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Datasheet for the decision of 20 October 2025

Case Number: T 1406/22 - 3.5.04

Application Number: 13796146.2

Publication Number: 2923335

IPC: G06T7/00, G01N21/84, G16H10/40

Language of the proceedings: EN

Title of invention:
TEST STRIP AND METHODS AND APPARATUS FOR READING THE SAME

Patent Proprietor:
R-Biopharm AG

Opponent:
Immundiagnostik AG

Headword:

Relevant legal provisions:
EPC Art. 100(a), 52(1), 56
RPBA 2020 Art. 13(1), 13(2)

Keyword:
Grounds for opposition - lack of inventive step (yes)
Auxiliary requests - admittance (no)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 1406/22 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 20 October 2025

Appellant: (Opponent)	Immundiagnostik AG Stubenwald-Allee 8a 64625 Bensheim (DE)
Representative:	Benedum, Ulrich Max NebensBenedum IP Oberföhringer Straße 172 81925 München (DE)
Respondent: (Patent Proprietor)	R-Biopharm AG An der neuen Bergstraße 17 64297 Darmstadt (DE)
Representative:	HGF HGF Limited 4th Floor, 1 City Square Leeds LS1 2AL (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 6 April 2022 rejecting the opposition filed against European patent No. 2923335 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chair	B. Willems
Members:	B. Le Guen
	W. Ungler

Summary of Facts and Submissions

I. The appeal is against the decision of the opposition division rejecting the opposition against European patent No. 2 923 335.

II. The prior-art documents cited in the decision included the following:

D1 EP 2 453 242 A1
D3 WO 2009/054729 A1

III. The opposition division found that none of the grounds on which the opposition was based prejudiced the maintenance of the European patent (Article 101(2) EPC).

IV. The opponent (appellant) filed notice of appeal. In its statement of grounds of appeal, the appellant requested that the decision under appeal be set aside and that the patent be revoked in its entirety. It provided arguments to support its view that, among other things, the subject-matter of claim 1 as granted lacked an inventive step in view of the combined disclosures of documents D1 and D3 (Article 100(a) EPC).

V. In its reply to the appeal, the proprietor (respondent) requested among other things that the appeal be dismissed. The respondent further provided arguments rebutting the appellant's objections.

VI. The board issued summons for in-person oral proceedings to be held on 9 December 2024. In a communication under

Article 15(1) RPBA, the board gave its preliminary opinion that, among other things, the subject-matter of claim 1 would have been obvious to the skilled person in view of the combined disclosures of documents D1 and D3.

VII. With its letter dated 13 September 2024, the respondent filed amended claims of first to third auxiliary requests, indicated a basis in the application as filed for the amendments and submitted reasons why these requests should be admitted into the proceedings.

VIII. By letter dated 7 December 2024, the respondent requested postponement of the oral proceedings because the representative's flights had been cancelled due to adverse weather conditions.

IX. On 9 December 2024, the board's registrar phoned the parties' representatives to inform them of the board's intention to reschedule the oral proceedings to 1 pm on 9 December 2024 and to change the format of the oral proceedings to videoconference.

X. During the oral proceedings on 9 December 2024, the appellant objected to the format of the oral proceedings by videoconference and requested an adjournment of the oral proceedings. The respondent did not object to an adjournment of the oral proceedings. At the end of the oral proceedings by videoconference, the chair informed the parties of the board's decision to adjourn the oral proceedings.

XI. The board issued summons for in-person oral proceedings to be held on 20 October 2025.

XII. By letter dated 3 October 2025 the respondent indicated that it would not be attending the oral proceedings and that it withdrew its request for oral proceedings.

XIII. The oral proceedings before the board were held on 20 October 2025 in the respondent's absence. The parties' final requests were as follows.

- The appellant requested that the decision under appeal be set aside and that the patent be revoked.
- The respondent requested in writing that the appeal be dismissed, i.e. that the patent be maintained as granted (**main request**), or alternatively, that the patent be maintained on the basis of the claims of one of the **first to third auxiliary requests** filed with its letter dated 13 September 2024.

At the end of the oral proceedings, the chair announced the board's decision.

XIV. Claim 1 of the patent reads as follows (the references added in square brackets are those used in the decision under appeal):

"[**A**] A computer implemented method of analysing a response of an analyte test device (100, 700), comprising:

[**B**] recording, by a reading device (200), an image of coded test information (130) associated with the test device (100, 700) [**B1**] wherein the test information (130) comprises first and second registration marks (131);
[**C**] determining directly based on the image of the test information (130) one or more test parameters, [**C1**] wherein the test parameters comprise location

information for providing a location on the test device (100, 700) of one or more features;
[**D**] recording, by the reading device (200), an image of one or more optically responsive portions (111) of the test device (100, 700); and
[**E**] determining the response of the test device (100, 700) based on the one or more test parameters and the image of the one or more optically responsive portions (111) of the test device, [**E1**] wherein the determining the response comprises applying a perspective transform to the image of the one or more optically responsive portions (111) of the test device (100, 700) [**E2**] to convert the locations of one or more features in the image to a standard coordinate system, regardless of the effect of translation and rotation of the test device 100 with respect to the reading device 200;
[**F**] wherein the location information provides a distance of the one or more optically responsive portions (111) from the test information (130) and an angle between an axis of the test information (130) and the one or more optically responsive portions (111),
[**G**] wherein a unit of measurement used to determine the distance is determined based on a length between the first and second registration marks (131)."

XV. Claim 1 of the first auxiliary request differs from claim 1 of the patent in the following amendments to features B and D (added features are underlined):

"[**B**] recording, by a reading device (200), an image of coded test information (130) associated with the test device (100, 700), wherein the test device (100, 700) comprises the coded test information (130) and"

"[**D**] recording, by the reading device (200), an image of one or more optically responsive portions (111) of

the test device (100, 700), wherein the image of the one or more optically responsive portions (111) and the image of the coded test information (130) are recorded as a single image; and"

XVI. Claim 1 of the second auxiliary request differs from claim 1 of the patent in the following amendments to feature G (added terms are underlined; deleted terms are ~~struck through~~):

"[**G**] wherein a unit of measurement used to determine the distance is determined from~~based on~~ a length between the first and second registration marks (131)."

XVII. Claim 1 of the third auxiliary request differs from claim 1 of the patent in the amendments indicated in points XV. and XVI..

Reasons for the Decision

1. The appeal is admissible.

Technical background

2. Test strips are often used for testing for the presence of an analyte of interest (compound, virus, bacterium, protein, etc.) in a sample. A test strip typically comprises one or more measurement regions where a response of the test strip to the sample is visibly observed. For a quantifiable output, the test strip may be inserted into a dedicated reading device where it is subjected to predetermined illumination conditions so that the response of the measurement region(s) can be measured.

3. The patent proposes solutions for enabling use of a general purpose handheld device, such as a mobile phone or a tablet, as a reading device (see paragraph [0057] of the patent). One aspect concerns the provision of coded test information (e.g. a Quick Response (QR) code) on the test strip that indicates the location of the measurement regions (see paragraphs [0021] and [0046] of the patent). Another aspect concerns the consideration of the three-dimensional pose of the general purpose handheld device relative to the test strip (see paragraphs [0047] and [0053] of the patent).

Main request (patent as granted) – inventive step

4. Pursuant to Articles 100(a), 52(1), 56 and 101(2) EPC, the subject-matter of the European patent must not be obvious to a person skilled in the art having regard to the state of the art.

5. *Preliminary remarks – interpretation of claim 1 as granted*

5.1 In its letter dated 13 September 2024, the respondent made the following submissions as to the interpretation of **features B**, **D and G** of **claim 1 as granted**.

- It would be clear to the skilled person when using the description to interpret the claims as set out in Article 69 EPC and its Protocol, that steps B and D of claim 1 as granted referred to two sections of the **same** image, particularly in the context of the remaining features of the claim.
- Likewise, the skilled person when using the description to interpret the claims would understand that the language "associated with" in feature B as granted implied that the test

information was **comprised on**, or otherwise **fixed to**, a surface of the test device.

- A unit of measurement was defined as a definite magnitude of a quantity, that is a definite length which was used as a standard such that other lengths could be expressed as a multiple of that unit. The expression "based on" in feature G would clearly be read to mean that the unit of measurement was derived **directly** from the distance between registration marks (i.e. as some multiple or fraction of the distance).

5.2 In its communication pursuant to Article 15(1) RPBA, the board questioned that interpretation. However, even assuming for argument's sake that the respondent's interpretation were correct, the board concludes that the subject-matter of claim 1 of the patent as granted lacks an inventive step. The reasons are as follows.

6. *Document D1's disclosure and distinguishing features*

6.1 Document **D1** discloses a method for performing an immunoassay using a test substrate providing visually readable test results and having a quality assurance (QA) label thereon containing one or more stable optically detectable markers (such as coloured lines of known density) adaptable to a plurality of test formats (see paragraph [0005]). The immunoassay device may further include a two-dimensional barcode specifying a variety of different data types and assay parameters, such as the location of detection and control zones, the size and shape of the device, the number, shape, size and location of QA labels or the number, shape, size and location of optically detectable markers (see paragraphs [0032] to [0037]). In use, analyte test results may be obtained by placing a test device in an

optical scanner after a collected donor sample has been applied to it (see paragraph [0045]). Alternatively, smartphones or other mobile technology may be used (see paragraph [0040]).

6.2 The opposition division concluded that the subject-matter of claim 1 differed from the disclosure of document D1 in features B1, E1, E2, F and G (see point 16 of the decision under appeal).

6.3 The board agrees with the opposition division and the parties (see point 7.1.1 of the statement of grounds of appeal and point 3.3.1 of the reply to the appeal) that document D1 does not disclose features E1, E2, F and G. However, it finds that the conclusion that document D1 does not disclose feature B1 is based on an overly narrow understanding of that feature. Claim 1 does not specify the form of the registration marks. Thus any two bars of the two-dimensional barcode disclosed in D1 anticipate the first and second registration marks specified by feature B1.

6.4 The board concludes that the **features distinguishing** the subject-matter of claim 1 from the disclosure of D1 are **features E1, E2, F and G.**

7. *Technical effect and objective technical problem*

7.1 **Feature F** specifies a way of representing the location of optically responsive portions that does not require the detection, in the recorded image, of other features than the test information (see statement of grounds of appeal, page 18, first sentence, and point 3.3.3 of the reply to the appeal: "*Only the test information needs to be identified in the image.*").

7.2 In the method specified in claim 1 (as well as in the method disclosed in document D1), the location of the optically responsive portions is manifestly expressed in the plane of the test device. **Features E1, E2, and G** account for distortions to that plane in the image recorded by the reading device, the distortions being caused by the three-dimensional orientation and position of the reading device (see paragraphs [0047] and [0053] of the patent). **Feature E1** accounts for the distortions caused by perspective. **Feature E2** expresses the desired result of compensating for perspective and translation parallel to the plane of the test device. **Feature G** accounts for the distance between the reading device and the test device in the direction perpendicular to the plane of the test device.

7.3 In point 20.2 of the decision under appeal, the opposition division formulated partial objective technical problems for features F and G.

7.3.1 In point 3.3.3 of its reply to the appeal, the respondent submitted that features F and G had the advantages that only the test information needed to be identified in the image and that that information was self-contained, i.e. no further information or context was required to be retrieved from a database or the like.

7.3.2 Even if the board adopts the respondent's interpretation of feature G (see point 5.1 above), the board cannot identify any synergy between features F and G. The advantages of feature F put forward by the respondent are not amplified by feature G nor vice versa. In the board's view, the use of registration marks to indicate the unit of measurement for the distance (feature G) is unrelated to the choice of a

particular coordinate system and its reference (feature F). Therefore, the board agrees with the opposition division that these features solve different problems.

7.4 In view of the above, it is to be established whether feature F on the one hand and features E1, E2 and G on the other hand are separately obvious in the light of the state of the art (see CLBoA, I.D.9.3.2).

7.5 The **partial objective technical problem** with respect to **feature F** may be formulated as finding an efficient way of representing the location.

7.6 The **partial objective technical problem** with respect to the **features E1, E2 and G** may be formulated as identifying the location of the optically responsive portions from the image recorded by a reading device (see point 3.3.2 of the reply to the appeal, last sentence).

8. *Obviousness - feature F*

8.1 As indicated in point 6.1 above, document D1 discloses a two-dimensional barcode on an immunoassay device indicating among other things the location of detection zones on the device. The skilled person would necessarily have had to choose a representation for that location. As noted in point 20.3 of the decision under appeal, polar coordinates were well known before the priority date of the patent. Thus, polar coordinates seem to merely represent an arbitrary choice from among several obvious solutions (see CLBoA, I.D.9.21.9; see also page 18 of the statement of grounds of appeal, second sentence).

8.2 Irrespective of the chosen coordinate system, a reference for that system must necessarily be chosen. Any feature of the test device would have represented a possible reference. However, on account of the fact that the test information would already have been detected in the image at the time of identifying the location of the optically responsive portions, the board disagrees with the appellant that the choice of the test information as a reference is random (see page 18 of the statement of grounds of appeal, first paragraph and point 3.3.3 of the reply to the appeal).

8.3 However, the board finds that the skilled person would have realised that using a feature which must in any case be detected in order to achieve another function is more efficient than detecting an additional feature (e.g. an edge or a corner of the test device). For this reason alone, the board agrees with the appellant that the two-dimensional barcode specified in claim 1 would have represented an obvious choice.

8.4 Additionally, document **D3** discloses identifying the location of a measurement area on a test device on the basis of a distance (obtained from a database) from the **left corner of a barcode** (see page 5, first two paragraphs). This barcode is associated with other functions, such as revealing geometrical distortions (see D3, page 4, lines 14 to 31) or embedding information about the test strip, standard curves or qualitative thresholds (see page 6, lines 5 to 7). This is further evidence that using the two-dimensional barcode disclosed in D1 as a reference for the polar coordinate system would have been obvious to the skilled person.

8.5 In view of the above, the board finds that **feature F** would have been **obvious** to the skilled person.

9. *Obviousness - features E1, E2 and G*

9.1 As indicated in point 6.1 above, document D1 discloses using smartphones or other mobile technology to capture an image of the test device.

9.2 Since users are bound to position their smartphones at different angles and distances relative to the test device, the skilled person would have realised that the location of the detection zones embedded in the two-dimensional barcode cannot be meaningfully used when analysing the captured image unless the distortions caused by camera pose are accounted for. **Features E1 and E2**, as well as the requirement that the scale of the transformed image be accounted for, would have been **obvious** in view of this realisation.

9.3 The only remaining issue is whether the skilled person would also have arrived at feature G when trying to account for the scale of the transformed image.

9.4 Feature G specifies that "*a unit of measurement used to determine the distance is determined based on a length between the first and second registration marks*".

9.5 Even if the respondent's interpretation of **feature G** is adopted (see section 5. above), the board finds that this feature would have been **obvious** to the skilled person for the following reasons.

9.5.1 The passage on page 5, lines 7 to 19 of document **D3** (referred to by the appellant in point 7.1.4 of its statement of grounds of appeal) discloses determining

the distance from the barcode left corner to the measurement area using "the estimated DPI". The estimated DPI (dots per inch) is a scaling factor computed by comparing the physical length of the barcode in inches (known from a database; hereinafter "**w_{in}**") with the corresponding length in the captured image in pixels (hereinafter "**w_{pix}**"), itself obtained by detecting the start and stop positions of the barcode in the image. Therefore, in the method of document D3, the distance from the barcode left corner to the measurement area in inches (hereinafter "**d_{in}**") must be converted to pixels (hereinafter "**d_{pix}**") before it is used. This can be expressed by the following formula:

$d_{pix} = d_{in} \times w_{pix}/w_{in}$,

wherein d_{in} and w_{in} are **separately** obtained from the database and w_{pix} is measured in the image.

9.5.2 In point 3.3 of its reply dated 13 September 2024, the respondent submitted that in document D3, the location information was expressed as a physical length, stored in a database and the image was scaled based on the length of a barcode. Even if the length of the barcode was used in the locating process, D3 did not disclose determining a unit of measurement (i.e., a unit used to express the distance) from this length.

9.5.3 The respondent's analysis is correct. However, the board recalls that document D1 discloses a two-dimensional barcode **including** among other things the location of detection and control zones. Thus, obtaining d_{in} and w_{in} from the barcode instead of a database would have been obvious to the skilled person. Furthermore, the skilled person, being presumed to have

average knowledge and abilities (see CLBoA, I.D8.1.1), would have known that the formula d_{in} x (w_{pix}/w_{in}) disclosed in D3 - where the ratio w_{pix}/w_{in} is determined first - is mathematically equivalent to the formula (d_{in}/w_{in}) x w_{pix} - where the ratio d_{in}/w_{in} is determined first. Therefore, indicating the ratio d_{in}/w_{in} in the barcode instead of **both** d_{in} and w_{in} would have been an obvious alternative to the skilled person. Doing so would have anticipated feature G since the barcode length is the unit of measurement for the ratio d_{in}/w_{in}.

10. *Conclusion*

10.1 In view of the above, the board finds that the subject-matter of claim 1 of the patent as granted (respondent's **main request**) would have been obvious to the skilled person in view of the combined disclosures of documents D1 and D3. Therefore, the ground for opposition under **Article 100(a) EPC** prejudices the maintenance of the patent.

First to third auxiliary requests - admittance

11. The **first to third auxiliary requests** were filed by the respondent after it filed its reply to the appeal. Thus they represent amendments to the respondent's case under Article 13(1) RPBA.

12. In the case of an amendment to a patent application, one of the criteria set out in Article 13(1) RPBA is "*whether the party has demonstrated that any such amendment, prima facie, overcomes the issues raised ... by the Board ...*".

13. The amendments made to claim 1 in accordance with the first to third auxiliary requests (see points XV. to XVII. above) are intended to rule out other interpretations of features B, D, G than the one put forward in point 5.1 above.

14. In points 2.2, 3.2 and 4.2 of its reply dated 13 September 2024, the respondent essentially argued that the first to third auxiliary requests were submitted in response to a new interpretation of features B, D, G made by the board in its communication pursuant to Article 15(1) RPBA, which for the first time deviated from the interpretation put forward in point 5.1 above.

15. The board accepts the respondent's argument that the preliminary opinion expressed in the board's communication under Article 15(1) RPBA represents exceptional circumstances within the meaning of Article 13(2) RPBA. However, the board still has the discretion to decide whether to admit the requests into the appeal proceedings, based on the criteria set out in Article 13(1) RPBA.

16. The above conclusion that the subject-matter of claim 1 of the patent as granted lacks an inventive step has already been reached by taking account of the respondent's interpretation of features B, D and G (see point 5.2 above). Therefore, the amendments made to claim 1 in accordance with the first to third auxiliary requests are *prima facie* not suitable for overcoming that objection.

17. In view of the above, the board, exercising its discretion under Article 13(1) RPBA, decided **not** to

admit the **first to third auxiliary requests** into the appeal proceedings.

Conclusion

18. Since the respondent's main request is not allowable and the respondent's auxiliary requests were not admitted into the appeal proceedings, the decision under appeal must be set aside and the patent revoked.

Order

For these reasons it is decided that:

The decision under appeal is set aside. The patent is revoked.

The Registrar: The Chair:

K. Boelicke B. Willems

Decision electronically authenticated