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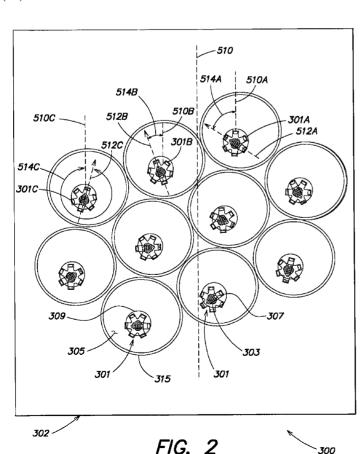
- (71) Applicant (for all designated States except US): PHILIPS SOLID-STATE LIGHTING SOLUTIONS, INC. [US/US]; Three Burlington Woods Drive, 4th Floor, Burlington, MA 01803 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): WILLIAMSON, Ryan, C. [US/US]; 929 Broadway, Apt. 1, Somerville, MA 02144 (US).

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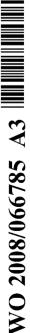
- (74) Agent: TEJA, Joseph, Jr., Wolf, Greenfield & Sacks, P.C., Federal Reserve Plaza, 600 Atlantic Avenue, Boston, MA 02210-2206 (US).
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[Continued on next page]

(54) Title: METHODS AND APPARATUS FOR PROVIDING UNIFORM PROJECTION LIGHTING



(57) Abstract: A projection lighting (300) fixture includes multiple LED packages (301) (e.g., chip-on-board or surface mount LED assemblies including one or more LED junctions) disposed on a common mounting board or substrate (302). Each LED package is associated with a corresponding collimator (315). The common mounting board on which the multiple LED package/collimator pairs are disposed includes a reference axis (510) in the plane of the board (e.g., a vertical or horizontal axis of the board). One or more of the LED packages are disposed on the common mounting board such that they are rotated clockwise or counter-clockwise with respect to the reference axis (510), so that at least two of the LED packages have different rotations. The light projected from the respective collimators associated with the multiple LED packages at least partially overlaps in a target illumination field (310), and the different rotations of at least two of the LED packages facilitates substantially uniform illumination in the target illumination field.



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A. CLASSIFICATION OF SUBJECT MATTER . INV . F21V7/00

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols) G03B $\,$ F21V

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, COMPENDEX, INSPEC, FSTA, BIOSIS, EMBASE, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT						
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X Furti	er documents are listed in the continuation of Box C.	X See patent family annex.				
"A" docume consider er earlier of filing of which citation other in "P" docume	nt which may throw doubts on priority claim(s) or is cited to establish the publication date of another n or other special reason (as specified) ant referring to an oral disclosure, use, exhibition or	 *T* later document published after the inter or priority date and not in conflict with 1 cited to understand the principle or the invention *X* document of particular relevance; the cleannot be considered novel or cannot involve an inventive step when the document of particular relevance; the cleannot be considered to involve an inv	he application but ory underlying the aimed invention be considered to sument is taken alone aimed invention entive step when the re other such docu- s to a person skilled			
Date of the	actual completion of the international search	Date of mailing of the international sear	ch report			
15 May 2008		27/05/2008				
Name and r	nailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,	Authorized officer Tomezzoli, Giancar				

INTERNATIONAL SEARCH REPORT

International application No
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4	DE 100 16 381 A1 (GODLER FRANC [DE]) 4 October 2001 (2001-10-04) paragraph [0022] - paragraph [0027]; figures 1,2	1-20	
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