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Language of the proceedings: EN

Title of invention:
LIGHT-EMITTING DEVICE AND METHOD FOR DESIGNING LIGHT EMITTING DEVICE

Applicant:
Citizen Electronics Co., Ltd.

Relevant legal provisions:
EPC Art. 83

Keyword:
Sufficiency of disclosure - indication of at least one way to carry out the invention (no) - skilled person enabled to carry out the invention over the whole range claimed (no)

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Case Number: T 1205/20 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 14 March 2024

Appellant: (Applicant)	Citizen Electronics Co., Ltd. 23-1 Kamikurechi 1-chome Fujiyoshida-shi, Yamanashi 403-0001 (JP)
Representative:	Hoffmann Eitle Patent- und Rechtsanwälte PartmbB Arabellastraße 30 81925 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 3 January 2020 refusing European patent application No. 14873899.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	T. Häusser
Members:	M. Ley
	G. Decker

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division refusing European patent application No. 14 873 899 pursuant to Article 97(2) EPC.

II. The examining division decided *inter alia* that the application did not meet the requirements of Article 83 EPC.

III. The appellant requests as a main request that the impugned decision be set aside and a European patent be granted on the basis of the claims underlying the impugned decision or alternatively on the basis of the claims according to auxiliary request 1 filed with the statement setting out the grounds of appeal or auxiliary request 2 filed with the letter dated 14 February 2024.

The appellant submitted *inter alia* the following documents:

A1 The Lighting Handbook, D. L. DiLaura et al., Tenth Edition, 2011, excerpts
A2 EP 2 753 151 A1
A3 EP 3 567 989 A1
T1 Table "Result of comprehensive visual experiment"

Documents A2 and A3 are the English equivalents of Japanese Patent Publications No. 5257538 and 5252107, respectively, which are cited as "Patent Document 4" and "Patent document 3" in the description of the application (see paragraph [0009]).

IV. Claim 1 according to the main request has the following wording:

1. A light-emitting device at least including, as light-emitting elements:

a blue semiconductor light-emitting element;

a green phosphor; and

a red phosphor, wherein

light emitted from the light-emitting device in a main radiant direction satisfies all of Conditions 1 to 4 and Conditions I to IV below

Condition 1:

when λ denotes wavelength, $\varphi_{SSL1}(\lambda)$ denotes a spectral power distribution of light emitted from the light-emitting device in the main radiant direction,

$\varphi_{ref1}(\lambda)$ denotes a spectral power distribution of reference light which is selected in accordance with a correlated color temperature T_{SSL1} of the light emitted from the light-emitting device in the main radiant direction,

(X_{SSL1}, Y_{SSL1}, Z_{SSL1}) denote tristimulus values of the light emitted from the light-emitting device in the main radiant direction, and

(X_{ref1}, Y_{ref1}, Z_{ref1}) denote tristimulus values of the reference light which is selected in accordance with T_{SSL1} of the light emitted from the light-emitting device in the main radiant direction, and

a normalized spectral power distribution $S_{SSL1}(\lambda)$ of the light emitted from the light-emitting device in the main radiant direction, a normalized spectral power distribution $S_{ref1}(\lambda)$ of the reference light which is selected in accordance with T_{SSL1} (K) of the light emitted from the light-emitting device in the main radiant direction, and a difference $\Delta S_{SSL1}(\lambda)$ of between normalized spectral power distributions are respectively defined as

$S_{SSL1}(\lambda) = \varphi_{SSL1}(\lambda)/Y_{SSL1}$

$S_{ref1}(\lambda) = \varphi_{ref1}(\lambda)/Y_{ref1}$

$\Delta S_{SSL1}(\lambda) = S_{ref1}(\lambda) - S_{SSL1}(\lambda)$, and

in a case where $\lambda_{SSL1\text{-}RL\text{-}max}$ (nm) represents a wavelength that provides a longest wavelength local maximum value of $S_{SSL1}(\lambda)$ in a wavelength range of 380 nm or more and 780 nm or less, and when a wavelength $\Lambda 4$ that is represented by $S_{SSL1}(\lambda_{SSL1\text{-}RL\text{-}max})/2$ exists on a longer wavelength-side of $\lambda_{SSL1\text{-}RL\text{-}max}$,

an index $A_{cg}(\varphi_{SSL1}(\lambda))$ represented by the following formula (1-1) satisfies

$-10.0 < A_{cg}(\varphi_{SSL1}(\lambda)) \leq 120.0$,

but

in a case where $\lambda_{SSL1-RL-max}$ (nm) represents a wavelength that provides the longest wavelength local maximum value of $S_{SSL1}(\lambda)$ in a wavelength range of 380 nm or more and 780 nm or less, and when the wavelength $\Lambda 4$ that is represented by $S_{SSL1}(\lambda_{SSL1-RL-max})/2$ does not exist on the longer wavelength-side of $\lambda_{SSL1-RL-max}$,

an index $A_{cg}(\varphi_{SSL1}(\lambda))$ represented by the following formula (1-2) satisfies

$-10.0 < A_{cg}(\varphi_{SSL1}(\lambda)) \leq 120.0$;

[Expression 1]

$$A_{cg}(\phi_{SSL1}(\lambda)) = \int_{380}^{495} \Delta S_{SSL1}(\lambda)d\lambda + \int_{495}^{590} (-\Delta S_{SSL1}(\lambda))d\lambda + \int_{590}^{\Lambda 4} \Delta S_{SSL1}(\lambda)d\lambda \quad (1-1)$$

[Expression 2]

$$A_{cg}(\phi_{SSL1}(\lambda)) = \int_{380}^{495} \Delta S_{SSL1}(\lambda)d\lambda + \int_{495}^{590} (-\Delta S_{SSL1}(\lambda))d\lambda + \int_{590}^{780} \Delta S_{SSL1}(\lambda)d\lambda \quad (1-2)$$

Condition 2:

a distance $D_{uv}(\varphi_{SSL1}(\lambda))$ of the spectral power distribution $\varphi_{SSL1}(\lambda)$ of light from a black-body radiation locus defined by ANSI C78.377 satisfies

$-0.0220 \leq D_{uv}(\varphi_{SSL1}(\lambda)) \leq -0.0070$;

Condition 3:

when a maximum value of spectral intensity in a range of 430 nm or more and 495 nm or less is defined as $\varphi_{SSL1-BM-max}$ and a minimum value of spectral intensity in a range of 465 nm or more and 525 nm or less is defined as $\varphi_{SSL1-BG-min}$, the spectral power distribution $\varphi_{SSL1}(\lambda)$ of light satisfies

$$0.2250 \leq \varphi_{SSL1-BG-min}/\varphi_{SSL1-BM-max} \leq 0.7000;$$

Condition 4:

in the spectral power distribution $\varphi_{SSL1}(\lambda)$ of light, when a maximum value of spectral intensity in a range of 590 nm or more and 780 nm or less is defined as $\varphi_{SSL1-RM-max}$, a wavelength $\lambda_{SSL1-RM-max}$ that provides $\varphi_{SSL1-RM-max}$ satisfies

$$605 \text{ (nm)} \leq \lambda_{SSL1-RM-max} \leq 653 \text{ (nm)};$$

Condition I:

when a^*_{nSSL1} and b^*_{nSSL1} (where n is a natural number from 1 to 15) respectively denote the a^* value and b^* value in the CIE 1976 $L^*a^*b^*$ color space of the following 15 Munsell renotation color samples of #01 to #15 based on a mathematical assumption that illumination is performed by the light emitted from the light-emitting device in the main radiant direction, and

when a^*_{nref1} and b^*_{nref1} (where n is a natural number from 1 to 15) respectively denote the a^* value and b^* value in the CIE 1976 $L^*a^*b^*$ color space of the 15 Munsell renotation color samples based on a mathematical assumption that illumination is performed by reference light which is selected in accordance with the correlated color temperature $T_{SSL1}(K)$ of the light emitted in the main radiant direction, each saturation difference ΔC_{nSSL1} satisfies

$-4.00 \leq \Delta C_{nSSL1} \leq 8.00$ (where n is a natural number from 1 to 15);

Condition II:

an average saturation difference represented by the following formula (1-3) satisfies

[Expression 3]

$$\frac{\sum_{n=1}^{15} \Delta C_{nSSL1}}{15} \quad (1-3)$$

[Expression 4]

$$0.50 \leqq \frac{\sum_{n=1}^{15} \Delta C_{nSSL1}}{15} \leqq 4.00;$$

Condition III:

when a maximum saturation difference value is denoted by $\Delta C_{SSL-max1}$ and a minimum saturation difference value is denoted by $\Delta C_{SSL-min1}$, a difference $|\Delta C_{SSL-max1} - \Delta C_{SSL-min1}|$ between the maximum saturation difference value and the minimum saturation difference value satisfies

$2.00 \leq |\Delta C_{SSL-max1} - \Delta C_{SSL-min1}| \leq 10.00$,

where $\Delta C_{nSSL1} = \sqrt{\{(a^*_{nSSL1})^2 + (b^*_{nSSL1})^2\}} - \sqrt{\{(a^*_{nref1})^2 + (b^*_{nref1})^2\}}$,

with the 15 Munsell renotation color samples being:

#01 7.5 P 4 /10

#02 10 PB 4 /10

#03	5	PB	4	/12
#04	7.5	B	5	/10
#05	10	BG	6	/ 8
#06	2.5	BG	6	/10
#07	2.5	G	6	/12
#08	7.5	GY	7	/10
#09	2.5	GY	8	/10
#10	5	Y	8.5	/12
#11	10	YR	7	/12
#12	5	YR	7	/12
#13	10	R	6	/12
#14	5	R	4	/14
#15	7.5	RP	4	/12; and

Condition IV:

when θ_{nSSL1} (degrees) (where n is a natural number from 1 to 15) denotes a hue angle in the CIE 1976 $L^*a^*b^*$ color space of the 15 Munsell renotation color samples based on a mathematical assumption that illumination is performed by the light emitted from the light-emitting device in the main radiant direction, and

when θ_{nref1} (degrees) (where n is a natural number from 1 to 15) denotes a hue angle in the CIE 1976 $L^*a^*b^*$ color space of the 15 Munsell renotation color samples based on a mathematical assumption that illumination is performed by reference light which is selected in accordance with the correlated color temperature T_{SSL1} of the light emitted in the main radiant direction, an absolute value of each difference in hue angles $|\Delta h_{nSSL1}|$ satisfies

0.00 degree $\leq |\Delta h_{nSSL1}| \leq 12.50$ degrees (where n is a natural number from 1 to 15),

where $\Delta h_{nSSL1} = \theta_{nSSL1} - \theta_{nref1}$.

V. Claim 1 according to auxiliary request 1 corresponds to claim 1 of the main request and further specifies after "a red phosphor, wherein" (line 5 of claim 1) the following features:

"the green phosphor is configured such that a wavelength $\lambda_{PHOS-GM-max}$ that provides maximum emission intensity when light is excited by the green phosphor alone is 511 nm or more and 543 nm or less, and

a full-width at half-maximum $W_{PHOS-GM-fwhm}$ thereof is 90 nm or more and 110 nm or less,

the red phosphor is configured such that a wavelength $\lambda_{PHOS-RM-max}$ that provides maximum emission intensity when light is excited by the red phosphor alone is 622 nm or more and 663 nm or less, and

a full-width at half-maximum $W_{PHOS-RM-fwhm}$ thereof is 80 nm or more and 105 nm or less,"

VI. Claim 1 according to auxiliary request 2 corresponds to claim 1 of the main request and further specifies after the features "light emitted from ... Conditions I to IV below" (lines 6 to 8 of claim 1) and "$\varphi_{ref1}(\lambda)$ denotes ... in the main radiant direction," (lines 10 to 12 of claim 1), respectively, the following features:

"wherein main radiant direction is a direction in which luminous intensity or luminance of the light-emitting device is maximum or locally maximum,"

"the reference light is black-body radiation light when T_{SSL1} is lower than 5000 K and CIE daylight when T_{SSL1} is equal to or higher than 5000 K,"

VII. The appellant essentially argued that the patent application contained sufficient information for the skilled person to carry out the invention over the whole breadth of claim 1 of the main request and the auxiliary requests, respectively. The requirements of Article 83 EPC were thus met.

Reasons for the Decision

1. Claimed invention

The invention concerns a light-emitting device including, as light emitting elements, a blue semiconductor light-emitting element, a green phosphor and a red phosphor, wherein light emitted from the light-emitting device in a main radiant direction satisfies all conditions 1 to 4 and conditions I to IV as claimed.

According to the application, with a light-emitting device according to the invention, the light source efficiency can be improved in a light-emitting device capable of realising a natural, vivid, highly visible and comfortable appearance of colours or an appearance of objects while maintaining favourable colour appearance characteristics, see e.g. paragraph [0038] of the application as originally filed.

2. Main request - sufficiency of disclosure

2.1 In the following, if not otherwise provided, any indication of pages, paragraphs, tables or figures relates to the application as originally filed, and not the published version of the application, the paragraph numbering in the published version differing from the one of the application as originally filed.

2.2 The appellant argued that the parameters used in the claims were standard parameters in the present technical field of LEDs, see document A1. Thus, they were not unusual parameters.

The parameters used in claim 1 were explained in paragraphs [0055] to [0057], [0090], [0091] to [0094], [0096], [0097], [0104] to [0109], and [0116] to [0125] of the description of the application. The expressions used in claim 1 were common mathematical operations. The calculations to be carried out were not extensive or too cumbersome.

In particular, index A_{CG} was also used in paragraphs [0080] to [0089] of A3 and paragraphs [0081] to [0092] of A2 and indicated the balance among the intensity in a short wavelength region, the intensity in an intermediate wavelength region, and the intensity in a long wavelength region. The "distance D_{uv}" was defined in the standard ANSI C78.377, which was mentioned e.g. on page 7.63 of A1, in paragraph [0052] of A3 or paragraph [0051] of A2. The "main radiant direction" was defined in paragraphs [0081] to [0085] of the description of the application. The "spectral distribution" was the relative intensity per unit wavelength, see the figures of the application or page 1.8, Figure 1.7 and section 5.2.1.3 of A1. The concepts of "colour temperature" and "tristimulus values" were known from A1, see sections 6.2.5, 6.1.5.3 and 6.1.5.6.

Moreover, the skilled person would arrive at the claimed device when consulting any one of the multiple examples disclosed throughout the description. The method and conclusions of the experiment starting in paragraph [0126] disclosed several experiments using different combinations of components and materials to produce a light-emitting device according to claim 1, see Tables 4 to 15, paragraph [0155] and following. Tables 4 to 15 disclosed that a blue semiconductor with peak wavelengths between 450 nm (e.g. example #110) and 460 nm (e.g. example #109) may be combined with green phosphor (CSMS, CSO, LuAG or G-YAG) having peak wavelengths between 514 nm (e.g. example #102) and 540 nm (e.g. example #109) and red phosphor (SCASN, CASON or CASN) having peak wavelengths between 625 nm (e.g. example #102) and 660 nm (e.g. example #111) to arrive at the present invention.

Reference was also made to the table "Result of comprehensive visual experiment" filed with the grounds of appeal summarising the results of "Tables 1-2-1 to 1-7-2 and 1-10-1 to 1-15-2 as Groups A to D". In Group A, regarding the materials of the light-emitting device, any light-emitting devices of the "Experimental examples" as well as the "Comparative experimental examples" comprised a blue LED (excitation source at 457.5 nm), LuAG phosphor as a green phosphor, and CASN phosphor as a red phosphor. Regarding the parameter

conditions, any "Experimental example" satisfied all of the conditions 1 to 4 and conditions I to IV, whereas any "Comparative experimental example" did not satisfy at least one of the conditions 1 to 4 and conditions I to IV. The same applied to Groups B to D.
Hence, no research program had to be carried out and in the specification or on the basis of their common general knowledge the skilled person had sufficient information at their disposal in order to carry out the invention.

The skilled person ascertained the light emitting properties and tendencies of phosphors through preliminary experiments and simulations before designing a spectrum of light. The skilled person would know how to select, by ordinary trial and error, the chemical compositions, mixture proportions, the properties, peak wavelengths and full-widths at half-maximum of the phosphors as well as the shape and structure of the semiconductor light-emitting element and the light emitting device for the purpose of achieving light that satisfied conditions 1 to 4 and conditions I to IV recited in claim 1.

In the technical field of the application it was common to use simulations without the need of manufacturing the light-emitting device, see paragraph [0090] of A3 and paragraph [0087] of A2. The information provided in the application (e.g. paragraphs [0087] to [0090], original claims 16 to 18, description starting from paragraph [0168]) was a sufficient starting point for the skilled person using simulations and preliminary experiments as well as their common general knowledge to carry out the invention.

2.3 The board is not convinced by the appellant's arguments.

2.3.1 Present claim 1 is directed to a light-emitting device including (as light-emitting elements) a blue semiconductor light-emitting element, a green phosphor, and a red phosphor.

As also pointed out by the examining division, such light-emitting devices are known from the state of the art, see the impugned decision, points 3.2 to 3.5 of the Reasons and see also the application, paragraph [0006] and Japanese Patent Publications No. 5257538 and 5252107 cited in paragraph [0009] of the description of the application (see documents A2 and A3).

Examples of blue light emitting semiconductor elements are given in paragraphs [0025], [0028], [0225], [0226], [0253], the only specific semiconductor material being AlInGaN.

Examples of green and red phosphors are provided in paragraphs [0026], [0027], [0028], [0143], [0178] to [0180], [0254] to [0265], [0269] to [0274], Tables 2, 4, 6, 8, 10, 12, 14, 18, 20, 22, 24, 26, and 28. It appears that the preferred green phosphors are CSMS, CSO, LuAG, G-YAG and that the preferred red phosphors are SCASN, CASON, CASN, see original claims 16 and 17, page 130, lines 1 to 5, page 132, lines 1 to 5.

According to claim 1 of the main request, said light-emitting device is arranged so as to satisfy conditions 1 to 4 and conditions I to IV.

2.3.2 According to claim 1, $\varphi_{SSL1}(\lambda)$ denotes a spectral power distribution of light emitted from the light-emitting device in the main radiant direction. The spectral power distribution of a given light emitting element can be experimentally measured for a given direction (see e.g. A1, page 1.8, Figure 1.7). The board accepts that the term "main radiant direction" can be a direction in which the luminous intensity or luminance of the light emitting device is maximum or locally maximum, although paragraphs [0081] to [0085] of the description of the application seem to provide other possible definitions, see also the statement setting out the grounds of appeal, page 2, penultimate paragraph.

The board also accepts that, according to condition 1 in claim 1, $\varphi_{ref1}(\lambda)$ denotes a spectral power distribution of reference light which is "selected in accordance with a correlated color temperature T_{SSL1} of the light emitted from the light-emitting device in the main radiant direction", wherein in accordance with e.g. paragraph [0120] of the description, the reference light is black-body radiation light when T_{SSL1} is lower than 5000 K and CIE daylight when T_{SSL1} is equal to or higher than 5000 K. The correlated colour temperature (CCT) is the absolute temperature that a black-body has when it has approximately the same colour as the light-emitting device, see A1, pages 6.17 and 6.18. The board accepts that the correlated colour temperature T_{SSL1} for a given light emitting device can be determined.

As pointed out by the appellant, the concepts of tristimulus values X, X, Z, and of the distance D_{uv} are known to the skilled person. The colour coordinates a*, b* and the hue angle θ in the CIE 1976 $L^*a^*b^*$ colour space are also known to the skilled person.

The board concurs with the examining division that the parameter A_{cg} is not a parameter generally used in the field of lightning devices, although it was used in earlier European patent applications A2 and A3 having the same inventor as the present application. Nevertheless, the board is of the view that the wording of claim 1 allows the skilled person to understand how to calculate A_{cg} (condition 1). The same applies for the calculations to be performed according to the other conditions.

2.3.3 However, the board is not convinced that the skilled person using the application as a whole and their common general knowledge would be in a position to design a light-emitting device with a blue light-emitting semiconductor element, a green phosphor and a red phosphor or to modify a known light-emitting device of this type such that the conditions 1 to 4 and I to IV are met.

The skilled person might be aware of the crucial parameters (chemical compositions, mixture proportions, thickness, disposition, peak wavelengths and full-widths at half-maximum of the phosphors, shape and structure of the semiconductor light-emitting element, additional optical elements such as filters, lenses, etc.) they might have to modify or select in order to possibly fulfil the claimed conditions. However, in view of the large number of parameters to consider and the large number of conditions to be met and their complexity, the skilled person using their common general knowledge would not be in a position to provide, without undue burden, a light-emitting device fulfilling the claimed conditions and to solve the problem underlying the application. As pointed out by the examining division, a research program would indeed have to be carried out.

Regarding the examples of the application as originally filed, the board notes that in each Group A to D of document T1 all light emitting devices have the same blue light-emitting semiconductor element and the same green and red phosphors. However, only the "experimental examples" fulfil all conditions 1 to 4 and I to IV whereas the "comparative experimental examples" do not. The application as originally filed is completely silent about the technical features necessary to obtain such different results.

The examining division raised the same point on pages 4 and 5 of the impugned decision with respect to experimental example 117 and comparative example 103. Indeed, examples 117 and 103 differ only in the parameters according to the Conditions 1 to 4 and Conditions I to IV but do not differ at all with respect to the basic parameters regarding the blue light-emitting semiconductor element and the chemical composition and hence the peak wavelength and full-width at half-maximum of the phosphors (see also the description of the application, Table 6 on page 114 of the description, Experimental example 117 and Table 18 on page 145, Comparative example 103). In both examples a blue semiconductor light-emitting element ("excitation source") is used which emits light having a peak wavelength of 457.5 nm. The green phosphor is LuAG (peak wavelength of 530 nm, full-width at half-maximum of 104 nm, see pages 114 and 145), the red phosphor is CASN (peak wavelength of 660 nm with a full-width at half-maximum of 88 nm, see pages 114 and 145). However, experimental example 117 does fulfil the claimed conditions 1 to 4 and I to IV while comparative example 103 does not.

The application as a whole does not describe any details whatsoever how the experimental examples (each fulfilling conditions 1 to 4 and I to IV) are implemented. As shown in table T1 provided by the appellant and as discussed above, the mere choice of the blue semiconductor light-emitting element and the phosphors with their corresponding peak wavelengths and full-widths at half-maximum is not sufficient. The board notes that according to the penultimate column of the tables on pages 113, 115, 117, 119, 121, and 123 visual experiments with test persons have been performed for experimental examples, which indicates that they were actually manufactured, see also Table T1. Hence, it would have been possible to include more details about the mixture proportions of the phosphors, the thicknesses and dispositions of the phosphor layers, the shape, structure, arrangement and driving conditions of the semiconductor light-emitting element, the use and arrangement of additional optical elements such as filters, lenses, etc. All this information should have been included in the description of the application for properly disclosing the invention and enabling the skilled person to put the invention into practice. However, the appellant decided not to include any of this information.

The application as a whole does not provide any guidance to the skilled person for designing or manufacturing a device fulfilling the claimed conditions.

Hence, the application does not even indicate at least one way enabling the skilled person to carry out the invention, see *Case Law of the Boards of Appeal of the EPO*, 10th edition 2022, II.C.5.2. Moreover, the board takes the view that, in the present case, it is highly questionable whether, even if one way to carry out the invention had been disclosed, this would have been sufficient to carry out the invention over the whole range claimed, in view of the multiple complex conditions to be fulfilled and the many parameters to be considered (*ibid.*, II.C.5.4).

Starting with the information provided in the application, the skilled person would select a semiconductor blue light-emitting element, green and red phosphors, and would then have to start extensive calculations, simulations and measurements, i.e. carry out a research program (*ibid.*, II.C.6.7) in order to explore the limits of the claim to find out whether or not said eight claimed conditions are met. A small or reasonable amount of trial-and-error experimentation is in the board's judgment not sufficient.

2.3.4 In view of the above considerations the board is of the opinion that the application does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. The requirements of Article 83 EPC are not met.

3. Auxiliary requests 1 and 2

Auxiliary request 1 was filed with the statement setting out the grounds of appeal, but does not correspond to any request submitted during the examination proceedings. Auxiliary request 2 was filed after notification of the board's communication under Article 15(1) RPBA. Their admittance is thus subject to the board's discretion under Articles 12(4) and 13(2) RPBA, respectively.

However, the features added to claim 1 of the auxiliary requests do not substantially change its subject-matter and are thus unable to overcome the deficiency in the application as a whole, as set out in point 2.3 above. Consequently, for the reasons given above for the main request, both auxiliary requests do not meet the requirements of Article 83 EPC.

Hence, the question of their admittance can be left open.

4. As no allowable request is on file, the appeal must fail.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

S. Sánchez Chiquero T. Häusser

Decision electronically authenticated