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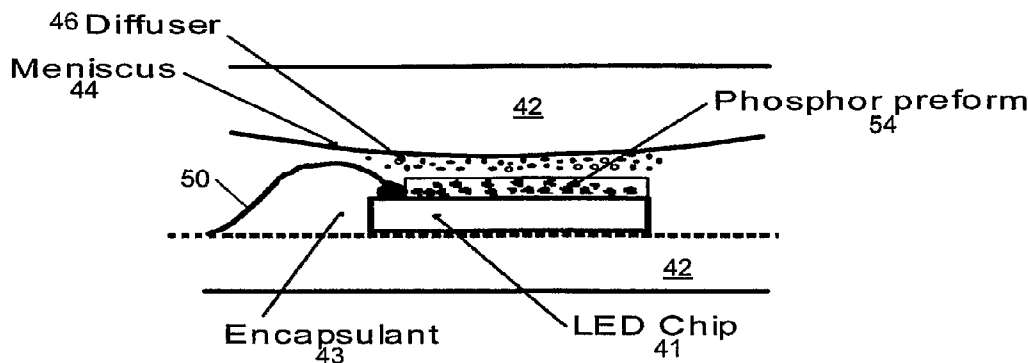
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- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, **BR**, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, **HR**, HU, **ID**, IL, IN, IS, **JP**, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
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- Published:**
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 - 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:**
17 January 2008

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:** SIDE-VIEW SURFACE MOUNT WHITE LED



(57) **Abstract:** A light emitting diode is disclosed. The diode includes a package support and a semiconductor chip on the package support, with the chip including an active region that emits light in the visible portion of the spectrum. Metal contacts are in electrical communication with the chip on the package. A substantially transparent encapsulant covers the chip in the package. A phosphor in the encapsulant emits a frequency in the visible spectrum different from the frequency emitted by the chip and in response to the wavelength emitted by the chip. A display element is also disclosed that combines the light emitting diode and a planar display element. The combination includes a substantially planar display element with the light emitting diode positioned on the perimeter of the display element and with the package support directing the output of the diode substantially parallel to the plane of the display element.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/008503

A. CLASSIFICATION OF SUBJECT MATTER
INV. H01L33/00

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)
HOIL

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document with indication, where appropriate, of the relevant passages	Relevant to claim No
X	US 2002/063520 A1 (YU HUEI-CHE [TW] ET AL) 30 May 2002 (2002-05-30) paragraphs [0004], [0006], [0010], [0023] - [0030]; figures 1-6	1-6,9
Y	-----	7,8
X	US 2005/221519 A1 (LEUNG MICHAEL [US] ET AL) 6 October 2005 (2005-10-06) abstract; figure 19	1
X	US 2004/140765 A1 (TAKEKUMA AKIRA [JP]) 22 July 2004 (2004-07-22) abstract; figure 1 paragraphs [0022] - [0025]	1-6
Y	US 6 936 862 B1 (CHANG CHIH-CHIN [TW] ET AL) 30 August 2005 (2005-08-30) column 2, lines 22-57; figure 2	7,8

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
- '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

22 August 2007

Date of mailing of the international search report

13/11/2007

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/008503

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons

- 1 Claims Nos :
because they relate to subject matter not required to be searched by this Authority, namely.

- 2 **D** Claims Nos
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically

- 3 Claims Nos .
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6 4(a)

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows-

see additional sheet

- 1 As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims

- 2 As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

- 3 As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos

- 4 No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims, it is covered by claims Nos.

1-9

Remark on **Protest**

- The additional search fees were accompanied by the applicant's protest
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM POT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9

a light emitting diode comprising a diffuser dispersed within an encapsulant

2. claims: 10-15

a display element comprising the combination of a light emitting diode and a planar display element

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2007/008503
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