

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 June 2006 (29.06.2006)

PCT

(10) International Publication Number
WO 2006/069117 A3

(51) International Patent Classification:
F21V 9/00 (2006.01)

(21) International Application Number:
PCT/US2005/046278

(22) International Filing Date:
20 December 2005 (20.12.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/637,554 20 December 2004 (20.12.2004) US

(71) Applicant (for all designated States except US): **COLOR KINETICS INCORPORATED** [US/US]; 10 Milk Street, Suite 1100, Boston, Massachusetts 02108 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **CHEMEL, Brian** [US/US]; 24 Thompson Road, Marblehead, Massachusetts 01945 (US). **MORGAN, Frederick, M.** [US/US]; 157 Butler Road, Quincy, Massachusetts 02169 (US). **DOWLING, Kevin, J.** [US/US]; 23 Village View Road, Westford, Massachusetts 01886 (US).

(74) Agents: **TEJA, Jr., Joseph** et al.; Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, Massachusetts 02210-2206 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

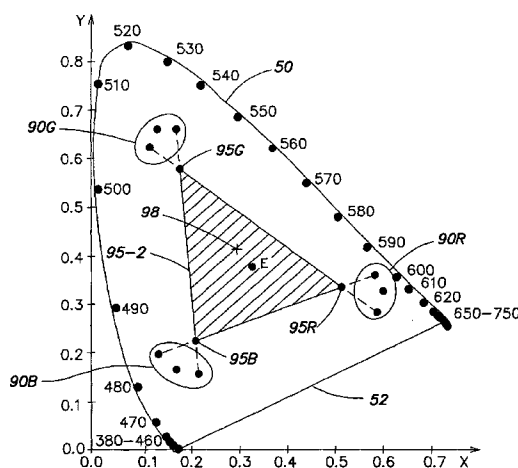
Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
12 April 2007

[Continued on next page]

(54) Title: METHODS AND APPARATUS FOR CONTROLLED LIGHTING BASED ON A REFERENCE GAMUT



(57) Abstract: Methods and apparatus for controlled lighting based on a reference color gamut that is shared amongst multiple lighting units. A reference color gamut may be determined for multiple lighting units based on spectral power distributions associated with the lighting units. Variable color light or variable color temperature white light subsequently may be generated consistently and predictably amongst multiple lighting units that are each controlled based on the reference color gamut. Lighting commands received by multiple lighting units may be appropriately processed in each lighting unit, based on a predetermined relationship between the lighting commands and the reference color gamut, to ensure consistent and predictable color or color temperature reproduction amongst the multiple units. In one exemplary implementation, the multiple lighting units include LED light sources to facilitate energy efficient generation and versatile control of variable color light or variable color temperature white light, for general purpose illumination and other applications.

WO 2006/069117 A3



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.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/46278

A. CLASSIFICATION OF SUBJECT MATTER

IPC: F21V 9/00(2006.01)

USPC: 362/231

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)

U.S. : 362/231

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2005/200578 A1 (LEE et al) 15 September 2005 (15.09.2005) see entire document.	1-4, 10-12, 21, 22, 29, 33-37, 39, 40
Y	US 2003/0214817 A1 (HACKER) 20 November 2003 (20.11.2003) see entire document.	5-9, 30-32, 38, 41-45 5, 6, 9
Y	US 2003/0137849 A1 (ALDEN) 24 July 2003 (24.07.2003) see entire document.	-9,30-32
Y --- A	US 6,414,756 B1 (TSUKADA) 02 July 2002 (02.07.2002) see entire document.	38, 41-45 13-20, 23-28

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

☐ See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search
07 February 2007 (07.02.2007)

Date of mailing of the international search report
20 FEB 2007

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (571) 273-3201

Authorized officer *Jose Dees*
Jose Dees
Telephone No. 571-272-1569

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/46278

Continuation of B. FIELDS SEARCHED Item 3:

EAST; US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; (led or light adjl emitting adjl diode) with white and (spd or spectral near power near distribut\$5) and color near (temperature or space), (light or color) near signature same color near temperature and color near space