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Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) **Date of publication of the international search report:**
5 August 2010

(54) **Title:** LIGHT EMITTING DIODE EMERGENCY LIGHTING MODULE

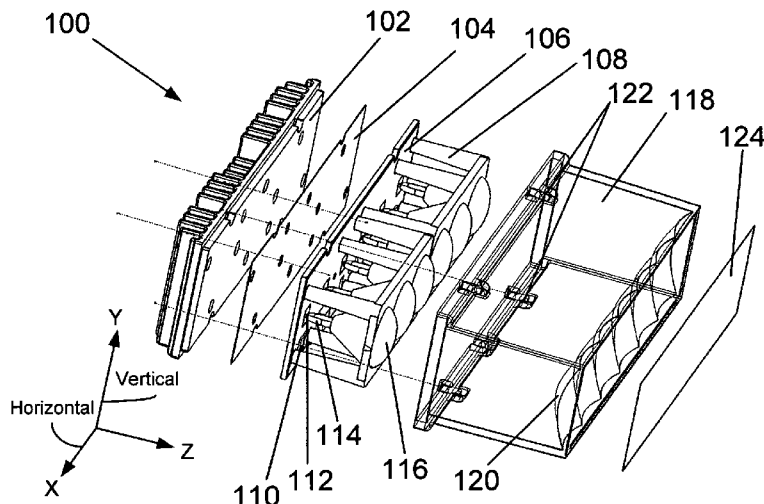
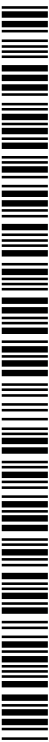


Fig. 1

(57) **Abstract:** The present invention uses "Chip-on-Board" (COB) metal core printed circuit board (PCB) technology in conjunction with high efficiency compact imaging and non-imaging optics for LEDs to provide an emergency light that is compact, offers high performance with respect to luminance levels, long life, and low costs. Thermal impedance between the LED junction and a heat sink is significantly reduced for COB technology by placing the LED die directly on a high thermal conductivity material substrate to increase temperature dependant life and thermally dependant output power. Additionally, because there is no encapsulant or domed optic over the LED die, it is possible to get a much more compact and efficient substantially Etendue (area, solid angle, index squared product) preserving collection optic over the die.



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A. CLASSIFICATION OF SUBJECT MATTER*F21V 5/00(2006.01)i, F21V 7/04(2006.01)i*

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)

F21V 5/00; F21S 2/00; F21V 13/04; F21V 7/04; F21V 8/00; G03B 21/14; H01L 33/00

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: LED, light

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	JP 2004-102132 A (OLYMPUS CORP.) 02 April 2004 See paragraphs [0059], [0070]-[0096] and figures 1-3.	1-10, 13-18 11-12
A	US 2008-0112165 A1 (MORI YUKI et al.) 15 May 2008 See the abstract and figure 15.	1-18
A	KR 10-0808669 B1 (Q-LIGHT CO., LTD.) 29 February 2008 See the abstract and figures 7, 9.	19
A	WO 2007-074933 A1 (SHOWA DENKO K.K. et al.) 05 July 2007 See the abstract and figure 4.	19

 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 application or patent 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 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

18 JUNE 2010 (18.06.2010)

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Box No. 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. 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 No. 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:

I. Claims 1-18 directed to an emergency lighting apparatus comprising an elongated support member, an array of spaced apart non-imaging concentrators, one or more additional optical elements and an elongated diffuser.

II. Claim 19 directed to an emergency lighting beacon comprising a support member, a rotationally symmetric non-imaging concentrator, a rotationally symmetric parabolic reflecting element and a rotationally symmetric conical reflector.

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.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/US2009/005921

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		DE 60309400 T2	15.02.2007
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