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**Datasheet for the decision
of 15 May 2014**

Case Number: T 1224/09 - 3.4.03

Application Number: 98944539.0

Publication Number: 1016062

IPC: G09G3/32, H05B37/02

Language of the proceedings: EN

Title of invention:

MULTICOLORED LED LIGHTING METHOD AND APPARATUS

Patent Proprietor:

Philips Solid-State Lighting Solutions, Inc.

Opponents:

04: DigitaLicht AG
05: Rena Electronica B.V.

Headword:

Relevant legal provisions:

EPC Art. 123(2), 123(3)
EPC 1973 Art. 54, 56, 100(a), 100(c), 107

Keyword:

Observations by third parties
Inventive step - main request (yes)

Decisions cited:

G 0009/92, T 0129/88, T 0046/10

Catchword:



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Case Number: T 1224/09 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 15 May 2014

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
27 April 2009 concerning maintenance of the
European Patent No. 1016062 in amended form.**

Composition of the Board:

Chairman	G. Eliasson
Members:	V. L. P. Frank
	T. Bokor

Summary of Facts and Submissions

- I. This is an appeal by the patent proprietor against the interlocutory decision of the opposition division to maintain the European patent EP 1 194 915 as amended (Article 101(3) (a)EPC).

The patent was opposed in its totality. Grounds of opposition were added subject-matter, lack of novelty and inventive step (Articles 100(a), 100(c), 54 and 56 EPC 1973).

- II. Opponents I, II and IV also appealed the interlocutory decision of the opposition division. However: appellant opponent I withdrew his opposition with letter of 17 July 2012; appellant opponent II withdrew his opposition and his appeal with letter of 4 March 2011; and appellant opponent IV withdrew his appeal with letter of 6 June 2011.

Opponent III withdrew his opposition with letter of 08 May 2009, ie already during the opposition proceedings.

Hence only opponents IV and V remained party to the proceedings as of right (Article 107 EPC 1973).

- III. With letter of 20 July 2009 a third party submitted observations concerning the patentability of the illumination apparatus of claim 1 as granted (Article 115 EPC) together with three Japanese patent application documents, their respective English translations and a published patent appeal/trial decision from the Japanese Patent Office.

IV. Oral proceedings were held in the sole presence of the appellant proprietor, as respondent opponents IV and V did not attend the oral proceedings.

The appellant requested at the oral proceedings before the Board that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the following documents:

Description: pages 2-6 of the patent specification;

Claims: 1-11 filed during the oral proceedings before the Board;

Drawings: sheets 1/5-5/5 of the patent specification.

Respondent opponent IV requested in writing that the decision under appeal be set aside and that the patent be revoked. He further requested that document K1 be admitted into the proceedings

Respondent opponent V did not submit any requests in this appeal.

V. Claim 1 of the sole request reads as follows (the differences with respect to claim 1 as granted were highlighted by the Board; also the paraphrasing was added by the Board):

"1. An illumination apparatus comprising:

(i) a plurality of light emitters of at least two different colours adapted to be coupled to a power circuit including a power source (300) and a common potential reference (390);

(ii) driver means (380) for driving the plurality of light emitters, the driver means comprising at least

two switches connected to the plurality of light emitters and said power circuit and corresponding to respective current paths of the at least two different colour light emitters; ~~and~~

(iii) a controller for periodically and independently opening and closing the at least two switches,

(iv) the controller having an alterable address assigned to itself such as to identify and respond to a respective portion of an input data stream assigned thereto, which data stream portion is assigned to that controller;
~~characterized by~~

(v) each light emitter being an LED; and

(vi) said controller (400) being arranged to generate a plurality of PWM signals, **the PWM signals having uniform frequency,**

(vii) each signal corresponding to a respective colour of the plurality of LEDs of different colours,

(viii) each said PWM signal causing a respective one of the at least two switches to be opened and closed at ~~corresponding frequencies~~ **the uniform frequency** according to respective independent duty cycles, and

(ix) wherein said data stream portion comprises data for determining the respective duty cycles of the at least two different colour LEDs."

VI. VI. The following documents were cited in the decision under appeal:

D4 = US 5 184 114 A

D5 = US 5 420 482 A

D20 = US 4 845 481 A

D28 = WO 91/16786 A

Document K1 was cited in appeal by respondent opponent IV:

K1 = elrad 1986, Heft 1, pp 57-60

The following documents were submitted by the third party with the letter of 20 July 2009 and referred to by former opponents I and II:

D53 = JP 8-7611 A

D53' = English translation of D53

D54 = JP 60-54094 A

D54' = English translation of D54

D55 = JP 63-312175 A

D55' = English translation of D55

D56 = Appeal/Trial decision of the Japanese Patent Office, 30 March 2007, Appeal number 2003-10

VII. Former opponent II introduced evidence in the appeal proceedings of a prior use of an LED illumination apparatus made by Rena Electronica B. V., a company resident in Zundert, The Netherlands. The evidence was

in form of documents A1-1 to A1-12 and the offer to hear the project manager of Rena Electronica B. V. as witness.

VIII. In the decision under appeal, the opposition division found that:

- Claim 1 as granted did not meet the requirements of Article 123(2) EPC, since the originally filed application documents disclosed that the microcontroller created square waves having uniform frequency but independent duty cycles. The use of the expression "corresponding frequencies" in claim 1, however, resulted in that the frequency of one of the PWM signals could be different from that of the others (reasons, point 2).
- Document D28 was not more relevant than the prior art documents already on file. It failed to disclose light emitting elements having multiple colours, a controller having an alterable address and being adapted to identify and respond to a respective portion of an input data stream assigned thereto, which data stream portion is assigned to the controller. For these reasons D28 was not admitted into the proceedings (reasons, point 3.1).
- The illumination apparatus of claim 1 of the 1st auxiliary request before the opposition division did not involve an inventive step having regard to a combination of documents D5 and D4. The claimed apparatus differed from D5 by the features of the characterizing portion of the claim. Document D4 disclosed the use of PWM signals for driving LEDs.

It was the view of the opposition division that the skilled person, having knowledge of D5 and facing the problem of reducing power consumption of the illumination apparatus while increasing the life of the light emitting elements, would consider LEDs as light emitting elements and would drive the LEDs with PWM signals according to D4 (reasons, point 5).

- The illumination apparatus of claim 1 of the 2nd auxiliary request before the opposition division was found to involve an inventive step, since the claimed illumination apparatus differed from D5 additionally in that the PWM signals controlled the intensity of the colour light emitters independently and simultaneously. Neither document D4 nor document D20 disclosed or suggested such control of light emitters and required considerable modifications to achieve it (reasons, point 7).

IX. The submissions of the third party were essentially reiterated by former opponents I and II. Their common arguments were essentially as follows:

- Document D53 disclosed an illumination apparatus comprising differently coloured fluorescent tubes (R, G, B) which could be independently dimmed in order to control their brightness and the colour of the emitted compounded light. Several of these illumination units were mounted on a lattice structure, whereby every dimmer had a DIP switch to select its address. The colour and intensity of each illumination unit was controlled from a personal computer by selecting the address of each unit. Hence the claimed illumination apparatus

differed from the one of D53 in that LEDs were used as light emitters and in that they were controlled by PWM signals. This was however known eg from documents D54 and/or D55. A person skilled in the art would have contemplated using LEDs for reducing the power consumption of the illumination apparatus and for increasing the life of the light emitting elements. There were moreover no reasons for driving the differently coloured LED with different frequencies. Thus the skilled person's first choice would have been to drive all the LEDs with the same frequency, since the brightness control was achieved by varying the duty cycle of the PWM signal.

- X. Former opponent I argued in addition, insofar as it is relevant to the present decision, essentially as follows:
- Claim 1 as granted contained subject-matter which extended beyond the content of the original application. In particular, the expressions "*driver means*", "*power circuit*" and "*controller*" used in claim 1 had no basis in the original application. Furthermore, feature (viii) of claim 1 was not originally disclosed, since the use of the expression "*corresponding frequencies*" implied that the different PWM signals could have different frequencies, contrary to the original disclosure.
 - Document D28 took away the novelty of the illumination apparatus of claim 1. It was thus highly relevant and should therefore be admitted into the proceedings. Although the decision under appeal stated that D28 did not disclose that the

light emitters had different colour, it would be directly and unambiguously clear to the skilled person that some LEDs could have one colour and others another colour.

- Document D5 disclosed the features of the preamble of claim 1. The remaining features of the claim could however be derived from documents D20 or D4, since they concerned the use of LEDs as light emitters and the use of PWM signals for controlling the brightness of the LEDs.

XI. Former opponent II argued in addition, insofar as it is relevant to the present decision, essentially as follows:

- The expression "*corresponding frequencies*" in feature (viii) of claim 1 went beyond the original disclosure, as it allowed that different PWM signals had different frequencies. Also the expressions "*driver means*", "*power circuit*" and "*controller*" used in claim 1 were not originally disclosed.
- The illumination apparatus of claim 1 was not new over the prior use of the apparatus produced by Rena Electronica B. V. and sold to "Barocci_Discotheek", as shown by the documents submitted. A witness was offered to testify the sale of this apparatus.
- The illumination apparatus of claim 1 as granted did not involve an inventive step over a combination of document D5 with one of documents D20 or D4.

- Documents D53-D55 submitted by the third party were highly relevant and should therefore be admitted into the proceedings.

XII. Respondent opponent IV argued, insofar as it is relevant to the present decision, essentially as follows:

- Document K1 disclosed brightness control of LEDs by PWM signals. The claimed illumination apparatus differed from the method disclosed in K1 in that differently coloured LEDs were controlled instead of the monochromatic LEDs used in K1. Thus none of the claims involved an inventive step.

XIII. The appellant argued, insofar as it is relevant to the present decision, essentially as follows:

- Document D5 did not disclose features (ii), (iii) or (viii) of claim 1, as no switches were disclosed which were periodically and independently opened and closed at the uniform frequency. The opposition division contended that the logic gates IC1-IC3 which were 4-bit bistable latches operated as switches. This was submitted to be wrong, and certainly they did not operate as required by features (iii) and (viii). In the embodiment disclosed in D5, the brightness of the different colour light emitters was commonly controlled by a common signal and not independently by different respective signals.
- The opposition division further referred to D4 as disclosing the combination of LEDs and PWM, and noted that D4 disclosed a single clock, but ignored that D4 disclosed a specific PWM system

for driving LEDs which did not even remotely disclose or hint at the combination of features (ii), (iii), (vii) (viii) or (ix) not disclosed in D5. D4 related to a display screen and had nothing to do with the controlled lighting system of D5 or problems associated therewith. D4 did not relate to an illumination apparatus for illuminating an area with ambient light. D4 was concerned with the achievement of multiple colours in LED display systems but did not address the problem of how efficiently to drive any individual LED chip.

- Former opponent I did not identify any relevant teaching of D20. Accordingly, since former opponent I did not comment on or rebutted the opposition division's finding on D20, it was clearly an unsubstantiated attack to rely upon the combination of D5 and D20.

- Documents D53 to D55 were documents filed by a third party and opponent II also relied upon these documents. D56 was a copy of the decision from the Japanese Patent Office rejecting the Japanese patent application corresponding to the present European patent. However, such a decision and its reasoning had no legal significance in the EPO, not least because of the different tests for inventive step. There was no evidence that the opponents did not know this decision and the cited prior art during the opposition proceedings. For this reason, the opponents should be barred from bringing documents in the appeal proceedings that they should have known for three years. Although the documents were filed as third party observations under Article 115 EPC, the requirement to file in time should also apply to

third party submissions as well. Yet further, the documents were prima facie not more relevant than the documents cited during the opposition proceedings. For these reasons, it was requested that D53 to D55 be deemed inadmissible into the appeal proceedings under the provisions of Article 114 EPC, and the corresponding submissions of the opponents and the third party be deemed irrelevant.

- D53 related to illumination apparatus comprising fluorescent tubes, and not LEDs. Although D53 disclosed that each light emitting unit included a dimmer which received a signal from the personal computer and determined a dimming amount for each of the three fluorescent lamps independently, there was no enabling disclosure as to the structure and function of the dimmer. Given that D53 did not relate to LEDs and had no enabling disclosure of the illumination control function, it was submitted that D53 was not prima facie relevant.
- The objective technical problem present in D53 was that there was no enabling disclosure how to control the different colour light emitters independently in the ambient light emitting unit and also the light emitting unit was inefficient and costly. When faced with this objective technical problem, the skilled person would not have considered D54, since in D54 only a single colour and a moderately changing brightness (not the colour) of an LED was achieved.
- D55 related to a printer having single colour LEDs. The skilled person would not be motivated to

look at D55's printer solution when faced with the objective technical problem in the ambient illumination apparatus of D53.

Reasons for the Decision

1. Procedural issues

1.1 Party status

1.1.1 The appeal of the patent proprietor is admissible.

1.1.2 Opponent IV withdrew his appeal with letter of 6 June 2011, remaining a respondent and party to the proceedings as of right. The objection raised by the appellant proprietor regarding the admissibility of the appeal of opponent IV is therefore no longer of relevance.

1.1.3 Respondent opponent V did not appeal the interlocutory decision of the opposition division. Opponents I, II and III have withdrawn their respective oppositions. Hence only opponents IV and V remain as parties as of right (Article 107 EPC 1973).

1.1.4 As the patent proprietor is the sole appellant in this appeal, the principle of prohibition of *reformatio in peius* as set out in decision G 9/92 (OJ EPO 1994, 875) applies.

Consequently it is not within the competence of the Board to challenge the request upheld by the opposition division in its interlocutory decision. The appellant proprietor's request is however more general than the

request upheld by the opposition division. Thus the principle, set out in decision G 9/92 is respected.

1.1.5 In examining the appeal, however, evidence can be cited which has been submitted by the former opponents (Case Law, 7th Ed., Chapter IV.C.4.1.2 and T 46/10).

1.2 Documents K1 and D28

1.2.1 Opponent IV requested that document K1 be admitted into the proceedings. This document is a very general disclosure dealing with brightness control of incandescent lamps and LED. The Board considers that this document is not more relevant than the other documents cited during the opposition proceedings and decides for these reasons not to admit document K1 into the appeal proceedings.

1.2.2 Former opponent I submitted that document D28 should be admitted into the proceedings although it had not been admitted into the proceedings before the opposition division. The opposition division considered this document to be not more relevant than the other documents already on file (reasons 3.1 of the decision under appeal).

The Board shares the view of the opposition division that document D28 is not more relevant than the other documents already on file, since it neither discloses a plurality of light emitters of at least two different colours nor a controller for periodically and independently opening the at least two switches. Hence the objection of former opponent I that the disclosure of document D28 takes away the novelty of the illumination apparatus of claim 1 as granted is without a factual basis.

The Board decides for these reasons not to admit document D28 into the appeal proceedings.

- 1.3 Evidence on public prior use: twelve documents and the request to hear a witness
 - 1.3.1 The allegation of public prior use, partly to be proven by a witness was submitted by former opponent II.
 - 1.3.2 It was stated in decision T 129/88 that "*Although a Board of Appeal ... has an obligation under Article 114(1) EPC to investigate matters of its own motion, that obligation does not extend as far as investigating an allegation of prior public use, where the party who formerly made that allegation has withdrawn from the proceedings, and it is difficult to establish all the relevant facts without his cooperation*" (reasons 3.1).
 - 1.3.3 The allegation of public prior use involves four documents written in Dutch which is not an official language of the EPO (Article 14(1) EPC 1973). Such documents are to be considered as not having been filed if a required translation was not filed in due time (Article 14(4) and Rule 3(3) EPC). Following the withdrawal of opponent II from the opposition and opposition appeal proceedings the filing of a translation can no longer be expected. The requirement of impartiality in *inter partes* proceedings obviously precludes the Board from taking active steps for or against a party, such as ordering a translation.
 - 1.3.4 The appellant challenged whether the submitted documents themselves were made available to the public through the alleged sale of the apparatus. In order to decide this issue further evidence would be required by

the Board. The absence of the former opponent II from the proceedings means that the Board can not expect such evidence.

1.3.5 Finally, the request to hear a witness on the facts relating to the alleged public prior use is apparently moot, since it was submitted by former opponent II who is no longer a party to the proceedings. As such, its request to hear the witness is superseded. Again, the Board cannot order of its own motion the hearing of the witness.

1.3.6 Accordingly, the Board deems that the remaining evidence on file concerning the alleged public prior use is *prima facie* not fully convincing and decides not to consider the allegation of public prior use submitted by former opponent II.

1.4 Documents D53 to D56

1.4.1 Documents D53 to D55 are Japanese patent applications with their respective English translations. Document D56 is a translation of the appeal decision of the Japan Patent Office dismissing the appeal against the refusal of the Japanese patent application corresponding to the patent in suit. The decision is based on documents D53 to D55. These documents were submitted by a third party according to Article 115 EPC and relied on by former opponents I and II.

1.4.2 The appellant argued that documents D53 to D55 were not *prima facie* relevant, or at least not more relevant than other documents in the proceedings, and were filed belatedly. He pointed out that a third party should not obtain a more favourable treatment than a party to the proceedings. Additionally, the third party was not

identified and remained anonymous so that an abuse of the proceedings was possible.

1.4.3 The Board however can hardly consider that documents D53 to D55 are not *prima facie* relevant, as they led to the refusal of the corresponding application before the Japanese Patent Office. The third party observations are also not anonymous, as they were presented and signed by a professional representative. The only requirement in Article 115 and Rule 114 EPC 1973 relating to the entitlement to submit third party observations is the requirement that the third party shall not be a party to the proceedings. There is no requirement to state whether the third party acts in its own name or on behalf of someone else. It is also not foreseen in the EPC that third party observations should be submitted within a specific time period. Hence third party observations can be submitted at any time as long as proceedings are pending. Admitting and considering such observations, however, is an issue to be decided by the competent department of the EPO. In the case of the Boards of appeal, the principles set out in Article 13 RPBA seem to be a reasonable basis on which the discretion to admit the third party observations shall be exercised, ie in view inter alia of the complexity of the new subject-matter, the current state of the proceedings, the need for procedural economy and, in case oral proceedings have been arranged, whether the Board or the other parties can reasonably be expected to deal with it without adjournment of the oral proceedings.

1.4.4 Documents D53 to D55 were submitted at the start of the appeal proceedings and the appellant discussed these documents in detail in his submissions. The Board

further considers that the proceedings will not be delayed by admitting these documents.

On the other hand, document D56, i.e. the decision of the Japanese Patent Office, need in itself not be considered in the present proceedings. The mere fact that the corresponding Japanese application was finally refused over documents D53 to D55 was not contested by the appellant, nor was it submitted that the reasons for the refusal by the JPO Appeal Board should have been different from those arguments which are already on file among the arguments of the opponents.

- 1.4.5 The Board decides for these reasons to admit documents D53 to D55 into the appeal proceedings, while D56 need not be considered and hence need not be admitted.

2. *Amendments (Article 123(2) and (3) EPC)*

- 2.1 The opposition division found that the specification in claim 1 as granted that the PWM signals caused the switches to open and close at "*corresponding frequencies*" went beyond the content of the application as filed, since the application merely disclosed that the microcontroller converted the numerical data received on the serial receive pin (Rx) into three independent high frequency square waves of "*uniform frequency*" but independent duty signals on the three signal output pins (page 8, lines 8-12; Figure 2).

A similar argument was also put forward by former opponents I and II.

- 2.2 Claim 1 has been amended to state that "*the PWM signals having a uniform frequency*" and that each PWM signal

causing a respective switch *"to be opened and closed at **the** uniform frequency"* (emphasis added by the Board).

These amendments overcome the objection of added subject-matter, since it is now specified that the PWM signals have a single (ie the) uniform frequency, in line with the original disclosure.

As granted claim 1 covered an illumination apparatus with PWM signals having different frequencies, the amendment to PWM signals with a single frequency is a restriction of the scope of protection (Article 123(3) EPC).

- 2.3 Former opponents I and II also argued that the expressions *"driver means"*, *"power circuit"* and *"controller"* did not have a clear basis in the original patent application.

The Board however finds this objection unjustified, since these expressions refer to the constituting blocks of the illumination apparatus and their features and function are clearly defined in the claim and correspond to those originally described.

- 2.4 Finally claim 1 was amended by deleting the expression *"characterized by"*, ie by casting claim 1 into the one-part form. This was allowed by the Board, since the preamble of claim 1 did not correspond to the disclosure of document D5, as will be discussed later on. The two-part form of the claim was however made assuming that the preamble reflected the disclosure of D5.

2.5 The Board finds for these reasons that the amendments to claim 1 fulfill the requirements of Article 123(2) and (3) EPC.

3. *Inventive step (Article 56 EPC 1973)*

3.1 The only remaining issue in this appeal is that of inventive step.

3.2 There were essentially two lines of attack on inventive step starting respectively from documents D5 and D53. These two documents were combined in turn with one of documents D4, D20, D54 and D55 (when discussing documents D53 to D55 reference will be made to their respective English translations D53' to D55'). It is thus necessary to discuss first the disclosure of these two starting documents.

3.3 Document D5

3.3.1 This document discloses a controlled lighting system comprising a plurality of groups of light elements 48R, 48B, 48G connected to control units 44 and a controller 60. The amount of light emitted by each light element can be independently controlled in response to control signals generated by controller 60 (Figure 1; column 2, lines 43-65). The control signals are transmitted to the control units 44 in the form of one of three different 8-bit words. The first two words have the form "ddddddnn" where "dddddd" represents 6 bits of address data and the trailing "nn" bits identifies the data as being a group or a unit address ID (column 4, lines 10-23). The third word has the form "xxxddd0" where the three initial x's indicate which light element the data relates to, the "ddd" represent the binary value for setting the light intensity and the

trailing "0" indicates that the word is a light data word (ie a one in the leading "x" selects light element 48R, a one in the second "x" selects light element 48B and a one in the trailing "x" selects light element 48G). Two or more light elements of the same unit may be selected at the same time to receive **the same binary data** by setting more than one "x" to one, ie in a given cycle two or more light elements may not be set to different light intensities. To set two light elements to different light intensities more than a cycle, ie a sequence of the three data words (group address, unit address and light data), is required (column 4, lines 24-32).

3.3.2 The setting of the light intensity of a given light element is done by respective D/A Converter and Drivers 94R, 94B and 94G. As shown in Figure 6, signal lines G, H, I and J transmit the brightness data to the integrated circuits IC1, IC2 and IC3. Signal lines D, E and F select the addressed light element(s). Different set of resistors R1 to R4 are connected to the output of the integrated circuits IC1 to IC3, respectively, and together with resistors R5 and R6 act as a D/A converter to control driver transistors T1 to T3 (Figure 1, 5 and 6; column 1, lines 55 to column 2, line 14; column 2, lines 43-65; column 4, lines 33-38; column 6, line 58 to column 7, line 2).

3.3.3 The appellant argued that the preamble of granted claim 1 did not correctly reflect the prior art apparatus disclosed in document D5, since the driver means of D5 did not comprise at least two switches connected to the plurality of light emitters and said power circuit and corresponding to respective current paths, ie feature (ii) of claim 1.

3.3.4 In fact the D/A Converter and Driver of D5 comprises a 4-Bit Bi-Stable Latch (eg integrated circuit IC1). Although a latch is a switch, these switches are not in the current path of the light element, but select the corresponding resistor R1-R4 which drives the base of transistor T1 through which the current path for the respective light element runs. Hence the second part of feature (ii) of claim 1 is not disclosed by D5.

As the preamble of claim 1 does not correspond to the disclosure of D5, the Board has allowed to amend claim 1 to the one-part form.

3.4 Document D53/D53'

3.4.1 This document discloses an illumination apparatus in which the colour and the brightness of the light emitters can be freely chosen. It discloses an illumination apparatus comprising a plurality of fluorescent lamps 11 provided with red, green and blue colour filters. The fluorescent lamps are arranged in a lattice structure and are provided with dimmers 13 having a unique address (page 1, [Constitution]; page 9, [0022]; Figures 6 and 7).

3.4.2 Although, as the appellant pointed out, D53/D53' does not disclose the structure of the dimmers, this does not imply that the whole disclosure of this document is not enabling in the present case, since the skilled person would be aware that he would in any case have to replace the dimmers by other suitable driver means if light sources other than fluorescent tubes were to be chosen. As to the statement in D53/D53' that the fluorescent tubes' brightness can be independently and simultaneously controlled, the Board agrees with the appellant proprietor that in view of the complete

absence of any details on the dimmers, there is no enabling disclosure of the specific feature of "independent and simultaneous control" beyond the desired technical effect to be achieved.

The Board also does not consider the lack of disclosure in D53' on how the control of the respective light intensities is performed by the controller as a gap in the disclosure, since a person skilled in the art of illumination apparatus was familiar with addressable control by a personal computer.

3.5 In summary, both documents D5 and D53/D53' disclose in the wording of claim 1:

An illumination apparatus comprising

- (i) a plurality of light emitters of at least two different colours coupled to a power circuit,
- (ii) driver means for driving the plurality of light emitters, and
- (iv) a controller having an alterable address assigned to itself such as to identify and respond to a respective portion of an input data stream assigned thereto, which data stream portion is assigned to that controller.

Consequently, the second portion of feature (ii) (ie the portion specifying the presence of at least two switches in the respective current paths of the light emitters) and features (iii) and (v) to (ix) are not disclosed by documents D5 or D53/D53', namely that the illumination comprises:

(ii) driver means comprising at least two switches connected to the plurality of light emitters and said power circuit and corresponding to respective current

paths of the at least two different colour light emitter, and

(iii) a controller for periodically and independently opening and closing the at least two switches, whereby

(v) the light emitters are LEDs,

(vi) said controller is arranged to generate a plurality of PWM signals, the signals having uniform frequency,

(vii) each signal corresponding to a respective colour of the plurality of LEDs of different colours,

(viii) each said PWM signal causing a respective one of the at least two switches to be opened and closed at the uniform frequency according to respective independent duty cycles, and

(ix) wherein said data stream portion comprises data for determining the respective duty cycles of the at least two different colour LEDs.

3.6 The objective technical problem can thus be defined as to develop an illumination apparatus comprising addressable light units comprising light elements of different colours whose brightness can be independently and simultaneously controlled.

3.7 This is achieved by the illumination apparatus as claimed. In particular, the use of LEDs as light emitters and the use of a plurality of PWM signals with independent duty cycles to drive respective switches which are in the current path of the LEDs allows to

control independently and simultaneously the brightness of the different colour LEDs.

3.8 This solution is not rendered obvious by combining document D5 or D53/D55' with any one of documents D4, D20, D54/D54' or D55/D55' for the following reasons:

3.8.1 Document D4 relates to a solid state colour display system which uses LEDs as pixels. Although the display of D4 uses PWM signals to drive the LEDs of the display, it does so in a particular way (Figures 10 and 11; column 7, line 59 to column 8, line 64). Comparator 194 compares the output of the RAM 186 to the output of the PWM PROM 196 looking for conditions when data in the RAM should cause the associated LEDs to be turned on. PWM PROM 196 is a programmable read-only memory, which contains the look-up table which causes the RAM data to conform to a pulse width modulated brightness scheme containing 16 different intensities. The output from the comparator simply constitutes data which is communicated through the shift register and thereafter communicated across a latch driver along the anode terminal to the columns of the respective colour LED circuits.

The Board considers that the person skilled in the art would not have looked at a prior art document relating to colour displays when searching for an improvement for an illumination apparatus. Moreover, extracting the general concept of PWM signals for driving LEDs from this document is based on hindsight, since the teaching of D4 involves more than merely PWM driving of LEDs.

3.8.2 Document D20 discloses a seven segment display comprising LEDs of different colours forming a stand alone unit that comprises memory areas which are

preprogrammed with RGB data to obtain specific composite colours (Abstract). It does not disclose to provide a data stream to simultaneously and independently control the emission of LEDs. It merely discloses the use of PWM signals to control LEDs based on data that are read in parallel from memory areas (Figures 7 and 8; column 3, line 64 to column 4, line 23).

As in the case of D4, the Board does not consider that the person skilled in the art would have looked at a prior art document relating to colour displays when searching for an improvement for an illumination apparatus.

- 3.8.3 As pointed out by the opposition division, documents D4 or D20 do not disclose how to control independently and simultaneously the brightness of a plurality of differently coloured light elements (decision under appeal, reasons points 7.3-7.5). Hence they cannot lead to the solution to the posed technical problem.
- 3.8.4 Document D54/D54' relates to a control circuit for moderately changing the brightness of an LED when turning the light on or off. This document discloses the use of PWM signals with variable duty cycle. However, these signals are used for ramping the brightness of an LED up and down instead of switching it on and off in an abrupt manner. It does not address the objective technical problem posed in the present invention in any way (Figures 5-7; page 4, 2nd paragraph to page 5, 3rd paragraph).
- 3.8.5 Document D55/D55' relates to a driver for a light emitting element to be used in an LED printer. The driver is capable of compensating the dispersion of

light emission luminance by correcting the light emission of LED arrays. The Board however considers that the skilled person would not have consulted a document relating to printers when trying to improve a multicoloured illumination apparatus.

3.9 Hence no combination of documents D5 or D53/D53', as starting documents, with any of documents D4, D20, D54/D54' or D55/D55' renders the illumination apparatus of claim 1 obvious, since no combination of these documents would provide an illumination apparatus that independently and simultaneously controls the brightness of different colour light emitters.

3.10 The Board judges for these reasons that the illumination apparatus of claim 1 involves an inventive step within the meaning of Article 56 EPC 1973.

Order

For these reasons it is decided that:

4. The decision under appeal is set aside.
5. The case is remitted to the department of first instance with the order to maintain the patent as amended in the following version:

Description: Pages 2-6 of the patent specification

Claims: 1-11 filed during the oral proceedings before
the Board

Drawings: sheets 1/5-5/5 of the patent specification

The Registrar:

The Chairman:



S. Sánchez Chiquero

G. Eliasson

Decision electronically authenticated



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Case Number: T 1224/09 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of correcting an error in the decision
of 15 May 2014

Appellant: Philips Solid-State Lighting Solutions, Inc.
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted on
27 April 2009 concerning maintenance of the
European Patent No. 1016062 in amended form.

Composition of the Board:

Chairman	G. Eliasson
Members:	V. L. P. Frank
	T. Bokor

I. Paragraph I of the decision shall read:

"This is an appeal by the patent proprietor against the interlocutory decision of the opposition division to maintain the European patent EP 1 016 062 as amended (Article 101(3) (a) EPC)."

The Registrar:

The Chairman



S. Sánchez Chiquero

G. Eliasson

Decision electronically authenticated