(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
4 July 2002 (04.07.2002)

PCT

(10) International Publication Number
WO 02/052902 A3

(51) International Patent Classification[7]: H05B 33/08

(21) International Application Number: PCT/IB01/02539

(22) International Filing Date:
12 December 2001 (12.12.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/749,154 27 December 2000 (27.12.2000) US

(71) Applicant: **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors: **MUTHU, Subramanian**; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **CHANG, Chin**; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(74) Agent: **MULDER, Cornelis, A., M.**; Internationaal Octrooibureau B.V., Prof Holstlaan 6, NL-5656 AA Eindhoven (NL).

(81) Designated States *(national)*: CN, JP.

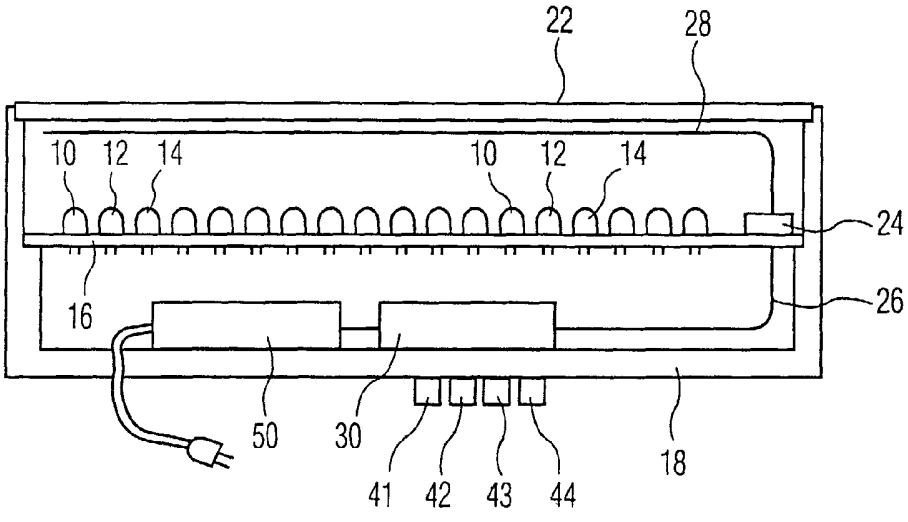
(84) Designated States *(regional)*: European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).

Published:
— *with international search report*

(88) Date of publication of the international search report:
31 October 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: LED LUMINAIRE WITH ELECTRICALLY ADJUSTED COLOR BALANCE



(57) Abstract: The combined light output (chromaticity) of a while light emitting LED luminaire is electronically controlled based on measurements by single photodiode arranged to measure the light outputs of at least a plurality of the LEDs in the array. This is accomplished by measuring the light output of the LEDs in each color separately in a sequence of time pulses. For an array of red, green, and blue LEDs there are three time pulses in a measuring sequence. During each time pulse, the current for the color being measured is turned off. The response time of a typical photodiode is extremely short, so the measuring sequence can be performed in a sufficiently short time that an observer will not detect it (e.g. 10 ms). Measured light outputs for the colors are compared to desired outputs, which may be set by user controls, and changes to the power supply for the color blocks are made as necessary. Chromatically is thus automatically controlled without regard to the factors which may cause it to change. The user inputs permit varying the desired chromatically to for example warm white (more red output) or cool white (more blue output).

WO 02/052902 A3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 01/02539

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H05B33/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H05B

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, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	WO 02 23954 A (KONINKL PHILIPS ELECTRONICS NV) 21 March 2002 (2002-03-21) page 2, line 7 -page 6, line 18; figures 1-5	1-8
X	US 6 127 783 A (MARSHALL THOMAS M ET AL) 3 October 2000 (2000-10-03) cited in the application column 2, line 24 -column 3, line 37; figures 1-4	1
A	US 5 471 052 A (RYCZEK LAWRENCE J) 28 November 1995 (1995-11-28)	
A	EP 0 505 878 A (EATON CORP) 30 September 1992 (1992-09-30)	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 July 2002	26/07/2002

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Albertsson, E

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/IB 01/02539

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
WO 0223954	A	21-03-2002	WO	0223954 A1	21-03-2002
US 6127783	A	03-10-2000	CN	1291282 T	11-04-2001
			WO	0037904 A1	29-06-2000
			EP	1056993 A1	06-12-2000
US 5471052	A	28-11-1995	NONE		
EP 0505878	A	30-09-1992	US	5150174 A	22-09-1992
			EP	0505878 A1	30-09-1992
			JP	5113370 A	07-05-1993