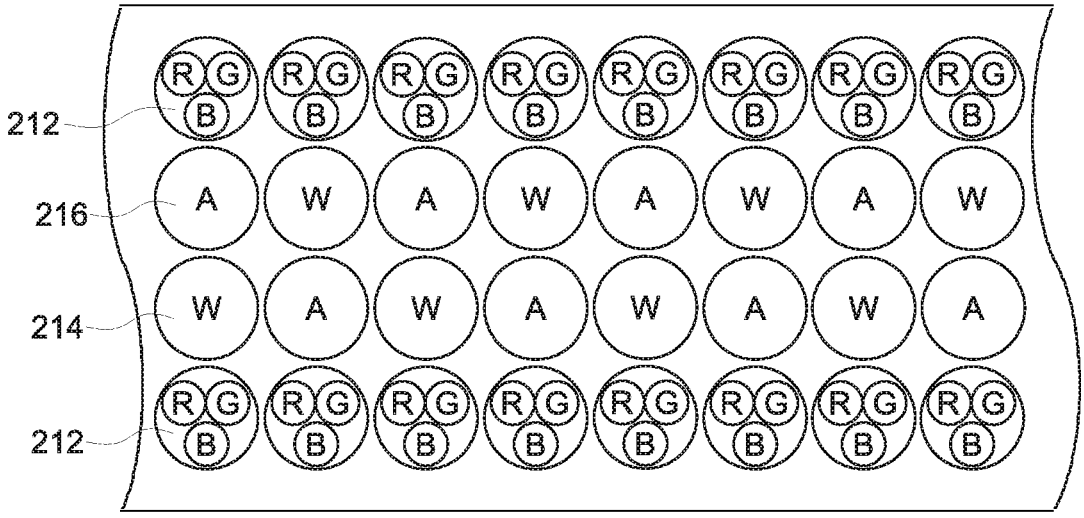


FIG. 9H

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: MACIAS, GUILLERMO

Serial Number: 15/476,410 Examiner: SAWHNEY, HARGOBIND S.

Confirmation Number: 8635

Filed: 3/31/2017 Art Unit: 2875

For: **TUBE LIGHT WITH IMPROVED LED ARRAY**

Mail Stop FEE AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF DAVID L. HOFFMAN UNDER 37 C.F.R. §1.131 and/or §1.132

I, David L. Hoffman, Esq., declare as follows:

1. I am the attorney of record for the inventor of the invention disclosed and claimed in the subject application.

2. Attached as Exhibit 1 is a true and correct copy of the provisional patent application I filed on behalf of the inventor, U.S. Provisional Application No. 61/648,554, filed on May 17, 2012.

3. The provisional patent application contains, for example, in Fig. 12, an example of dimensions including 41 mm for the housing:

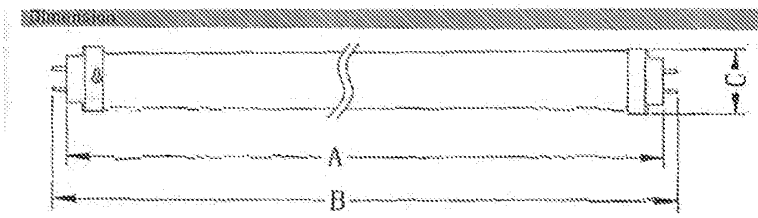


FIG. 12

Part No. Parameter	T12-120CM
Dimension(mm)	A=1198MM B=1213MM C=41MM
Main material	Aluminum+PC
Power consumption(W)	≤20.5W
Input voltage(V)	AC100-120V
LED quantity(Pc)	876
LED type	3528 SMD

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Executed this 12th day of February 2018, at Valencia, California.

Date: February ___, 2018

David L. Hoffman, Reg. No. 32,469

FIG. 1

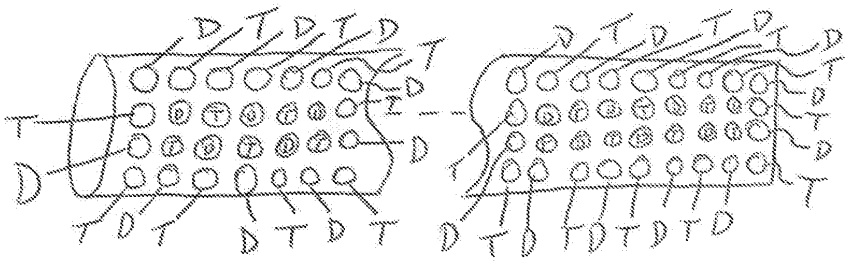


FIG. 2

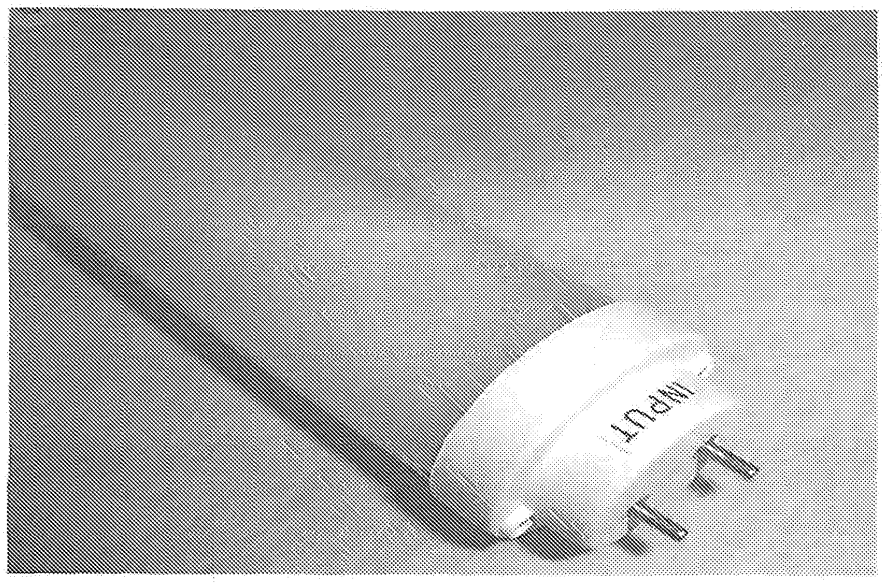
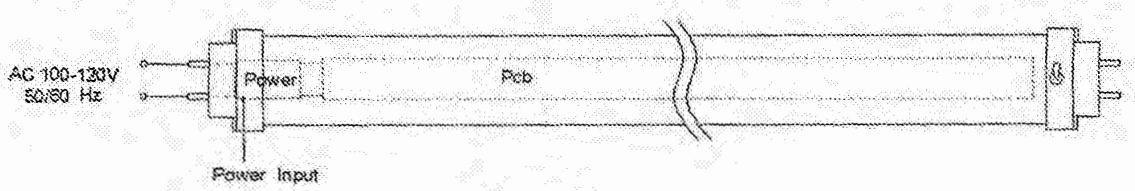


FIG. 3

Install

Step One

Before installing, please check the LED tube structure diagram.(As the picture 1 shows)



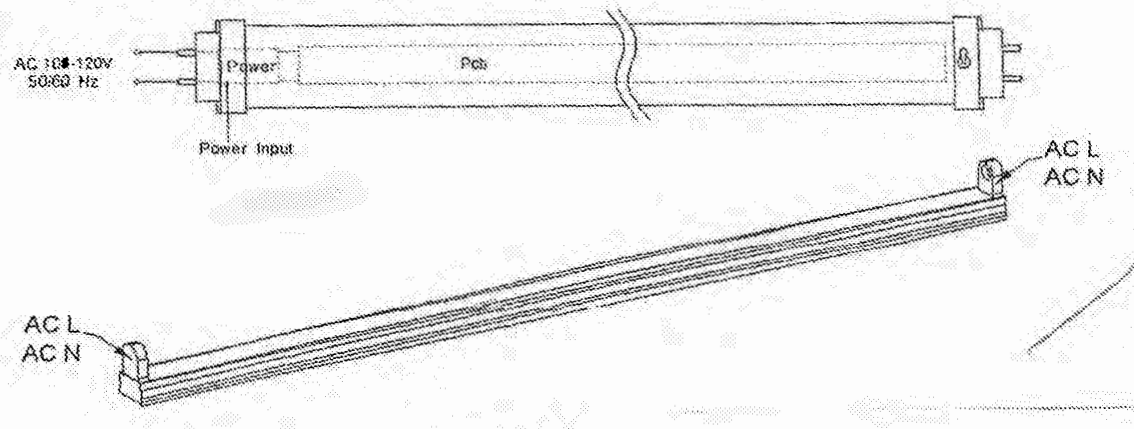
Picture 1

Step Two:

Make sure esch side of the fixture has AC"L" and AC"N" Such as the picture 2 shows

Step three:

Directly install the light on the fixture

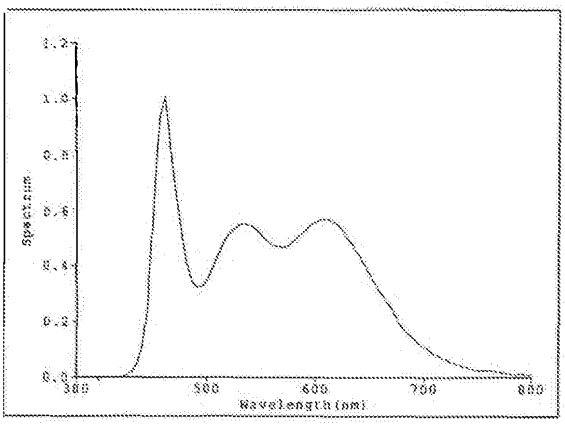


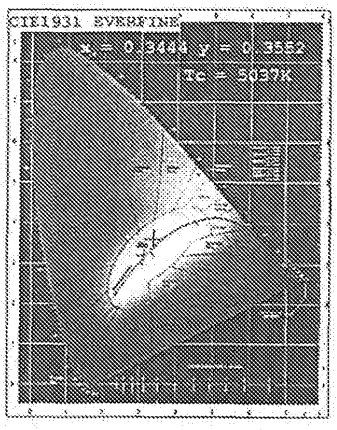
Picture 2

FIG. 4

T12 LED Switch LED Tube Light	
Voltage	AC 110v
Power	20+20w
Type	Dimmable
Control	One switch controls two color
Color Temperature	Warm White:2700-3200 K
	Day White:5000-5500 K
Lumens	Warm White:1010 ±10%
	Day White:1170 ±10%
CRI	>91 Ra

Light Source Test Report





Color Parameters:

Chromaticity Coordinate:x=0.3444(dx=0.0003) y=0.3552(dy=0.0044)
Chromaticity Coordinate:u'=0.3444 v'=0.3552(duv=2.06e-03)
Tc=5037K Dominant WL:Ld=570.2nm Purity=9.9% Centroid WL:557.0nm
Ratio:R=19.3% G=75.2% B=5.5% Peak WL:Lp=460.0nm HWL:27.7nm
Render Index:Ra=92.8
R1 =97 R2 =98 R3 =98 R4 =90 R5 =93 R6 =94 R7 =89
R8 =85 R9 =70 R10=99 R11=95 R12=67 R13=98 R14=100 R15=93

Photo Parameters:

Flux: 1168.3 lm Pe: 3.9258 W Efficacy:55.27 lm/W
WHITE:ANSI_5000K

Electrical Parameters:

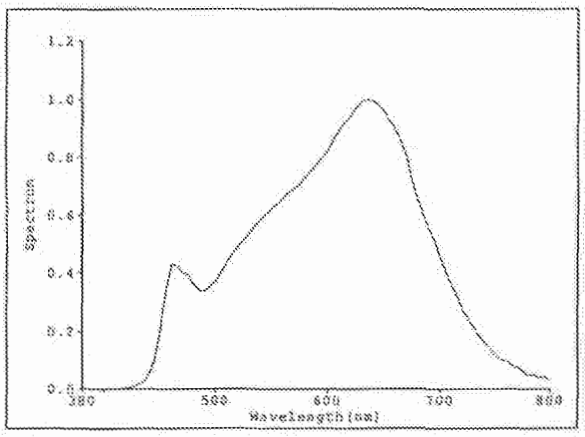
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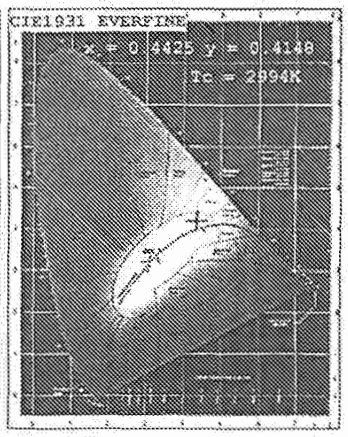
Instrument Status:
Scan Range:380.0nm-800.0nm Interval:5.0nm[0] Ip=3909(G=3,D=58)
REF=36785(R=4) k=-0.104% ENT: 30.3 centigrade (29.4)

Product Type:T12-1200-带开关 (110V) Manufacturer:ZHIYUE OPTOELECTRONCS
Number:扩散正白1 Test Department:ZHIYUE OPTOELECTRONCS
Temperature:25.3 deg Humidity:65.0%
Test Operator:ZhouHePing Test Date:2012-05-08 20:05:10
Software:V2.00.121 Instrument:PMS-80_V1 (SN:11060011)

FIG. 6

Light Source Test Report





Color Parameters:

Chromaticity Coordinate:x=0.4425(dx=0.0003) y=0.4148(dy=0.0044)
Chromaticity Coordinate:u'=0.4425 v'=0.4148(duv=3.44e-03)
Tc=2994K Dominant WL:Ld=581.7nm Purity=57.3% Centroid WL:611.0nm
Ratio:R=26.1% G=70.8% B=3.1% Peak WL:Lp=635.0nm HWL:173.6nm
Render Index:Ra=96.0
R1 =98 R2 =99 R3 =99 R4 =93 R5 =96 R6 =99 R7 =93
R8 =92 R9 =88 R10=97 R11=95 R12=80 R13=99 R14=99 R15=95

Photo Parameters:

Flux: 1010.3 lm Fe: 3.8129 W Efficacy:47.88 lm/W
WHITE:ANSI_3000K

Electrical Parameters:

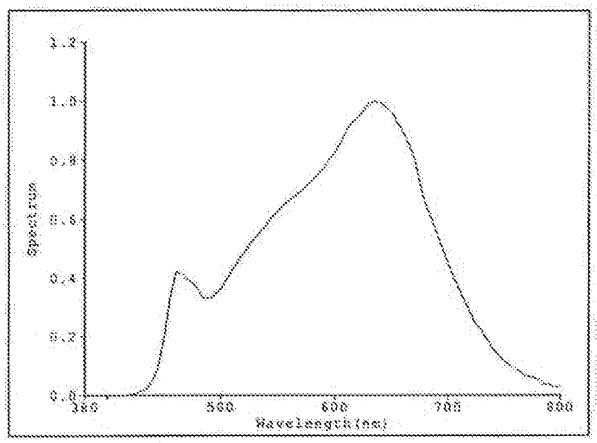
Luminaire: U=110.3V I=0.2582A P=21.10W PF=0.7450

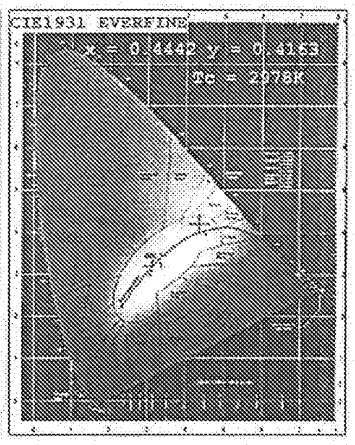
Instrument Status:
Scan Range:360.0nm~800.0nm Interval:5.0nm(0) Tp=1243(G=3,D=58)
REF=32562(R=4) $=-0.126% PMT: 38.3 centigrade (28.5)

Product Type:T12-1200-带开关 (110V)
Number:扩散暖白1
Temperature:25.3 deg Humidity:65.0%
Test Operator:ZhouHePing Test Date:2012-05-08 20:09:08
Software:V2.00.121 Instrument:PMS-80_V1 (SN:11060011)

FIG. 7

Light Source Test Report





Color Parameters:

Chromaticity Coordinate:x=0.4442(dx=0.0003) y=0.4163(dy=0.0044)
Chromaticity Coordinate:u'=0.4442 v'=0.4163(duv=3.80e-03)
Tc=2978K Dominant WL:Ld=581.7nm Purity=58.3% Centroid WL:611.0nm
Ratio:R=26.1% G=70.8% B=3.0% Peak WL:lp=635.0nm HWL:172.0nm
Render Index:Ra=95.8
R1 =98 R2 =99 R3 =99 R4 =92 R5 =95 R6 =99 R7 =93
R8 =92 R9 =85 R10=97 R11=94 R12=80 R13=98 R14=99 R15=94

Photo Parameters:

Flux: 1066.0 lm Fe: 3.9906 W Efficacy:48.35 lm/W
WHITE:ANSI_3000K

Electrical Parameters:

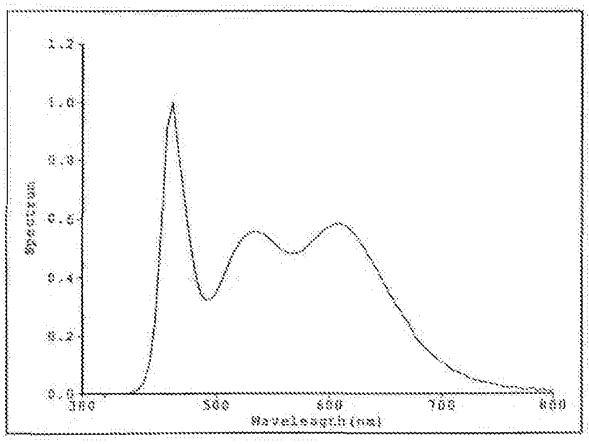
Luminaire: U=111.0V I=0.2509A P=22.05W PF=0.7918

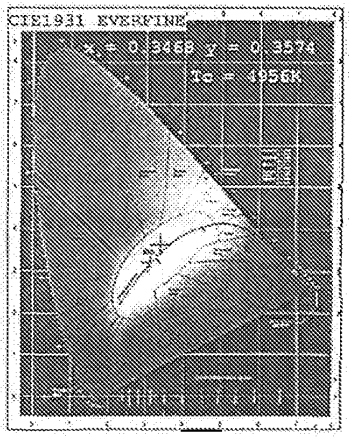
Instrument Status:
Scan Range:380.0nm-800.0nm Interval:5.0nm[0] Ip=1265(G=3,D=58)
REF=34359(N=4) k=-0.058% PMT: 30.3 centigrade (29.7)

Product Type:T12-1200-带开关 (110V) Manufacturer:ZHIYUE OPTOELECTRONCS
Number:扩散暖白2 Test Department:ZHIYUE OPTOELECTRONCS
Temperature:25.3 deg Humidity:65.0%
Test Operator:ZhouHePing Test Date:2012-05-08 20:13:05
Software:V2.00.121 Instrument:PMS-80_V1 (SN:11060011)

FIG. 8

Light Source Test Report





Color Parameters:

Chromaticity Coordinate:x=0.3468(dx=0.0003) y=0.3574(dy=0.0044)
Chromaticity Coordinate:u'=0.3468 v'=0.3574(duv=2.21e-03)
Tc=4956K Dominant WL:Ld=571.2nm Purity=11.3% Centroid WL:558.0nm
Ratio:R=19.4% G=75.2% B=5.4% Peak WL:Lp=460.0nm HWL:27.7nm
Render Index:Ra=91.9
R1 =96 R2 =98 R3 =97 R4 =87 R5 =91 R6 =95 R7 =87
R8 =83 R9 =68 R10=98 R11=91 R12=61 R13=98 R14=99 R15=91

Photo Parameters:

Flux: 1235.4 lm Fe: 4.1217 W Efficacy:56.94 lm/W
WHITE:ANSI_5000K

Electrical Parameters:

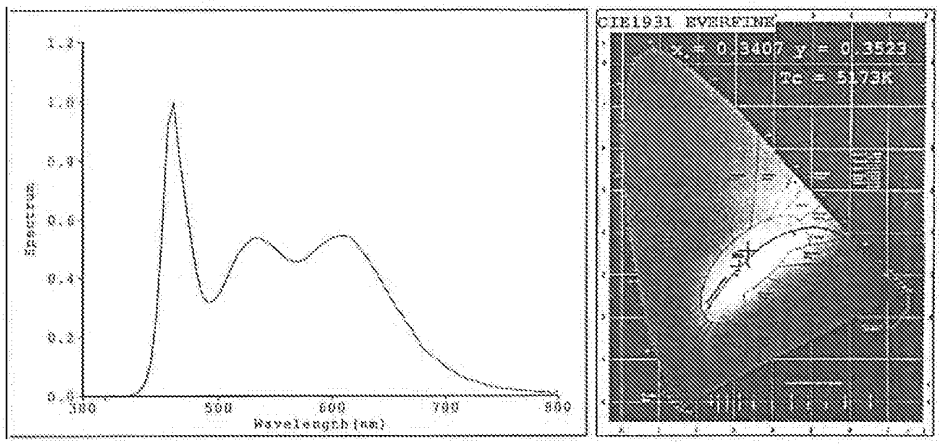
Luminaire: U=111.0V I=0.2436A P=21.69W PF=0.8026

Instrument Status:
Scan Range:380.0nm~800.0nm Interval:5.0nm(0) Ip=4052(G=3,D=58)
REF=38905(B=4) $=-0.098% PMT: 30.3 centigrade (29.9)

Product Type:T12-1200-带开关 (110V) Manufacturer:ZHIYUE OPTOELECTRONCS
Number:扩散正白2 Test Department:ZHIYUE OPTOELECTRONCS
Temperature:25.3 deg Humidity:65.0%
Test Operator:ZhouHePing Test Date:2012-05-08 20:14:58
Software:V2.00.121 Instrument:PMS-80_V1 (SN:11060011)

FIG. 9

Light Source Test Report



Color Parameters:

Chromaticity Coordinate:x=0.3407(dx=0.0003) y=0.3523(dy=0.0044)
Chromaticity Coordinate:u'=0.3407 v'=0.3523(duv=2.12e-03)
Tc=5173K Dominant WL:Ld=567.5nm Purity=7.9% Centroid WL:555.0nm
Ratio:R=19.0% G=75.4% B=5.7% Peak WL:Lp=460.0nm HWL:27.9nm
Render Index:Ra=92.4

R1 =96	R2 =98	R3 =97	R4 =90	R5 =93	R6 =94	R7 =88	
R8 =84	R9 =69	R10=99	R11=94	R12=67	R13=98	R14=100	R15=93

Photo Parameters:

Flux: 1304.1 lm Pe: 4.6477 W Efficacy:62.27 lm/W
WHITE:ANSI_5000K

Electrical Parameters:

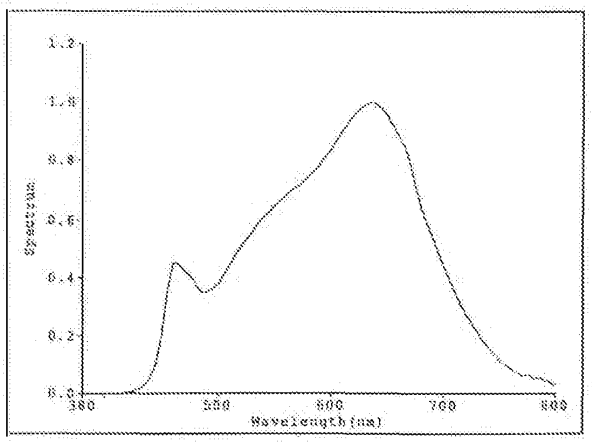
Luminaire: U=110.9V I=0.2537A P=22.23W PF=0.7902

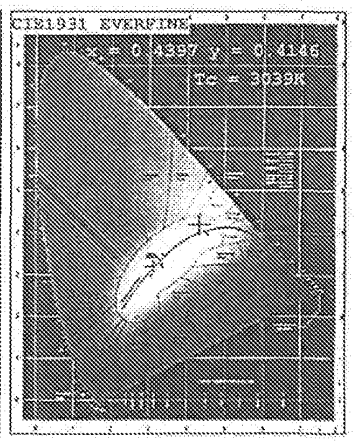
Instrument Status:
Scan Range:380.0nm~800.0nm Interval:5.0nm(0) Ip=474(G=3,D=58)
REF=43522(R=4) ϕ=-0.113% MMT: 30.3 centigrade (29.1)

Product Type:T12-1200-带开关 (110V) Manufacturer:ZHIYUE OPTOELECTRONCS
Number:透明正白3 Test Department:ZHIYUE OPTOELECTRONCS
Temperature:25.3 deg Humidity:65.0%
Test Operator:ZhouHePing Test Date:2012-05-08 20:17:53
Software:V2.00.121 Instrument:PMS-80_V1 (SN:11060011)

FIG. 10

Light Source Test Report





Color Parameters:

Chromaticity Coordinate:x=0.4397(dx=0.0003) y=0.4146(dy=0.0044)
Chromaticity Coordinate:u'=0.4397 v'=0.4146(duv=3.76e-03)
Tc=3039K Dominant WL:Ld=581.4nm Purity=56.4% Centroid WL:609.0nm
Ratio:R=25.7% G=71.1% B=3.2% Peak WL:Lp=635.0nm HWL:174.0nm
Render Index:Ra=95.6
R1 =98 R2 =99 R3 =99 R4 =92 R5 =95 R6 =99 R7 =93
R8 =92 R9 =86 R10=97 R11=94 R12=79 R13=98 R14=99 R15=94

Photo Parameters:

Flux: 1166.2 lm Fe: 4.3428 W Efficacy:56.84 lm/W
WHITE:ANSI_3000K

Electrical Parameters:

Luminaire: U=110.9V I=0.2437A P=20.52W PF=0.7502

Instrument Status:
Scan Range:380.0nm-800.0nm Interval:5.0nm(0) Ip=1465(G=3,D=58)
REF=37542(R=4) $=-0.232% BNT: 30.3 centigrade (29.1)

Product Type:T12-1200-带开关 (110V) Manufacturer:ZHIYUE OPTOELECTRONCS
Number:透明暖白3 Test Department:ZHIYUE OPTOELECTRONCS
Temperature:25.3 deg Humidity:65.0%
Test Operator:ZhouHePing Test Date:2012-05-08 20:21:02
Software:V2.00.121 Instrument:PMS-80_V1 (SN:11060011)

Fig. 11

Application

Feature:

1) Base : G13
2) Available Color : Day White , Warm White
3) Aluminum Housing with surface protect, PC milky cover, Clean Cover,Strip Cover
4) Working Temperature : -20°C-40°C
5) Lifespam : 40,000HRS
6) No IR and No UV
7) Color Temperature adjust
8) Switch control two color: warm white and day white

Application:

★ Direct replace traditional fluorescent light.

★ For showroom using.

★ As the sample to show your client the different color temperature

★ For home using. Day white for reading, warm white for life

★ For hotel using, not only can meet the warm white but also meet day white requirement.

They do not need buy two lights for both color.

Warranty:

We promise 3 years warranty. You can get new one if the LED light is out of working because of the quality.If you are our agent, we do not only allow you to change the new light, but also we pay your freight charge.

Notice :

1) No pushing
2) Carrying carefully.
3) Be Sure working under right voltage
4) Only indoor Using
5) No twisting when power is on

Specification

Dimension

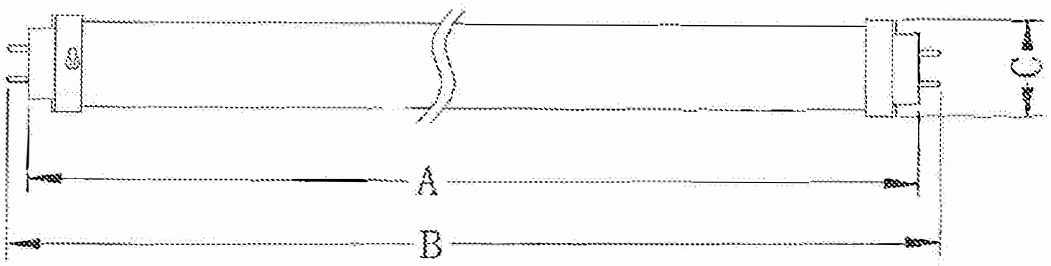


Fig. 2

Basic specification

Part No. Parameter	T12-120CM
Dimension(mm)	A=1198MM B=1213MM C=41MM
Main material	Aluminum+PC
Power consumption(W)	≤20.5W
Input voltage(V)	AC100-120V
LED quantity(Pc)	576
LED type	3528 SMD

Color temperature(K)	2800-3300(M) / 5000-5500(W)
Luminous flux(Lm)	M: 1050±10%
	W: 1200±10%
Rendering index	>92
Socket type	G13
Weight(kg)	0.89±0.01
Inner box (cm)	¢ Φ49*1240
Carton (cm)	L1250*W260*H235mm (1/20)
Life expectancy(h)	40,000

FIG. 13

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PROVISIONAL APPLICATION

OF

Guillermo Macias

Santa Clarita, CA

ON

TUBE LIGHT WITH IMPROVED LED ARRAY

Docket Number:	12-10060
Sheets of Drawings:	Twelve (12)
Sheets of Written Description:	Six (6)(INCLUDING THIS COVER)

Attorneys
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Fax: (661) 775-9423
Customer No.: 36212

TUBE LIGHT WITH IMPROVED LED ARRAY

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a tube light with an improved LED array.

Description of the Related Art

Fluorescent bulbs have existed for over 100 years. Many fluorescent bulbs are made in tubular form.

Subsequently, LEDs (light emitting diodes) have been developed. Since LEDs use very little energy and have a relatively long life, in recent years it has been popular to replace existing fluorescent bulbs with LEDs. In order to match the tubular form of a fluorescent bulb, arrays of LEDs are placed on a tube having the same form factor as a fluorescent bulb, such as a T8 or T12 size fluorescent bulb. One such bulb is made by Dialight and is called DuroSite™. For example, in size T8, the bulb in one form uses SMD LEDs in a four foot long tube - 1500 Lumens, Natural White light, 17 Watt, 300 LED, 90V-277V, ETL/UL Approved. There are four different color temperature renderings available:

Warm White:	3700 Kelvin; ~ 1450 lumens - Yellowish Light
Natural White:	4500 Kelvin; ~ 1500 lumens - Natural White Light
Daylight White:	5500 Kelvin; ~ 1550 lumens - Pure White
Cool White:	7000 Kelvin; ~ 1600 lumens - Bluish Light

Other color renderings may be possible.

In the lighting industry, and particular for TV, stage, auditorium, and/or film studio use, and/or other venues, these lights can often cause an actor to look green, depending upon the skin tone of the actor. Therefore, it is common when using these types of lights, to have to change out all of the banks of lights depending upon what actor or actors or other persons are appearing

under the lights. Commonly, a lighting crew must continually change light bulbs between daylight white (or day white) and tungsten (or warm white), and if desired, other types of white/light.

It is desired to achieve sufficient light of the desired type without changing bulbs.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic view of a bulb in accordance with one embodiment, showing alternating daylight and tungsten (warm white) LEDs;

Fig. 2 is a perspective view of an LED bulb device (a portion thereof) showing connectors at one end (in the form of standard fluorescent bulb connectors) and made in a fluorescent tube format with a cover, e.g., plastic, for the LEDs;

Fig. 3 is a schematic view of the LED bulb device showing the connectors and a power input, as well as a PCB (printed circuit board) on which the LEDs of FIG. 1 would be arrayed, and in this type of bulb, the LEDs may be arrayed only on one side, e.g., a front side, thereof, however, there may be an array on a rear side thereof as well, and picture 2 of Fig. 3 shows a receptor for receiving the bulb device;

Fig. 4 is a chart of parameters for an LED bulb device, e.g., configured in a T12 format, for use with a switch controlling which color is on, and is dimmable;

Figs. 5 to 10 show various test results and specifications for the LED bulb device;

Fig. 11 is a chart of various information concerning the LED bulb device;

Figs. 12 and 13 together form a chart of specifications for one preferred bulb device.

DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

In one preferred embodiment with reference to FIGs. 1 to 4, there is a tubular LED light in the form of a fluorescent tube shape, with an array of four LED bulbs in one direction transverse or perpendicular to a main axis of the tube and facing in one direction, by many rows of such LED bulbs, e.g., at least five (for a total of twenty LEDs), but more preferably at least ten or twenty rows, or even twenty five or more rows (100 or more LEDs). The number of LED rows may vary depending upon size of the bulb device. For example, in a three foot long tube there will be fewer LEDs than a four foot long tube light device, generally in a linear variance given the same diameter.

The LEDs having a daylight (D)(or other light type 1) are alternated in a checkerboard pattern with the LEDs having a tungsten light (T)(or other light type 2 different from type 1). A checkerboard pattern is most preferred but other evenly dispersed/arrayed patterns that produce comparable evenly dispersed light are suitable. The daylight LEDs and tungsten LEDs are evenly/uniformly staggered or substantially evenly/uniformly staggered with no more than about a ten percent variation in uniformity.

FIG. 1 shows one row and column arrangement, the daylight LEDs being element D, and the tungsten LEDs being element T.

Various nonexclusive applications are listed in FIG. 11.

The specifications for LEDs are shown in FIG. 4 and alternatively in FIGS. 12-13.

This inventive LED array may be controlled by a DMX (digital multiplex) controller, such as DMX512 (512 dimmer channels) or any other DMX controller, or other dimmer controllers.

A single switch can turn on the daylight LEDs and turn of the tungsten LEDs and visa versa. Therefore, it is not necessary to change out the LED tube bulb between tungsten and daylight bulbs.

In a most preferred embodiment, because LED manufacturing quality varies greatly, LEDs are first tested and then placed in the array if they meet the specifications sufficient to produce sufficient light from each color light type (type 1 or type 2) of the LED bulb device.

The LED bulb device is preferably in size T8 or T12, but other sizes and types may be used.

In a typical movie, TV or other studio or stage setting, there may be four T12 bulbs (or other size) per light fixture. There may be many light fixtures, e.g., dozens or even hundreds.

With preferred embodiments of the invention, a switch, e.g., located on the lighting device or located remotely (wired or wirelessly triggered), is switched to simply send power to one of the bulb types (type 1) and not to type 2, or switched to another position to send power to the other bulb type (type 2) and not type 1. The switch may have another position to turn all LEDs off. If desired, another position to turn on all LEDs may be used.

The PCB is wired to send power to the bulbs of each type alternately, or to no bulbs, and if desired, to all bulbs, depending on the switch position.

Therefore, no bulb devices need to be switched out when changing between daylight and warm light (or tungsten).

Each LED preferably meets a minimum brightness, as tested e.g., by a brightness meter.

Also, it should be noted that instead of the color temperatures shown in the specifications in the Figures, the following color temperatures may be used:

Tungston 27 - Kelvin threw 33 Kelvin
Daylight 5000 Kelvin threw 5700 kelvin

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QUASAR SCIENCE LLC EXHIBIT 1002
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Although the invention has been described using specific terms, devices, and/or methods, such description is for illustrative purposes of the preferred embodiment(s) only. Changes may be made to the preferred embodiment(s) by those of ordinary skill in the art without departing from the scope of the present invention, which is set forth in the following claims. In addition, it should be understood that aspects of the preferred embodiment(s) generally may be interchanged in whole or in part.

CLAIMS

WHAT IS CLAIMED IS:

An LED lighting device having an alternating arrangement of LEDs providing one type of light and of LEDs providing another type of light, preferably in an elongate form, and preferably of daylight and warm light colors.

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QUASAR SCIENCE LLC EXHIBIT 1002
Page 173 of 369

PTO/SB/08a (01-10)
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(Not for submission under 37 CFR 1.99)

Application Number	15476410
Filing Date	2017-03-31
First Named Inventor	Guillermo Macias
Art Unit	2875
Examiner Name	Hargobind S. Sawhney
Attorney Docket Number	12-10060-CIP2

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	1	7507001	B2	2009-03-24	KIT	
	2	7646029	B2	2010-01-12	MUELLER ET AL.	
	3	9066405	B2	2015-06-23	VAN DE VEN	
	4	9239134	B1	2016-01-19	MACIAS	
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	1	20040105261	A1	2004-06-03	DUCHARME ET AL.	

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	Application Number	15476410
	Filing Date	2017-03-31
	First Named Inventor	Guillermo Macias
	Art Unit	2875
	Examiner Name	Hargobind S. Sawhney
	Attorney Docket Number	12-10060-CIP2

	2	20070228999	A1	2007-10-04	KIT	
	3	20100102729	A1	2010-04-29	KATZIR ET AL	
	4	20130127369	A1	2013-05-23	CAMPBELL ET AL	

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	Application Number	15476410
	Filing Date	2017-03-31
	First Named Inventor	Guillermo Macias
	Art Unit	2875
	Examiner Name	Hargobind S. Sawhney
	Attorney Docket Number	12-10060-CIP2

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Application Number	15476410
	Filing Date	2017-03-31
	First Named Inventor	Guillermo Macias
	Art Unit	2875
	Examiner Name	Hargobind S. Sawhney
	Attorney Docket Number	12-10060-CIP2

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

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OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/David L. Hoffman/	Date (YYYY-MM-DD)	2018-02-15
Name/Print	David L. Hoffman	Registration Number	32,469

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

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Electronic Patent Application Fee Transmittal

Application Number:	15476410
Filing Date:	31-Mar-2017
Title of Invention:	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY
First Named Inventor/Applicant Name:	Guillermo Macias
Filer:	David L. Hoffman
Attorney Docket Number:	12-10060-CIP2

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	6	50	300
INDEPENDENT CLAIMS IN EXCESS OF 3	2201	1	230	230
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
RCE- 1st Request	2801	1	650	650
		Total in USD ($)		**1180**

Electronic Acknowledgement Receipt	
EFS ID:	31803791
Application Number:	15476410
International Application Number:	
Confirmation Number:	8635
Title of Invention:	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY
First Named Inventor/Applicant Name:	Guillermo Macias
Customer Number:	36212
Filer:	David L. Hoffman
Filer Authorized By:	
Attorney Docket Number:	12-10060-CIP2
Receipt Date:	15-FEB-2018
Filing Date:	31-MAR-2017
Time Stamp:	14:42:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1180
RAM confirmation Number	021618INTEFSW14431700
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment Submitted/Entered with Filing of CPA/RCE	Amendmentof15Feb2018CUTE.pdf	131127 0ab1cfd2003f163b47e91839a8eb08e01ef42ac4	no	14
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	sb0030efs.pdf	1349912 3c38e821119d3d16254f753e051d29b26de379ed	no	3
Warnings:					
Information:					
3	Drawings-only black and white line drawings	AnnotatedDrawingSheetCUTE.pdf	187948 1b2931fc2cd0819aee41d98c9e83e79ca6031eb2	no	1
Warnings:					
Information:					
4	Drawings-other than black and white line drawings	ReplacementDrawingsCUTE.pdf	246833 aa7215a976bbbaa1a235ea0d0ccbdc1c6feac676	no	4
Warnings:					
Information:					
5	Affidavit-not covered under specific rule	ExecutedHoffmanDeclarationCUTE.pdf	5058970 8c14c8438283afd2262a0e33d8bd9b8e8811bddd	no	20
Warnings:					
Information:					
6	Information Disclosure Statement (IDS) Form (SB08)	updated_IDS.pdf	612267 5d3ea60ac968a1cfa7d76b6523668b02644265ec	no	5
Warnings:					
Information:					

7	Fee Worksheet (SB06)	fee-info.pdf	33715 1a86b2307635e10900f183e8182d6f41c7a4993b	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	7620772	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: MACIAS, Guillermo

Serial Number: 15/476,410

Examiner: SAWHNEY, Hargobind S.

Confirmation No.: 8635

Filed: March 31, 2017

Art Unit: 2875

For: **MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Dear Sir or Madam:

Concurrently with the Request for Continued Examination (RCE) submitted herewith, kindly amend the above-identified claims as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Amendments to the Drawings begin on page 10 of this paper and include both an attached replacement sheet and an annotated sheet showing changes

Remarks/Arguments begin on page 11 of this paper.

Amendments to the Specification

Please amend the specification as follows:

Please replace the paragraph beginning at page 31, line 5 with the following paragraph:

Again, luminosity is at least 1000 lumens. Lifespan in Examples 1, 2 and 3 is estimated at 40,000 hours. The tubular light may have a diameter, for example, of 41 mm.

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:

a support structure;

a housing for the support structure;

an array of LED emitting devices mounted on the support structure, wherein the array of LED emitting devices comprise: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; a fourth set of LED emitting elements configured to emit light of at a fourth color; and a fifth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range;

and

a controller coupled to the array of LED emitting devices and operable to receive commands for operating the LED emitting devices, and further comprising an LED driver, said LED driver configured to selectively provide electrical power to the array of LED emitting devices;

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wherein the housing has a linear form factor substantially that of a fluorescent tube having a diameter of no greater than about ~~one and a half inches~~ 41 mm, and further comprising an electrical input connection for receiving ~~an AC~~ input power, wherein said input connection is in electrical communication with the LED driver.

2. (Previously presented) The LED lighting device of Claim 1, wherein the first, second, third and fourth sets of LED light emitting elements are evenly dispersed along the length of the lighting device.

3. (Previously presented) The LED lighting device of Claim 1, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements to selectively produce at least 255 different colors from the lighting device.

4. (Previously presented) The LED lighting device of Claim 3, wherein the LED driver is responsive to DMX signals to selectively produce the at least 255 different colors.

5. (Previously presented) The LED lighting device of Claim 1, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements to selectively produce at least 255 different colors of a color wheel from the lighting device.

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6. (Currently Amended) An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:

   a. a support structure;

   b. a housing for the support structure;

   c. an array of LED emitting devices mounted on the support structure, wherein the array of LED emitting devices comprise: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; and a fourth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range; and

   d. a controller coupled to the array of LED emitting devices and operable to receive commands for operating the LED emitting devices, and further comprising an LED driver, said LED driver configured to selectively provide electrical power to the array of LED emitting devices,

   e. wherein the housing has a linear form factor substantially that of a fluorescent tube having no greater than a length of four feet and a diameter of no greater than about ~~one and a half inches~~ 41 mm, and further comprising an electrical input connection for receiving ~~an AC~~

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input power, wherein said input connection is in electrical communication with the LED driver.

7. (Previously presented) The LED lighting device of Claim 6, wherein the first, second, third, fourth and fifth sets of LED light emitting elements are evenly dispersed along the length of the lighting device.

8. (Previously presented) The LED lighting device of Claim 6, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set, fourth set and fifth set of LED emitting elements to selectively produce at least 255 different colors from the lighting device.

9. (Previously presented) The LED lighting device of Claim 8, wherein the LED driver is responsive to DMX signals to selectively produce the at least 255 different colors.

10. (Previously presented) The LED lighting device of Claim 6, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements to selectively produce at least 255 different colors of a color wheel from the lighting device.

11. (Newly Presented) The LED lighting device of Claim 1, wherein the electrical input connection is adapted for receiving AC input power.

12. (Newly Presented) The LED lighting device of Claim 6, wherein the electrical input connection is adapted for receiving AC input power.

13. (Currently Amended) An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:

a support structure;

a housing for the support structure;

an array of LED emitting devices mounted on the support structure, wherein the array of LED emitting devices comprise: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; a fourth set of LED emitting elements configured to emit light of at a fourth color; and a fifth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range;

and

a controller coupled to the array of LED emitting devices and operable to receive commands for operating the LED emitting devices, and further comprising an LED driver, said LED driver configured to selectively provide electrical power to the array of LED emitting devices;

wherein the housing has a linear form factor substantially that of a fluorescent tube light, and further comprising an electrical input connection for

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receiving input power, wherein said input connection is in electrical communication with the LED driver.

14. (Newly presented) The LED lighting device of Claim 13, wherein the first, second, third and fourth sets of LED light emitting elements are evenly dispersed along the length of the lighting device.

15. (Newly presented) The LED lighting device of Claim 13, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements to selectively produce at least 255 different colors from the lighting device.

16. (Newly presented) The LED lighting device of Claim 13, wherein the LED driver is responsive to DMX signals to selectively produce the at least 255 different colors.

17. (Newly presented) The LED lighting device of Claim 13, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements to selectively produce at least 255 different colors of a color wheel from the lighting device.

18. (Newly Presented) The LED lighting device of Claim 13, wherein the electrical input connection is adapted for receiving AC input power.

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19. (Newly Presented) The LED lighting device of Claim 13, wherein the fluorescent tube light has a substantially T12 form.

20. (Currently Amended) An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:

a. a support structure;

b. a housing for the support structure;

c. an array of LED emitting devices mounted on the support structure, wherein the array of LED emitting devices comprise: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; and a fourth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range; and

d. a controller coupled to the array of LED emitting devices and operable to receive commands for operating the LED emitting devices, and further comprising an LED driver, said LED driver configured to selectively provide electrical power to the array of LED emitting devices,

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e. wherein the housing has a linear form factor substantially that of a fluorescent tube light, and further comprising an electrical input connection for receiving input power, wherein said input connection is in electrical communication with the LED driver.

21. (Newly presented) The LED lighting device of Claim 20, wherein the first, second, third and fourth sets of LED light emitting elements are evenly dispersed along the length of the lighting device.

22. (Newly presented) The LED lighting device of Claim 20, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements to selectively produce at least 255 different colors from the lighting device.

23. (Newly presented) The LED lighting device of Claim 20, wherein the LED driver is responsive to DMX signals to selectively produce the at least 255 different colors.

24. (Newly presented) The LED lighting device of Claim 20, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements to selectively produce at least 255 different colors of a color wheel from the lighting device.

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25. (Newly Presented) The LED lighting device of Claim 20, wherein the electrical input connection is adapted for receiving AC input power.

26. (Newly Presented) The LED lighting device of Claim 20, wherein the fluorescent tube light has a substantially T12 form.

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Amendments to the Drawings:

The attached sheets (4) of replacement drawings include changes to Fig. 9A to 9H, requested by the Examiner. These sheets, which include Figs. 9A-9H, replace the original sheet including Figs. 9A-9H. Changes have been made to show five different LED colors (RGBAW).

Attachment: Replacement Sheets (4)

Annotated Sheet (1) Showing Changes

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REMARKS

Claims 1-26 now stand in the application.

Claims 1 and 6 have minor amendments. New claims 11-26 have been added for emphasis.

Support for the amended and/or new claims may be found in the originally filed claims and/or specification, e.g., as follows:

The "41 mm" recitation in claims 1 and 6 has support in the provisional application, which was incorporated by reference. Accordingly, to put corresponding terms in the current specification, there is also a specification amendment above.

Support for the specification amendment is located in the provisional application, a copy of which is submitted with the accompanying Declaration of Guillermo Macias, Ex. 1: see, FIG. 12. FIG. 12 includes a dimensional diagram and a chart showing the dimensions of the T12 tube light, where dimension C is 41mm.

Dependent claims 11 and 12 are added to recite a peripheral element removed from claims 1 and 6.

New independent claims 13 and 20 are similar to claims 1 and 6, respectively, except that they refer to tubular lights like fluorescent tubes. These claims, like claims 1 and 6, are believed to be patentably distinct from the art of record for similar reasons.

Dependent claims 14-17 and 21-24 are similar to the original sets of dependent claims. Dependent claims 18 and 25 are similar to claims 11 and 12. Dependent claims 19 and 26 recite the T12 format (mentioned in the specification, e.g., p. 20, last 5 lines.

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The drawing amendments are made herein to make the drawings (Figs. 9A to 9H) more clearly agree with the claim language, per the Examiner's request. The attached four sheets of drawings include changes to Figs. 9A to 9H. These four sheets replace the original sheet that included Figs. 9A to 9H. In these figures, illustrative changes have been made to show five different LED colors (RGBAW). The Red, Green and Blue LEDs could be clustered together or separated.

Note that Figures 10A, 10B, etc. already show four types of LEDs C1 to C4.

Accordingly, the replacement drawings are respectfully submitted to overcome the issues.

An information disclosure statement (IDS) is submitted concurrently herewith to bring art cited recently in a prior application to the USPTO's attention in this application.

In view of the above amendments and remarks, reconsideration of the application and allowance of all of the claims are respectfully requested. **If any issues remain which can be resolved by a supplemental response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number indicated below.**

Respectfully submitted,

HOFFMAN PATENT GROUP

Date: Feb. 15, 2018

/David L. Hoffman/
David L. Hoffman
Reg. No. 32,469

Encls.

HOFFMAN PATENT GROUP
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Email: david@dlhpatent.com

QUASAR SCIENCE LLC EXHIBIT 1002
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DocCode – SCORE

SCORE Placeholder Sheet for IFW Content

Application Number: 15476410 Document Date: 02/15/2018

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

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Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/476,410	Filing Date 03/31/2017	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	x $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	x $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	02/15/2018	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 26	Minus	** 20	= 6	x $50 =	300
	Independent (37 CFR 1.16(h))	* 4	Minus	***3	= 1	x $230 =	230
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**530**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SLIE
ARLENE JONES

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/476,410	03/31/2017	2875	1260	12-10060-CIP2	10	2

CONFIRMATION NO. 8635

CORRECTED FILING RECEIPT

36212
HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355

OC000000097570205

Date Mailed: 02/22/2018

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Guillermo Macias, Santa Clarita, CA;

Applicant(s)

Guillermo Macias, Santa Clarita, CA;

Power of Attorney: The patent practitioners associated with Customer Number 36212

Domestic Priority data as claimed by applicant

This application is a CIP of 15/096,549 04/12/2016
which claims benefit of 62/146,551 04/13/2015
and is a CIP of 13/896,868 05/17/2013 PAT 9719642
which claims benefit of 61/648,554 05/17/2012

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/10/2017

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/476,410**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No
**** SMALL ENTITY ****
Title

MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

Preliminary Class

362

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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QUASAR SCIENCE LLC EXHIBIT 1002
Page 201 of 369

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/476,410	03/31/2017	Guillermo Macias	12-10060-CIP2	8635

36212 7590 04/04/2018
HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355

EXAMINER	
SAWHNEY, HARGOBIND S	

ART UNIT	PAPER NUMBER
2875	

NOTIFICATION DATE	DELIVERY MODE
04/04/2018	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

David@DLHpatent.com
DLHpatent@sbcglobal.net
Ruth@DLHpatent.com

Office Action Summary	Application No. 15/476,410	Applicant(s) MACIAS, GUILLERMO	
	Examiner HARGOBIND S. SAWHNEY	Art Unit 2875	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/15/2018*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☐ Claim(s) *1-26* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-26* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *2/15/2018* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *2/15/2018*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

1. The Request for Continued Examination (RCE), and amendment, each filed on February 15, 2018 has been entered. Accordingly:

- Claims 1 and 6 have been amended; new claims 11-26 have been added; and
- Because of further amendment to the previously allowed independent claims 1 and 6, and newly added claims, as discussed above, allowability of all previously filed claims is withdrawn herewith.

Thus, all pending claims 1-26 are examined herewith. .

Claim Objections

2. Claims 13-19 are objected to because of the following informalities:

Claim 13 (amended) is labeled with wrong status. It is a newly added claim.

Due to their dependency on the objected base claim 13, claims 14-19 are necessarily objected.

Appropriate correction is required.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the following as described in the specification.

Each of the amended figures 9A-9H does not show the first, second, third, fourth and fifth set of LEDs as claimed. Only four sets of LEDs are illustrated. One set includes R, G and B LEDs clustered as one set.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the

drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3, 5-8, 10-15, 17-22 and 24-26 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over German Patent No. DE 202009011476 U1 (Sander) in view of US Patent Application Pub. No. US 2007/0262732 A1 (Shen).

Regarding claim 1, Sander discloses a lighting device (Sander, Figure 1) comprising:

- a housing - identified as a tube- capable of enveloping a support – identified as a interposed board- bearing an array of LED- emitting devices 1s and 2s (Sander, Figure 1, English translated abstract and text attached herewith); the array of LED-lighting devices 1s and 2s including LEDs of a first color (red), a second color (blue), a third color (green), a fourth color (yellow) and a fifth color (white) (Sander, Figure 1, English translated abstract and text); the LEDs 1s and 2s being capable of a broad spectrum of white light within a predetermined Kelvin temperature range (Sander, Figure 1, English translated abstract and text attached herewith);

and an electrical power input via voltage regulating electronics 5 (Sander, Figure 1, English translated abstract and text attached herewith).

However, the lighting device disclosed by Sander specifically does not include a controller and a driver as claimed by the Applicant.

On the other hand, Shen discloses an LED tube assembly (Shen, Figure 1a) including: LED tubes, each operationally coupled to a driver 10 capable of providing power to the LED tube with LED array; and controllers 20 and 30 capable of sending signals to the drivers 10s (Shen, Figure 1a, Para. 0021).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the lighting device of Sander by providing the driver and controller with their connections to the LEDs as taught by Shen for benefit and advantage of operating the LED lighting device in controlled manner.

Further Sander discloses the lighting device including the shell enveloping the LEDs as discussed above. However, Sander does not teach the shell has a linear form factor substantially same as that of a fluorescent tube.

On the other hand, Shen discloses the lighting device including a plurality of LED tubes, each a linear form factor substantially same as that of a fluorescent tub, commercially available T12 fluorescent tubes having the diameter as claimed (Shen, Figure 1a, Para. 0004).

It would be have been obvious to one of ordinary skill in the art at the time of the

invention to modify the lighting device of Sander by providing the enclosing shell with the form factor similar to that of a fluorescent tube for the benefits of retrofit options.

Regarding claims 2, 3, 5 and 11, Sander in view of Shen discloses the lighting device further including:

- **Re. Claim 2,** the first, second , third and fourth LED elements are substantially evenly spaced (Sander, Figure 1, English translated abstract and text attached herewith) and in (Shen, Figure 1a);

- **Re. Claim 3,** combination of the first, second, third, fourth and fifth LED light emitter, as applied to claim 1 discussed above, able to produce the claimed number (255) colors with permutation and combination of the activation of LEDs (Sander, Figure 1, English translated abstract and text attached herewith) and in (Shen, Figure 1a); and

- **Re. Claim 5,** combination of the first, second, third, fourth and fifth LED light emitter, as applied to claim 1 discussed above, capable to produce the claimed number (255) colors with permutation and combination of the activation of LEDs of the lighting device with a color wheel well known in the art of illumination (Sander, Figure 1, English translated abstract and text attached herewith) and in (Shen, Figure 1a); and

- **Re. Claim 11,** the electrical power input, via voltage regulating electronics 5, is capable for receiving AC input power- identified as the power supply

provided by a central connection line, (Sander, Figure 1, English translated abstract and text attached herewith).

Regarding claims 6-8, 10 ad 12, Sander in view of Shen discloses the lighting device meets all limitations in similar manner as that applied to claims- 3- 5 and 11 respectively as discussed above.

Regarding claims 13-15 and 17-19, Sander in view of Shen discloses the lighting device meets all limitations in similar manner as that applied to claims 6-10 and 12 respectively as discussed above.

Regarding claims 20-22 and 24-26, Sander in view of Shen discloses the lighting device meets all limitations in similar manner as that applied to claims 6-10 and 12 respectively as discussed above.

6. Claims 4, 9, 16 and 23 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over German Patent No. DE 202009011476 U1 (Sander) in view of US Patent Application Pub. No. US 2007/0262732 A1 (Shen) as applied to claim 3 above, and further in view of US Patent application pub. No. US 2009/0009092 A1 (Routledge).

Sander in view of Shen discloses the LED lighting device including an LED tube operationally coupled to a driver and a controller capable of signaling the LEDs in the LED tube as applied to claim 3 discussed above. However neither individually nor in combination Sander, and Shen teaches the controller producing DMX signals to the driver.

On the other hand, Routledge discloses an LED device 40 (Routledge, Figure 4) including: a plurality of LEDs 42s operationally coupled to a driver 16 and a controller 45 capable of providing DMX signals to the driver 16 (Routledge, Figure 4, Para. 0042).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the lighting device of Sander in view of Shen by providing the DMX signaling controller and coupling to the LED driver as taught by Routledge for the benefits producing signals for production of colors desired.

Regarding each of claims 9, 16 and 23, Sander in view of Shen and Routledge discloses the lighting device meets all limitations in similar manner as that applied to claim 4 as discussed above.

Response to Amendment

6. Applicant's arguments filed on February 15, 2018 with respect to allowability of claims, and submission of RCE and the newly added claims, a new ground(s) of rejections has been necessitated by the amendment. Thus there is no argument requiring response from the Examiner.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to HARGOBIND S. SAWHNEY whose telephone number is 571 272 2380. The examiner can normally be reached on 8:00 AM - 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the examiner's

Supervisor, Mr. Jong-Suk (James) Lee can be reached on 571 272 7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

3/28/2018

/Hargobind S Sawhney/

Primary Examiner, Art Unit 2875

Notice of References Cited	Application/Control No. 15/476,410	Applicant(s)/Patent Under Reexamination MACIAS, GUILLERMO	
	Examiner HARGOBIND S. SAWHNEY	Art Unit 2875	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2007/0262732 A1	11-2007	Shen; Yuh-Ren	G09G3/342	315/312
*	B	US-2009/0009092 A1	01-2009	Routledge; Gordon	H05B33/0866	315/151
*	C	US-2011/0149563 A1	06-2011	Hsia; Chungho	F21V25/04	362/221
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N	DE 20200901176 U1	02-2010	GERMANY	SANDER	
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
*	U	DE 20200901176 U1 ENGLISH TRANSLATION; https://dialog.proquest.com/professional/patenuppatent?accountid=161361
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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BIB DATA SHEET

CONFIRMATION NO. 8635

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/476,410	03/31/2017	362	2875	12-10060-CIP2
	RULE			

APPLICANTS

INVENTORS

Guillermo Macias, Santa Clarita, CA;

**** CONTINUING DATA **************************

This application is a CIP of 15/096,549 04/12/2016
which claims benefit of 62/146,551 04/13/2015
and is a CIP of 13/896,868 05/17/2013 PAT 9719642
which claims benefit of 61/648,554 05/17/2012

**** FOREIGN APPLICATIONS **************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
04/10/2017

Foreign Priority claimed	☐ Yes ☑ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☑ No		CA	13	10	2
Verified and Acknowledged	/HARGOBIND S SAWHNEY/ Examiner's Signature	Initials				

ADDRESS

HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355
UNITED STATES

TITLE

MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

FILING FEE RECEIVED	FEES: Authority has been given in Paper	
1260	No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	**Art Unit**
	HARGOBIND S SAWHNEY	2875

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	01/20/2018	03/29/2018							
	1	=	✓							
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	24		✓							
	25		✓							
	26		✓							

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	15476410
Filing Date	2017-03-31
First Named Inventor	Guillermo Macias
Art Unit	2875
Examiner Name	Hargobind S. Sawhney
Attorney Docket Number	12-10060-CIP2

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7507001	B2	2009-03-24	KIT	
	2	7646029	B2	2010-01-12	MUELLER ET AL.	
	3	9066405	B2	2015-06-23	VAN DE VEN	
	4	9239134	B1	2016-01-19	MACIAS	
	5	9845924	B1	2017-12-19	MACIAS	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20040105261	A1	2004-06-03	DUCHARME ET AL.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.S.S/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15476410
	Filing Date	2017-03-31
	First Named Inventor	Guillermo Macias
	Art Unit	2875
	Examiner Name	Hargobind S. Sawhney
	Attorney Docket Number	12-10060-CIP2

	2	20070228999	A1	2007-10-04	KIT	
	3	20100102729	A1	2010-04-29	KATZIR ET AL	
	4	20130127369	A1	2013-05-23	CAMPBELL ET AL	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature	/HARGOBIND S SAWHNEY/	Date Considered	03/29/2018

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.S.S/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15476410
	Filing Date	2017-03-31
	First Named Inventor	Guillermo Macias
	Art Unit	2875
	Examiner Name	Hargobind S. Sawhney
	Attorney Docket Number	12-10060-CIP2

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.S.S/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15476410
	Filing Date	2017-03-31
	First Named Inventor	Guillermo Macias
	Art Unit	2875
	Examiner Name	Hargobind S. Sawhney
	Attorney Docket Number	12-10060-CIP2

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/David L. Hoffman/	Date (YYYY-MM-DD)	2018-02-15
Name/Print	David L. Hoffman	Registration Number	32,469

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.S.S/

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	19	("20030072156" | "20040257007" | "20070258240" | "20090052204" | "20090109668" | "20100148673" | "20100214779" | "20100289428" | "20100315001" | "20110058365" | "20110084608" | "20110163941" | "20110235318" | "20110285292" | "6720745" | "7180252" | "7476003" | "8203260" | "9057493").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 08:15
S2	1	15/473410	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:15
S3	20	S1 or S2	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:15
S4	8	guillermo macias	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:16
S5	2	(US-9845924-$ or US-9719642-$).did.	USPAT	NEAR	ON	2018/01/20 08:18
S6	22	S3 or S5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:18
S7	22	S3 or S5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:18
S8	0	("15096549").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 09:13
S9	0	15/096549	US-PGPUB;	NEAR	ON	2018/01/20

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			09:14
S10	1	("9719642").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 09:17
S12	23	("20110285292" | "20110084608" | "20110163941" | "20110235318" | "20070258240" | "20100148673" | "7180252" | "8203260" | "9239134" | "20030072156" | "7476003" | "20110058365" | "20130127369" | "7507001" | "20040257007" | "20090052204" | "20090109668" | "20100214779" | "20100315001" | "9057493" | "9066405" | "20100289428" | "6720745").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 12:37
S13	19	("20030072156" | "20040257007" | "20070258240" | "20090052204" | "20090109668" | "20100148673" | "20100214779" | "20100289428" | "20100315001" | "20110058365" | "20110084608" | "20110163941" | "20110235318" | "20110285292" | "6720745" | "7180252" | "7476003" | "8203260" | "9057493").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 12:38
S14	23	S12 or S13	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 12:38
S15	3	(US-20090109668-$).did. or (US-9057493-$ or US-7476003-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 12:52
S16	1	("7507001").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 12:56
S17	2	(("7507001") or ("20030072156")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:02
S18	3	(("7507001") or ("20030072156") or ("20110235318")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:06
S20	5	(("7507001") or ("20030072156") or ("20110235318") or ("20100315001") or ("20100214779")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:10
S21	5	(("7507001") or ("20030072156") or ("20110235318") or ("20100315001") or ("20100214779")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:37
S22	8	((support or ((mounting (structure or element or surface)) or base)) with (array with (light with (diod$3 or chips)))) and ((linear or elongat$4) (housing or casing)) and (fluorescent tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:34

S23	122	((support or ((mounting (structure or element or surface)) or base)) with (array with (light with (diod$3 or chips)))) and ((linear or elongat$4) (housing or casing))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:35
S24	113	S23 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:36
S25	3	S22 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:36
S26	3	(US-20120086345-$).did. or (US-8547036-$ or US-8079731-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 14:37
S27	9	S23 not S24	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:40
S28	14	("20060056855" | "20080310850" | "20090196016" | "20100106306" | "20100141153" | "20100327766" | "20110069960" | "7580643" | "8150269" | "8547036").PN. OR ("9192030").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 14:41
S29	1	(US-20100106306-$).did.	US-PGPUB	NEAR	ON	2018/01/20 14:43
S30	153314	(((light with (diod$3 or chips)) or "LED") with tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:44
S31	14986	(((light with (diod$3 or chips)) or "LED") tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:45
S32	1003	S31 and (array with ((light with (diod$3 or chips)) or "LED"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:47
S33	566	S32 and @ad < "20120517"	US-PGPUB;	NEAR	ON	2018/01/20

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			14:47
S34	1	S32 and @ad < "20120517" and (tubular housing) and control$4 and driver	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:49
S35	4	("20030142047" | "6448718" | "6583775" | "6593919").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 14:55
S36	170922	((F21K9/27 OR F21K9/272 OR F21K9/278 OR F21S4/28 OR F21S9/02 OR F21V7/005 OR F21V9/08 OR F21V23/005 OR F21V23/045 OR F21V23/06 OR F21Y2103/10 OR F21Y2105/10 OR F21Y2107/90 OR F21Y2113/13 OR F21Y2115/10 OR H05B33/0803 OR H05B33/0809 OR H05B33/0815 OR H05B33/0845 OR H05B33/0851 OR H05B33/0854 OR H05B33/0857 OR H05B33/086 OR H05B33/0863 OR H05B37/029).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:59
S37	175	S33 AND S36	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:59
S38	7	(US-20110121756-$ or US-20100176724-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-8115393-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:23
S39	7	(US-20110121756-$ or US-20100176724-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-8115393-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:23
S40	8	S23 and F21K9/$.CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:25
S41	3	S23 and F21V21/$.CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:25
S42	3	S23 and F21V23/$.CPC.	US-PGPUB; USPAT;	NEAR	ON	2018/01/20 15:25

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S43	11	S40 or S41 or S42	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:26
S44	1	15/473410	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S45	20	S13 or S44	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S46	2	(US-9845924-$ or US-9719642-$).did.	USPAT	NEAR	ON	2018/01/20 15:27
S47	22	S45 or S46	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S48	34	S47 or S20 or S26 or S29 or S39	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S49	31	S48 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S50	13	(US-20110285292-$ or US-20110235318-$ or US-20110121756-$ or US-20110058365-$ or US-20100176724-$ or US-20100106306-$ or US-20090109668-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-7507001-$ or US-7476003-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:36
S51	13	(US-20110285292-$ or US-20110235318-$ or US-20110121756-$ or US-20110058365-$ or US-	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:36

		20100176724-$ or US-20100106306-$ or US-20090109668-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-7507001-$ or US-7476003-$).did.				
S52	1	S31 and (array with ((light with (diod$3 or chips)) or "LED")) and (red red and blue and white and green)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:44
S53	78	S30 and (array with ((light with (diod$3 or chips)) or "LED")) and (red red and blue and white and green)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:45
S54	54	S53 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:45
S55	406	S30 and (array with ((light with (diod$3 or chips)) or "LED")) and (red and blue and white and green and amber)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:48
S56	269	S55 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:48
S57	34	S30 and (array with ((light with (diod$3 or chips)) or "LED")) and (first color) and (second color) and (third color) and (fourth color) and white	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:49
S58	26	S57 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:50
S59	0	S50 and (first color) and (second color) and (third color) and (fourth color) and white	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	NEAR	ON	2018/01/20 15:59

			IBM_TDB			
S60	1	S50 and (array with ((light with (diod$3 or chips)) or "LED")) and (red and blue and white and green and amber)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 16:00
S61	2	((row or set) with ((light emitting diode) or "LED") with (first color)) and ((row or set) with ((light emitting diode) or "LED") with (second color)) and ((row or set) with ((light emitting diode) or "LED") with (third color)) and ((row or set) with ((light emitting diode) or "LED") with (fourth color)) and ((row or set) with ((light emitting diode) or "LED") with (white with kelvin))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 16:12
S62	0	(((light with (diod$3 or chips)) or "LED") with tube) and (((row or set) with ((light emitting diode) or "LED") with (first color)) and ((row or set) with ((light emitting diode) or "LED") with (second color)) and ((row or set) with ((light emitting diode) or "LED") with (third color)) and ((row or set) with ((light emitting diode) or "LED") with (fourth color)) and ((row or set) with ((light emitting diode) or "LED") with (white with kelvin)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 16:13
S63	0	((F21K9/27 OR F21K9/272 OR F21K9/278 OR F21S4/28 OR F21S9/02 OR F21V7/005 OR F21V9/08 OR F21V23/005 OR F21V23/045 OR F21V23/06 OR F21Y2103/10 OR F21Y2105/10 OR F21Y2107/90 OR F21Y2113/13 OR F21Y2115/10 OR H05B33/0803 OR H05B33/0809 OR H05B33/0815 OR H05B33/0845 OR H05B33/0851 OR H05B33/0854 OR H05B33/0857 OR H05B33/086 OR H05B33/0863 OR H05B37/029).CPC.) and ((((light with (diod$3 or chips)) or "LED") with tube) and (((row or set) with ((light emitting diode) or "LED") with (first color)) and ((row or set) with ((light emitting diode) or "LED") with (second color)) and ((row or set) with ((light emitting diode) or "LED") with (third color)) and ((row or set) with ((light emitting diode) or "LED") with (fourth color)) and ((row or set) with ((light emitting diode) or "LED") with (white with kelvin))))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 16:15
S66	8	("20070074098" | "4492863" | "6856087" | "6923548").PN. OR ("7476003").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 20:29
S67	2	(US-6923548-$ or US-6856087-$).did.	USPAT	NEAR	ON	2018/01/20 20:32
S68	3	(US-8262249-$ or US-8147091-$ or US-7476003-$).did.	USPAT	NEAR	ON	2018/01/20 20:34

S69	5	S67 or S68	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 20:34
S70	19	("20030072156" | "20040257007" | "20070258240" | "20090052204" | "20090109668" | "20100148673" | "20100214779" | "20100289428" | "20100315001" | "20110058365" | "20110084608" | "20110163941" | "20110235318" | "20110285292" | "6720745" | "7180252" | "7476003" | "8203260" | "9057493").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 20:36
S71	4	S69 not S70	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 20:37
S72	31	("20110285292" | "20110084608" | "20110163941" | "6923548" | "8147091" | "20070228999" | "20110235318" | "6856087" | "20100102729" | "9239134" | "20070258240" | "20100148673" | "7180252" | "8203260" | "20040105261" | "20030072156" | "7476003" | "20130127369" | "9845924" | "20110058365" | "7476003" | "20040257007" | "20090052204" | "20090109668" | "20100214779" | "20100315001" | "9057493" | "7646029" | "9066405" | "20100289428" | "6720745" | "7507001").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/03/27 16:45
S73	10	(US-20100315001-$ or US-20100214779-$ or US-20090109668-$).did. or (US-9845924-$ or US-9057493-$ or US-8147091-$ or US-7476003-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/27 16:59
S74	10	(US-20100315001-$ or US-20100214779-$ or US-20090109668-$).did. or (US-9845924-$ or US-9057493-$ or US-8147091-$ or US-7476003-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/27 16:59
S75	31	("20110285292" | "20110084608" | "20110163941" | "6923548" | "8147091" | "20070228999" | "20110235318" | "6856087" | "20100102729" | "9239134" | "20070258240" | "20100148673" | "7180252" | "8203260" | "20040105261" | "20030072156" | "7476003" | "20130127369" | "9845924" | "20110058365" | "7476003" | "20040257007" |	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/03/27 16:59

		"20090052204" | "20090109668" | "20100214779" | "20100315001" | "9057493" | "7646029" | "9066405" | "20100289428" | "6720745" | "7507001").PN.				
S76	0	15/476410	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 17:35
S77	8119199	(substrate or (circuit board) or (printed circuit board) or "PCB")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:11
S78	793	(red (light with (diodes) or "LEDs")) and (blue (light with (diodes) or "LEDs")) and (green (light with (diodes) or "LEDs")) and (white (light with (diodes) or "LEDs")) and (amber (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:11
S79	344	S77 and S78	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:12
S80	8	((first color) (light with (diodes) or "LEDs")) and ((second color) (light with (diodes) or "LEDs")) and ((third color) (light with (diodes) or "LEDs")) and ((fourth color) (light with (diodes) or "LEDs")) and ((fifth color) (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:14
S81	3	S77 and S80	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:15
S82	220	S77 and S78 and (casing or tube or bulb)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:20
S83	101	S77 and S78 and (casing or tube or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:20

S84	99	S77 and S78 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:23
S85	1	S81 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:24
S86	57	S84 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:26
S87	0	S85 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:26
S88	8119199	(substrate or (circuit board) or (printed circuit board) or "PCB")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:53
S89	793	(red (light with (diodes) or "LEDs")) and (blue (light with (diodes) or "LEDs")) and (green (light with (diodes) or "LEDs")) and (white (light with (diodes) or "LEDs")) and (amber (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:53
S90	99	S88 and S89 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:53
S91	57	S90 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:53
S92	8	((first color) (light with (diodes) or "LEDs")) and ((second color) (light with (diodes) or "LEDs")) and ((third color) (light with (diodes) or "LEDs")) and ((fourth color) (light with (diodes)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	NEAR	ON	2018/03/27 22:53

		or "LEDs")) and ((fifth color) (light with (diodes) or "LEDs"))	DERWENT; IBM_TDB			
S93	3	S88 and S92	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:53
S94	82	(retrofit fluorescent tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:57
S95	331	(retrofit with (fluorescent tube))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:58
S96	4	S95 and S89	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:59
S97	8	(US-20120299476-$ or US-20120206050-$ or US-20100171145-$ or US-20070145915-$ or US-20060187081-$ or US-20060002110-$).did. or (US-RE44903-$ or US-7202613-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/27 23:07
S98	14	(US-20110285292-$ or US-20110058365-$ or US-20100315001-$ or US-20100289428-$ or US-20100214779-$ or US-20100102729-$ or US-20090109668-$).did. or (US-9845924-$ or US-9057493-$ or US-8147091-$ or US-7476003-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/27 23:13
S101	28	S93 or S96 or S97 or S98	US-PGPUB; USPAT	NEAR	ON	2018/03/27 23:15
S103	1758	(red (light with (diodes) or "LEDs")) and (blue (light with (diodes) or "LEDs")) and (green (light with (diodes) or "LEDs")) and (white (light with (diodes) or "LEDs")) and ((amber or yellow) (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:16
S104	441	S103 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:17

S105	3	S103 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4 and S95	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:17
S106	3	(US-20140203716-$ or US-20060002110-$).did. or (US-9357600-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/27 23:18
S107	28	S101 or S106	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:19
S108	28	(US-20140203716-$ or US-20120299476-$ or US-20120206050-$ or US-20110285292-$ or US-20110058365-$ or US-20110037413-$ or US-20100315001-$ or US-20100289428-$ or US-20100214779-$ or US-20100171145-$ or US-20100102729-$ or US-20090109668-$ or US-20070145915-$ or US-20060221606-$ or US-20060187081-$ or US-20060002110-$).did. or (US-9845924-$ or US-9747763-$ or US-9357600-$ or US-9057493-$ or US-RE44903-$ or US-8212466-$ or US-8147091-$ or US-7476003-$ or US-7202613-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/27 23:22
S109	25	S108 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:22
S110	25	S108 and (tube or (tubular (housing or case or casing or envelope or enclosure or capsulent)) or bulb)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:23
S111	99	S88 and S89 and (tube or (tubular (housing or case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:23
S112	0	((red (light with (diodes) or "LEDs")) tube) with ((plurality or different) color "LEDs")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	NEAR	ON	2018/03/28 09:13

			IBM_TDB			
S113	9	(((light with (diodes) or "LEDs")) tube) with ((plurality or different) color "LEDs")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:14
S114	50	((((light with (diode) or "LED")) tube) with (("LEDs" or diodes) with ((plurality or different) colors)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:26
S115	15	S114 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:26
S116	15	(US-20120217772-$ or US-20020145392-$).did. or (US-9493102-$).did. or (CN-202484660-$ or CN-102537680-$ or CN-202115240-$ or CN-101303475-$ or CN-201803298-$ or CN-201740528-$ or CN-201441096-$ or CN-101382263-$ or CN-101303475-$ or CN-2789578-$ or CN-2667289-$ or CN-2275268-$).did.	US-PGPUB; USPAT; FPRS	NEAR	ON	2018/03/28 09:27
S117	15	S116 and (("LEDs" or diodes) with ((plurality or different) colors))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:27
S118	35	S114 not S115	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:32
S119	8119199	(substrate or (circuit board) or (printed circuit board) or "PCB")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:42
S120	793	(red (light with (diodes) or "LEDs")) and (blue (light with (diodes) or "LEDs")) and (green (light with (diodes) or "LEDs")) and (white (light with (diodes) or "LEDs")) and (amber (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:42
S121	8	((first color) (light with (diodes) or "LEDs")) and ((second color) (light	US-PGPUB; USPAT;	NEAR	ON	2018/03/28 09:42

		with (diodes) or "LEDs")) and ((third color) (light with (diodes) or "LEDs")) and ((fourth color) (light with (diodes) or "LEDs")) and ((fifth color) (light with (diodes) or "LEDs"))	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S122	3	S119 and S121	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:42
S123	331	(retrofit with (fluorescent tube))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:42
S124	4	S123 and S120	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:42
S125	8	(US-20120299476-$ or US-20120206050-$ or US-20100171145-$ or US-20070145915-$ or US-20060187081-$ or US-20060002110-$).did. or (US-RE44903-$ or US-7202613-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:42
S126	14	(US-20110285292-$ or US-20110058365-$ or US-20100315001-$ or US-20100289428-$ or US-20100214779-$ or US-20100102729-$ or US-20090109668-$).did. or (US-9845924-$ or US-9057493-$ or US-8147091-$ or US-7476003-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:42
S127	28	S122 or S124 or S125 or S126	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:42
S128	28	(US-20140203716-$ or US-20120299476-$ or US-20120206050-$ or US-20110285292-$ or US-20110058365-$ or US-20110037413-$ or US-20100315001-$ or US-20100289428-$ or US-20100214779-$ or US-20100171145-$ or US-20100102729-$ or US-20090109668-$ or US-20070145915-$ or US-20060221606-$ or US-20060187081-$ or US-20060002110-$).did. or (US-9845924-$ or US-9747763-$ or US-9357600-$ or US-9057493-$ or US-RE44903-$ or US-8212466-$ or US-8147091-$ or US-7476003-$ or US-7202613-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:44
S129	16	S128 and (("LEDs" or diodes) with	US-PGPUB;	NEAR	ON	2018/03/28

		((plurality or different) colors))	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			09:45
S130	13	(US-20120299476-$ or US-20120206050-$ or US-20110285292-$ or US-20100171145-$ or US-20100102729-$ or US-20070145915-$ or US-20060187081-$ or US-20060002110-$).did. or (US-9845924-$ or US-7476003-$ or US-7202613-$ or US-7180252-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:54
S131	1	("9719642").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/28 09:55
S133	14	S130 or S131	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:55
S134	14	(US-20110285292-$ or US-20110058365-$ or US-20100315001-$ or US-20100289428-$ or US-20100214779-$ or US-20100102729-$ or US-20090109668-$).did. or (US-9845924-$ or US-9057493-$ or US-8147091-$ or US-7476003-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:59
S135	22	S133 or S134	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:59
S136	14	S135 and (("LEDs" or diodes) with ((plurality or different) colors))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 10:03
S137	177516	((F21K9/00 OR F21K9/20 OR F21K9/23 OR F21K9/232 OR F21K9/27 OR F21K9/272 OR F21K9/278 OR F21S10/02 OR F21S10/023 OR F21S4/20 OR F21S4/28 OR F21S9/00 OR F21V15/013 OR F21V19/02 OR F21V23/005 OR F21V23/006 OR F21V23/04 OR F21V3/02 OR F21Y2103/10 OR F21Y2105/10 OR F21Y2113/00 OR F21Y2113/10 OR F21Y2113/13 OR F21Y2115/10 OR H05B33/0803 OR F21K9/20 OR F21K9/23 OR F21K9/27 OR F21K9/278 OR F21S10/02 OR F21S4/28 OR	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 12:56

		F21V15/013 OR F21V23/005 OR F21V3/02 OR F21Y2113/10 OR F21Y2115/10 OR H05B33/08 OR H05B37/029 OR H05B33/0809 OR H05B33/081 OR H05B37/02 OR H05B37/0227 OR H05B37/0245 OR H05B37/0254 OR H05B37/029 OR H05B37/029).CPC.)				
S138	793	(red (light with (diodes) or "LEDs")) and (blue (light with (diodes) or "LEDs")) and (green (light with (diodes) or "LEDs")) and (white (light with (diodes) or "LEDs")) and (amber (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 15:48
S139	331	(retrofit with (fluorescent tube))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 15:48
S140	4	S139 and S138	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 15:48
S141	1	("7646029").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/28 16:08
S142	1	("8080819").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/28 16:10
S143	207	("20010032985" | "20010043093" | "20020038157" | "20020044066" | "20020048169" | "20020070688" | "20020074559" | "20020078221" | "20020122309" | "20020130627" | "20020145394" | "20020145869" | "20020152045" | "20020158583" | "20020171927" | "20020176259" | "20030011538" | "20030028260" | "20030057884" | "20030057887" | "20030076281" | "20030100837" | "20030133292" | "20030222587" | "20040036006" | "20040052076" | "20040061106" | "20040090191" | "20040090787" | "20040100204" | "20040105261" | "20040105264" | "20040113568" | "20040116039" | "20040120148" | "20040130909" | "20040178751" | "20040179793" | "20040206970" | "20040212320" | "20040212321" | "20040212993" | "20050006754" | "20050047130" | "20050099824" | "20050116667" | "20050151489" | "20050179041" | "20050213352" | "20050213353" | "20050218838" | "20050218870" | "20050219872" | "20050231133" |	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/03/28 16:16

		"20050236029" | "20050236998" | "20050253533" | "20050264472" | "20050275626" | "20050276053" | "20070001177" | "20070120135" | "4967330" | "5765940" | "5847593" | "6014614" | "6016038" | "6150774" | "6166496" | "6208073" | "6211626" | "6292901" | "6340868" | "6356700" | "6369525" | "6441943" | "6459919" | "6528954" | "6548967" | "6577080" | "6580228" | "6608453" | "6614103" | "6624597" | "6717376" | "6720745" | "6762562" | "6774584" | "6777891" | "6781329" | "6787999" | "6788011" | "6801003" | "6806659" | "6828530" | "6869204" | "6883929" | "6885035" | "6888322" | "6897624" | "6926432" | "6936978" | "6965205" | "6967448").PN. OR ("6969954" | "6975079" | "7009348" | "7015825" | "7204622" | "7227634" | "7233115" | "7233831" | "7246919" | "7256554" | "7281811" | "7318651" | "7318659" | "7348736" | "7352138" | "7354172" | "7358706" | "7364488" | "7367692" | "7410269" | "7458698" | "7459864" | "7473020" | "7476002" | "7482565" | "7484860" | "7503675" | "7505268" | "7510400" | "7511437" | "7515128" | "7520635" | "7521875" | "7522211" | "7540641" | "7542257" | "7543951" | "7543956" | "7545630" | "7550935" | "7557521" | "7604378" | "7618151" | "7621752" | "7631986" | "7658506" | "7659673" | "7667766" | "7703951" | "7710369" | "7731383").PN. OR ("8080819").URPN.				
S144	1	("20100171145").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/28 16:22
S145	1	S144 and control$4 and driver	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:27
S146	1	S144 and driver	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:30
S147	1	S144 and substrate	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:34
S148	16402	((light with (diodes or chips) or	US-PGPUB;	NEAR	ON	2018/03/28

		"LEDs")) with (red and blue and green and white and (amber or yellow))	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			16:39
S149	4478	(((light with (diodes or chips) or "LEDs")) with (red and blue and green and white and (amber or yellow))) and tube	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:39
S150	2866	(((light with (diodes or chips) or "LEDs")) with (red and blue and green and white and (amber or yellow))) and tube and substrate	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:40
S151	1088	(((light with (diodes or chips) or "LEDs")) with (red and blue and green and white and (amber or yellow))) and tube and substrate and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:40
S152	899	(((light with (diodes or chips) or "LEDs")) with (red and blue and green and white and (amber or yellow))) and tube and substrate and driver and control$4 and fluorescent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:41
S153	334	(((light with (diodes or chips) or "LEDs")) with (red and blue and green and white and (amber or yellow))) and tube and substrate and driver and control$4 and (fluorescent tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:41
S154	133	S153 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:43
S155	62	S154 not backlight	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:44
S156	55	S155 not ((light guide) or (wave guide))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	NEAR	ON	2018/03/28 16:44

			IBM_TDB			
S157	0	((((light with diode) or "LED") tube) with (((light with (diodes or chips)) or "LEDs") with (red and blue and green and white and (amber or yellow)))) and tube and substrate and driver and control$4 and (fluorescent tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:18
S158	0	((((light with diode) or "LED") tube) with ((red and blue and green and white and (amber or yellow)) "LED")) and tube and substrate and driver and control$4 and (fluorescent tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:20
S159	1	((((light with diode) or "LED") tube) with ((red and blue and green and white and (amber or yellow))))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:21
S160	6	tube with ((red and blue and green and white and (amber or yellow)) with diodes)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:23
S161	434	(((light with diode) or "LED") tube) and (driver with power) and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:52
S162	72	(((light with diode) or "LED") tube) and (driver with (power (input or connect$3))) and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:52
S163	19	S162 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:53
S164	4	(US-20130294059-$ or US-20130265746-$ or US-20110176297-$).did. or (US-8147091-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 17:56
S165	4	(((light with diode) or "LED") tube) and (driver with (power (input or connect$3))) and control$4 and S164	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:56

S166	1	(US-6270229-$).did.	USPAT	NEAR	ON	2018/03/28 18:15
S167	1	("20110149563").PN.	US-PGPUB	OR	OFF	2018/03/28 18:23
S168	3	DE-202009011476-$.did.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:24
S169	1	(DE-202009011476-$).did.	DERWENT	NEAR	ON	2018/03/28 18:24
S170	2	S167 or S169	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:24
S171	1	(DE-202009011476-$).did.	DERWENT	NEAR	ON	2018/03/28 18:47
S172	0	S171 and (driver with (power (input or connect$3))) and control$4 and S164	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:48
S173	0	S171 and (driver with (power (input or connect$3))) and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:48
S174	0	S171 and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:49
S175	0	S167 and (driver with (power (input or connect$3))) and control$4 and S164	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:49
S176	1	S167 and (driver with (power (input or connect$3))) and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:50
S177	47	(((light with diode) or "LED") tube) and (driver with (power (input or connect$3))) and controller	US-PGPUB; USPAT; USOCR;	NEAR	ON	2018/03/28 18:55

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S178	12	S177 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:56
S179	174	(((light with diode) or "LED") tube) and driver and (power (input or connect$3)) and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:58
S180	51	S179 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:58
S181	39	S180 not S178	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:59
S182	521	(((light with diode) or "LED") tube) and driver and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:21
S183	478	(((light with diode) or "LED") tube) and driver and controller and power	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:22
S184	255	(((light with diode) or "LED") tube) and (driver with power) and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:22
S185	96	S184 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:23
S186	59	S185 not S180	US-PGPUB;	NEAR	ON	2018/03/28

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			19:23
S187	253	S183 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:28
S188	157	S187 not S185	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:28
S189	7	(US-20120188756-$ or US-20110084608-$ or US-20110037907-$).did. or (US-9232578-$ or US-8319433-$ or US-7839559-$ or US-6796685-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 19:36
S190	0	(((light with diode) or "LED") tube) and (driver with power) and controller and S189	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:36
S191	0	((light with diode) or "LED") and (driver with power) and controller and S189	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:42
S192	40412	((light with diode) or "LED") and (driver with power) and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:42
S193	521	(((light with diode) or "LED") tube) and driver and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:44
S194	61	(((light with diode) or "LED") tube) and driver and controller and 362/$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:45
S195	40	S194 and @ad < "20120517"	US-PGPUB;	NEAR	ON	2018/03/28

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			19:45
S196	59	(((light with diode) or "LED") tube) and driver and controller and 315/$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:47
S197	36	S196 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:47
S199	1	("20070262732").PN.	US-PGPUB	OR	OFF	2018/03/29 09:38
S200	1	S199 and driver and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 09:39
S201	1	(DE-202009011476-$).did.	DERWENT	NEAR	ON	2018/03/29 09:57
S202	358993	S199 or (tube and fluorescent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:05
S203	1	("20070262732").PN.	US-PGPUB	OR	OFF	2018/03/29 10:06
S205	1	(US-20070262732-$).did.	US-PGPUB	NEAR	ON	2018/03/29 10:07
S206	358993	S205 or (tube and fluorescent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:07
S207	1	S205 and (tube and fluorescent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:07
S208	0	15/473410 and "DMX"	US-PGPUB; USPAT; USOCR; FPRS;	NEAR	ON	2018/03/29 10:25

			EPO; JPO; DERWENT; IBM_TDB			
S209	0	15/476410 and "DMX"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:25
S210	1	S199 and signal$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:31
S211	126	("DMX" with driver) and "LED"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:33
S212	0	("DMX" with driver) and ("LED" tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:33
S213	0	("DMX" with driver) and (LED tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:34
S214	126	("DMX" with driver) and "LEDs"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:34
S215	44	S214 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:34
S216	4	(US-20090009092-$).did. or (US-9554433-$ or US-8955979-$ or US-8063576-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/29 10:37
S217	4	("DMX" with driver) and S216	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	NEAR	ON	2018/03/29 10:37

			IBM_TDB			
S218	11	("20040105261" | "20040135524" | "20060220571" | "6473065" | "7161556").PN. OR ("8063576").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/03/29 10:40
S219	11	(US-20060220571-$ or US-20040135524-$ or US-20040105261-$).did. or (US-D800367-$ or US-9520742-$ or US-D706480-$ or US-D705976-$ or US-D705975-$ or US-8337068-$ or US-7161556-$ or US-6473065-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/29 10:40
S220	0	("DMX" with driver) and S219	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:40

3/29/2018 4:05:58 PM
C:\Users\hsawhney\Documents\EAST\Workspaces\15476410 MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	Art Unit
	HARGOBIND S SAWHNEY	2875

CPC- SEARCHED		
Symbol	Date	Examiner
F21K9/27; F21K9/278; F21S4/28; F21V9/08; F21V23/005; F21V23/045; F21V23/06; F21Y2103/10; F21Y2105/10; F21Y2113/13; F21Y2115/10; H05B33/0803; H05B33/0809; H05B33/0815; H05B37/029	1/20/2018	HSS
F21K9/20; F21K9/23; F21K9/27; F21K9/278; F21S10/023; F21S4/28; F21S9/00; F21V15/013; F21V23/005; F21V3/02; F21Y2113/10; F21Y2115/10; H05B37/029; H05B33/0809; H05B33/0815; H05B37/02; H05B37/029	3/28/2018	HSS

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner
F21K9; F21S4; F21S9; F21S10; F21V3; F21V15; F21V19; F21V23; F21Y2103; F21Y2105; F21Y2113; F21Y2115; H05B33; H05B37	3/28/2018	HSS

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner
US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB; Forward/ backward Text Search; Inventor name search, and Text search History Printout attached.	3/28/2018	HSS

INTERFERENCE SEARCH	

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
Interference Search History printout is attached herewith.		1/20/2018	HSS

UNITED STATES PATENT AND TRADEMARK OFFICE

USPTO Automated Interview Request (AIR)

May 17 2018

This paper requesting to schedule and/or conduct an interview is appropriate because:

This submission is requested to be accepted as an authorization for this interview to communicate via the internet. Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with the undersigned concerning scheduling of the interview via video conference, instant messaging, or electronic mail, and to conduct the interview in accordance with office practice including video conferencing.

Name(s):
Nicholas Whitelaw

S-signature:
/Nicholas Whitelaw/

Registration Number:
36418

U.S. Application Number:
15476410

Confirmation Number:
8635

E-mail Address:
nwhitelaw@dwpatentlaw.com

Phone Number:
7035838300

Proposed Time of Interview:
5-30-2018 11:00 AM ET

Alternative Proposed Time(s) of Interview:
ET
Alternative Proposed Time(s) of Interview:
ET
Prefered Interview Type:
In-person

I am the applicant or applicant's representative for this application.

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PALM-SILVER

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. Serial No.	**:**	**15/476,410**
1st Named Inventor	**:**	**Macias, Guillermo**
Filed	**:**	**March 31, 2017**
Title	**:**	**Multicolored Tube Light with Improved LED Array**
TC/A.U.	**:**	**2875**
Examiner	**:**	**Sawhney**
Confirmation No.	**:**	**8635**
Docket No.	**:**	**12-10060-CIP2**
Customer No.	**:**	**36212**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AND RESPONSE TO OFFICE ACTION DATED APRIL 4, 2018

Sir:

This paper is filed in response to the Office Action dated April 4, 2018 issued in the above-identified U.S. patent application. In view of the following remarks and amendments to the claims, reconsideration of the application is respectfully requested.

Amendments to the Claims begin on page 2 of this paper.

Amendments to the Drawings begin on page 12 of this paper.

Remarks/Arguments begin on page 13 of this paper.

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:

a support structure;

a housing for the support structure;

an array of LED emitting devices mounted on the support structure, wherein the array of LED emitting devices is configured to emit five different colors of light and comprises ~~comprise~~: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; a fourth set of LED emitting elements configured to emit light of at a fourth color; and a fifth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range; and

a controller coupled to the array of LED emitting devices and configured ~~operable~~ to receive commands for operating select ones of the LED emitting devices with varying amounts of power to produce light consisting of varying amounts of the five different colors provided by the first, second, third, fourth, and fifth sets of LED emitting elements to produce many different colors outputted from the lighting device, and further comprising an LED driver, ~~said~~ the LED driver configured to selectively provide electrical power to the array of LED emitting devices;

wherein the housing has a linear form factor substantially that of a fluorescent tube having an axial direction and having a diameter of no greater than about 41 mm, and further comprising an electrical input connection for receiving input power, wherein ~~said~~ the input connection is in electrical communication with the LED driver, and

wherein the housing has opposite ends and the support structure is in a form of an elongated and narrow surface extending in the axial direction and the housing having a top side and a bottom side which each extend in the axial direction, and wherein the

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LEDs are configured to emit light from the top side of the housing along a length of the housing between the opposite ends, and the top side of the housing has a diffusion cover extending the axial length of the support between the ends.

2. (Currently amended) The LED lighting device of Claim 1, wherein the first, second, third, ~~and~~ fourth and fifth sets of LED light emitting elements are in multiple rows and evenly dispersed along the length of the ~~lighting device~~ housing.

3. (Currently amended) The LED lighting device of Claim 1, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set, ~~and~~ fourth set and fifth set of LED emitting elements in increments of about 1/255 to selectively produce at least 255 different colors from the lighting device.

4. (Currently amended) The LED lighting device of Claim 3, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set, ~~and~~ fourth set and fifth set of LED emitting elements in response ~~is responsive~~ to DMX signals from an external computer console or lighting control board to selectively ~~power the~~ produce the at least 255 different colors of an entertainment industry color wheel emitted from the lighting device.

5. (Currently amended) The LED lighting device of Claim 1, wherein ~~the LED driver is adapted for selectively driving each of the first set, second set, third set, fourth set of LED emitting elements to selectively produce at least 255 different colors of a color wheel from the lighting device~~ the electrical input connection is configured to receive AC input power and has at least one of an inverter and a power supply in the housing and the LED driver is in the housing.

6. (Currently Amended) An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:

a. a support structure;

b. a housing for the support structure;

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c. an array of LED emitting devices mounted on the support structure, wherein the array of LED emitting devices is configured to emit four different colors of light and comprises ~~comprise~~: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; and a fourth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range; and

d. a controller coupled to the array of LED emitting devices and configured ~~operable~~ to receive commands for operating select ones of the LED emitting devices with varying amounts of power to produce light consisting of varying amounts of the four different colors provided by the first, second, third, and fourth sets of LED emitting elements to produce many different colors outputted from the lighting device, and further comprising an LED driver, ~~said~~ the LED driver configured to selectively provide electrical power to the array of LED emitting devices,

e. wherein the housing has a linear form factor substantially that of a fluorescent tube of one of a T12 and T8 form, and having ~~no greater than~~ a length of no greater than about four feet and a diameter of no greater than about 41 mm, and further comprising an electrical input connection for receiving input power, ~~wherein said input connection is in electrical communication with the LED driver~~and

f. wherein the input connection is in electrical communication with the LED driver, wherein the housing has opposite ends and the support surface is in a form of an elongated and narrow surface extending in the axial direction, and the housing having a top side and a bottom side which each extend in the axial direction, and wherein the LEDs are configured to emit light from the top side of the housing along a length of the housing between the opposite ends, and the top side of the housing has a diffusion cover extending the axial length of the support between the ends.

7. (Currently amended) The LED lighting device of Claim 6, wherein the first, second, third, and fourth ~~and fifth~~ sets of LED light emitting elements are in multiple rows and evenly dispersed along the length of the ~~lighting device~~ housing.

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8. (Currently amended) The LED lighting device of Claim 6, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set, and fourth set ~~and fifth set~~ of LED emitting elements in increments of about 1/255 to selectively produce at least 255 different colors from the lighting device.

9. (Currently amended) The LED lighting device of Claim 8, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set, ~~and~~ fourth set and fifth set of LED emitting elements in response ~~is responsive~~ to DMX signals from an external computer console or lighting control board to selectively ~~power the~~ produce the at least 255 different colors of an entertainment industry color wheel emitted from the lighting device.

10. (Currently amended) The LED lighting device of Claim 6, wherein ~~the LED driver is adapted for selectively driving each of the first set, second set, third set, fourth set of LED emitting elements to selectively produce at least 255 different colors of a color wheel from the lighting device~~ the electrical input connection is configured to receive AC input power and has at least one of an inverter and a power supply in the housing and the LED driver is in the housing.

11. (Currently amended) The LED lighting device of Claim 1, wherein the electrical input connection is ~~adapted for receiving~~ configured to receive AC input power and has at least one of an inverter and a power supply in the housing.

12. (Currently amended) The LED lighting device of Claim 6, wherein the electrical input connection is ~~adapted for receiving~~ configured to receive AC input power and has at least one of an inverter and a power supply in the housing.

13. (Currently amended) An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:

a support structure;

a housing for the support structure;

an array of LED emitting devices mounted on the support structure, wherein the array of LED emitting devices is configured to emit five different colors of light and comprises ~~comprise~~: a first set of LED emitting elements configured to emit light of a first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; a fourth set of LED emitting elements configured to emit light of at a fourth color; and a fifth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range; and

a controller coupled to the array of LED emitting devices and configured ~~operable~~ to receive commands for operating select ones of the LED emitting devices with varying amounts of power to produce light consisting of varying amounts of the five different colors provided by the first, second, third, fourth, and fifth sets of LED emitting elements to produce many different colors outputted from the lighting device, ~~said~~ and an LED driver configured to selectively provide electrical power to the array of LED emitting devices;

wherein the housing has a linear form factor substantially that of one of a T12 and T8 form, and fluorescent tube light, and further comprising an electrical input connection for receiving input power, wherein ~~said~~ the input connection is in electrical communication with the LED driver, and

wherein the housing has opposite ends and the support structure is in a form of an elongated and narrow surface extending in the axial direction and the housing having a top side and a bottom side which each extend in the axial direction, and wherein the LEDs are configured to emit light from the top side of the housing along a length of the housing between the opposite ends, and the top side of the housing has a diffusion cover extending the axial length of the support between the ends.

14. (Currently amended) The LED lighting device of Claim 13, wherein the first, second, third, fourth and fifth ~~and fourth~~ sets of LED light emitting elements are in multiple rows and evenly dispersed along the length of the lighting device.

15. (Currently amended) The LED lighting device of Claim 13, wherein the LED

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driver is adapted for selectively driving each of the first set, second set, third set, fourth and fifth ~~and fourth~~ set of LED emitting elements in increments of about 1/255 to selectively produce at least 255 different colors from the lighting device.

16. (Currently amended) The LED lighting device of Claim ~~13~~15, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set, ~~and~~ fourth set and fifth set of LED emitting elements in response ~~is responsive~~ to DMX signals from an external computer console or lighting control board to selectively ~~power the~~ produce the at least 255 different colors of an entertainment industry color wheel emitted from the lighting device.

17. (Currently amended) The LED lighting device of Claim 13, wherein ~~the LED driver is adapted for selectively driving each of the first set, second set, third set, fourth set of LED emitting elements to selectively produce at least 255 different colors of a color wheel from the lighting device~~ the electrical input connection is configured to receive AC input power and has at least one of an inverter and a power supply in the housing and the LED driver is in the housing.

18. (Currently amended) The LED lighting device of Claim 13, wherein the electrical input connection is ~~adapted for receiving~~ configured to receive AC input power.

19. (Previously presented) The LED lighting device of Claim 13, wherein the fluorescent tube light has a substantially T12 form.

20. (Currently Amended) An LED lighting device configured for providing light suitable for a commercial image recording, the LED lighting device comprising:

a. a support structure;

b. a housing for the support structure;

c. an array of LED emitting devices mounted on the support structure, wherein the array of LED emitting devices is configured to emit four different colors of light and comprises ~~comprise~~: a first set of LED emitting elements configured to emit light of a

first color; a second set of LED emitting elements configured to emit light of a second color; a third set of LED emitting elements configured to emit light of a third color; and a fourth set of LED emitting elements configured to emit a broad-spectrum white light within a predetermined Kelvin temperature range; and

d. a controller coupled to the array of LED emitting devices and configured ~~operable~~ to receive commands for operating select ones of the LED emitting devices with varying amounts of power to produce light consisting of varying amounts of the five different colors provided by the first, second, third, and fourth sets of LED emitting elements to produce many different colors outputted from the lighting device which are uniform in color, ~~said~~ and an LED driver configured to selectively provide electrical power to the array of LED emitting devices,

e. wherein the housing has a linear form factor substantially that of a fluorescent tube light of one of a T12 and T8 form, and further comprising an electrical input connection for receiving input power, wherein ~~said~~ the input connection is in electrical communication with the LED driver, and

f. wherein the housing has opposite ends and the support structure is in a form of an elongated and narrow surface extending in the axial direction and the housing having a top side and a bottom side which each extend in the axial direction, and wherein the LEDs are configured to emit light from the top side of the housing along a length of the housing between the opposite ends, and the top side of the housing has a diffusion cover extending the axial length of the support between the ends.

21. (Previously presented) The LED lighting device of Claim 20, wherein the first, second, third and fourth sets of LED light emitting elements are in multiple rows and evenly dispersed along the length of the lighting device.

22. (Currently amended) The LED lighting device of Claim 20, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements in increments of about 1/255 to selectively produce at least 255 different colors from the lighting device.

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23. (Currently amended)) The LED lighting device of Claim ~~20~~22, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set, ~~and~~ fourth set and fifth set of LED emitting elements in response ~~is responsive~~ to DMX signals from an external computer console or lighting control board to selectively ~~power the~~ produce the at least 255 different colors of an entertainment industry color wheel emitted from the lighting device.

24. (Previously presented) The LED lighting device of Claim 20, wherein the LED driver is adapted for selectively driving each of the first set, second set, third set and fourth set of LED emitting elements to selectively produce at least 255 different colors of a color wheel from the lighting device.

25. (Currently amended) The LED lighting device of Claim 20, wherein the electrical input connection is ~~adapted for receiving~~ configured to receive AC input power and has at least one of an inverter and a power supply in the housing and the LED driver is in the housing.

26. (Previously presented) The LED lighting device of Claim 20, wherein the fluorescent tube light has a substantially T12 form.

27. (Newly presented) The LED lighting device of Claim 1, wherein the fluorescent tube light has a substantially T12 form.

28. (Newly presented) The LED lighting device of Claim 1, wherein the fluorescent tube light has a substantially T12 form and is about one to four feet long.

29. (Newly presented) The LED lighting device of Claim 6, wherein the fluorescent tube light has a substantially T12 form and is about one to four feet long.

30. (Newly presented) The LED lighting device of Claim 13, wherein the fluorescent tube light has a substantially T12 form and is about one to four feet long.

31. (Newly presented) The LED lighting device of Claim 20, wherein the fluorescent tube light has a substantially T12 form and is about one to four feet long.

32. (Newly presented) The LED lighting device of Claim 1, wherein at least one of the colors of the LEDs is amber.

33. (Newly presented) The LED lighting device of Claim 6, wherein at least one of the colors of the LEDs is amber.

34. (Newly presented) The LED lighting device of Claim 13, wherein at least one of the colors of the LEDs is amber.

35. (Newly presented) The LED lighting device of Claim 20, wherein at least one of the colors of the LEDs is amber.

36. (Newly presented) The LED lighting device of Claim 1, wherein the first, second, third and fourth LEDs are red, green, blue and amber, respectively.

37. (Newly presented) The LED lighting device of Claim 13, wherein the first, second, third and fourth LEDs are red, green, blue and amber, respectively.

38. (Newly presented) The LED lighting device of Claim 1, wherein among the colors the driver is configured to selectively produce are white light in each of daylight and tungsten temperature ranges.

39. (Newly presented) The LED lighting device of Claim 6, wherein among the colors the driver is configured to selectively produce are white light in each of daylight and tungsten temperature ranges.

40. (Newly presented) The LED lighting device of Claim 13, wherein among the

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colors the driver is configured to selectively produce are white light in each of daylight and tungsten temperature ranges.

41. (Newly presented) The LED lighting device of Claim 20, wherein among the colors the driver is configured to selectively produce are white light in each of daylight and tungsten temperature ranges.

42. (Newly presented) The LED lighting device of Claim 1, wherein the first, second, third, fourth and fifth LEDs are arranged substantially in a repeating matrix pattern along the length of the axial direction.

43. (Newly presented) The LED lighting device of Claim 6, wherein the first, second, third, and fourth LEDs are arranged substantially in a repeating matrix pattern along the length of the axial direction.

44. (Newly presented) The LED lighting device of Claim 13, wherein the first, second, third, fourth and fifth LEDs are arranged substantially in a repeating matrix pattern along the length of the axial direction.

45. (Newly presented) The LED lighting device of Claim 20, wherein the first, second, third, and fourth LEDs are arranged substantially in a repeating matrix pattern along the length of the axial direction.

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Amendments to the Drawings:

Please kindly amend Figures 9A-9H of the drawings to remove the circles around the letters RGB as shown on the attached replacement sheets, and attached annotated sheet.

Attachment: Replacement sheets and annotated sheet

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REMARKS/ARGUMENTS

Introduction

By the present amendment various claims including all of the independent claims have been amended. Claims 1-45 are pending. New claims 27-45 have been added. Exemplary support for the claim amendments is shown in a chart of support appended hereto. The drawings have been amended as agreed to in the interview.

Interview

The Examiner is thanked for the courtesies extended during the interview that took place on May 30, 2018 at 11 am. During the interview, the objections and rejections set forth in the last rejection were discussed.

DRAWINGS: Initially the objections to the drawings were discussed. The Applicant noted that the drawings show five different types of LEDs, each type producing a different color, namely red, green, blue, white and amber. Applicant has chosen to show the red, green and blue LEDs being arranged in groups with a red, a green and a blue LED located physically near each other. However, five sets of LEDs are shown, one per color. The Examiner suggested that removing the circles around the letters RBG would overcome the rejection. The Applicant has amended the drawings as suggested.

PRIOR ART: The Applicant also noted that with regard to the prior art, the Examiner has noted that German Patent No. DE 202009011476 U1 (Sander) discloses the availability of five different colors of lights. However, Sander only discloses white LEDs and one other color being mounted at any given time. Reference numeral 1 points to four LEDs all of which are emitting white light. Reference numeral 2 points to two LEDs

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which both are emitting the same color. It appears that these two identical color LEDs 2 would be chosen from available colors listed in Sander.

Shen, the secondary reference, only shows 3 colors of LEDs, red, green and blue. This device is for backlighting inside an LCD display device (e.g., a TV) or the like. Whether taken individually, or in combination, the references do not disclose or suggest the five colors recited in claim 1. In addition, Applicant notes that the Examiner's reasons for allowance, set forth in the Notice of Allowance still apply to the current claim set. The Examiner kindly provided a copy of a translation of the primary reference. Agreement was not reached regarding grounds of patentability.

Claim Objections

The claims have been objected to as having incorrect status identifiers. A new claim set is now provided with correct status identifiers.

Drawing Objections

Figures 9A-9H of the drawings have been objected to as not showing sets of lights as claimed. The drawings have been amended to show the sets of lights in the manner agreed to in the interview.

Claim Amendments

The independent claims have been amended to emphasize the use of four or five different color emitting LEDs which together make many colors uniformly emitted from the lighting device. One of the colors is broad-spectrum white light which is important in the entertainment industry. The claims have also been amended to emphasize structure to selectively drive the LEDs with varying power to create different color mixes. In a preferred embodiment, there are at least 255 different colors. This enables the lighting device to be controlled by a lighting device with color wheel enabled controls. In the

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entertainment industry, which uses the color wheel, it is quite an achievement for a fluorescent form factor LED light to provide that much color in a suitable output.

The LEDs are laid out in multiple rows in a repeating matrix. The claims have been further amended to recite that the housing has a support structure extending for along the axial length and the LEDs emit light from a top side of the support structure and housing along the axial length, and a diffusion cover is on the top side from which light is emitted.

This combination of elements achieves an elongate tubular lighting device that is very useful in the entertainment industry. Moreover, in another preferred embodiment, this lighting device achieves daylight and tungsten (temperature range) white light settings which makes the light very useful for e.g., filming different scenes. Achieving these two temperature ranges of white light, as well as the broad color ranges, is very significant.

Claim Rejections Under 35 U.S.C. 103

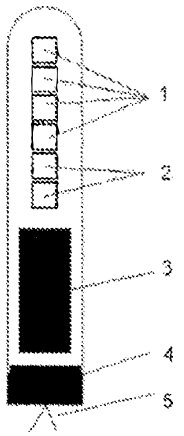
Claims 1-3, 5-8, 10-15, 17-22 and 24-26 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Sander in view of U.S. Patent Application Pub. No. US 2007/0262732 A1 (Shen). In the Action, Sander is cited as the primary reference. It is acknowledged in the Action that Sander does not disclose a controller and driver as claimed by Applicant. In the Action, such a feature is considered obvious in view of Shen. This rejection is respectfully traversed, and further overcome by the above amendments.

The Patent Office has the initial burden of showing a *prima facie* case of obviousness. See *In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006). In order to establish a *prima facie* case of obviousness, each and every limitation of the claims must be considered. See M.P.E.P. § 2143.03 citing *In re Wilson*, 424 F.2d 1382, 1385, 165

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USPQ 494, 496 (CCPA 1970). There must be an apparent reason for one of ordinary skill in the art to combine known elements in the fashion claimed by the patent at issue. This analysis should be made explicit. See *KSR International Co. v. Teleflex Inc.*, 127 U.S. 1727, 1732 (2007), citing *In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006).

At the interview, the Examiner noted that Sander discloses availability of five different colors of lights. However, Sander only discloses white and one other color being mounted at any given time. Sander has only one drawing, copied below:



Sander's Only Drawing

Reference numeral 1 points to four (4) LEDs. All four of these LEDs generate white light. See, on the translation provided by the Patent Office, the "List of Reference Numbers" copied below. Numeral 1 is "LED white / warm white." Accordingly, there are four (4) warm white LEDs 1.

LIST OF REFERENCE NUMBERS

1 : LED white / warm white 2: LED color 3: Electronics for voltage regulation 4: Plug watertight 5: Connecting cables

Reference numeral 2 points to two LEDs generating a single color, and presumably this single color would be chosen from the available colors mentioned in Sander's text.

Shen does not overcome the shortcomings of Sander. Specifically, Sander only shows three (3) colors: red, green and blue. Whether taken individually, or in combination, Sander and Shen do not disclose or suggest the four (4) colors as recited in claims 6 and 20 or the five (5) colors as recited in claims 1 and 13. This position has been confirmed by the translation of Sander which discloses different lamps which may be assembled with colored LEDs but not a single lamp with multiple different colored LEDs, as claimed.

Moreover, one of ordinary skill in the art would not modify Sander by Shen's teachings. Sander is an external light, while Shen is for lighting for scanning inside a TV or the like. It would take quite a substantial redesign of Shen without any clear suggestion to modify Sander by Shen to add in three more colors.

Figs. 1b and 7 of Sander (reproduced below) show that the LCD device provides LEDs that face away from a diffusion sheet. The LEDs are for backlight. There is no housing for each diffusion sheet, and certainly not one oriented in the claimed manner. Sander's light provides light from an upper end of the tube. As disclosed at paragraph 0002, "The light-active region of the glass bulb looks out of the top of the metal tube…." In Sander, the top is the upper end, given the orientation of the drawing. The light is not emitted along the length of the tube between the ends, just in one direction. The claimed orientation is of importance in the entertainment industry. The Sander light would have no use in the entertainment industry. How and why one would possibly modify Sander by the teachings of Shen is not obvious to one of ordinary skill in the art.

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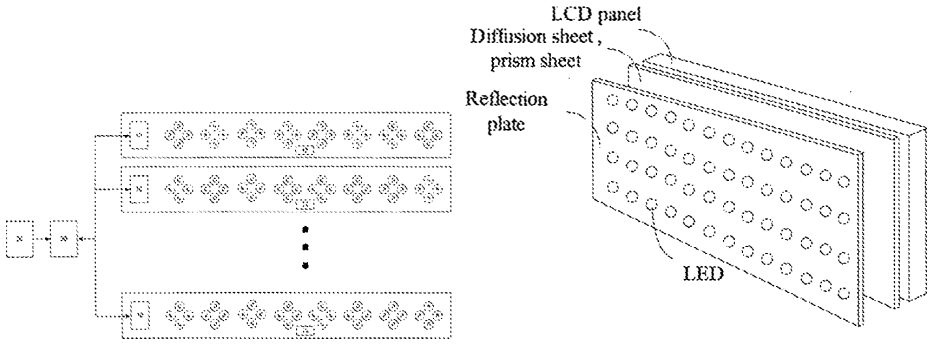


FIG. 7

In addition, even assuming for purposes of argument that one would attempt to put the RGB chip of Shen inside Sander's device, the light would be output from an upper end of the device as taught by Sander.

Sander does not teach a repeating matrix. Sander is not worried about emitting uniform light.

Further, the claims have been amended to specify that the controller coupled to the array of LED emitting devices is configured to receive commands for operating select ones of the LED emitting devices to produce light consisting of the four different colors (or five in claims 1 and 13) established by the first, second, third, and fourth sets (five sets in claims 1 and 13) of LED emitting elements, and further comprising an LED driver, the LED driver configured to selectively provide electrical power to the array of LED emitting devices. Sander and Shen, whether considered singly or in combination, do not disclose this claimed selective powering.

All of the independent claims recite that the tubular lighting device is no more than about 41 mm wide. Claims 6, 13 and 20 specifically recite that the tubular lighting device is in a T8 or T12 form factor. These sizes leave very little room for various types of LEDs. The inventor has managed to create a lighting device that can achieve 255 different color outputs that appear to the naked eye as uniform and that are DMX

controllable, in this limited form factor. Use, particularly of the five different colors (broad spectrum white light, red, green, blue and amber) enables 255 quality output different colors suitable for use in the entertainment industry. Neither Sander nor Shen teach such a lighting device, alone or in combination.

Moreover, various dependent claims emphasize additional important aspects of the invention. Dependent claims 2, 7, 14 and 21 recite that the colored LEDs are in multiple rows evenly dispersed along the length of the lighting device. Sander teaches unevenly dispersing the LED colors because white are on one side, and colored LEDs are on another side. Further, Sander teaches only one row of LEDs.

Dependent claims 3, 8, 15 and 22 recite that the LEDs are powered in increments of 1/255 (rather than the customary 1/100) in order to achieve the 255 colors. Sander and Shen have no such teaching.

Claims 4, 9, 16 and 23 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over German Patent No. DE 202009011476 U1 (Sander) in view of U.S. Patent Application Pub. No. US 2007/0262732 A1 (Shen) as applied to claim 3 above, and further in view of US Patent Application Pub. No. US 2009/0009092 A1 (Routledge). These claims should be considered allowable at least by virtue of their dependencies. Moreover, to the extent that this rejection may apply to any of the dependent claims regarding DMX and/or the color wheel of 255 colors, application of the color wheel and DMX to achieve 255 different colors is not something one of ordinary skill in the art would consider possible in the limited cross sectional area of about 41 mm or T8 or T12 form. Further, this variety of different colors enables the lighting device to be effectively controlled by a computer console or lighting control board which is color wheel enabled.

Dependent claims 5, 10, 17 and 25 recite that the electrical input connection receives AC power and that there is an onboard inverter and/or power supply, and the LED driver is onboard. Again, there is very limited space in a T8 or T12 form or about 41

mm cross section. One of ordinary skill in the art would not think to achieve this structure in combination with the structure of the independent claims.

Dependent claims 26 and 27 emphasize the T12 form factor. Dependent claims 28 to 31 emphasize the T12 form factor in combination with the length of about one to four feet, which emphasizes the elongate tubular shape (where the length is long in comparison to the width). For the reasons state about, one would not have found it obvious to put the structure of the independent claims into this form factor.

Dependent claims 32-35 emphasize that the LEDs include amber. Amber is important, at least in some embodiments, to achieving a full spectrum for the color wheel.

Dependent claims 36-37 emphasize the five different colors of LEDs on the tubular light (white is already recited in the independent base claims 1 and 13).

Dependent claims 38-41 emphasize that the lighting devices produce two types of temperature white light, which two are the most commonly used in the entertainment industry, tungsten and daylight temperature ranges. Producing a light that achieves two different types of temperature white light, along with multiple colors, would not have been obvious to one of ordinary skill in the art. The purposes of variations in colored light and two different temperature white lights are quite different. Moreover, achieving this combination in the recited form factor is a further indication of nonobviousness.

Dependent claims 42-45 recite that the different types of LEDs are disposed in a repeating matrix along the axial direction. Sander lacks any such teaching.

Based on the above remarks, agreements made in the interview and amendments to the drawings and claims, the Applicant respectfully submits that the present invention is patentably defined over the prior art of record such that allowance of all claims and passage of the application to issue are respectfully requested. If the Examiner should have any additional questions or concerns regarding this matter, the Examiner is cordially

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invited to contact the undersigned at the number provided below in order to further prosecution.

Respectfully submitted,

Date: July 5, 2018

/David L. Hoffman/
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Reg. No 32,469

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Email: david@dlhpatent.com

Support For Amendments

Claim element	Exemplary Specification and/or Drawing
Four or five different color LEDs	E.g., Figs. 9A – 9H and 10A – 10D
Controller selectively varying power to the four or five different LEDs to provide different colors	E.g., Figs. 11A, 11B, p. 33. lines 1-7 (LEDs capable of different intensities and control of output of LEDs); e.g., p. 35, sixth line from bottom to p. 36, line 7 (color mixing providing about 255 color hues and suitable for the entertainment industry; bottom of p. 44 to top of p. 55
Housing with elongate support structure extending axially and having top and bottom with LEDs emitting light from top along its length	E.g., original claims 1 and 6, e.g., p. 18, paragraph beginning at line 7, Figs. 9A – 9H and 10A – 10D and Figs. 3, 4, 4A, 13, 14A, 14B, and p. 21, line 2 ("diffusor shade [24] fits on top of the housing")
LED driver in housing	E.g., p. 20, 8th line from bottom ("onboard electronics including an LED driver and an inverter or power supply")
Controller in housing	E.g., p. 37, line 13
Inverter or power supply in housing	E.g., p. 20, 8th line from bottom ("onboard electronics including an LED driver and an inverter or power supply")
Multiple rows of LEDs	E.g., Figs. 9A-9H and 10A-10D
RGBAW	E.g., Figs. 9A-9H and p. 13, middle
At least one color is white	E.g., Figs. 9A-9H and p. 36, lines 1-7
At least one color is amber	E.g., Figs. 9A-9H and p. 13, middle
About 12" to 48" length	E.g., p. 48, item (c)
White light each of daylight and tungsten temperature ranges output achieved by white plus amber	E.g., p. 44, lines 1-8

Top side of housing has a diffusion cover extending the axial length of the support between the ends	E.g., p. 41, 6th line from bottom to 3rd line from bottom
T12 and/or T8 form factor	E.g., p. 26, 7th line from the bottom, and e.g., p. 48, line 8
Light output "Uniform in color" (defined as to the naked eye)	E.g., p. 35, 6th line from the bottom to 3rd line from the bottom
Driver responds in increments of a little under 0.4% (rather than standard 1%), which provides the 255 colors	E.g., p. 13, 9th line from bottom to 4th line from bottom
LEDs in a repeating matrix pattern	E.g., p. 33, paragraph starting at 8th line from bottom

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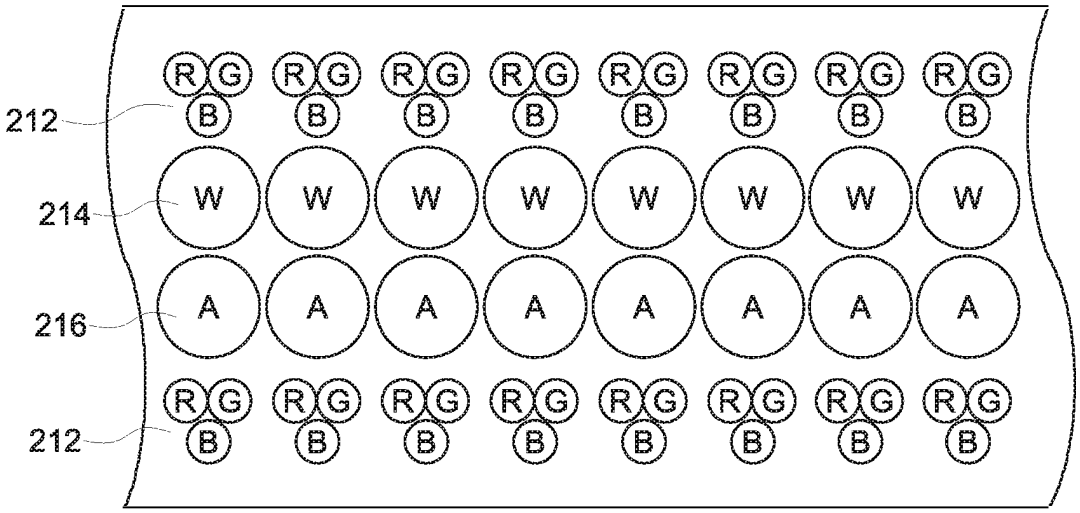


FIG. 9A

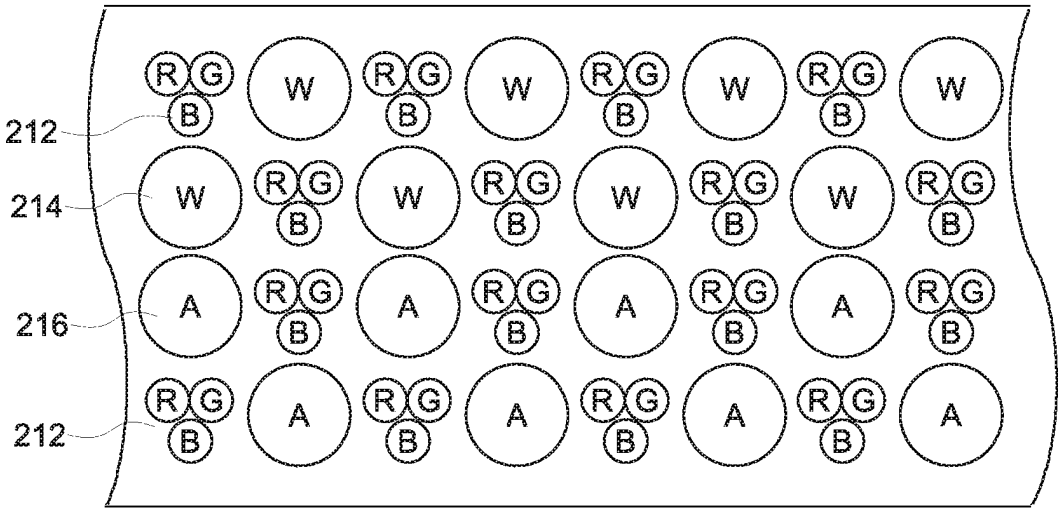


FIG. 9B

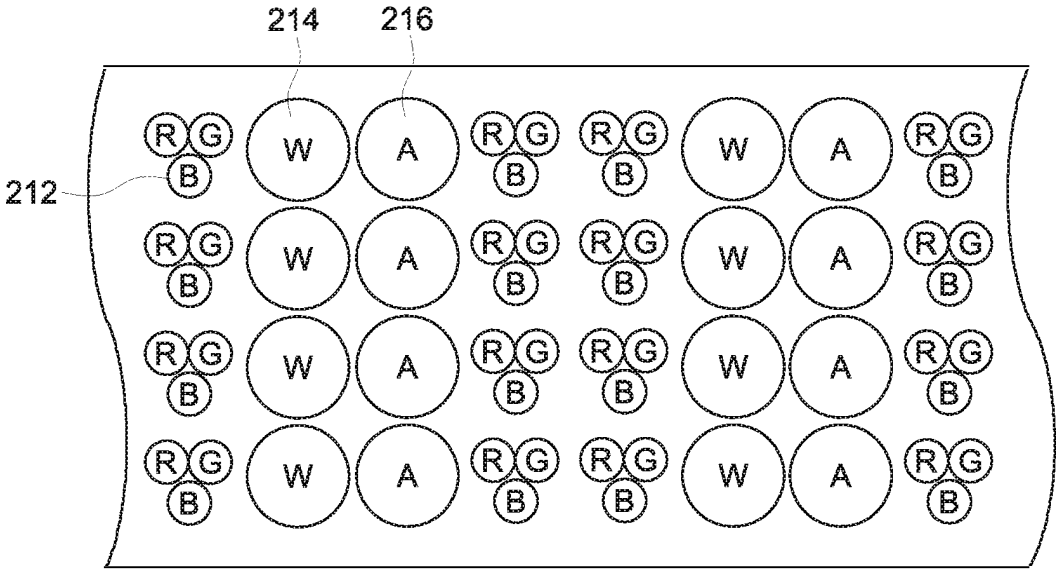


FIG. 9C

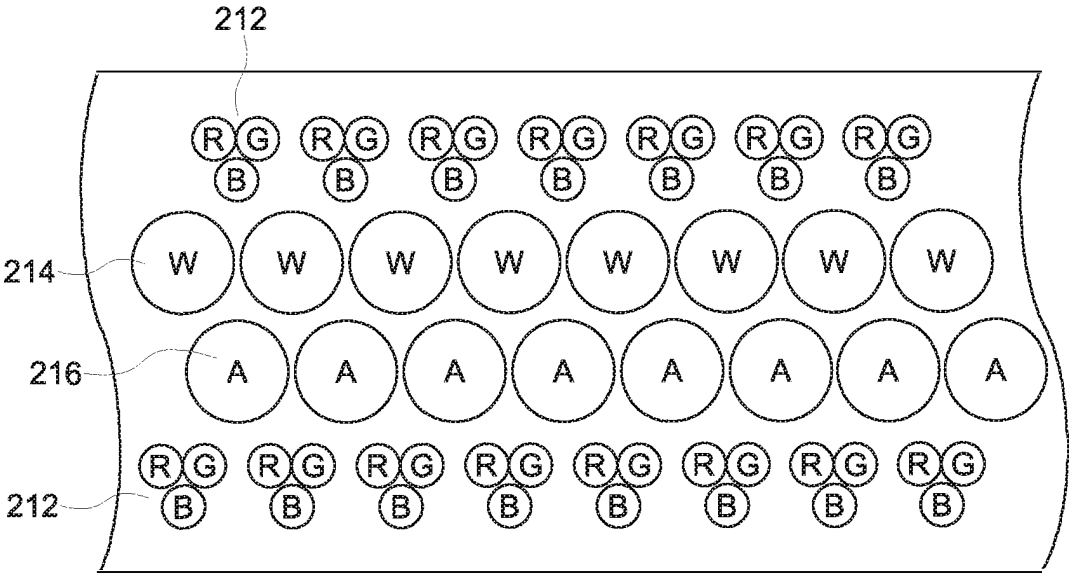


FIG. 9D

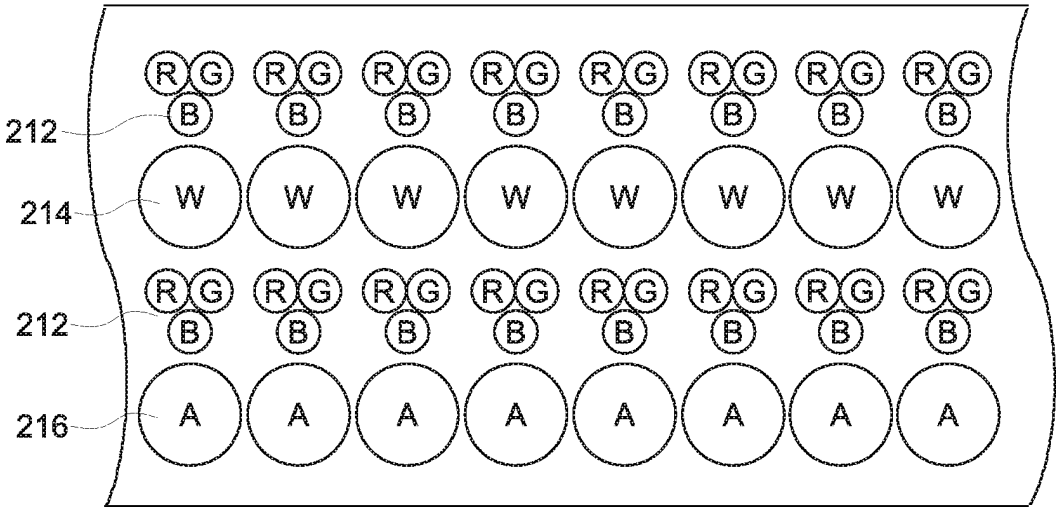


FIG. 9E

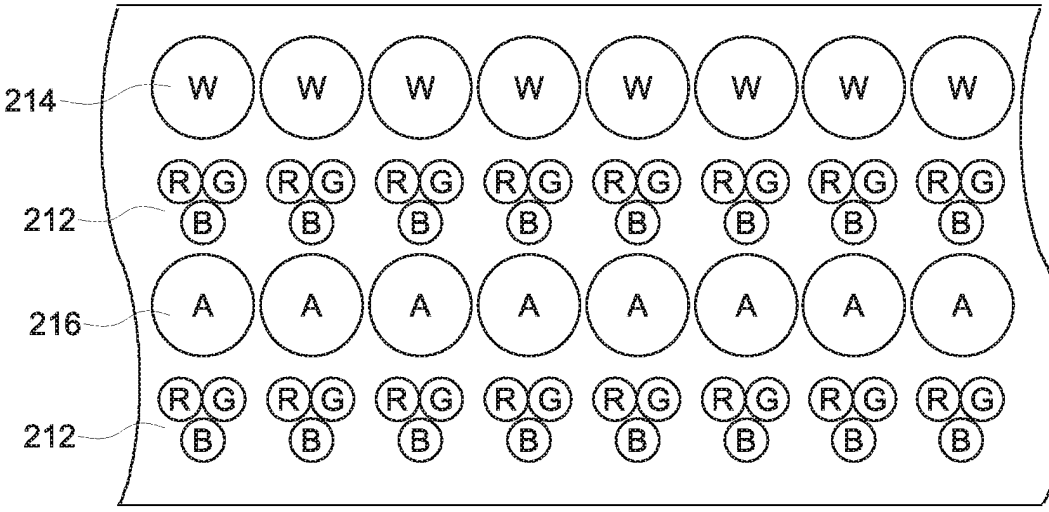


FIG. 9F

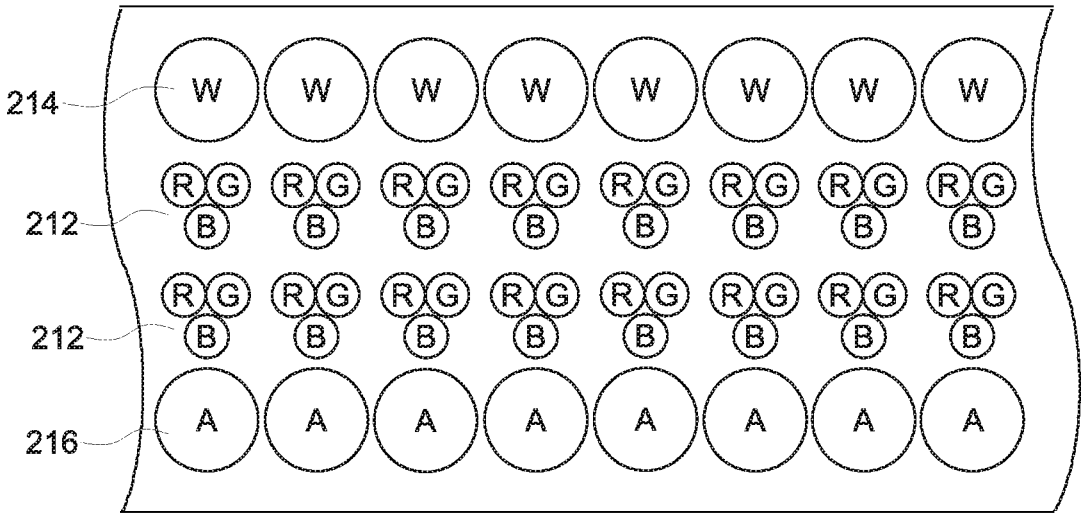


FIG. 9G

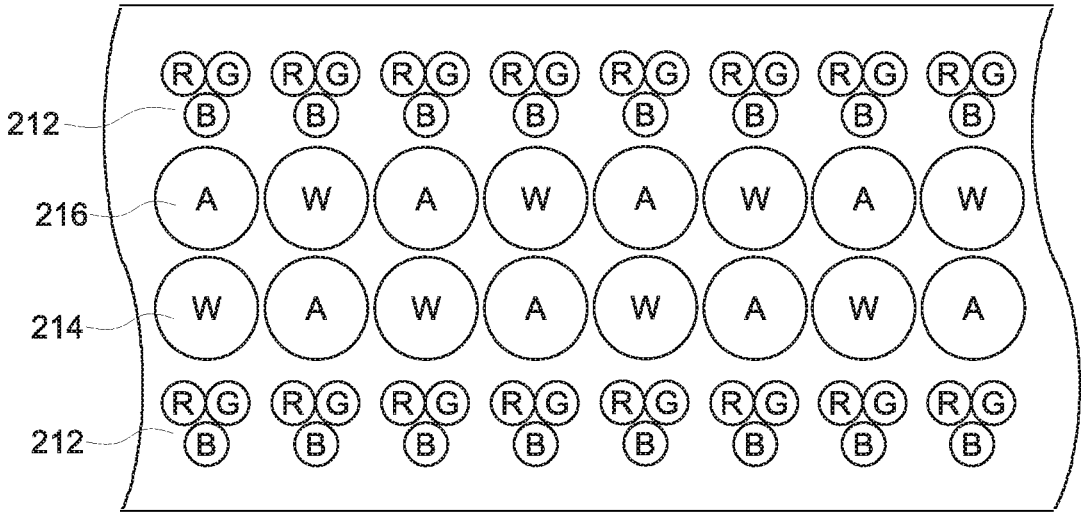


FIG. 9H

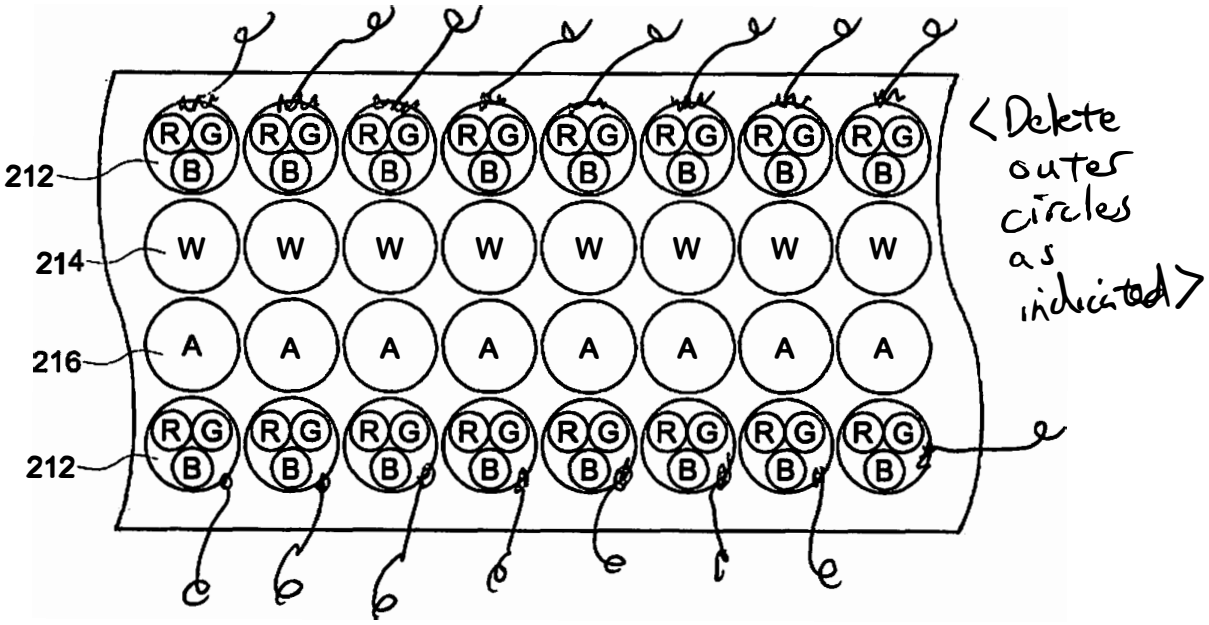

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FIG. 9A

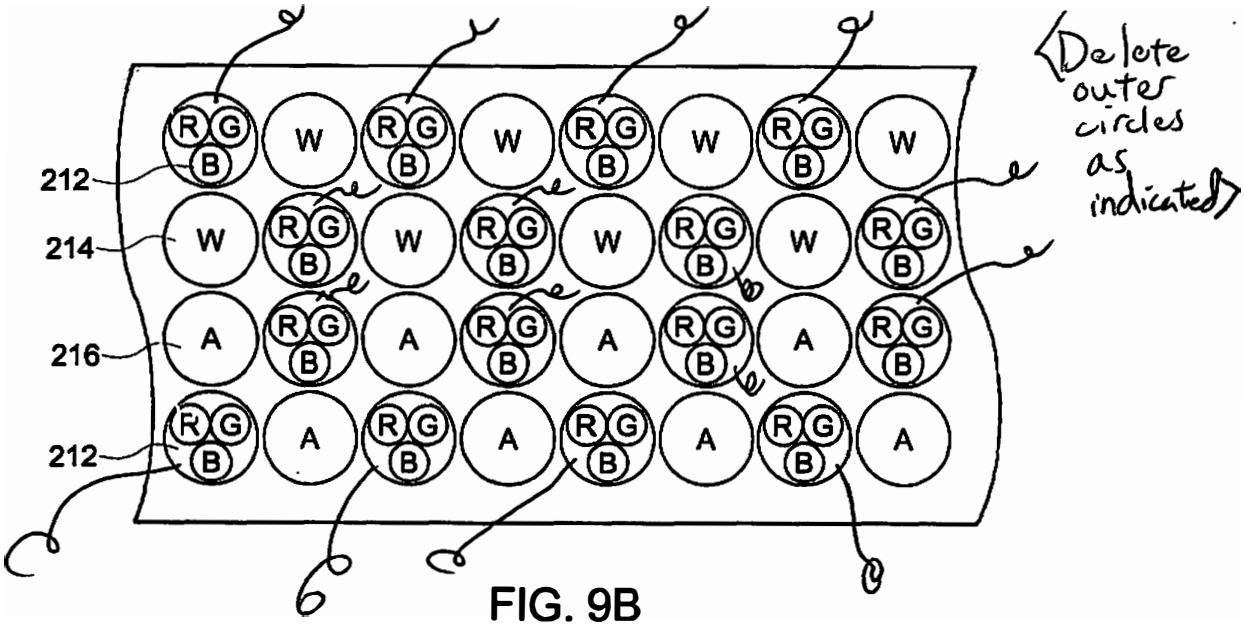

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FIG. 9B

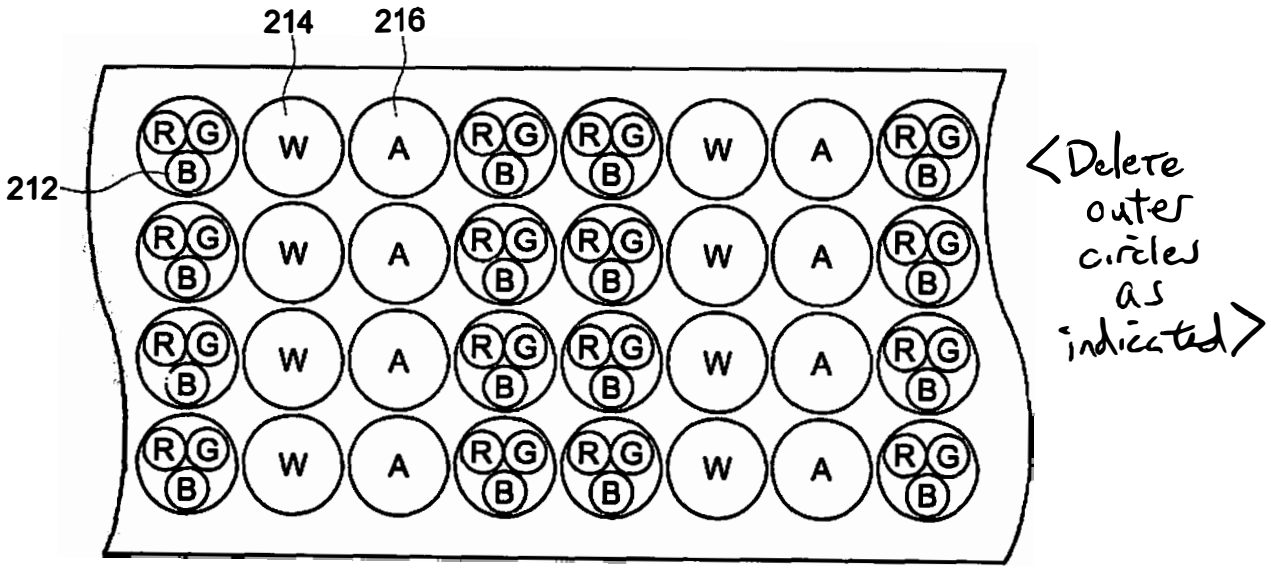

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FIG. 9C

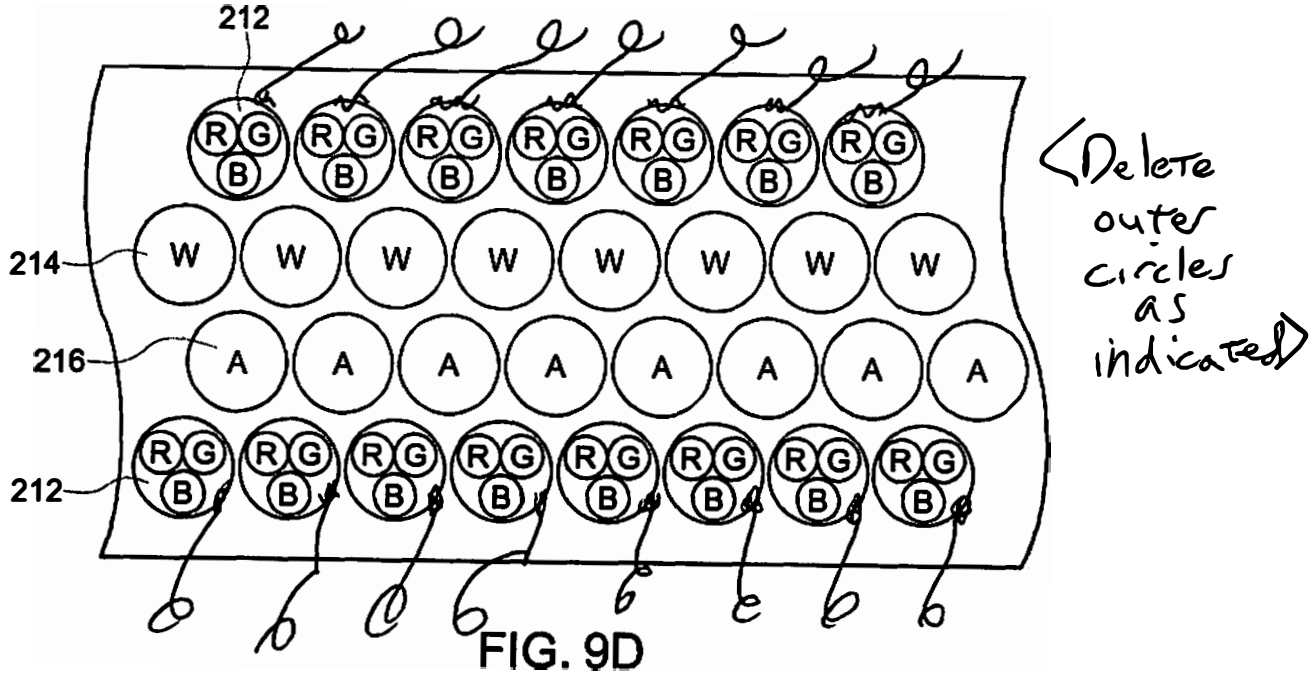

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FIG. 9D

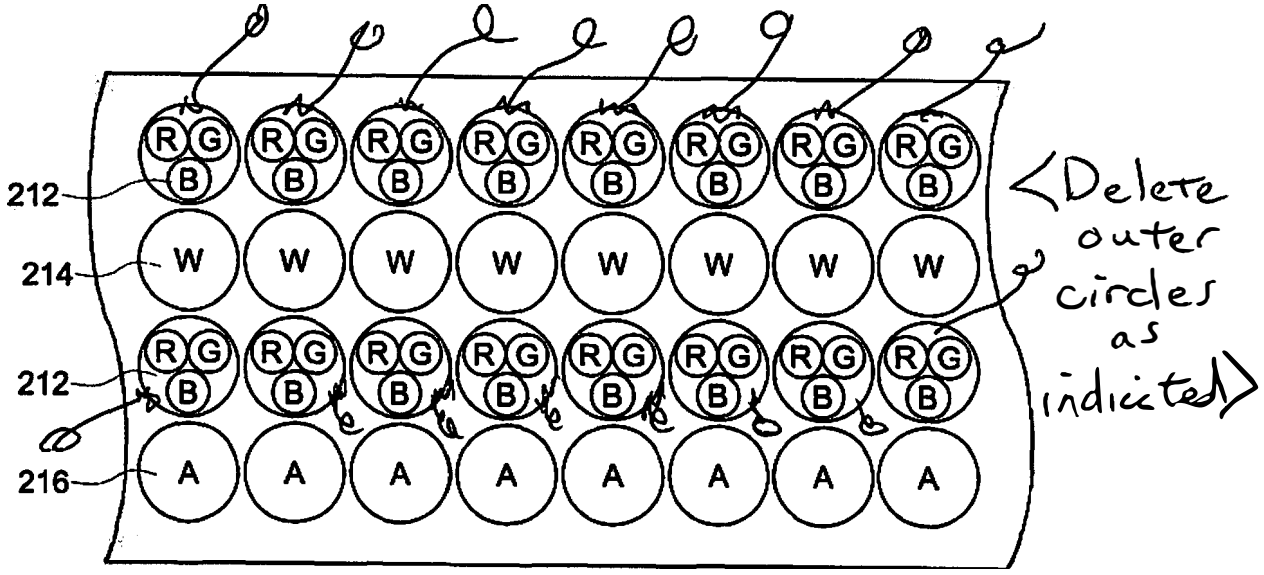

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FIG. 9E

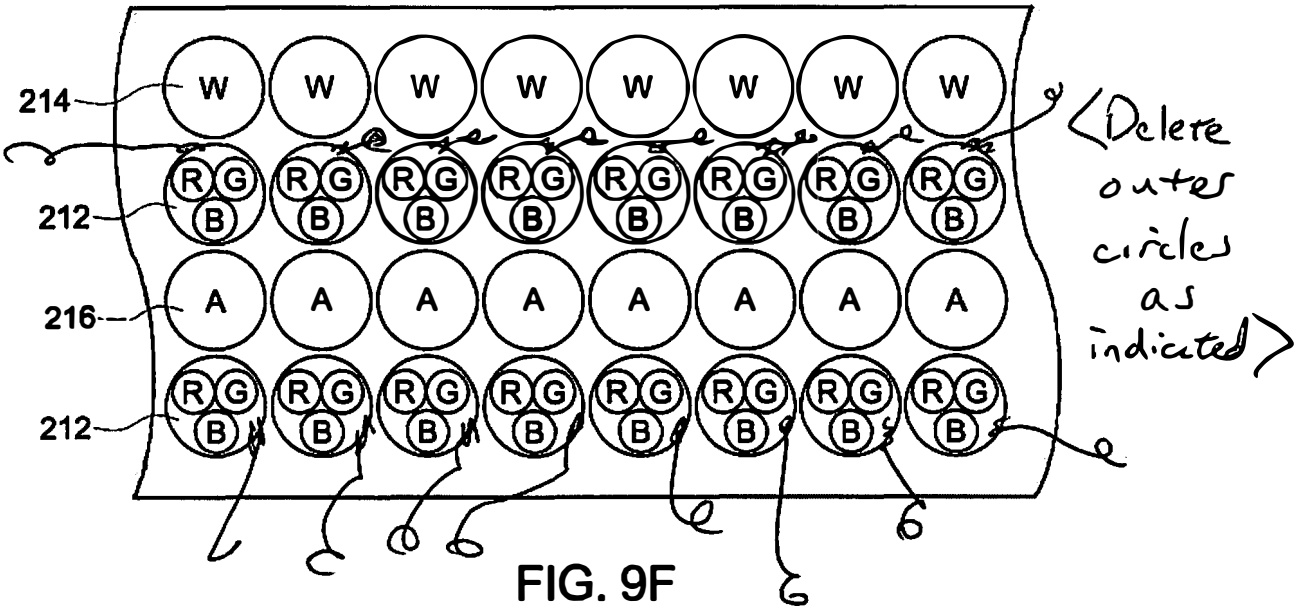

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216
212
R G B
W
A
<Delete outer circles as indicated>

FIG. 9F

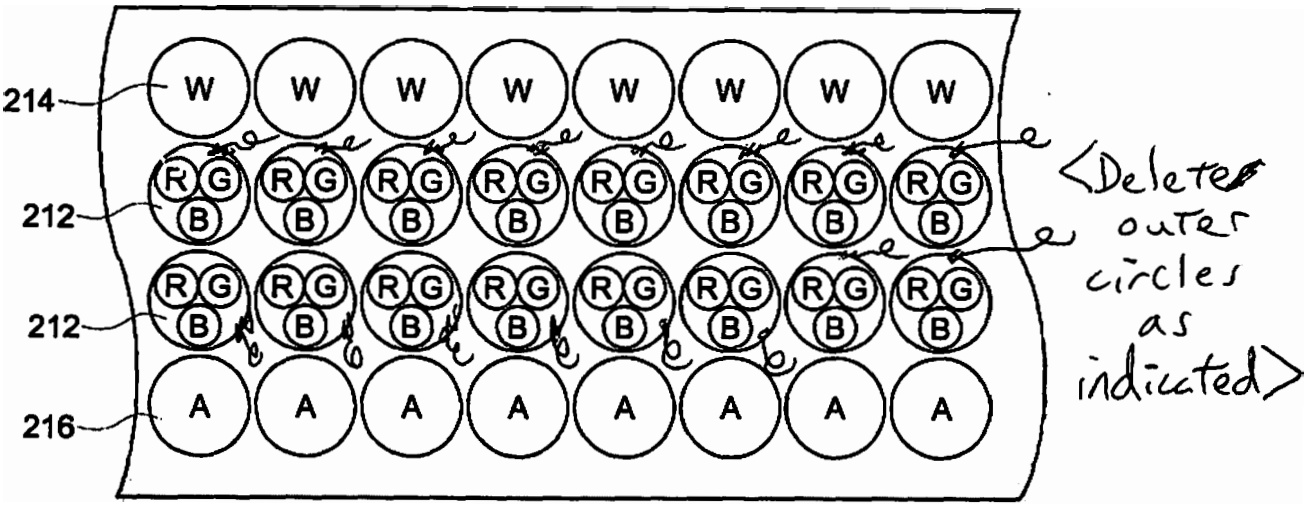

214
212
212
216
W
R G B
A
<Delete outer circles as indicated>

FIG. 9G

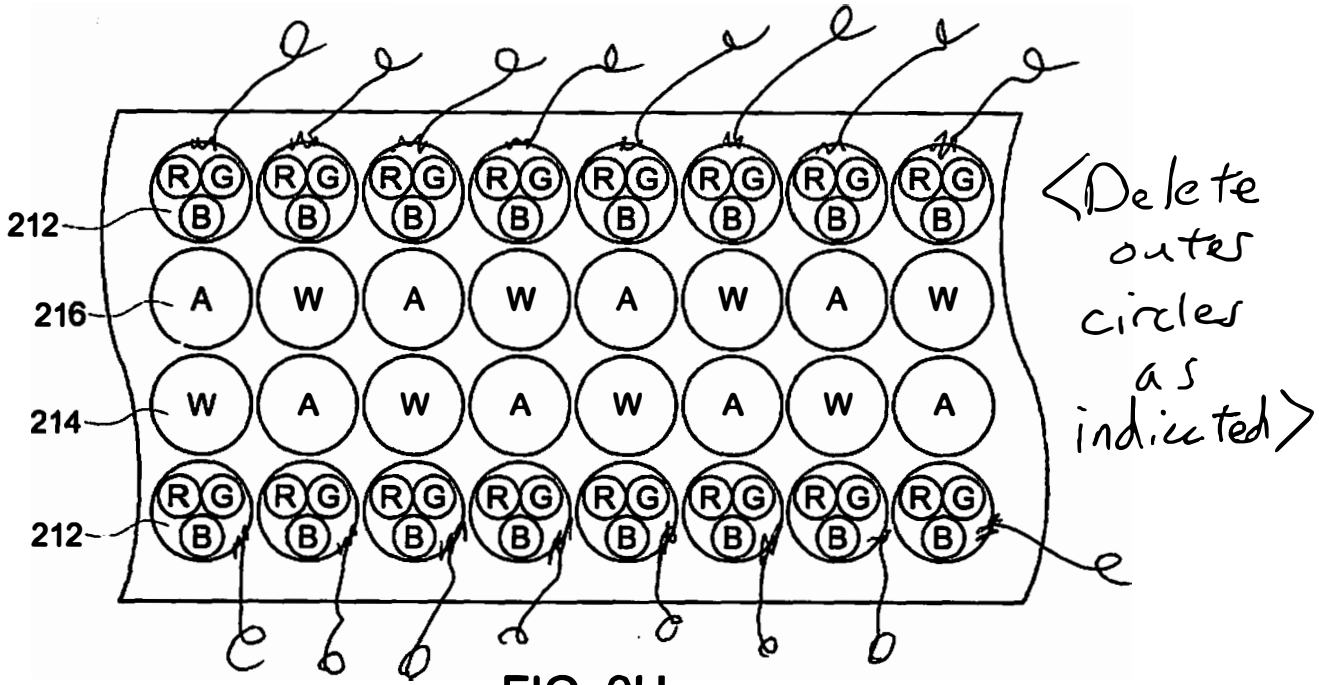

212
216
214
212
R G B
A
W
<Delete outer circles as indicated>

FIG. 9H

Electronic Patent Application Fee Transmittal					
Application Number:	15476410				
Filing Date:	31-Mar-2017				
Title of Invention:	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY				
First Named Inventor/Applicant Name:	Guillermo Macias				
Filer:	David L. Hoffman				
Attorney Docket Number:	12-10060-CIP2				
Filed as Small Entity					
Filing Fees for **Utility under 35 USC 111(a)**					
Description		**Fee Code**	**Quantity**	**Amount**	**Sub-Total in USD($)**
Basic Filing:					
Pages:					
Claims:					
CLAIMS IN EXCESS OF 20		2202	19	50	950
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**950**

Electronic Acknowledgement Receipt	
EFS ID:	33097796
Application Number:	15476410
International Application Number:	
Confirmation Number:	8635
Title of Invention:	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY
First Named Inventor/Applicant Name:	Guillermo Macias
Customer Number:	36212
Filer:	David L. Hoffman
Filer Authorized By:	
Attorney Docket Number:	12-10060-CIP2
Receipt Date:	05-JUL-2018
Filing Date:	31-MAR-2017
Time Stamp:	16:11:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$950
RAM confirmation Number	070618INTEFSW16133800
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	AmendmentAndResponseJuly2018cute.pdf	300434 4a7a2162c824d54356df03d478e87ccbf9ab692f	no	23
Warnings:					
Information:					
2	Drawings-only black and white line drawings	ReplacementDrawings.pdf	558302 370f71d561ede18c171675d3ca9d23f6c9579b9d	no	4
Warnings:					
Information:					
3	Miscellaneous Incoming Letter	AnnotatedDrawingSheets.pdf	158647 74e57a54d5d777b45cdf2769de5cd7ab061f94e3	no	4
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30513 e4c3289540c1c3f1f4c839981bab379cbf8a96ff	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1047896		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/476,410	Filing Date 03/31/2017	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	x $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	x $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	07/05/2018	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 45	Minus	** 26	= 19	x $50 =	950
	Independent (37 CFR 1.16(h))	* 4	Minus	***4	= 0	x $230 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**950**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SLIE
ARLENE JONES

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

36212 7590 12/10/2018

HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355

EXAMINER
SAWHNEY, HARGOBIND S

ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 12/10/2018

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/476,410	03/31/2017	Guillermo Macias	12-10060-CIP2	8635

TITLE OF INVENTION: MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0	$0	$500	03/11/2019

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: **(571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

36212 7590 12/10/2018
HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date indicated below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/476,410	03/31/2017	Guillermo Macias	12-10060-CIP2	8635

TITLE OF INVENTION: MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0	$0	$500	03/11/2019

EXAMINER	ART UNIT	CLASS-SUBCLASS
SAWHNEY, HARGOBIND S	2875	362-011000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*
❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)
❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (08-18) Approved for use through 01/31/2020 OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/476,410	03/31/2017	Guillermo Macias	12-10060-CIP2	8635

36212 7590 12/10/2018

HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355

EXAMINER	
SAWHNEY, HARGOBIND S	

ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 12/10/2018

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/476,410	Applicant(s) MACIAS, GUILLERMO	
	Examiner HARGOBIND S. SAWHNEY	Art Unit 2875	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the amendment filed on 7/5/2018.*

   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are *1-45.* As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/HARGOBIND S SAWHNEY/ Primary Examiner, Art Unit 2875	12/3/2018

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

1. The amendment, each filed on July 5, 2018 has been entered. Accordingly:

   - Replacement figures 9A-9H has been entered; Claims 1-18, 20, 22, 23 and 25 have been amended; new claims 27-45 have been added.

   Thus, all pending claims 1-45 are pending.

Reasons for Allowance

2. Claims 1-45 are allowed.

The prior art, including German Patent No. DE 202009011476 U1 (Sander), of record does not show or suggest the applicant's invention as claimed. Specifically, the prior art of record does not teach an LED lighting device combining:

- LEDs capable of emitting light through a light-diffusing top-side of an elongated LED housing; the LEDs supported on a circuit board, and including: a first set of LEDs capable of emitting light of a first color; a second set of LEDs capable of emitting light of a second color; a third set of LEDs capable of emitting light of a third color; a fourth set of LEDs capable of emitting light of a fourth color; a fifth set of LEDs capable of emitting a broad spectrum of

white light as recited in each of the amended independent claims 1 and 13; and

- LEDs capable of emitting light through a light-diffusing top-side of an elongated LED housing; the LEDs supported on a circuit board, and including: a first set of LEDs capable of emitting light of a first color; a second set of LEDs capable of emitting light of a second color; a third set of LEDs capable of emitting light of a third color; and a fourth set of LEDs capable of emitting light of a fourth color capable of emitting a broad spectrum of white light as recited in each of the amended independent claims 6 and 20.

Sander discloses an LED lighting device including a linear housing receiving five LEDs of different colors. However, the linear housing is closed at one end, and does not have light-diffusing top portion. Thus, Sander does not meet the limitations of any of the amended independent claims 1, 6, 13 and 20.

Therefore, each of the amended independent claims 1, 6, 13 and 20 is allowed over prior art.

Claims 2-5, 11, 27, 28, 32, 36, 38 and 42 are necessarily allowed because of their dependency on the allowed amended independent claim 1.

Claims 7-10, 12, 29, 33, 39 and 43 are necessarily allowed because of their dependency on the allowed amended independent claim 6.

Claims 14-19, 30, 34, 37, 40 and 44 are necessarily allowed because of their dependency on the allowed amended independent claim 13.

Claims 21-26, 31, 35, 41 and 45 are necessarily allowed because of their dependency on the allowed amended independent claim 20.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to HARGOBIND S. SAWHNEY whose telephone number is 571 272 2380. The examiner can normally be reached on 8:00 AM - 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the examiner's Supervisor, Mr. Jong-Suk (James) Lee can be reached on 571 272 7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR

only. For more information about the PAIR system, see http://pair-direct.uspto.gov.

Should you have questions on access to the Private PAIR system, contact the

Electronic Business Center (EBC) at 866-217-9197 (toll-free).

12/3/2018

/Hargobind S Sawhney/

Primary Examiner, Art Unit 2875

Notice of References Cited	Application/Control No. 15/476,410	Applicant(s)/Patent Under Reexamination MACIAS, GUILLERMO	
	Examiner HARGOBIND S. SAWHNEY	Art Unit 2875	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2005/0264472 A1	12-2005	Rast, Rodger H.	G09G3/14	345/30
*	B	US-2008/0025019 A1	01-2008	Kim; Bum Jin	G02F1/133603	362/231
*	C	US-2010/0102730 A1	04-2010	Simon; David L.	F21V23/0464	315/152
*	D	US-2012/0146503 A1	06-2012	Negley; Gerry	F21K9/27	315/35
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
*	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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CONFIRMATION NO. 8635

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/476,410	03/31/2017	362	2875	12-10060-CIP2

APPLICANTS

INVENTORS

Guillermo Macias, Santa Clarita, CA;

**** CONTINUING DATA ************************

This application is a CIP of 15/096,549 04/12/2016 ABN
which claims benefit of 62/146,551 04/13/2015
and is a CIP of 13/896,868 05/17/2013 PAT 9719642
which claims benefit of 61/648,554 05/17/2012

**** FOREIGN APPLICATIONS ************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
04/10/2017

Foreign Priority claimed	☐ Yes ☑ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☑ No		CA	13	10	2
Verified and Acknowledged	/HARGOBIND S SAWHNEY/ Examiner's Signature	Initials				

ADDRESS

HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355
UNITED STATES

TITLE

MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

FILING FEE RECEIVED	FEES: Authority has been given in Paper	☐ All Fees
2210	No._____ to charge/credit DEPOSIT ACCOUNT	☐ 1.16 Fees (Filing)
	No._____ for following:	☐ 1.17 Fees (Processing Ext. of time)
		☐ 1.18 Fees (Issue)
		☐ Other _____
		☐ Credit

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	**Art Unit**
	HARGOBIND S SAWHNEY	2875

CPC						
Symbol					**Type**	**Version**
F21K		9	/	278	F	2016-08-01
F21V		23	/	005	I	2013-01-01
F21V		9	/	08	I	2013-01-01
F21K		9	/	272	I	2016-08-01
F21V		23	/	06	I	2013-01-01
H05B		33	/	0815	I	2013-01-01
H05B		33	/	0845	I	2013-01-01
H05B		33	/	0857	I	2013-01-01
F21V		3	/	02	I	2013-01-01
F21V		23	/	045	I	2013-01-01
F21Y		2113	/	13	A	2016-08-01
F21Y		2115	/	10	A	2016-08-01
F21Y		2103	/	10	A	2016-08-01
H04N		5	/	2354	A	2013-01-01
H04N		5	/	2256	A	2013-01-01
F21V		7	/	005	I	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	45	
/HARGOBIND S SAWHNEY/ Primary Examiner.Art Unit 2875	12/3/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4 and 9A

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	**Art Unit**
	HARGOBIND S SAWHNEY	2875

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
		F	2	1	V	23 / 005						
CROSS REFERENCE(S)		F	2	1	V	7 / 005						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	45	
/HARGOBIND S SAWHNEY/ Primary Examiner.Art Unit 2875	12/3/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4 and 9A

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	Examiner	**Art Unit**
	HARGOBIND S SAWHNEY	2875

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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14	7	38	23	21	39										
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26	16	9	32												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	45	
/HARGOBIND S SAWHNEY/ Primary Examiner.Art Unit 2875	12/3/2018	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4 and 9A

U.S. Patent and Trademark Office Part of Paper No. 20181202

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	Art Unit
	HARGOBIND S SAWHNEY	2875

CPC- SEARCHED		
Symbol	Date	Examiner
F21K9/27; F21K9/278; F21S4/28; F21V9/08; F21V23/005; F21V23/045; F21V23/06; F21Y2103/10; F21Y2105/10; F21Y2113/13; F21Y2115/10; H05B33/0803; H05B33/0809; H05B33/0815; H05B37/029	1/20/2018	HSS
F21K9/20; F21K9/23; F21K9/27; F21K9/278; F21S10/023; F21S4/28; F21S9/00; F21V15/013; F21V23/005; F21V3/02; F21Y2113/10; F21Y2115/10; H05B37/029; H05B33/0809; H05B33/0815; H05B37/02; H05B37/029	3/28/2018	HSS
B60Q2900/10; B60Q3/47; F21K9/27; F21K9/27; F21S10/02; F21S10/023; F21V3/02; F21V7/005; F21V23/00; F21V23/005; F21V23/04; F21Y2103/10; F21Y2105/10; F21Y2113/10; F21Y2115/10; G02F2001/133622; H05B37/02	12/3/2018	HSS

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner
F21K9; F21S4; F21S9; F21S10; F21V3; F21V15; F21V19; F21V23; F21Y2103; F21Y2105; F21Y2113; F21Y2115; H05B33; H05B37	3/28/2018	HSS
B60Q3; F21K9; F21S4; F21S10; F21V3; F21V7; F21V9; F21V23; F21Y2103; F21Y2105; F21Y2107; F21Y2113; F21Y2115; G02F2001; H05B37	12/3/2018	HSS

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

SEARCH NOTES		
Search Notes	Date	Examiner

SEARCH NOTES		
Search Notes	**Date**	**Examiner**
US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB; Forward/ backward Text Search; Inventor name search, and Text search History Printout attached.	12/3/2018	HSS

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
Interference Search History printout is attached herewith.		12/3/2018	HSS

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	**Art Unit**
	HARGOBIND S SAWHNEY	2875

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	01/20/2018	03/29/2018	12/03/2018						
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2	2	=	✓	=						
3	3	=	✓	=						
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13	6	=	✓	=						
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15476410	MACIAS, GUILLERMO
	Examiner	**Art Unit**
	HARGOBIND S SAWHNEY	2875

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
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21	39			=						
33	40			=						
44	41			=						
12	42			=						
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34	44			=						
45	45			=						

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	(((tube or housing) with (light (diffusive or diffusion)) with (top cover)) and ((first ((light emitting diode) or LED) set) with (emit$4 light) with (first color)) and ((second ((light emitting diode) or LED) set) with (emit$4 light) with (second color)) and ((third ((light emitting diode) or LED) set) with (emit$4 light) with (third color)) and ((fourth ((light emitting diode) or LED) set) with (emit$4 light) with (fourth color)) and ((fifth ((light emitting diode) or LED) set) with (emit$4 light) with (fifth color)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 20:17
L2	0	(((tube or housing) with (light (diffusive or diffusion)) with (top cover)) and ((first ((light emitting diode) or LED) set) with (emit$4 light) with (first color)) and ((second ((light emitting diode) or LED) set) with (emit$4 light) with (second color)) and ((third ((light emitting diode) or LED) set) with (emit$4 light) with (third color)) and ((fourth ((light emitting diode) or LED) set) with (emit$4 light) with (fourth color)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 20:18
L3	484474	((B60Q3/$ OR F21K9/$ OR F21S4/$ OR F21S10/$ OR F21V3/$ OR F21V7/$ OR F21V9/$ OR F21V23/$ OR F21Y2103/$ OR F21Y2105/$ OR F21Y2107/$ OR F21Y2113/$ OR F21Y2115/$ OR G02F2001/$ OR H05B37/$).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 20:19
L4	160324	((B60Q2900/10 OR B60Q3/47 OR F21K9/27 OR F21K9/27 OR F21K9/60 OR F21K9/62 OR F21S10/02 OR F21S10/023 OR F21V3/02 OR F21V7/0016 OR F21V7/005 OR F21V9/08 OR F21V23/00 OR F21V23/005 OR F21V23/04 OR F21Y2103/10 OR F21Y2105/10 OR F21Y2113/10 OR F21Y2115/10 OR G02F2001/133613 OR G02F2001/133622 OR H05B37/02).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 20:19
L5	484942	L3 or L4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 20:19

L6	0	((B60Q3/$ OR F21K9/$ OR F21S4/$ OR F21S10/$ OR F21V3/$ OR F21V7/$ OR F21V9/$ OR F21V23/$ OR F21Y2103/$ OR F21Y2105/$ OR F21Y2107/$ OR F21Y2113/$ OR F21Y2115/$ OR G02F2001/$ OR H05B37/$).CPC.) and (((tube or housing) with (light (diffusive or diffusion)) with (top cover)) and ((first ((light emitting diode) or LED) set) with (emit$4 light) with (first color)) and ((second ((light emitting diode) or LED) set) with (emit$4 light) with (second color)) and ((third ((light emitting diode) or LED) set) with (emit$4 light) with (third color)) and ((fourth ((light emitting diode) or LED) set) with (emit$4 light) with (fourth color)) and ((fifth ((light emitting diode) or LED) set) with (emit$4 light) with (fifth color)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 20:20
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S1	19	("20030072156" | "20040257007" | "20070258240" | "20090052204" | "20090109668" | "20100148673" | "20100214779" | "20100289428" | "20100315001" | "20110058365" | "20110084608" | "20110163941" | "20110235318" | "20110285292" | "6720745" | "7180252" | "7476003" | "8203260" | "9057493").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 08:15
S2	1	15/473410	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:15

S3	20	S1 or S2	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:15
S4	8	guillermo macias	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:16
S5	2	(US-9845924-$ or US-9719642-$).did.	USPAT	NEAR	ON	2018/01/20 08:18
S6	22	S3 or S5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:18
S7	22	S3 or S5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 08:18
S8	0	("15096549").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 09:13
S9	0	15/096549	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 09:14
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S15	3	(US-20090109668-$).did. or (US-9057493-$ or US-7476003-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 12:52
S16	1	("7507001").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 12:56
S17	2	(("7507001") or ("20030072156")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:02
S18	3	(("7507001") or ("20030072156") or ("20110235318")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:06
S20	5	(("7507001") or ("20030072156") or ("20110235318") or ("20100315001") or ("20100214779")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:10
S21	5	(("7507001") or ("20030072156") or ("20110235318") or ("20100315001") or ("20100214779")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/01/20 13:37
S22	8	((support or ((mounting (structure or element or surface)) or base)) with (array with (light with (diod$3 or chips)))) and ((linear or elongat$4) (housing or casing)) and (fluorescent tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:34
S23	122	((support or ((mounting (structure or element or surface)) or base)) with (array with (light with (diod$3 or chips)))) and ((linear or elongat$4) (housing or casing))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:35
S24	113	S23 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:36
S25	3	S22 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:36
S26	3	(US-20120086345-$).did. or (US-8547036-$ or US-8079731-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 14:37
S27	9	S23 not S24	US-PGPUB; USPAT; USOCR;	NEAR	ON	2018/01/20 14:40

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S28	14	("20060056855" | "20080310850" | "20090196016" | "20100106306" | "20100141153" | "20100327766" | "20110069960" | "7580643" | "8150269" | "8547036").PN. OR ("9192030").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 14:41
S29	1	(US-20100106306-$).did.	US-PGPUB	NEAR	ON	2018/01/20 14:43
S30	153314	(((light wit h(diod$3 or chips)) or "LED") wit ht ube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:44
S31	14986	(((light with (diod$3 or chips)) or "LED") tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:45
S32	1003	S31 and (array wit h((light wit h (diod$3 or chips)) or "LED"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:47
S33	566	S32 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:47
S34	1	S32 and @ad < "20120517" and (tubular housing) and control$4 and driver	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:49
S35	4	("20030142047" | "6448718" | "6583775" | "6593919").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 14:55
S36	170922	((F21K9/27 OR F21K9/272 OR F21K9/278 OR F21S4/28 OR F21S9/02 OR F21V7/005 OR F21V9/08 OR F21V23/005 OR F21V23/045 OR F21V23/06 OR F21Y2103/10 OR F21Y2105/10 OR F21Y2107/90 OR F21Y2113/13 OR F21Y2115/10 OR H05B33/0803 OR H05B33/0809 OR H05B33/0815 OR H05B33/0845 OR H05B33/0851 OR H05B33/0854 OR H05B33/0857 OR H05B33/086 OR	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:59

		H05B33/0863 OR H05B37/029).CPC.)				
S37	175	S33 AND S36	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 14:59
S38	7	(US-20110121756-$ or US-20100176724-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-8115393-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:23
S39	7	(US-20110121756-$ or US-20100176724-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-8115393-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:23
S40	8	S23 and F21K9/$.CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:25
S41	3	S23 and F21V21/$.CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:25
S42	3	S23 and F21V23/$.CPC.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:25
S43	11	S40 or S41 or S42	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:26
S44	1	15/473410	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S45	20	S13 or S44	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27

S46	2	(US-9845924-$ or US-9719642-$).did.	USPAT	NEAR	ON	2018/01/20 15:27
S47	22	S45 or S46	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S48	34	S47 or S20 or S26 or S29 or S39	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S49	31	S48 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:27
S50	13	(US-20110285292-$ or US-20110235318-$ or US-20110121756-$ or US-20110058365-$ or US-20100176724-$ or US-20100106306-$ or US-20090109668-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-7507001-$ or US-7476003-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:36
S51	13	(US-20110285292-$ or US-20110235318-$ or US-20110121756-$ or US-20110058365-$ or US-20100176724-$ or US-20100106306-$ or US-20090109668-$ or US-20080144316-$ or US-20040156197-$).did. or (US-8262249-$ or US-8147091-$ or US-7507001-$ or US-7476003-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/01/20 15:36
S52	1	S31 and (array with ((light with (diod$3 or chips)) or "LED")) and (red red and blue and white and green)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:44
S53	78	S30 and (array with ((light with (diod$3 or chips)) or "LED")) and (red red and blue and white and green)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:45
S54	54	S53 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	NEAR	ON	2018/01/20 15:45

			IBM_TDB			
S55	406	S30 and (array with ((light with (diod$3 or chips)) or "LED")) and (red and blue and white and green and amber)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:48
S56	269	S55 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:48
S57	34	S30 and (array with ((light with (diod$3 or chips)) or "LED")) and (first color) and (second color) and (third color) and (fourth color) and white	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:49
S58	26	S57 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:50
S59	0	S50 and (first color) and (second color) and (third color) and (fourth color) and white	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 15:59
S60	1	S50 and (array with ((light with (diod$3 or chips)) or "LED")) and (red and blue and white and green and amber)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 16:00
S61	2	((row or set) with ((light emitting diode) or "LED") with (first color)) and ((row or set) with ((light emitting diode) or "LED") with (second color)) and ((row or set) with ((light emitting diode) or "LED") with (third color)) and ((row or set) with ((light emitting diode) or "LED") with (fourth color)) and ((row or set) with ((light emitting diode) or "LED") with (white with kelvin))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 16:12
S62	0	(((light with (diod$3 or chips)) or "LED") with tube) and (((row or set) with ((light emitting diode) or "LED") with (first color)) and ((row or set) with ((light emitting diode) or "LED") with (second color)) and ((row or set) with ((light emitting diode) or "LED")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 16:13

		with (third color)) and ((row or set) with ((light emitting diode) or "LED") with (fourth color)) and ((row or set) with ((light emitting diode) or "LED") with (white with kelvin)))				
S63	0	((F21K9/27 OR F21K9/272 OR F21K9/278 OR F21S4/28 OR F21S9/02 OR F21V7/005 OR F21V9/08 OR F21V23/005 OR F21V23/045 OR F21V23/06 OR F21Y2103/10 OR F21Y2105/10 OR F21Y2107/90 OR F21Y2113/13 OR F21Y2115/10 OR H05B33/0803 OR H05B33/0809 OR H05B33/0815 OR H05B33/0845 OR H05B33/0851 OR H05B33/0854 OR H05B33/0857 OR H05B33/086 OR H05B33/0863 OR H05B37/029).CPC.) and ((((light with (diod$3 or chips)) or "LED") with tube) and (((row or set) with ((light emitting diode) or "LED") with (first color)) and ((row or set) with ((light emitting diode) or "LED") with (second color)) and ((row or set) with ((light emitting diode) or "LED") with (third color)) and ((row or set) with ((light emitting diode) or "LED") with (fourth color)) and ((row or set) with ((light emitting diode) or "LED") with (white with kelvin))))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 16:15
S66	8	("20070074098" | "4492863" | "6856087" | "6923548").PN. OR ("7476003").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 20:29
S67	2	(US-6923548-$ or US-6856087-$).did.	USPAT	NEAR	ON	2018/01/20 20:32
S68	3	(US-8262249-$ or US-8147091-$ or US-7476003-$).did.	USPAT	NEAR	ON	2018/01/20 20:34
S69	5	S67 or S68	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 20:34
S70	19	("20030072156" | "20040257007" | "20070258240" | "20090052204" | "20090109668" | "20100148673" | "20100214779" | "20100289428" | "20100315001" | "20110058365" | "20110084608" | "20110163941" | "20110235318" | "20110285292" | "6720745" | "7180252" | "7476003" | "8203260" | "9057493").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/01/20 20:36
S71	4	S69 not S70	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/01/20 20:37
S72	31	("20110285292" | "20110084608" | "20110163941" | "6923548" |	US-PGPUB; USPAT;	NEAR	ON	2018/03/27 16:45

		"8147091" | "20070228999" | "20110235318" | "6856087" | "20100102729" | "9239134" | "20070258240" | "20100148673" | "7180252" | "8203260" | "20040105261" | "20030072156" | "7476003" | "20130127369" | "9845924" | "20110058365" | "7476003" | "20040257007" | "20090052204" | "20090109668" | "20100214779" | "20100315001" | "9057493" | "7646029" | "9066405" | "20100289428" | "6720745" | "7507001").PN.	USOCR			
S73	10	(US-20100315001-$ or US-20100214779-$ or US-20090109668-$).did. or (US-9845924-$ or US-9057493-$ or US-8147091-$ or US-7476003-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/27 16:59
S74	10	(US-20100315001-$ or US-20100214779-$ or US-20090109668-$).did. or (US-9845924-$ or US-9057493-$ or US-8147091-$ or US-7476003-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/27 16:59
S75	31	("20110285292" | "20110084608" | "20110163941" | "6923548" | "8147091" | "20070228999" | "20110235318" | "6856087" | "20100102729" | "9239134" | "20070258240" | "20100148673" | "7180252" | "8203260" | "20040105261" | "20030072156" | "7476003" | "20130127369" | "9845924" | "20110058365" | "7476003" | "20040257007" | "20090052204" | "20090109668" | "20100214779" | "20100315001" | "9057493" | "7646029" | "9066405" | "20100289428" | "6720745" | "7507001").PN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/03/27 16:59
S76	0	15/476410	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 17:35
S77	8119199	(substrate or (circuit board) or (printed circuit board) or "PCB")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:11
S78	793	(red (light with (diodes) or "LEDs")) and (blue (light with (diodes) or "LEDs")) and (green (light with (diodes) or "LEDs")) and (white (light with (diodes) or "LEDs")) and (amber (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	NEAR	ON	2018/03/27 19:11

			IBM_TDB			
S79	344	S77 and S78	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:12
S80	8	((first color) (light with (diodes) or "LEDs")) and ((second color) (light with (diodes) or "LEDs")) and ((third color) (light with (diodes) or "LEDs")) and ((fourth color) (light with (diodes) or "LEDs")) and ((fifth color) (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:14
S81	3	S77 and S80	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:15
S82	220	S77 and S78 and (casing or tube or bulb)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:20
S83	101	S77 and S78 and (casing or tube or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:20
S84	99	S77 and S78 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:23
S85	1	S81 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:24
S86	57	S84 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 19:26
S87	0	S85 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS;	NEAR	ON	2018/03/27 19:26

			EPO; JPO; DERWENT; IBM_TDB			
S88	8119199	(substrate or (circuit board) or (printed circuit board) or "PCB")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:53
S89	793	(red (light with (diodes) or "LEDs")) and (blue (light with (diodes) or "LEDs")) and (green (light with (diodes) or "LEDs")) and (white (light with (diodes) or "LEDs")) and (amber (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:53
S90	99	S88 and S89 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:53
S91	57	S90 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:53
S92	8	((first color) (light with (diodes) or "LEDs")) and ((second color) (light with (diodes) or "LEDs")) and ((third color) (light with (diodes) or "LEDs")) and ((fourth color) (light with (diodes) or "LEDs")) and ((fifth color) (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:53
S93	3	S88 and S92	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:53
S94	82	(retrofit fluorescent tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:57
S95	331	(retrofit with (fluorescent tube))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 22:58
S96	4	S95 and S89	US-PGPUB; USPAT;	NEAR	ON	2018/03/27 22:59

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S97	8	(US-20120299476-$ or US-20120206050-$ or US-20100171145-$ or US-20070145915-$ or US-20060187081-$ or US-20060002110-$).did. or (US-RE44903-$ or US-7202613-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/27 23:07
S98	14	(US-20110285292-$ or US-20110058365-$ or US-20100315001-$ or US-20100289428-$ or US-20100214779-$ or US-20100102729-$ or US-20090109668-$).did. or (US-9845924-$ or US-9057493-$ or US-8147091-$ or US-7476003-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/27 23:13
S101	28	S93 or S96 or S97 or S98	US-PGPUB; USPAT	NEAR	ON	2018/03/27 23:15
S103	1758	(red (light with (diodes) or "LEDs")) and (blue (light with (diodes) or "LEDs")) and (green (light with (diodes) or "LEDs")) and (white (light with (diodes) or "LEDs")) and ((amber or yellow) (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:16
S104	441	S103 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:17
S105	3	S103 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4 and S95	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:17
S106	3	(US-20140203716-$ or US-20060002110-$).did. or (US-9357600-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/27 23:18
S107	28	S101 or S106	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:19
S108	28	(US-20140203716-$ or US-20120299476-$ or US-20120206050-$ or US-20110285292-$ or US-20110058365-$ or US-20110037413-$ or US-20100315001-$ or US-20100289428-$ or US-20100214779-$ or US-20100171145-$ or US-20100102729-$ or US-20090109668-$	US-PGPUB; USPAT	NEAR	ON	2018/03/27 23:22

		or US-20070145915-$ or US-20060221606-$ or US-20060187081-$ or US-20060002110-$).did. or (US-9845924-$ or US-9747763-$ or US-9357600-$ or US-9057493-$ or US-RE44903-$ or US-8212466-$ or US-8147091-$ or US-7476003-$ or US-7202613-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.				
S109	25	S108 and (tube or (tubular (housing ot case or casing or envelope or enclosure or capsulent)) or bulb)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:22
S110	25	S108 and (tube or (tubular (housing or case or casing or envelope or enclosure or capsulent)) or bulb)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:23
S111	99	S88 and S89 and (tube or (tubular (housing or case or casing or envelope or enclosure or capsulent)) or bulb) and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/27 23:23
S112	0	((red (light with (diodes) or "LEDs")) tube) with ((plurality or different) color "LEDs")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:13
S113	9	(((light with (diodes) or "LEDs")) tube) with ((plurality or different) color "LEDs")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:14
S114	50	(((((light with (diode) or "LED")) tube) with (("LEDs" or diodes) with ((plurality or different) colors)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:26
S115	15	S114 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:26
S116	15	(US-20120217772-$ or US-20020145392-$).did. or (US-9493102-$).did. or (CN-202484660-$ or CN-	US-PGPUB; USPAT; FPRS	NEAR	ON	2018/03/28 09:27

		102537680-$ or CN-202115240-$ or CN-101303475-$ or CN-201803298-$ or CN-201740528-$ or CN-201441096-$ or CN-101382263-$ or CN-101303475-$ or CN-2789578-$ or CN-2667289-$ or CN-2275268-$).did.				
S117	15	S116 and (("LEDs" or diodes) with ((plurality or different) colors))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:27
S118	35	S114 not S115	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:32
S119	8119199	(substrate or (circuit board) or (printed circuit board) or "PCB")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:42
S120	793	(red (light with (diodes) or "LEDs")) and (blue (light with (diodes) or "LEDs")) and (green (light with (diodes) or "LEDs")) and (white (light with (diodes) or "LEDs")) and (amber (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:42
S121	8	((first color) (light with (diodes) or "LEDs")) and ((second color) (light with (diodes) or "LEDs")) and ((third color) (light with (diodes) or "LEDs")) and ((fourth color) (light with (diodes) or "LEDs")) and ((fifth color) (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:42
S122	3	S119 and S121	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:42
S123	331	(retrofit with (fluorescent tube))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:42
S124	4	S123 and S120	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	NEAR	ON	2018/03/28 09:42

			IBM_TDB			
S125	8	(US-20120299476-$ or US-20120206050-$ or US-20100171145-$ or US-20070145915-$ or US-20060187081-$ or US-20060002110-$).did. or (US-RE44903-$ or US-7202613-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:42
S126	14	(US-20110285292-$ or US-20110058365-$ or US-20100315001-$ or US-20100289428-$ or US-20100214779-$ or US-20100102729-$ or US-20090109668-$).did. or (US-9845924-$ or US-9057493-$ or US-8147091-$ or US-7476003-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:42
S127	28	S122 or S124 or S125 or S126	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:42
S128	28	(US-20140203716-$ or US-20120299476-$ or US-20120206050-$ or US-20110285292-$ or US-20110058365-$ or US-20110037413-$ or US-20100315001-$ or US-20100289428-$ or US-20100214779-$ or US-20100171145-$ or US-20100102729-$ or US-20090109668-$ or US-20070145915-$ or US-20060221606-$ or US-20060187081-$ or US-20060002110-$).did. or (US-9845924-$ or US-9747763-$ or US-9357600-$ or US-9057493-$ or US-RE44903-$ or US-8212466-$ or US-8147091-$ or US-7476003-$ or US-7202613-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:44
S129	16	S128 and (("LEDs" or diodes) with ((plurality or different) colors))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:45
S130	13	(US-20120299476-$ or US-20120206050-$ or US-20110285292-$ or US-20100171145-$ or US-20100102729-$ or US-20070145915-$ or US-20060187081-$ or US-20060002110-$).did. or (US-9845924-$ or US-7476003-$ or US-7202613-$ or US-7180252-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:54
S131	1	("9719642").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/28 09:55
S133	14	S130 or S131	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:55

S134	14	(US-20110285292-$ or US-20110058365-$ or US-20100315001-$ or US-20100289428-$ or US-20100214779-$ or US-20100102729-$ or US-20090109668-$).did. or (US-9845924-$ or US-9057493-$ or US-8147091-$ or US-7476003-$ or US-7180252-$ or US-6923548-$ or US-6856087-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 09:59
S135	22	S133 or S134	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 09:59
S136	14	S135 and (("LEDs" or diodes) with ((plurality or different) colors))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 10:03
S137	177516	((F21K9/00 OR F21K9/20 OR F21K9/23 OR F21K9/232 OR F21K9/27 OR F21K9/272 OR F21K9/278 OR F21S10/02 OR F21S10/023 OR F21S4/20 OR F21S4/28 OR F21S9/00 OR F21V15/013 OR F21V19/02 OR F21V23/005 OR F21V23/006 OR F21V23/04 OR F21V3/02 OR F21Y2103/10 OR F21Y2105/10 OR F21Y2113/00 OR F21Y2113/10 OR F21Y2113/13 OR F21Y2115/10 OR H05B33/0803 OR F21K9/20 OR F21K9/23 OR F21K9/27 OR F21K9/278 OR F21S10/02 OR F21S4/28 OR F21V15/013 OR F21V23/005 OR F21V3/02 OR F21Y2113/10 OR F21Y2115/10 OR H05B33/08 OR H05B37/029 OR H05B33/0809 OR H05B33/081 OR H05B37/02 OR H05B37/0227 OR H05B37/0245 OR H05B37/0254 OR H05B37/029 OR H05B37/029).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 12:56
S138	793	(red (light with (diodes) or "LEDs")) and (blue (light with (diodes) or "LEDs")) and (green (light with (diodes) or "LEDs")) and (white (light with (diodes) or "LEDs")) and (amber (light with (diodes) or "LEDs"))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 15:48
S139	331	(retrofit with (fluorescent tube))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 15:48
S140	4	S139 and S138	US-PGPUB; USPAT; USOCR;	NEAR	ON	2018/03/28 15:48

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S141	1	("7646029").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/28 16:08
S142	1	("8080819").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/28 16:10
S143	207	("20010032985" | "20010043093" | "20020038157" | "20020044066" | "20020048169" | "20020070688" | "20020074559" | "20020078221" | "20020122309" | "20020130627" | "20020145394" | "20020145869" | "20020152045" | "20020158583" | "20020171927" | "20020176259" | "20030011538" | "20030028260" | "20030057884" | "20030057887" | "20030076281" | "20030100837" | "20030133292" | "20030222587" | "20040036006" | "20040052076" | "20040061106" | "20040090191" | "20040090787" | "20040100204" | "20040105261" | "20040105264" | "20040113568" | "20040116039" | "20040120148" | "20040130909" | "20040178751" | "20040179793" | "20040206970" | "20040212320" | "20040212321" | "20040212993" | "20050006754" | "20050047130" | "20050099824" | "20050116667" | "20050151489" | "20050179041" | "20050213352" | "20050213353" | "20050218838" | "20050218870" | "20050219872" | "20050231133" | "20050236029" | "20050236998" | "20050253533" | "20050264472" | "20050275626" | "20050276053" | "20070001177" | "20070120135" | "4967330" | "5765940" | "5847593" | "6014614" | "6016038" | "6150774" | "6166496" | "6208073" | "6211626" | "6292901" | "6340868" | "6356700" | "6369525" | "6441943" | "6459919" | "6528954" | "6548967" | "6577080" | "6580228" | "6608453" | "6614103" | "6624597" | "6717376" | "6720745" | "6762562" | "6774584" | "6777891" | "6781329" | "6787999" | "6788011" | "6801003" | "6806659" | "6828530" | "6869204" | "6883929" | "6885035" | "6888322" | "6897624" | "6926432" | "6936978" | "6965205" | "6967448").PN. OR ("6969954" | "6975079" | "7009348" | "7015825" | "7204622" | "7227634" | "7233115" | "7233831" | "7246919" | "7256554" | "7281811" | "7318651" | "7318659" | "7348736" | "7352138" | "7354172" | "7358706" | "7364488" | "7367692" | "7410269" | "7458698" | "7459864" |	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/03/28 16:16

		"7473020" | "7476002" | "7482565" | "7484860" | "7503675" | "7505268" | "7510400" | "7511437" | "7515128" | "7520635" | "7521875" | "7522211" | "7540641" | "7542257" | "7543951" | "7543956" | "7545630" | "7550935" | "7557521" | "7604378" | "7618151" | "7621752" | "7631986" | "7658506" | "7659673" | "7667766" | "7703951" | "7710369" | "7731383").PN. OR ("8080819").URPN.				
S144	1	("20100171145").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/28 16:22
S145	1	S144 and control$4 and driver	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:27
S146	1	S144 and driver	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:30
S147	1	S144 and substrate	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:34
S148	16402	((light with (diodes or chips) or "LEDs")) with (red and blue and green and white and (amber or yellow))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:39
S149	4478	((((light with (diodes or chips) or "LEDs")) with (red and blue and green and white and (amber or yellow))) and tube	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:39
S150	2866	((((light with (diodes or chips) or "LEDs")) with (red and blue and green and white and (amber or yellow))) and tube and substrate	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:40
S151	1088	((((light with (diodes or chips) or "LEDs")) with (red and blue and green and white and (amber or yellow))) and tube and substrate and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	NEAR	ON	2018/03/28 16:40

			DERWENT; IBM_TDB			
S152	899	(((light with (diodes or chips) or "LEDs")) with (red and blue and green and white and (amber or yellow))) and tube and substrate and driver and control$4 and fluorescent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:41
S153	334	(((light with (diodes or chips) or "LEDs")) with (red and blue and green and white and (amber or yellow))) and tube and substrate and driver and control$4 and (fluorescent tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:41
S154	133	S153 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:43
S155	62	S154 not backlight	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:44
S156	55	S155 not ((light guide) or (wave guide))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 16:44
S157	0	((((light with diode) or "LED") tube) with (((light with (diodes or chips)) or "LEDs") with (red and blue and green and white and (amber or yellow)))) and tube and substrate and driver and control$4 and (fluorescent tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:18
S158	0	((((light with diode) or "LED") tube) with ((red and blue and green and white and (amber or yellow)) "LED")) and tube and substrate and driver and control$4 and (fluorescent tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:20
		((((light with diode) or "LED") tube) with ((red and blue and green and white and (amber or yellow))))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR		17:21
S160	6	tube with ((red and blue and green and white and (amber or yellow)) with diodes)	US-PGPUB; USPAT; USOCR;	NEAR	ON	2018/03/28 17:23

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S161	434	((((light with diode) or "LED") tube) and (driver with power) and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:52
S162	72	((((light with diode) or "LED") tube) and (driver with (power (input or connect$3))) and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:52
S163	19	S162 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:53
S164	4	(US-20130294059-$ or US-20130265746-$ or US-20110176297-$).did. or (US-8147091-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 17:56
S165	4	((((light with diode) or "LED") tube) and (driver with (power (input or connect$3))) and control$4 and S164	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 17:56
S166	1	(US-6270229-$).did.	USPAT	NEAR	ON	2018/03/28 18:15
S167	1	("20110149563").PN.	US-PGPUB	OR	OFF	2018/03/28 18:23
S168	3	DE-202009011476-$.did.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:24
S169	1	(DE-202009011476-$).did.	DERWENT	NEAR	ON	2018/03/28 18:24
S170	2	S167 or S169	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:24
S171	1	(DE-202009011476-$).did.	DERWENT	NEAR	ON	2018/03/28 18:47
S172	0	S171 and (driver with (power (input or connect$3))) and control$4 and S164	US-PGPUB; USPAT; USOCR;	NEAR	ON	2018/03/28 18:48

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S173	0	S171 and (driver with (power (input or connect$3))) and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:48
S174	0	S171 and driver and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:49
S175	0	S167 and (driver with (power (input or connect$3))) and control$4 and S164	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:49
S176	1	S167 and (driver with (power (input or connect$3))) and control$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:50
S177	47	(((light with diode) or "LED") tube) and (driver with (power (input or connect$3))) and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:55
S178	12	S177 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:56
S179	174	(((light with diode) or "LED") tube) and driver and (power (input or connect$3)) and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:58
S180	51	S179 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 18:58
S181	39	S180 not S178	US-PGPUB;	NEAR	ON	2018/03/28

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			18:59
S182	521	(((light with diode) or "LED") tube) and driver and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:21
S183	478	(((light with diode) or "LED") tube) and driver and controller and power	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:22
S184	255	(((light with diode) or "LED") tube) and (driver with power) and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:22
S185	96	S184 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:23
S186	59	S185 not S180	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:23
S187	253	S183 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:28
S188	157	S187 not S185	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:28
S189	7	(US-20120188756-$ or US-20110084608-$ or US-20110037907-$).did. or (US-9232578-$ or US-8319433-$ or US-7839559-$ or US-6796685-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/28 19:36
S190	0	(((light with diode) or "LED") tube)	US-PGPUB;	NEAR	ON	2018/03/28

		and (driver with power) and controller and S189	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			19:36
S191	0	((light with diode) or "LED") and (driver with power) and controller and S189	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:42
S192	40412	((light with diode) or "LED") and (driver with power) and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:42
S193	521	(((light with diode) or "LED") tube) and driver and controller	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:44
S194	61	(((light with diode) or "LED") tube) and driver and controller and 362/$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:45
S195	40	S194 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:45
S196	59	(((light with diode) or "LED") tube) and driver and controller and 315/$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:47
S197	36	S196 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/28 19:47
S199	1	("20070262732").PN.	US-PGPUB	OR	OFF	2018/03/29 09:38
S200	1	S199 and driver and controller	US-PGPUB; USPAT; USOCR; FPRS;	NEAR	ON	2018/03/29 09:39

			EPO; JPO; DERWENT; IBM_TDB			
S201	1	(DE-202009011476-$).did.	DERWENT	NEAR	ON	2018/03/29 09:57
S202	358993	S199 or (tube and fluorescent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:05
S203	1	("20070262732").PN.	US-PGPUB	OR	OFF	2018/03/29 10:06
S205	1	(US-20070262732-$).did.	US-PGPUB	NEAR	ON	2018/03/29 10:07
S206	358993	S205 or (tube and fluorescent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:07
S207	1	S205 and (tube and fluorescent)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:07
S208	0	15/473410 and "DMX"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:25
S209	0	15/476410 and "DMX"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:25
S210	1	S199 and signal$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:31
S211	126	("DMX" with driver) and "LED"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:33
S212	0	("DMX" with driver) and ("LED" tube)	US-PGPUB; USPAT;	NEAR	ON	2018/03/29 10:33

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S213	0	("DMX" with driver) and (LED tube)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:34
S214	126	("DMX" with driver) and "LEDs"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:34
S215	44	S214 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:34
S216	4	(US-20090009092-$).did. or (US-9554433-$ or US-8955979-$ or US-8063576-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/29 10:37
S217	4	("DMX" with driver) and S216	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:37
S218	11	("20040105261" | "20040135524" | "20060220571" | "6473065" | "7161556").PN. OR ("8063576").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/03/29 10:40
S219	11	(US-20060220571-$ or US-20040135524-$ or US-20040105261-$).did. or (US-D800367-$ or US-9520742-$ or US-D706480-$ or US-D705976-$ or US-D705975-$ or US-8337068-$ or US-7161556-$ or US-6473065-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/03/29 10:40
S220	0	("DMX" with driver) and S219	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/03/29 10:40
S221	2	(("20070262732") or ("20110149563")).PN.	US-PGPUB	OR	OFF	2018/03/29 16:11
S222	1	(DE-202009011476-$).did.	DERWENT	NEAR	ON	2018/03/29 16:11
S223	3	S221 or S222	US-PGPUB; USPAT;	NEAR	ON	2018/03/29 16:12

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S224	1	("20010012204").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/05/30 10:53
S225	1	S224 and "285" and "286"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/05/30 10:54
S226	3	DE-202009011476-$.did.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/05/30 12:43
S227	37604	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and ((five or "5" colors) or (red and blue and green and yellow and amber) with light)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 17:30
		(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR		2018/12/02 17:31
S229	8076	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((five or "5" colors) or (red and blue and green and yellow and amber)) with light) and ((light with diod$3) or "LEDs")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 17:33
S230	2701	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 17:35
S231	2091	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)) and (controller or driv$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 17:37
S232	222	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed	US-PGPUB; USPAT; USOCR;	NEAR	ON	2018/12/02 17:41

		circuit board)) and (((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)) and (controller or driv$3) and ((housing or shell or enclosure or tube) with (transparent (light emitting) or clear or trnaslucent or refract$4))	FPRS; EPO; JPO; DERWENT; IBM_TDB			
S233	110	S232 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 17:42
S234	0	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)) and (controller or driv$3) and (elongated (housing or shell or enclosure or tube) with (transparent (light emitting) or clear or trnaslucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 17:43
S235	2	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)) and (controller or driv$3) and (elongat$3 (housing or shell or enclosure or tube) with (transparent (light emitting) or clear or trnaslucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 17:44
S236	110	(US-20120086345-$ or US-20140049983-$ or US-20120287620-$ or US-20120243228-$ or US-20120159818-$ or US-20120069591-$ or US-20120020101-$ or US-20120018764-$ or US-20110317418-$ or US-20110273906-$ or US-20110255303-$ or US-20110234107-$ or US-20110227487-$ or US-20110188240-$ or US-20110096560-$ or US-20110074958-$ or US-20100302797-$ or US-20100135011-$ or US-20100106306-$ or US-20100103664-$ or US-20100102960-$ or US-20100102730-$ or US-20100097780-$ or US-20100080011-$ or US-20100067231-$ or US-20100039813-$).did. or (US-20080224597-$ or US-20080219019-$ or US-20070291488-$ or US-20070291475-$ or US-20070223230-$ or US-20070171640-$ or US-20070109804-$ or US-20060262550-$ or US-20060250801-$ or US-20060158138-$ or US-20060120083-$ or US-20060109648-$ or US-	US-PGPUB; USPAT	NEAR	ON	2018/12/02 17:46

		20050265024-$ or US-20050231947-$ or US-20050047167-$ or US-20040239243-$ or US-20040208018-$ or US-20040156207-$ or US-20040130909-$ or US-20040114384-$ or US-20040095777-$ or US-20030206417-$ or US-20030193802-$ or US-20030156425-$ or US-20020172053-$ or US-20010024371-$).did. or (US-9057493-$ or US-8547036-$ or US-8096683-$ or US-9698313-$ or US-9110200-$ or US-9028123-$ or US-8809893-$ or US-8761565-$ or US-8750671-$ or US-8653984-$ or US-8652357-$ or US-8616725-$ or US-8596813-$ or US-8541958-$ or US-8523394-$ or US-8502247-$ or US-8454193-$ or US-8434909-$ or US-8324817-$ or US-8262268-$ or US-8256924-$ or US-8251544-$ or US-8215786-$ or US-8214084-$ or US-8066415-$ or US-8033706-$).did. or (US-8033699-$ or US-7976196-$ or US-7938562-$ or US-7850351-$ or US-7824051-$ or US-7604376-$ or US-7534009-$ or US-7524097-$ or US-7458698-$ or US-7427150-$ or US-7410269-$ or US-7377675-$ or US-7300192-$ or US-7252405-$ or US-7217006-$ or US-7213941-$ or US-7188984-$ or US-7168830-$ or US-7111961-$ or US-7083312-$ or US-6908214-$ or US-6685348-$ or US-6600175-$ or US-6568839-$ or US-6550949-$ or US-6523976-$ or US-6416208-$).did. or (US-6276821-$ or US-6176602-$ or US-6132072-$ or US-5896092-$ or US-5803579-$).did.				
S237	110	S236 and ((((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 17:47
S238	11	(US-20120287620-$ or US-20120086345-$ or US-20110234107-$ or US-20110188240-$ or US-20100103664-$ or US-20100102730-$ or US-20100067231-$).did. or (US-9057493-$ or US-8653984-$ or US-8547036-$ or US-8096683-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/12/02 17:57
S239	8	S238 and color$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 17:58
S240	9	S238 and five	US-PGPUB; USPAT; USOCR;	NEAR	ON	2018/12/02 18:09

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S241	1015	("20010033488" | "20010045803" | "20020038157" | "20020044066" | "20020047569" | "20020047624" | "20020047628" | "20020048169" | "20020057061" | "20020060526" | "20020070688" | "20020074559" | "20020074958" | "20020078221" | "20020101197" | "20020113555" | "20020130627" | "20020145394" | "20020145869" | "20020152045" | "20020152298" | "20020153851" | "20020158583" | "20020163316" | "20020171365" | "20020171377" | "20020171378" | "20020176259" | "20020179816" | "20020195975" | "20030011538" | "20030028260" | "20030031015" | "20030048641" | "20030057884" | "20030057886" | "20030057887" | "20030057890" | "20030076281" | "20030085710" | "20030095404" | "20030100837" | "20030102810" | "20030133292" | "20030137258" | "20030185005" | "20030185014" | "20030189412" | "20030222587" | "20040003545" | "20040012959" | "20040036006" | "20040037088" | "20040052076" | "20040062041" | "20040075572" | "20040080960" | "20040090191" | "20040090787" | "20040105261" | "20040105264" | "20040113568" | "20040116039" | "20040124782" | "20040130909" | "20040141321" | "20040155609" | "20040160199" | "20040178751" | "20040189218" | "20040189262" | "20040212320" | "20040212321" | "20040212993" | "20040223328" | "20040240890" | "20040257007" | "20050013133" | "20050024877" | "20050030744" | "20050035728" | "20050036300" | "20050040774" | "20050041161" | "20050041424" | "20050043907" | "20050044617" | "20050047132" | "20050047134" | "20050062440" | "20050063194" | "20050078477" | "20050099824").PN. OR ("20050107694" | "20050110384" | "20050116667" | "20050128751" | "20050141225" | "20050151489" | "20050151663" | "20050154494" | "20050162093" | "20050174473" | "20050174780" | "20050184667" | "20050201112" | "20050206529" | "20050213320" | "20050213352" | "20050213353" | "20050218838" | "20050218870" | "20050219860" | "20050219872" | "20050225979" | "20050231133" | "20050236029" | "20050236998" | "20050248299"	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/12/02 18:11

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		"5962992"	"5963185"	"5966069"				
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		"5998928"	"6000807"	"6007209"				
		"6008783"	"6010228"	"6011691"				
		"6016038"	"6018237"	"6019493"				
		"6020825"	"6025550"	"6028694"				
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		"6068383"	"6069597"	"6072280"				
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		"6149283"	"6150774"	"6151529"				
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		"6183104"	"6184628"	"6196471"				
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		"6217190"	"6219239"	"6227679"			
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		"6250774"	"6252350"	"6252358"			
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		"6582103"	"6583550"	"6583573"			
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		"6592238"	"6596977"	"6598996"			
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		"6612712"	"6612717"	"6621222"			
		"6623151"	"6624597"	"6634770"			
		"6634779"	"6636003"	"6639349"			
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		"6744223"	"6748299"	"6762562"			
		"6774584"	"6777891"	"6781329"			
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		"6806659"	"6814470"	"6815724"			
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		"6853151"	"6853563"	"6857924"			
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		"6871981"	"6874924"	"6879883"			
		"6882111"	"6883929"	"6883934"			
		"6888322"	"6897624"	"6909239"			
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		"6936968"	"6936978"	"6940230"			
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		"6964501"	"6965197"	"6965205"			
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		"7118262"	"7119503"	"7121679"			
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		"7132635"	"7132785"	"7132804"			

		"7135824" | "7139617" | "7144135" | "7153002" | "7161311" | "7161313" | "7161556" | "7164110" | "7164235" | "7165863" | "7165866" | "7167777" | "7168843" | "7178941" | "7180252" | "7186003" | "7186005" | "7187141" | "7190126" | "7192154" | "7198387" | "7201491" | "7201497" | "7202613" | "7204615" | "7204622" | "7207696" | "7210818" | "7210957" | "7211959" | "7213934" | "7217004" | "7217012" | "7217022" | "7218056" | "7218238" | "7220015" | "7220018" | "7221104" | "7221110" | "7224000" | "7226189" | "7228052" | "7228190" | "7231060" | "7233115" | "7233831" | "7236366" | "7237924" | "7237925" | "7239532" | "7241038" | "7242152" | "7246926" | "7246931" | "7248239" | "7249269" | "7249865" | "7252408" | "7253566" | "7255457" | "7255460" | "7256554" | "7258458" | "7258467" | "7259528" | "7262439" | "7264372" | "7267467" | "7270443" | "7271794" | "7273300" | "7274045" | "7274160" | "7285801" | "7288902" | "7296912" | "7300184" | "7300192" | "7303300" | "7306353" | "7307391" | "7308296" | "7309965" | "7318658" | "7319244" | "7319246" | "7321191" | "7326964" | "7327281" | "7329031" | "7345320" | "7348604" | "7350936" | "7350952" | "7352138" | "7352339" | "7353071" | "7358679" | "7358929" | "7374327" | "7378805" | "7378976" | "7385359" | "7391159" | "7396146").PN. OR ("7401935" | "7401945" | "7423548" | "7427840" | "7429117" | "7434964" | "7438441" | "7449847" | "7476002" | "7476004" | "7478924" | "7490957" | "7497596" | "7507001" | "7510299" | "7520635" | "7521872" | "7524089" | "7534002" | "7549769" | "7556396" | "7572030" | "7575339" | "7602559" | "7619366" | "7635201" | "7800511" | "7848702" | "8183989" | "D054511" | "D058105" | "D079814" | "D080419" | "D084763" | "D119797" | "D125312" | "D268134" | "D293723" | "D354360" | "D376030" | "D422737" | "D457667" | "D457669" | "D457974" | "D458395" | "D463610" | "D468035" | "D481484" | "D491678" | "D492042" | "D518218" | "D532532" | "D536468" | "D538950" | "D538952" | "D538962" | "D548868" | "D553267" | "D556937" | "D557854" | "D563589" | "D580089" | "D581556" | "D582577" | "D584428" | "D586484" | "D586928" | "D593223" | "D612528" | "RE36030").PN. OR ("8653984").URPN.				
S242	5	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed	US-PGPUB; USPAT; USOCR;	NEAR	ON	2018/12/02 18:14

		circuit board)) and (((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)) and (controller or driv$3) and (elongat$3 (housing or shell or enclosure or tube) with (transparent (light emitting) or clear or translucent or refract$4))	FPRS; EPO; JPO; DERWENT; IBM_TDB			
S243	4968	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with ((five or "5" colors) or (red and blue and green and yellow and amber)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:17
S244	5	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)) and (controller or driv$3) and (elongat$3 (housing or shell or enclosure or tube) with (transparent (light emitting) or clear or translucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:18
S245	310	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)) and (controller or driv$3) and ((housing or shell or enclosure or tube) with (transparent (light emitting) or clear or translucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:19
S246	13	S241 and S245	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:19
S247	0	(simon-david-$).in. and ((((light with diod$3) or "LEDs") with (((red and blue and green and yellow and amber)) with light)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:28
S248	0	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (((red and blue and green and yellow, orange and amber)) with light)) and (controller or driv$3) and (elongat$3 (housing or shell or enclosure or tube) with (transparent (light emitting) or clear or trnaslucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:29

S249	1176	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (("5" or five or (red and blue and green and yellow, orange and amber)) with light)) and (controller or driv$3) and (tube with (transparent or (light emitting) or clear or translucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:36
S250	2273	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (("5" or five or (red and blue and green and yellow, orange and amber or white)) with light)) and (controller or driv$3) and (tube with (transparent or (light emitting) or clear or translucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:37
S251	643	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (("5" or five or (red and blue and green and yellow, orange and amber or white)) with light)) and ((controller or driv$3) with select$3) and (tube with (transparent or (light emitting) or clear or translucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:39
S252	273	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (("5" or five or (red and blue and green and yellow, orange and amber and white)) with light)) and ((controller or driv$3) with select$3) and (tube with (transparent or (light emitting) or clear or translucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:39
S253	171	S252 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:40
S254	26	(substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with ((("5" or five) colors) or (red and blue and green and yellow, orange and amber and white)) with light) and ((controller or driv$3) with select$3) and (tube with (transparent or (light emitting) or clear or translucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:45
S255	1	("LED" tube) and (((light with diod$3) or "LEDs") with ((("5" or five) colors) or (red and blue and green and	US-PGPUB; USPAT; USOCR;	NEAR	ON	2018/12/02 18:47

		yellow, orange and amber and white)) with light) and ((controller or driv$3) with select$3)	FPRS; EPO; JPO; DERWENT; IBM_TDB			
S256	79	(light with tube) and (((light with diod$3) or "LEDs") with ((("5" or five) colors) or (red and blue and green and yellow, orange and amber and white)) with light)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 18:49
S257	33	("20060244622" | "20070158668" | "20080128723" | "20080173884" | "20080179611" | "20080258130" | "20090140271" | "20090184333" | "20090212304" | "20090224265" | "20100039806" | "20100053956" | "20100134047" | "20100155763" | "20100220479" | "20100271819" | "20110013400" | "20120235199" | "20130114255" | "20130215610" | "20130329425" | "20140198497" | "20140265809" | "4946547" | "5200022" | "6914194" | "7213940" | "7791061" | "8058088" | "8714772" | "8905579" | "9215792" | "RE34861").PN. OR ("9897267").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/12/02 18:55
S258	3	(US-20110013400-$ or US-20100220479-$).did. or (US-8905579-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/12/02 18:57
S259	3	(US-20140268728-$).did. or (US-9897267-$ or US-8096683-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/12/02 18:58
S260	6	((light with tube) and (((light with diod$3) or "LEDs") with ((("5" or five) colors) or (red and blue and green and yellow, orange and amber and white)) with light)) and cree	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:00
S261	969	(light with tube) and ((light with diod$3) or "LEDs") and ((("5" or five) colors) or (red and blue and green and yellow, orange and amber and white) with light)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:03
S262	588	S261 not mirror	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:03
S263	368	S262 not backlight	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:04

S264	306	S263 not (light guide)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:04
S265	298	S264 not (wave guide)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:04
S266	166	S265 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:05
S267	165	S266 not S233	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:05
S268	165	S267 not S253	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:05
S269	58	S268 not filter	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:06
S270	1	("8587185").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/12/02 19:11
S271	2	("20090140271" | "6639360").PN. OR ("8587185").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/12/02 19:11
S272	5	(light$3 (device or fixture or assembly or apparatus)) and (substrate or (circuit board) or "PCB" or (printed circuit board)) and (((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)) and (controller or driv$3) and (elongat$3 (housing or shell or enclosure or tube) with (transparent (light emitting) or clear or translucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:12
S273	5	(((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue	US-PGPUB; USPAT;	NEAR	ON	2018/12/02 19:13

		and green and yellow and amber)) with light)) and (elongat$3 (housing or shell or enclosure or tube) with (transparent (light emitting) or clear or translucent or refract$4))	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S274	15	(((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)) and (elongat$3 with (housing or shell or enclosure or tube) with (transparent (light emitting) or clear or translucent or refract$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:14
S275	655	(((light with diod$3) or "LEDs") with (((five or "5" colors) or (red and blue and green and yellow and amber)) with light)) and ((((elongat$3 with (housing or shell or enclosure)) or tube) with (transparent or (light emitting) or clear or translucent or refract$4)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:18
S276	276	S275 not ((mirror or backlight or (light guide) or (wave guide)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:20
S277	182	S276 and @ad < "20120517"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 19:21
S278	14	(US-20120086345-$ or US-20120069563-$ or US-20120008314-$ or US-20110235321-$ or US-20110234107-$ or US-20100321921-$ or US-20100067231-$ or US-20100008085-$ or US-20060087838-$).did. or (US-8596813-$ or US-8547036-$ or US-8256924-$ or US-7976196-$ or US-6390641-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/12/02 19:25
S279	1	("20120146503").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/12/02 21:07
S280	1	S279 and color	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 21:07
S281	1	("20100102730").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/12/02 21:12
S283	1	S281 and color	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	NEAR	ON	2018/12/02 21:13

			DERWENT; IBM_TDB			
S284	5	("20060071221" | "7187140").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/02 21:23
S285	2	("20060071221" | "7187140").PN.	US-PGPUB; USPAT	NEAR	ON	2018/12/02 21:23
S286	1	("7476003") PN	US-PGPUB; USPAT; USOCR	OR	OFF	2018/12/02 21:34
S287	8	("20070074098" | "4492863" | "6856087" | "6923548").PN. OR ("7476003").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/12/02 21:34
S288	26	("6340824" | "6727643").PN. OR ("6856087").URPN.	US-PGPUB; USPAT; USOCR	NEAR	ON	2018/12/02 21:38
S289	34	("20110285292" | "20110084608" | "20110163941" | "6923548" | "8147091" | "20070228999" | "20110235318" | "6856087" | "20100102729" | "9239134" | "20070258240" | "20100148673" | "7180252" | "8203260" | "20040105261" | "20090009092" | "20030072156" | "7476003" | "20130127369" | "9845924" | "20110058365" | "7476003" | "20070262732" | "20110149563" | "20040257007" | "20090052204" | "20090109668" | "20100214779" | "20100315001" | "9057493" | "7646029" | "9066405" | "20100289428" | "6720745" | "7507001").PN.	US-PGPUB; USPAT	NEAR	ON	2018/12/03 09:47
S290	6	(("6856087") or ("7476003") or ("20050264472") or ("20080025019") or ("20120146503") or ("20100102730")).PN.	US-PGPUB; USPAT	OR	OFF	2018/12/03 10:22
S291	38	S289 or S290	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 10:23
S292	18	(US-20120146503-$ or US-20110235318-$ or US-20110084608-$ or US-20110058365-$ or US-20100315001-$ or US-20100289428-$ or US-20100214779-$ or US-20100102730-$ or US-20100102729-$ or US-20090109668-$ or US-20080025019-$ or US-20070262732-$ or US-20070228999-$).did. or (US-9845924-$ or US-9057493-$ or US-8147091-$ or US-7476003-$ or US-6923548-$).did.	US-PGPUB; USPAT	NEAR	ON	2018/12/03 10:29

S293	484474	((B60Q3/$ OR F21K9/$ OR F21S4/$ OR F21S10/$ OR F21V3/$ OR F21V7/$ OR F21V9/$ OR F21V23/$ OR F21Y2103/$ OR F21Y2105/$ OR F21Y2107/$ OR F21Y2113/$ OR F21Y2115/$ OR G02F2001/$ OR H05B37/$).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 14:05
S294	160324	((B60Q2900/10 OR B60Q3/47 OR F21K9/27 OR F21K9/27 OR F21K9/60 OR F21K9/62 OR F21S10/02 OR F21S10/023 OR F21V3/02 OR F21V7/0016 OR F21V7/005 OR F21V9/08 OR F21V23/00 OR F21V23/005 OR F21V23/04 OR F21Y2103/10 OR F21Y2105/10 OR F21Y2113/10 OR F21Y2115/10 OR G02F2001/133613 OR G02F2001/133622 OR H05B37/02).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 14:06
S295	34	("20110285292" | "20110084608" | "20110163941" | "6923548" | "8147091" | "20070228999" | "20110235318" | "6856087" | "20100102729" | "9239134" | "20070258240" | "20100148673" | "7180252" | "8203260" | "20040105261" | "20090009092" | "20030072156" | "7476003" | "20130127369" | "9845924" | "20110058365" | "7476003" | "20070262732" | "20110149563" | "20040257007" | "20090052204" | "20090109668" | "20100214779" | "20100315001" | "9057493" | "7646029" | "9066405" | "20100289428" | "6720745" | "7507001").PN.	US-PGPUB; USPAT	NEAR	ON	2018/12/03 16:17
S296	6	(("6856087") or ("7476003") or ("20050264472") or ("20080025019") or ("20120146503") or ("20100102730")).PN.	US-PGPUB; USPAT	OR	OFF	2018/12/03 16:17
S297	4	S296 not S295	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 16:17
S298	0	S295 ro S296	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 16:40
S299	38	S295 or S296	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 16:40

S300	23570	(((light with diod$3) or "LEDs") with ((four colors) or ((red and blue and green and (yellow or orange or amber)))))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 16:46
S301	18	S299 and S300	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 16:47
S302	1	("20070262732").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/12/03 17:34
S303	484474	((B60Q3/$ OR F21K9/$ OR F21S4/$ OR F21S10/$ OR F21V3/$ OR F21V7/$ OR F21V9/$ OR F21V23/$ OR F21Y2103/$ OR F21Y2105/$ OR F21Y2107/$ OR F21Y2113/$ OR F21Y2115/$ OR G02F2001/$ OR H05B37/$).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 17:57
S304	160324	((B60Q2900/10 OR B60Q3/47 OR F21K9/27 OR F21K9/27 OR F21K9/60 OR F21K9/62 OR F21S10/02 OR F21S10/023 OR F21V3/02 OR F21V7/0016 OR F21V7/005 OR F21V9/08 OR F21V23/00 OR F21V23/005 OR F21V23/04 OR F21Y2103/10 OR F21Y2105/10 OR F21Y2113/10 OR F21Y2115/10 OR G02F2001/133613 OR G02F2001/133622 OR H05B37/02).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	NEAR	ON	2018/12/03 17:57

12/3/2018 8:22:51 PM
C:\Users\hsawhney\Documents\EAST\Workspaces\15476410 MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY.wsp

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: **(571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

36212 7590 12/10/2018
HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date indicated below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/476,410	03/31/2017	Guillermo Macias	12-10060-CIP2	8635

TITLE OF INVENTION: MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$500	$0	$0	$500	03/11/2019

EXAMINER	ART UNIT	CLASS-SUBCLASS
SAWHNEY, HARGOBIND S	2875	362-011000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 David L. Hoffman
2 HOFFMAN PATENT GROUP
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: COLT INTERNATIONAL CLOTHING INC. DBA COLT LED

(B) RESIDENCE: (CITY and STATE OR COUNTRY): SANTA CLARITA, CA 91321

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☒ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /David L. Hoffman/ Date December 11, 2018

Typed or printed name David L. Hoffman Registration No. 32,469

PTOL-85 Part B (08-18) Approved for use through 01/31/2020 OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Electronic Patent Application Fee Transmittal

Application Number:	15476410
Filing Date:	31-Mar-2017
Title of Invention:	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY
First Named Inventor/Applicant Name:	Guillermo Macias
Filer:	David L. Hoffman
Attorney Docket Number:	12-10060-CIP2

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	500	500

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**500**

Electronic Acknowledgement Receipt	
EFS ID:	34548095
Application Number:	15476410
International Application Number:	
Confirmation Number:	8635
Title of Invention:	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY
First Named Inventor/Applicant Name:	Guillermo Macias
Customer Number:	36212
Filer:	David L. Hoffman
Filer Authorized By:	
Attorney Docket Number:	12-10060-CIP2
Receipt Date:	11-DEC-2018
Filing Date:	31-MAR-2017
Time Stamp:	13:37:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$500
RAM confirmation Number	121218INTEFSW13374100
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	PTOL85issuefeetransmittalCUTE.pdf	146999 6e930fa29ecd59a443d5a99ca5d6eaa90e3d8edd	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30113 1aedb392b27cd0655499e1dff93db96c0b16c9b4	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	177112		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/476,410	03/31/2017	Guillermo Macias	12-10060-CIP2	8635

36212 7590 12/21/2018
HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355

EXAMINER	
SAWHNEY, HARGOBIND S	

ART UNIT	PAPER NUMBER
2875	

NOTIFICATION DATE	DELIVERY MODE
12/21/2018	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

David@DLHpatent.com
DLHpatent@sbcglobal.net
Ruth@DLHpatent.com

PTOL-90A (Rev. 04/07)

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 15476410
Applicant : Macias
Filing Date : 03/31/2017
Date Mailed : 12/21/2018

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

A copy of this notice MUST be returned with the reply. Please address response to "Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450".

/Marty Willis/
Publication Branch
Office of Data Management
(571) 272-4200

Application No. 15476410 **Drawings filed: 03/31/2017**

IDENTIFICATION OF DRAWING DEFICIENCIES

- [ ] There is a hole or the image thereof within the illustration. FIG(s)
- [ ] The illustration is penetrated or traversed by a solid or broken line that is not intended to be part of the drawing, such as a dark line caused by a flaw in the copying process. FIG(s)
- [ ] An ink stamp or the image thereof obscures part of the illustration. FIG(s)
- [ ] The drawing is marred by black smudges, obliterations, or fax/copier marks (for example, speckles or dots in a substantial portion of the drawing). FIG(s)
- [ ] Figure numbers are duplicated or missing. FIG(s)
- [ ] Drawing sheet or figure is missing. FIG(s)
- [ ] Numbers, letters, or reference characters in the drawing have been crossed out or are illegibly handwritten. FIG(s)
- [ ] The character of the lines, numbers, and letters is poor. FIG(s)
- [ ] The drawing's background shows that the original drawing was made on graph paper or other paper with a pattern or decoration. FIG(s)
- [ ] The FIG. number label is placed in a location that causes the drawing to be read upside down. FIG(s)
- [X] Data, a reference number, or part of the drawing is truncated or missing, or a lead line has no reference number. FIG(s) 4
- [ ] The drawing and/or the FIG. label contain(s) foreign language. FIG(s)
- [ ] This utility application contains a photograph of a view that is capable of being illustrated as a line drawing. FIG(s)
- [ ] A petition under 37 CFR 1.84(a)(2) to accept color drawings has been granted, but the brief description of the drawings in the specification does not contain (or has not been amended to contain) the paragraph required by 37 CFR 1.84(a)(2)(iii).
- [ ] This reissue application contains added and/or amended drawings that are not labeled as “New” or “Amended” or “Canceled” as required by 37 CFR 1.173(b)(3). FIG(s)
- [ ] This Design reissue application contains a drawing that is labeled as “Canceled” but is not surrounded by brackets, or a drawing that is surrounded by brackets but is not labeled as “Canceled.” See 37 CFR 1.173(b)(3). FIG(s)
- [ ] OTHER:
- [X] COMMENTS:
Figure 4 appears to have two lead lines that are missing their corresponding reference numbers, directly below the two boxes marked "AC Power Source".

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/476,410	03/31/2017	Guillermo Macias	12-10060-CIP2	8635

36212 7590 12/21/2018
HOFFMAN PATENT GROUP
28494 WESTINGHOUSE PLACE
SUITE 204
VALENCIA, CA 91355

EXAMINER
SAWHNEY, HARGOBIND S

ART UNIT	PAPER NUMBER
2875	

NOTIFICATION DATE	DELIVERY MODE
12/21/2018	ELECTRONIC

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David@DLHpatent.com
DLHpatent@sbcglobal.net
Ruth@DLHpatent.com

PTOL-90A (Rev. 04/07)

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
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Application No. : 15476410
Applicant : Macias
Filing Date : 03/31/2017
Date Mailed : 12/21/2018

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See attachment(s).

A copy of this notice MUST be returned with the reply. Please address response to "Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450".

/Marty Willis/
Publication Branch
Office of Data Management
(571) 272-4200

Application No. 15476410 **Drawings filed: 03/31/2017**

IDENTIFICATION OF DRAWING DEFICIENCIES

- [ ] There is a hole or the image thereof within the illustration. FIG(s)
- [ ] The illustration is penetrated or traversed by a solid or broken line that is not intended to be part of the drawing, such as a dark line caused by a flaw in the copying process. FIG(s)
- [ ] An ink stamp or the image thereof obscures part of the illustration. FIG(s)
- [ ] The drawing is marred by black smudges, obliterations, or fax/copier marks (for example, speckles or dots in a substantial portion of the drawing). FIG(s)
- [ ] Figure numbers are duplicated or missing. FIG(s)
- [ ] Drawing sheet or figure is missing. FIG(s)
- [ ] Numbers, letters, or reference characters in the drawing have been crossed out or are illegibly handwritten. FIG(s)
- [ ] The character of the lines, numbers, and letters is poor. FIG(s)
- [ ] The drawing's background shows that the original drawing was made on graph paper or other paper with a pattern or decoration. FIG(s)
- [ ] The FIG. number label is placed in a location that causes the drawing to be read upside down. FIG(s)
- [X] Data, a reference number, or part of the drawing is truncated or missing, or a lead line has no reference number. FIG(s) 4
- [ ] The drawing and/or the FIG. label contain(s) foreign language. FIG(s)
- [ ] This utility application contains a photograph of a view that is capable of being illustrated as a line drawing. FIG(s)
- [ ] A petition under 37 CFR 1.84(a)(2) to accept color drawings has been granted, but the brief description of the drawings in the specification does not contain (or has not been amended to contain) the paragraph required by 37 CFR 1.84(a)(2)(iii).
- [ ] This reissue application contains added and/or amended drawings that are not labeled as "New" or "Amended" or "Canceled" as required by 37 CFR 1.173(b)(3). FIG(s)
- [ ] This Design reissue application contains a drawing that is labeled as "Canceled" but is not surrounded by brackets, or a drawing that is surrounded by brackets but is not labeled as "Canceled." See 37 CFR 1.173(b)(3). FIG(s)
- [ ] OTHER:
- [X] COMMENTS:
Figure 4 appears to have two lead lines that are missing their corresponding reference numbers, directly below the two boxes marked "AC Power Source".

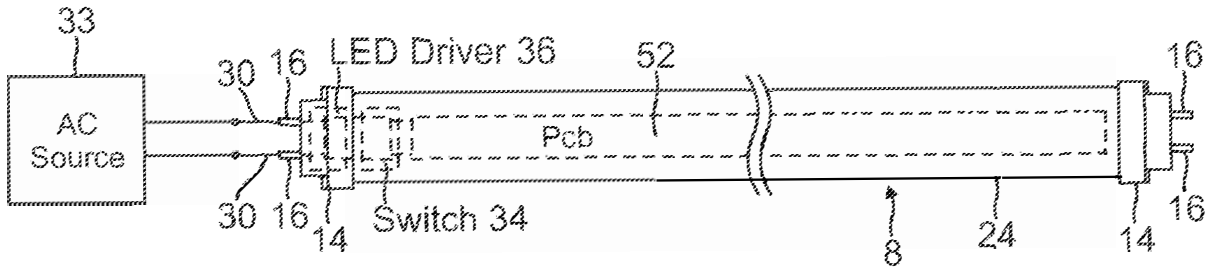


FIG. 3

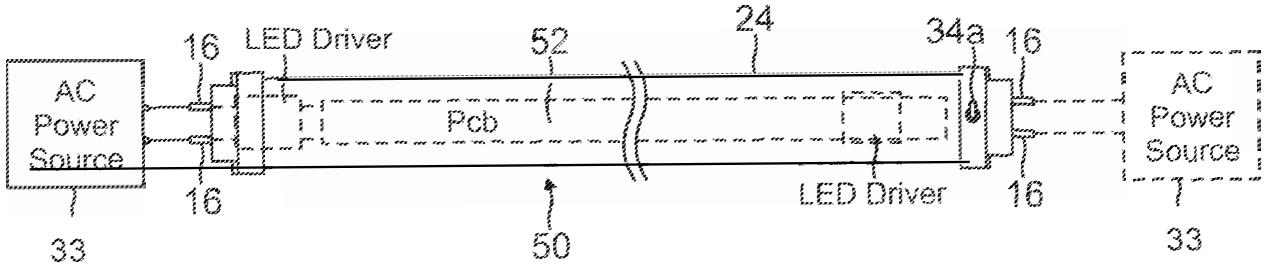


FIG. 4

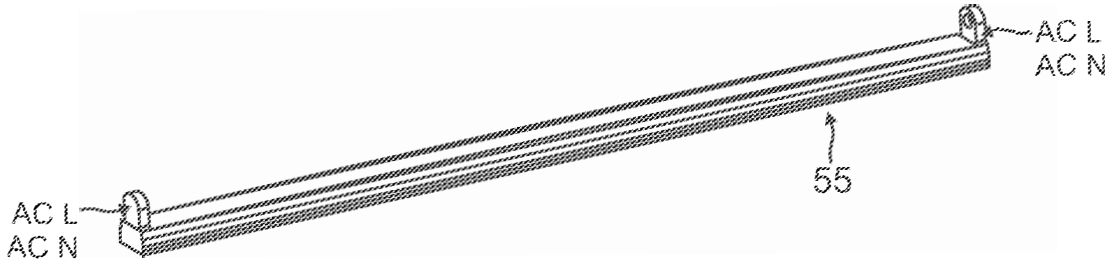


FIG. 4A

Replacement Sheet

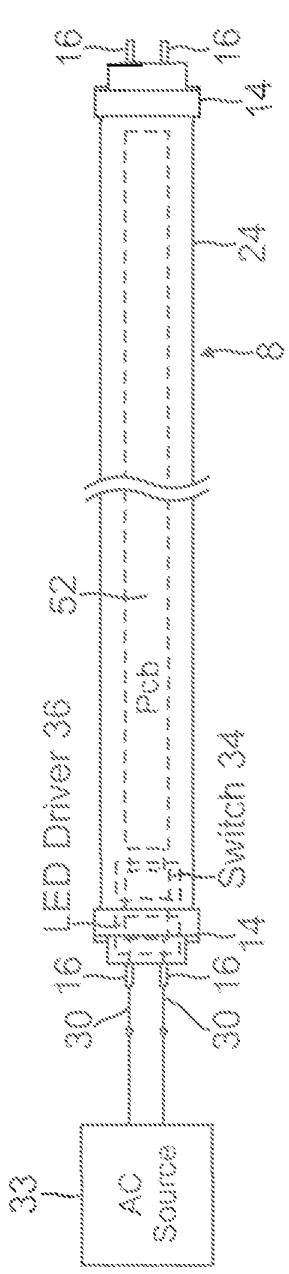


FIG. 3

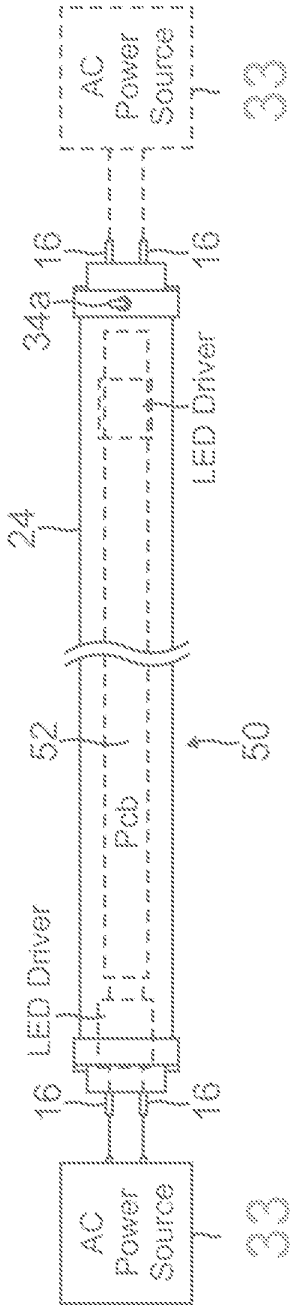


FIG. 4

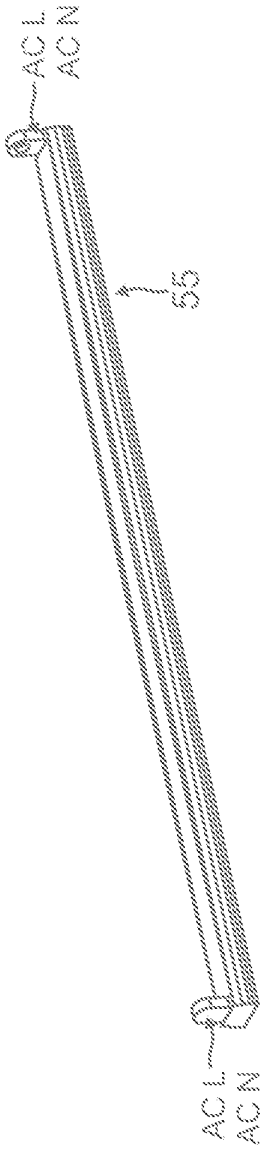


FIG. 4A

Electronic Acknowledgement Receipt	
EFS ID:	34682273
Application Number:	15476410
International Application Number:	
Confirmation Number:	8635
Title of Invention:	MULTICOLORED TUBE LIGHT WITH IMPROVED LED ARRAY
First Named Inventor/Applicant Name:	Guillermo Macias
Customer Number:	36212
Filer:	David L. Hoffman
Filer Authorized By:	
Attorney Docket Number:	12-10060-CIP2
Receipt Date:	21-DEC-2018
Filing Date:	31-MAR-2017
Time Stamp:	20:06:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	ResponseToNoticeReFig4.pdf	24331 e69b3fdae8585eb55e52f24d491e1d6d4cd623bc	no	3
Warnings:					

Information:					
2	Miscellaneous Incoming Letter	20181221NoticeCorrectedApplicationPartsCUTE.pdf	242865 e7bac976626237b704b1417ea0638cb6e0a67f4c	no	3
Warnings:					
Information:					
3	Drawings-only black and white line drawings	ReplacementSheetFig4CUTE.pdf	32651 643477d516c6a22a127d6e632b18128d5c5c952c	no	1
Warnings:					
Information:					
4	Drawings-other than black and white line drawings	AnnotatedSheetFig4CUTE.pdf	23558 5dd9ce9f1086d774fbcf88c9805b911f14f2bdbe	no	1
Warnings:					
Information:					
		Total Files Size (in bytes):	323405		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

DocCode – SCORE

SCORE Placeholder Sheet for IFW Content

Application Number: 15476410 Document Date: 12/21/2018

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

- Drawing

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Form Revision Date: August 26, 2013

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. Serial No.	**:**	**15/476,410**
1st Named Inventor	**:**	**Macias, Guillermo**
Filed	**:**	**March 31, 2017**
Title	**:**	**Multicolored Tube Light with Improved LED Array**
TC/A.U.	**:**	**2875**
Examiner	**:**	**Sawhney**
Confirmation No.	**:**	**8635**
Docket No.	**:**	**12-10060-CIP2**
Customer No.	**:**	**36212**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO NOTICE OF FILE CORRECTED APPLICATION PARTS-NOTICE OF ALLOWANCE MAILED DECEMBER 21, 2018 AND AMENDMENT IN RESPONSE

Sir:

This paper is filed in response to the **NOTICE OF FILE CORRECTED APPLICATION PARTS-NOTICE OF ALLOWANCE MAILED DECEMBER 21, 2018** issued in the above-identified U.S. patent application. In view of the following remarks and amendments to the drawings, entry of the amendments is respectfully requested.

Amendments to the Drawings begin on page 2 of this paper.

Remarks/Arguments begin on page 3 of this paper.

QUASAR SCIENCE LLC EXHIBIT 1002
Page 363 of 369

Amendments to the Drawings:

Please kindly amend Figure 4 of the drawings to add reference numerals 33 (in two places) as shown on the attached replacement sheet and attached annotated sheet. No new matter has been added.

Attachment: Replacement sheet and annotated sheet

REMARKS

A Notice of Allowance has been issued in this application. The issue fee has been paid. On December 21, 2018, a Notice to File Corrected Application Parts was issued. The sole informality is in Fig. 4, where reference numbers were inadvertently omitted.

The reference number of the AC power source is indicated in Fig. 3 as "33." It is also mentioned with respect to Fig. 4 as "33": see page 21, line 8 of the Specification.

Accordingly, a replacement sheet that includes Fig. 4 has reference numbers "33" added in accordance with the specification and also consistent with Fig. 3.

An annotated sheet is also submitted herewith to show the changes.

No new matter has been added.

Based on the above, entry of the amendment and issuance of the patent are respectfully requested.

If the Examiner should have any additional questions or concerns regarding this matter, the Examiner is cordially invited to contact the undersigned at the number provided below in order to further prosecution.

Respectfully submitted,

Date: December 21, 2018

/David L. Hoffman/
David L. Hoffman
Reg. No 32,469

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	15476410
	Filing Date	2017-03-31
	First Named Inventor	Guillermo Macias
	Art Unit	2875
	Examiner Name	H.S. SAWHNEY
	Attorney Docket Number	12-10060-CIP2

Change(s) applied to document, /AA/ 2/26/2018	13	20110235318	A1	2011 2001-09-29	Simon et al.		
	14	20110285292	A1	2011-11-24	Mollnow et al.		

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Dimmable High Power Par38 White + Blue LED Aquarium Reef Corals Grow Light Bulb, www.Amazon.com, May 23, 2012	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/HARGOBIND S SAWHNEY/	Date Considered	01/20/2018

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

EFS Web 2.1.17

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /H.S.S/

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/476,410	02/05/2019	10197224	12-10060-CIP2	8635

36212 7590 01/16/2019

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ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Guillermo Macias, Santa Clarita, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court District of Delaware on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	2/17/2022	District of Delaware

PLAINTIFF	DEFENDANT
Colt International Clothing, Inc. d/b/a Colt LED	Quasar Science LLC, Vitec Production Solutions Inc., Herc Entertainment Services LLC, Cinelease, Inc., Sony Pictures Entertainment Inc., Warner Bros. Entertainment Inc., Fox Corporation, Steven Strong, Raymond Gonzales, Jay Yowler, and Evans Brown

PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 See Attached		
2		
3		
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US 9,719,642 B1	8/1/2017	Colt International Clothing, Inc. d/b/a Colt LED
2	US 9,845,924 B1	12/19/2017	Colt International Clothing, Inc. d/b/a Colt LED
3	US 10,197,224 B1	2/5/2019	Colt International Clothing, Inc. d/b/a Colt LED
4	US 10,411,582 B1	9/10/2019	Colt International Clothing, Inc. d/b/a Colt LED
5	US 10,566,895 B1	2/18/2020	Colt International Clothing, Inc. d/b/a Colt LED
6	US 10,718,473 B1	7/21/2020	Colt International Clothing, Inc. d/b/a Colt LED