
Date: December 14, 2022
Court: Düsseldorf Higher Regional Court
Panel: 2nd Civil Senate
Type of decision: Judgment
Reference no: 2 U 2/17
ECLI: ECLI:DE:OLGD:2022:1214.2U2.17.00

Previous instance: Düsseldorf District Court, 4b O 103/15

Summary:

1.

Since the infringement court is bound by the act of grant - and consequently also by its further fate in the proceedings on the validity of the patent - it is excluded to make a patent interpretation and/or a scope of protection determination in the infringement proceedings, by which such subject matter, which has been taken away from the patent owner as subject matter of protection in the proceedings on the validity of the patent, is again included in the patent and its protection. Unlike in the context of equivalent use (cf. Federal Supreme Court (BGH), GRUR 2016, 921 - Pemetrexed), it is irrelevant for what reasons - formal or substantive - patent subject matter has been dropped in the prior art proceedings.

2

If the patent in suit protects an LED which, in addition to an LED chip, comprises a phosphor, and if the granted version of the claim has been limited in the legal status proceedings by the fact that it is no longer sufficient that the phosphor "comprises" a garnet phosphor of a certain chemical constitution, but that it is now required that the phosphor "is" a garnet phosphor of the certain chemical constitution,

this does not necessarily mean that an embodiment remains outside the scope of protection which, apart from the patented garnet phosphor, contains further non-garnet phosphors.

1.

Such an inference of non-use is permitted only if there is reason to believe that the partial revocation of the patent in suit was intended to conclusively limit the phosphors to garnet phosphors and to exclude any other non-garnet phosphor as being invalid for the invention.

1.

In contrast, a literal use of the patent is to be assumed if the garnet phosphor of certain chemical composition is required as a result of the partial revocation because *it is* responsible for the inventive advantages which could not be achieved with an arbitrarily small admixture of the garnet phosphor in a predominantly differently constituted non-garnet phosphor, and the attacked embodiment contains a patent-eligible garnet phosphor in sufficient quantity to bring about the patent-eligible effects, and the inventive effects are not lost by the presence of other phosphors.

Tenor:

I. The appeal against the judgment of the 4b Civil Chamber of the Düsseldorf District Court pronounced on December 15, 2016 is dismissed with the proviso that

1. the condemnation - in accordance with the version which the patent in suit has received by the decision of the Technical Board of Appeal of the European Patent Office of March 25, 2022 - refers to such light-emitting components, the phosphor of which *is* a garnet phosphor activated with cerium, which contains at least one element selected from Y, Lu, Sc, La, Gd and Sm and at least one element selected from Al, Ga and In;

2. with effect from July 30, 2017, the settlement of the legal dispute is established to the extent of the injunctive relief,

3. the awarded claim for information and invoicing relates to acts of use committed by the defendant in the period from August 8, 2015 to July 29, 2017,

4. the recall obligation exists for such products that have entered the market and are in the possession of commercial customers in the period from 08. August 2015 to 29. Juli 2017,

5. the obligation to destroy exists with respect to such products that came into the defendant's possession or ownership during the period August 8, 2015 to July 29, 2017 and are still there,

6. the established liability for damages exists for such damages committed by acts of use in the period from August 8, 2015 until July 29, 2017.

II. The plaintiff's cross-appeal is dismissed.

III. The defendant is ordered to pay the costs of the appeal proceedings.

IV. The judgment and the judgment of the District Court are provisionally enforceable. The defendant may avert enforcement against security in the amount of €2,000,000 unless the plaintiff provides security in the same amount prior to enforcement.

V. The revision is not admitted.

Reasons:

I.

The plaintiff is the registered proprietor of the European patent X XXX XXX, which arose from a European divisional application of EP X XXX XXX A1 and claims its filing date of 07/29/1997 and its priorities of 07/29/1996 (JP XXXXXXXXX), 09/17/1996 (JP XXXXXXXXX), 09/18/1996 (JP XXXXXXXXX), 12/27/1996 (JP XXXXXXXXX) and 03/31/1997 (JP XXXXXXXXX). The procedural

language of the patent in suit is English. The notice of grant of the patent in suit - which is valid inter alia for Germany and in force until the expiry of its term of protection on July 29, 2017 (during the appeal proceedings) - was published on July 8, 2015.

The patent in suit concerns a light-emitting device. Its claim 1, as granted and on which the District Court based its assessment, read in German translation as follows:

A light emitting device comprising:

a light-emitting diode (LED) chip comprising a gallium nitride-based compound semiconductor and a light-emitting layer capable of emitting light having a wavelength of 420 nm to 490 nm, and

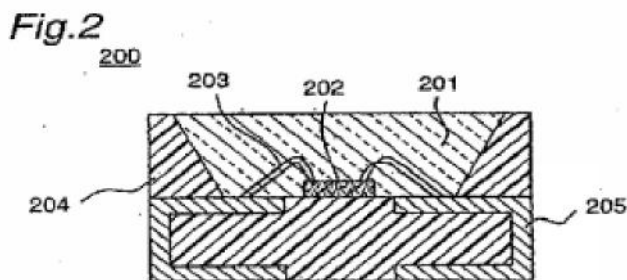
a phosphor that is excited by the light emitted from the LED chip and emits light that is in relation of complementary colors with the emitted light,

wherein the phosphor is contained in a coating material that coats the LED chip, and

*wherein the light emitting device emits white light by mixing the light emitted by the LED chip and the light emitted by the phosphor, **characterized in that***

the LED chip has a single-quantum well structure or multi-quantum well structure, and the phosphor comprises a cerium-activated garnet phosphor containing at least one element selected from Y, Lu, Sc, La, Gd and Sm and at least one element selected from Al, Ga and In.

Figure 2 of the patent application is reproduced below, showing the schematic cross-section of a chip-type light-emitting diode.



The defendant offers and sells the following luminaires with built-in LEDs nationwide:

- "[...]" (attacked embodiment A)
- "[...]" (attacked embodiment B)
-

"[...] (attacked embodiment C)

•

"[...] (attacked embodiment D)

•

"[...] (attacked embodiment E)

•

"[...] (attacked embodiment F)

•

"[...] (attacked embodiment G)

•

"[...] (attacked embodiment H)

•

"[...] (attacked embodiment I)

•

"[...] (attacked embodiment J)

The plaintiff claims to have examined the challenged embodiments and found that the illuminants of all embodiments contained a blue light emitting LED chip with a wavelength of about 450 nm with a compound semiconductor based on indium gallium nitride (InGaN). The coating over the LED chip contained phosphor particles. EDX investigations had shown that in all challenged embodiments - in addition to other phosphors - a cerium-activated garnet phosphor consisting of yttrium (Y), aluminum (Al), gallium (Ga) and oxygen (O) (in various proportions) was present. As a result, all challenged embodiments emitted white light (LGU, page 8).

In the contested judgment of December 15, 2016, the District Court upheld the plaintiff's patent infringement action and found against the defendant as follows (boldface added):

I. The defendant is ordered,

1. **to refrain from** any infringement of this provision upon avoidance of a fine of up to EUR 250,000.00 for each infringement, or, in the event of repeated infringements, up to a total of two years' imprisonment, which shall be enforced against the respective managing director of the defendant:

light emitting devices that have:

- a light-emitting diode (LED) chip comprising a gallium nitride-based compound semiconductor and a light-emitting layer capable of emitting light having a wavelength of 420 nm to 490 nm, and

- a phosphor that is excited by the light emitted by the LED chip and emits light that is in relation of complementary colors with the emitted light,
- wherein the phosphor is contained in a coating material that coats the LED chip, and
- wherein the light emitting device emits white light by mixing the light emitted by the LED chip and the light emitted by the phosphor,

to offer, place on the market or use in the Federal Republic of Germany or to import or possess for the aforementioned purposes,

- when the LED chip has a single-quantum well structure or multi-quantum well structure, and
- wherein the phosphor comprises a cerium activated garnet phosphor containing at least one element selected from Y, Lu, Sc, La, Gd and Sm and at least one element selected from Al, Ga, and In;

2. to provide the plaintiff with **information and an account of** the extent to which it has committed the acts referred to under I. 1. since 08/08/2015, submitting a chronologically ordered list indicating

- a) the quantity of products received and ordered under item I. 1., the names and addresses of manufacturers, suppliers and other previous owners;
- b) of the individual deliveries, broken down by delivery quantities, times and prices and indicating type designations as well as broken down by the names and addresses of the commercial customers;
- c) of the individual offers, broken down by offer quantities, times and prices, including type designations, as well as the names and addresses of the offerees, whereby the defendant reserves the right to disclose the names and addresses of its offerees instead of the plaintiff to a certified public accountant to be designated by the plaintiff, to a sworn auditor domiciled in the Federal Republic of Germany designated by the defendant and bound to secrecy vis-à-vis the defendant, provided that the defendant bears the costs of such auditor and authorizes and obligates such auditor to inform the plaintiff upon specific request whether a certain offeree is included in the list;
- d) of the advertising carried out, broken down by advertising medium, circulation volume, distribution period and distribution area, and, in the case of Internet advertising, the respective domain, access figures and placement periods;
- e) of the prime costs, including purchase prices, broken down by the individual cost factors, and the profit generated;

whereby copies of the purchase or sales documents (invoices) or, if no invoices have been issued, delivery documents must be submitted with regard to the information in lit. a) and lit. b);

3. to recall from the distribution channels the products referred to under I. 1. above, which have been on the market since 08/08/2015 and in the possession of commercial customers, by informing those commercial customers in possession of these products in writing that the Chamber has found

an infringement of the German part of the European patent EP X XXX XXX in the present judgment, and requesting them to return the products to the defendant and, in the event of the return of the products, to reimburse the commercial customers for the purchase price already paid, if any, and to assume the packaging and transport or shipping costs incurred as a result of the return. shipping costs arising from the return;

4. **to destroy**, at its option, the products in its direct or indirect possession or ownership referred to in item I. 1 or to hand them over to a bailiff to be appointed by the plaintiff for the purpose of destruction at the defendant's expense.

II. It is **determined that** the defendant is obliged to **compensate** the plaintiff for all **damage** that she has suffered or will suffer as a result of the acts referred to in item I. 1. committed since 08.08.2015.

During the appeal proceedings, which were temporarily suspended for this reason at the request of the plaintiff, the patent in suit was partially revoked by the Opposition Division of the European Patent Office by decision of October 23, 2017 (Annex HL 10) and maintained with the following - translated into German - version of main claim 1 (amendments to the granted version are indicated by underlining and strikethrough):

A light emitting device comprising:

a light-emitting diode (LED) chip comprising a gallium nitride-based compound semiconductor and a light-emitting layer capable of emitting light having a wavelength of 420 nm to 490 nm, and

a phosphor that is excited by the light emitted from the LED chip and emits light that is in relation of complementary colors with the emitted light,

wherein the phosphor is contained in a coating material that coats the LED chip, and

*wherein the light emitting device emits white light by mixing the light emitted by the LED chip and the light emitted by the phosphor, **characterized in that***

the LED chip has a single-quantum well structure or multi-quantum well structure, and the phosphor comprises a cerium-activated garnet phosphor containing at least one element selected from Y, Lu, Sc, La, Gd and Sm and at least one element selected from Al, Ga and In.

By decision dated March 25, 2022 (Exhibit HL 9), the Technical Board of Appeal 3.4.03 54 of the European Patent Office confirmed the opposition decision. In the meantime, a New European Patent Specification X XXX XXX B 2 taking into account the partial revocation has been published (Exhibit TW B 32).

The defendant is of the opinion that the challenged embodiments already do not make use of the granted, but in any case of the limited teaching of the patent in suit.

As far as the granted version of the claim is concerned, the patent interpretation of the District Court is to be contradicted insofar as the skilled person - in the absence of other indications in the patent specification - understands as "white light" only such light that lies close to the "white point" of the CIE standard valence system with the coordinates $x = 0.33$; $y = 0.33$ and $z = 0.33$, which is not the case with the challenged embodiments. With regard to the challenged embodiments D to J, the plaintiff also failed to conclusively demonstrate that the LED chips used have a "quantum well structure". The examinations carried out by the applicant with a scanning electron microscope (instead of with a transmission electron microscope) did not reveal the necessary details of the layer structure to such an extent that clear evidence was obtained. This defect was all the more serious because only one single measuring point had been taken into account. It was also not conclusively shown that the challenged embodiments contained a cerium-activated garnet phosphor within the meaning of the patent in suit. The methods used (EDX and XRPD) were not suitable to provide doubtless findings in this respect. If, therefore, any claims of the plaintiff were already inapplicable due to the lack of a conclusive fact of use, such claims would at least fail due to the fact that the prohibition rights from the patent in suit were exhausted. It was known from press reports that the plaintiff had "broadly" licensed its LED technology, including the production of white LEDs and including the patent in suit, to various well-known and internationally operating companies. In view of this, it is to be assumed that LEDs covered by the patent are not only supplied by the plaintiff's licensees to the Chinese manufacturers of the overall products distributed by the defendant with the plaintiff's consent, but that the plaintiff's consent also extends, at least impliedly, to the fact that the overall products in question are placed on the market in the EU by the distributors (such as the defendant). In the event of a dispute, the plaintiff had to submit the license agreements with the licensees (named by the defendant) pursuant to Section 142 (1) sentence 1 Code of Civil Procedure (ZPO).

In any case, the challenged embodiments did not make use of claim 1, which was limited by partial revocation. Whereas according to the granted version of the claim it was sufficient that the phosphor "*comprises*" a cerium-activated garnet phosphor of a certain composition, which allowed the presence of phosphors of other compositions, according to the partially revoked version of the claim it was necessary that the phosphor "*is*" a cerium-activated garnet phosphor of a certain composition, which excluded further phosphors of non-patent composition as components. However, precisely such other additional phosphors are present in all challenged embodiments, as the plaintiff itself has argued and as can be seen in detail from the table shown below - which remains undisputed as such between the parties:

AFF	Additional phosphor	Reference
A	SCASN	Klage S. 68
B	CASN:Eu	Klage S. 86/87
C	LuAG, CASN:Eu, SCASN:Eu	Klage S. 105/106
D	SCASN:Eu	Replik S. 16/17
E	SCASN:Eu	Replik S. 32/33
F	SCASN:Eu	Replik S. 48
G	SCASN:Eu	Replik S. 65/66
H	SCASN:Eu	Replik S. 81/82
I	SCASN:Eu; Sr ₂ Si ₅ N ₈ :Eu	Replik S. 97/98
J	SCASN:Eu	Replik S. 113/114

The defendant requests,

to amend the District Court judgment of December 15, 2016, and to dismiss the complaint.

The plaintiff requests (taking into account the amended version of the claim in the opposition proceedings and the expiry of the property right in the meantime) mutatis mutandis (for the exact wording of the request, see the writ of July 29, 2022, GA 581 f. and the minutes of the hearing of December 8, 2022),

to dismiss the appeal with the proviso that the judgment relates in its entirety to the version of the claim upheld in the opposition proceedings and that, furthermore

- *with effect from July 30, 2017 the settlement of the claim for injunctive relief is established,*
- *the awarded claim for information and accounting relates to acts of use committed by the defendant in the period from August 8, 2015 to July 29, 2017 and - which the plaintiff requested for the first time at the hearing on December 8, 2022 - the information is to be provided in electronically analyzable form,*
- *the recall obligation exists for such products that entered the market and are in the possession of commercial customers in the period from August 8, 2015 to July 29, 2017,*
- *the duty to destroy exists in respect of such products which came into the defendant's possession or ownership during the period August 8, 2015 to July 29, 2017 and are still there,*
- *the obligation to pay compensation for such damages committed by acts of use in the period from August 8, 2015 to July 29, 2017.*

It defends the District Court judgment as correct and, with regard to the claim limitation, is of the opinion that it does not release the challenged embodiments from the scope of protection of the

patent in suit. Even in its current form, claim 1 does not contain a limitation to the use of a cerium-activated garnet phosphor as the only phosphor in a light-emitting device. It is only required that the white light is produced by the use of one or more such garnet phosphors assembled according to the invention. This is the case because in the challenged embodiments the additional phosphors - as has remained uncontested - only cause a gradual change of the light temperature based on the white light produced with the garnet phosphor according to the patent into orange - as the plaintiff submitted uncontested at the hearing on December 8, 2022.

Reference is made to the contents of the court file and Exhibits for details of the facts and content of the dispute.

II.

The appeal is admissible; however, it is unsuccessful on the merits - as is the plaintiff's cross-appeal. The challenged embodiments also make use of the (after partial revocation) valid version of claim 1 of the patent in suit according to its wording.

A.

The patent in suit relates to a light emitting device consisting of a light emitting diode chip (LED chip) and a phosphor that converts the wavelength of light emitted by the light emitting device and in turn emits light. By mixing the light emitted by the LED chip and the complementary light emitted by the phosphor, the component emits the desired white light.

1.

Specifically, the patent in suit, according to its applicable claim version, proposes a light-emitting device having the following features:

•1. light emitting device which is

- a) a **light-emitting diode chip** (LED chip) and
- b) has a **phosphor**.

2. The light emitting diode chip (LED chip) has

- a) a compound semiconductor based on gallium nitride,
- b) a single or multiple quantum well structure and
- c) a light-emitting layer that can emit light with a wavelength of 420 nm to 490 nm.

3. the phosphor

- a) is contained in a coating material that coats the LED chip,
- b) is excited by the light emitted from the LED chip and emits light which is in relationship of complementary colors with the emitted light,
- c) is a garnet phosphor activated with cerium, which is
 - at least one element selected from Y, Lu, Sc, La, Gd and Sm,
 - and contains at least one element selected from Al, Ga and In.

4. The light emitting device emits white light by mixing the light emitted by the LED chip and the light emitted by the phosphor.

According to the unchallenged findings of the District Court, which do not reveal an error of law and with regard to which there is also no apparent reason for other findings, the light-emitting component has an LED chip and a phosphor. The LED chip uses a compound semiconductor based on gallium nitride, so that it emits light with a wavelength between 420 nm and 490 nm, namely blue light. The phosphor is used to emit light having a color complementary to the blue light of the LED chip when excited by the light of the LED chip. For this purpose, according to the invention, the phosphor is to be a cerium-activated garnet phosphor containing at least two different elements, the first selected from Y, Lu, Sc, La, Gd and Sm, and the second selected from Al, Ga and In. The combination of LED chip (which emits blue light with a wavelength of 420 to 490 nm) and garnet phosphor (which - excited by the blue light emitted by the LED chip - emits complementary colored light) allows white light to be produced.

2.

With the partial revocation of the patent in suit by the opposition division of the European Patent Office, claim 1 has been restricted to the effect that the phosphor excited by the light of the LED chip no longer only has to "have" a cerium-activated garnet phosphor of the chemical composition defined in feature 3c) (which would undoubtedly allow other phosphors in the coating not corresponding to feature 3c), but that it is now expressly required that the phosphor "is" a cerium-activated garnet phosphor of a composition according to the patent. However, this does not mean that the patent in suit does not tolerate any non-patent compliant phosphors other than the garnet phosphor, but limits the light emitting device's features with respect to phosphors - finally and conclusively - to the effect that either a single garnet phosphor according to feature 3c) or a plurality of garnet phosphors according to feature 3c), but beyond that no phosphor of other constitution is present in it.

a)

This does not yet follow from paragraphs ?0044? and ?0045? of the new patent specification published after the partial revocation, to which the plaintiff referred at the hearing on December 8, 2022, claiming that further luminescent materials of non-patent composition and quality were provided. If this were the case, it would indeed have to be concluded in case of doubt from the

descriptive text explaining the partially revoked claim that feature 3c) must not be understood as a conclusive designation of the phosphors permitted for the light-emitting component. In fact, the description text used does not deal with additional phosphors of a constitution not in accordance with the invention, but merely instructs the skilled person that he can influence and change the light color of the white light by selecting sensibly within the range of variation of their chemical composition permitted for the phosphors according to the patent (for which different basic elements are permitted in each group in proportions not specified in detail, namely Y, Lu, Sc, La, Gd and Sm on the one hand, and Al, Ga and In on the other hand). Thus it is said in the paragraph ?0045? concluding:

"Thus, one can shift the wavelength of the emitted light toward a shorter wavelength by replacing part of the Al contained in the composition with Ga, and one can shift the wavelength of the emitted light toward a longer wavelength by replacing part of the Y contained in the composition with Gd. In this way, one can continuously change the light color of the emission by changing the composition. ..."

Conversely, however, it does not necessarily follow from the fact that the description text itself does not explain any embodiment which, in addition to the garnet phosphor according to the patent in suit, contains other phosphors not according to the invention in an amount corresponding to the challenged embodiments that such additional phosphors are prohibited under the patent in suit. In particular, it is two quite different things if the patent in suit uses non-patent compliant phosphors as a comparative reference for the phosphors of the invention in order to show on them that the advantages of the patent in suit, which are not attainable with the reference phosphors, occur with and because of the use of a garnet phosphor of the constitution of the invention, and on the other hand it is a question of whether, if such garnet phosphors are used in sufficient quantity, their effect in accordance with the patent is impaired by the fact that other phosphors are also used (namely in small quantity). The first constellation described in the patent application only proves that the use of a garnet phosphor according to the patent results in the desired white light, which does not tell the skilled person whether this is only the case if the garnet phosphor is the only phosphor in the coating material of the LED chip. Since the description text nowhere explicitly articulates such a question, it is a question of what technical teaching the patent in suit conveys to the person skilled in the art when viewed from a function-oriented perspective. In answering this question, the partial revocation of the patent in suit cannot be disregarded.

b)

Since the infringement court is bound by the granting act - and consequently also by its further fate in the proceedings on the validity of the patent - it is excluded that in the infringement proceedings a patent interpretation and/or a determination of the scope of protection is made by which such subject matter, which has been taken away from the patent owner as subject matter of protection in the proceedings on the validity of the patent, is again included in the patent and its protection. Insofar as the Federal Supreme Court (GRUR 2016, 921 - Pemetrexed) differentiates in the context of an equivalent patent use according to the reasons - formal or substantive - for which patent subject matter was dropped in the prior art proceedings, and then if the (formal) revocation reason of inadmissible extension was decisive for this, does not assume any reason for a limitation of the

scope of protection, these principles are not transferable to the field of literal infringement at least if the patent claim has received a deviating claim wording due to the partial revocation - as in this case - which makes it clear to the person skilled in the art that and in which way the protection of the patent in suit has been abridged.

c)

In the present case, the granted version of the claim (according to which it was sufficient that the light-emitting component merely "comprises" a patented garnet phosphor) was partially revoked because the Opposition Division of the European Patent Office saw in it an inadmissible extension of the patent in suit beyond the priority-supported subject-matter of the original application, which directly and unambiguously conveys to the skilled person only that the advantages of the invention occur when using a garnet phosphor according to the patent, but does not indicate that this is also the case with another phosphor not according to the invention. Accordingly, the Technical Board of Appeal also understood the upheld claim 1 to mean that according to the technical teaching of the patent in suit, it is the garnet phosphor to which the component owes its advantageous effects in interaction with the LED chip. With sufficient clarity this emerges from point 8.3 of the Board of Appeal decision, which reads in German translation as follows:

The Board agrees with the statement of the Opposition Division on page 9 of the contested decision that the application as originally filed discloses that the phosphor used for the invention consists either of a garnet phosphor according to feature 7 (Note: here: feature 3c) or of a plurality of such garnet phosphors of different composition (but each phosphor having a composition according to feature 7 (Note: here: feature 3c)). In the Chamber's view, the wording of claim 1 encompasses both possibilities, so that there is no contradiction between claim 1 maintained by the Opposition Division (Note: limited) and the description.

The text of the opposition decision referred to by the Board of Appeal with approval reads in German translation:

In view of the above, the Opposition Division considers that the application documents filed clearly and unequivocally disclose:

i) a phosphor consisting of a (single) garnet phosphor; a phosphor consisting of a plurality of (yttrium-aluminum)garnet

ii) phosphors of different compositions.

No basis can be found for a phosphor comprising a garnet phosphor with any other possible fluorescent material that does not necessarily have a garnet structure.

In view of these statements, there is no reasonable doubt *that* as a result of the partial revocation, embodiments which were still subject to the granted version of the claim were excluded from patent protection as a consequence of the opposition decision. The only question is how *far the* restriction of the patent and (as a consequence thereof) of its protection made in the validity proceedings

extends, whereby in principle two possibilities are conceivable:

Should it be the case that the light emitting component must be equipped with a garnet phosphor and that its presence produces the desired advantages of the invention (formation of white light by mixing with the light of the LED chip), it would be left to the person skilled in the art, to provide other luminescent materials as *long* as they do not inadmissibly impair or even nullify the effects of the patented garnet luminescent material, which would be the case if, thanks to their presence, no white light is emitted by the light-emitting component (despite the presence of the garnet luminescent material). In such circumstances, it would be similar to a case in which the claim requires an articulated connection between two parts of the device. If the attacked embodiment is equipped with a hinge, this basically establishes patent use, although something different (in the sense of lack of patent use) applies if, in addition to the hinge, rigid struts are installed which bridge the hinge, thereby "stiffening" it and rendering it inoperative. If, on the other hand, the effect of the installed joint is maintained, additional equipment, which is realized in the challenged embodiment, would not be able to prevent patent use.

The situation would be different if the teaching of the patent in suit were to be understood to the effect that (e.g. for the necessary demarcation from the prior art, which has already disclosed a mixture of patentable and non-patentable phosphors, or for other reasons relevant to the validity of the patent) the phosphors were *finally and conclusively* defined as being of patentable constitution, because in such a situation phosphors of non-patentable constitution would be categorically excluded.

The differentiation shown is also in line with the case law of the Federal Supreme Court (BGH) (judgment of July 12, 2011 - X ZR 75/08 - Reifenabdichtmittel), which has already ruled that if it can be inferred from the original documents of the patent application that a product is to "*contain*" certain components, it is not thereby also disclosed without further ado as belonging to the invention that no further components may be added to it, but that for the assumption that the product "*consists*" exclusively of the mentioned components, as a rule further indications are required, such as the indication that the exclusive existence of the product from the mentioned components has special advantages or is otherwise desirable.

There are no sufficient indications for the latter alternative, which leads to non-infringement in the case in dispute.

d)

According to the granted version of the claim, it was sufficient that the light-emitting component had an LED chip emitting blue light and a phosphor emitting a complementary color, so that white light was emitted as a result of the mixing of both light emissions (that of the LED chip and that of the phosphor). According to the granted version of the claim, the phosphor responsible for the complementary light was only described as "having" a garnet phosphor of a certain composition, which would already have been the case if a garnet phosphor according to the patent - no matter in which quantity and no matter with which actual effect on the emitted light of the component - had merely been present, even if it was not due to it, but to a completely different phosphor present next

to it, that complementary light to the blue light of the LED chip was emitted and that white light was emitted altogether. The Technical Board of Appeal also proceeded from this understanding in its preliminary decision of August 19, 2021, which, because of the plaintiff's then still pending appeal, also addresses the issue of impermissible extension by the granted claim version. Under paragraphs 7.4 and 7.4.1 it states in German translation (note: bold added):

The Chamber is of the preliminary view that the subject matter of claim 1 as granted goes beyond the content of the application as filed because the wording "comprises" in feature 7 (note: here: feature 3c) introduces subject matter that was not disclosed in the application as originally filed.

*There appears to be agreement that the wording of claim 1 includes a phosphor comprising a garnet phosphor that is different from the phosphors described in feature 7, or even non-garnet based phosphors in addition to the garnet phosphor of feature 7. For example, claim 1 includes a phosphor comprising, for example, **primarily** (ZnCd)S:Cu or organic fluorescent pigments (i.e., the phosphors of Comparative Examples 1 and 2) ... and only a **small amount** (for example, 1%) of garnet phosphor according to Feature 7.*

*According to the present wording of claim 1, the light emitting device emits white light by mixing the light emitted by the LED chip (...) and the light emitted by the phosphor, wherein the phosphor is excited by the light emitted from the LED chip and emits light in relation of complementary colors with the emitted light of the LED chip. **The Chamber considers that this function of the phosphor according to the application as originally filed is disclosed only for a phosphor which is a cerium-activated garnet phosphor and contains at least one element selected from Y, Lu, Sc, La, Gd and Sm and at least one element selected from Al, Ga and In, and not for phosphors containing, for example, mainly the materials according to the comparative examples (...).***

If the quoted text is taken into account, it makes clear to the skilled person that the originally disclosed teaching of the patent in suit is to use a cerium-activated garnet phosphor of a very specific chemical composition as a luminescent material, because with it (and only with it) - in cooperation with an LED chip emitting blue light - it is possible to generate white light. Accordingly, the main presence of the garnet phosphor is essential, but not its sole presence in the coating material of the Led chip. Contrary to the defendant's opinion, the further, immediately following text of the preliminary decision does not change this statement. It reads in German translation as follows:

In the course of the patent application as originally filed, the skilled person would understand that in any use of the materials according to feature 7, the phosphor consists of these materials and does not include other garnet and non-garnet based phosphors.

If the entire text passage is understood analogously, the last sentence merely reflects the fact that cerium-activated garnet phosphors - and nothing else - are referred to in the original application

without exception. The last half-sentence, according to which "*in any use of the materials according to feature 7, the phosphor consists of these materials and does not comprise other garnet and non-garnet based phosphors,*" merely states those embodiments that are given to the person skilled in the art in the original application to explain the invention. This is not to say that, from the point of view of the person skilled in the art, any admixture of any other phosphor, no matter in what small amount, is harmful to the invention and therefore prohibited. For the person skilled in the art, the disclosure content of the original application is thus limited to the message that the use of a garnet phosphor according to the patent in the coating material of the LED chip results in the desired white light, and the application does not further state that the exclusive presence of a garnet phosphor is necessary or at least advantageous for this purpose, so that other phosphors are to be avoided.

An embodiment as explained above, in which a garnet phosphor of patentable constitution is present, but which is neither responsible for the emission of a suitable complementary light nor for the formation of white light when mixed with the light of the LED chip, which - as explained - satisfied the granted version of the claim, the appellate courts did not see disclosed in the original application, because in it it is directly and unambiguously shown only that it is a garnet phosphor of patent-conforming composition that can produce white light when mixed with the light of the LED chip. Against this background, the limitation of the claim wording to the effect that the phosphor emitting the complementary light and giving rise to white light as a result of mixing with the blue light of the LED chip must be a garnet phosphor of specific chemical composition serves to anchor the said disclosure content of the original application in the wording of the main claim, in that the claim is reduced to such embodiments in which the phosphor which emits light complementary to the light of the LED chip and, by mixing with the light of the LED chip, gives rise to white light as a whole, must be one with a garnet structure which is activated with cerium and has a specific chemical composition described in feature 3c).

If the only purpose of the partial revocation is to limit the patent in suit to those components in which the creation of white light by providing complementary colored light is due to the garnet phosphor of the constitution according to the invention, it is of no significance if other phosphors are present in addition to the phosphor according to the patent which do not destroy the light result achieved with the aid of the LED chip and the garnet phosphor.

B.

The challenged embodiments make use of the technical teaching of the patent in suit in the literal sense.

1.

With regard to the disputed claim features which were the subject of the granted version of the patent in suit, reference can be made to the correct statements of the District Court.

It correctly rejected the consideration that, in the absence of other indications in the patent specification, only light close to the white point with the coordinates $x = 0.33$, $y = 0.33$ and $z = 0.33$ could be regarded as "white light". There is not the slightest indication that the patent in suit is based on the CIE standard valence system. On the contrary, the examples of use for a light-emitting component according to the patent (background lighting, illuminated traffic signs or railroad signals, illuminated switches and the like) mentioned at the beginning of the patent specification make it clear to the person skilled in the art that it is solely a matter of producing a light which deserves the term "white" within the usual color scale. Thus, a color range is addressed and permitted, as is fully evident from the fact that the patent application itself - as explained above - mentions the possibility of varying the light color of the white light by the choice of the chemical composition.

The defendant's objection that the examinations of the layer structure with a scanning electron microscope referred to by the plaintiff in the presentation of the allegation of infringement concerning feature 2b) are not sufficiently informative does not constitute a significant denial of the plaintiff's claims that could necessitate any proof by the plaintiff (which may be lacking) of the quantum well structure present in the challenged embodiments. In the absence of a dispute, the plaintiff's infringement claim regarding the quantum well structure in the challenged embodiments is rather to be treated as undisputed (Sec. 138 Code of Civil Procedure (ZPO); cf. Kühnen, Handbuch der Patentverletzung, 14th edition, Chapter E, para. 172).

The same applies to the defendant's criticism that the methods used by the plaintiff to prove the cerium activation of the garnet phosphor (EDX, XRPD) are unsuitable. This also does not constitute a procedurally relevant dispute, which is why the cerium activation is to be treated as undisputed.

2.

Insofar as the challenged embodiments contain further phosphors in addition to the patented garnet phosphor, as shown in the table superimposed above, the plaintiff submits that the additional phosphors merely cause a gradual change in the light temperature based on the white light produced with the patented garnet phosphor, but do not result in the component no longer emitting "white light". This argument has remained undisputed and is therefore to be taken as a basis for the legal assessment. As far as the defendant criticizes last (writ of November 30, 2022, p. 6) that the plaintiff has not *proven that* the emitted white light is based on the use of the garnet phosphor according to the invention, this is - for the reasons already discussed above in another context - not a relevant denial. However, if the challenged embodiments have garnet phosphors effective according to the patent, the patent in suit - as explained - does not exclude further phosphors of a constitution not according to the invention, which do not change the effect of the garnet phosphor according to the invention, and therefore do not prevent the patent infringement.

C.

The acts of use were unlawful; in particular, the plaintiff's rights of prohibition have not been exhausted.

