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**Datasheet for the decision
of 25 November 2015**

Case Number: T 1996/11 - 3.5.02

Application Number: 07844933.7

Publication Number: 2095689

IPC: H05B33/14

Language of the proceedings: EN

Title of invention:

Lighting Device and Lighting Method

Applicant:

Cree, Inc.

Relevant legal provisions:

EPC Art. 83

Keyword:

Sufficiency of disclosure - undue burden (yes)



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

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Case Number: T 1996/11 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 25 November 2015

Appellant: Cree, Inc.
(Applicant) 4600 Silicon Drive
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Representative: Dummett Copp LLP
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted on 28 April 2011 refusing European patent application No. 07844933.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman M. Ruggiu
Members: R. Lord
W. Ungler

Summary of Facts and Submissions

- I. This is an appeal of the applicant against the decision of the examining division to refuse European patent application No. 07 844 933.7. The reasons given for the refusal were *inter alia* that the application did not meet the requirement of Article 83 EPC and that the claims filed with letter dated 15 November 2010 did not meet the requirements of Article 84 EPC.
- II. In the statement of grounds of appeal dated 31 August 2011 the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the present claims (i.e. those filed with letter dated 15 November 2010). This remains the appellant's sole request. As part of the arguments in the grounds of appeal the appellant referred to a declaration by Gerald H. Negley, one of the inventors in the present case, which had been filed during the procedure before the examining division (referred to in the present decision as the "Negley Declaration").

In a communication accompanying a summons to oral proceedings, dated 15 July 2015, the board informed the appellant *inter alia* of their preliminary opinion that the application did not meet the requirement of Article 83 EPC.

In a reply dated 26 October 2015 the appellant presented further arguments responding to the points raised in the communication from the board, again referring to the "Negley Declaration".

Oral proceedings before the board took place on 25 November 2015, at which, as indicated in a letter

dated 27 October 2015, the appellant was not represented.

III. Claim 1 according to the appellant's sole request reads as follows:

"A lighting device comprising:
a first group of solid state light emitters; and
a first group of lumiphors;
wherein:

if said first group of solid state light emitters is illuminated and said first group of lumiphors is excited, a mixture of (1) light exiting said lighting device that was emitted from said first group of solid state light emitters and (2) light exiting said lighting device that was emitted from said first group of lumiphors would, in the absence of any additional light, have a first group mixed illumination having x, y color coordinates which define a point which is within at least one area selected from among:

(1) an area on a 1931 CIE Chromaticity Diagram enclosed by first, second, third and fourth line segments, said first line segment connecting a first point to a second point, said second line segment connecting said second point to a third point, said third line segment connecting said third point to a fourth point, said fourth line segment connecting said fourth point to said first point, said first point having x, y coordinates of 0.32, 0.40, said second point having x, y coordinates of 0.36, 0.38, said third point having x, y coordinates of 0.41, 0.455, and said fourth point having x, y coordinates of 0.36, 0.48;

(2) an area on a 1931 CIE Chromaticity Diagram enclosed by first, second, third and fourth line segments, said

first line segment connecting a first point to a second point, said second line segment connecting said second point to a third point, said third line segment connecting said third point to a fourth point, said fourth line segment connecting said fourth point to said first point, said first point having x, y coordinates of 0.36, 0.48, said second point having x, y coordinates of 0.43, 0.45, said third point having x, y coordinates of 0.5125, 0.4866, and said fourth point having x, y coordinates of 0.4087, 0.5896; and

(3) an area on a 1931 CIE Chromaticity Diagram enclosed by first, second, third and fourth line segments, said first line segment connecting a first point to a second point, said second line segment connecting said second point to a third point, said third line segment connecting said third point to a fourth point, said fourth line segment connecting said fourth point to said first point, said first point having x, y coordinates of 0.41, 0.455, said second point having x, y coordinates of 0.36, 0.48, said third point having x, y coordinates of 0.4087, 0.5896, and said fourth point having x, y coordinates of 0.4788, 0.5202."

Claim 8, the only other independent claim, defines a corresponding method of lighting.

IV. The appellant's arguments, in so far as they are relevant for the present decision, are as follows:

The skilled person knew how to mix light of two or more different colours in order provide a desired mixed light colour point. Thus, contrary to the argument in the decision under appeal, it would not have been necessary for the skilled person to have carried out an extensive research programme in order to arrive at a

device as claimed. One such combination was disclosed on page 34 of the application, as discussed in more detail in the "Negley Declaration".

An important aspect of the claimed invention was that high efficacy could be obtained by mixing light from solid state light emitters (e.g. LEDs that emit blue light) and lumiphors (e.g. phosphor that emits greenish-yellow light or yellowish-green light), and that such combinations provided for the addition of red light, thus significantly boosting the overall CRI Ra of the light output from the device, and resulting in colour output that could be on or extremely close to the blackbody locus.

Reasons for the Decision

1. The appeal is admissible.
2. For the following reasons the board considers that the application does not disclose the claimed invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art, thus not meeting the requirement of Article 83 EPC.
 - 2.1 According to the description, the aim of the invention is to provide illumination with "outstanding efficacy as well as good CRI Ra (i.e., some CRI Ra is sacrificed to provide better efficacy)" (see in particular the application as published (WO 2008/058 168 A2), page 8, lines 1 to 3; page 9, lines 1 to 3; page 20, line 31 to page 21, line 3; and page 33, lines 28 to 31).
 - 2.2 The application (see page 34, lines 5 to 22) gives only one example of a combination of a solid state light

emitter and a lumiphor. Even if this specific combination might achieve the above object (which is not clear from the cited passage), the board considers it not to be plausible that every other possible combination of solid state light emitters and lumiphors that would emit mixed light falling in the areas defined in claims 1 and 8 would also provide "outstanding efficacy" (and a good CRI Ra) with respect to other combinations of solid state emitters and lumiphors that would not emit mixed light falling within the areas defined in the claims. The board therefore considers that the disclosure in the present application amounts to nothing more than an invitation to the skilled person to search by trial and error which combinations would achieve the object of the invention. The board is of the opinion that such a search would place an undue burden on the skilled person, so that the disclosure of the invention in the application would not meet the requirement of Article 83 EPC (see Case Law of the Boards of Appeal, 7th edition, 2013, section II.C.5.6.1). The fact that the skilled person would have known how to combine LEDs and phosphors in order to provide a mixed light colour point in one of the regions specified in claims 1 and 8 does not render this argument invalid, because in the opinion of the board that alone is not sufficient to achieve the technical effects which, according to the application, underlie the invention.

- 2.3 According to paragraph 3. of the appellant's letter of 26 October 2015, which was filed in response to the communication of 15 July 2015 in which the board presented the above argument, the board has not properly taken into account the teaching of the application concerning the "high efficacy" obtainable by the disclosed combinations of solid state light

emitters and lumiphors. In this context the appellant refers to the combination of LEDs that emit blue light and phosphor that emits greenish-yellow light or yellowish-green light, which seems to correspond to the example on page 34 of the description, and is also in accordance with the wavelength ranges defined in some of the dependent claims (e.g. claim 2) of the original application and in corresponding passages in the description. However, the appellant then goes on to state that "such combinations provide for the addition of red light (thus significantly boosting the overall CRI Ra of the light output from device)". This adding of red light is also mentioned in the next paragraph of the letter. However, the board has not been able to find any clear teaching to this effect in the application as originally filed, and the appellant has not indicated where such teaching might be found, so that if this is indeed part of the inventive concept, then that concept was not originally disclosed, thus confirming the above conclusion that the application does not meet the requirement of Article 83 EPC.

- 2.4 In the context of the above argument, the board observes that the description does include one sentence (at page 20, lines 21 to 24) noting that according to "some embodiments ... the lighting device further comprises ... at least one solid state emitter which ... would emit light having a dominant wavelength in the range of from 600 nm to 630 nm", which would be red light. However, this sentence says nothing about the nature of the other solid state light emitters or the lumiphors, since the indications that they can comprise emitters with wavelength of 430 nm to 480 nm (i.e. blue) and lumiphors with wavelength of 555 nm to 585 nm (i.e. yellow-green or yellow) appear only later in the description. It also provides no indication of

the purpose or effect of this added light. This sentence is also followed by another sentence (in the same paragraph) suggesting that these embodiments can contain emitters with wavelengths from 495 nm to 510 nm (i.e. greenish blue), but from the appellant's arguments this seems not to be relevant to the invention, so that it is not clear to the board that the previous sentence should be either. Thus the first of these sentences provides no hint to the skilled person that the invention could be carried out in the manner suggested by the appellant in his letter of 26 October 2015.

3. The further arguments presented by the appellant concerned clarity (Article 84 EPC) and inventive step (Article 56 EPC), and are therefore not relevant to the above objection.

4. The board thus concludes that the appellant's sole request is not allowable, so that the appeal has to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



U. Bultmann

M. Ruggiu

Decision electronically authenticated