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**Datasheet for the decision  
of 13 September 2013**

**Case Number:** T 1478/10 - 3.4.02

**Application Number:** 04743509.4

**Publication Number:** 1646859

**IPC:** G01N21/47

**Language of the proceedings:** EN

**Title of invention:**  
HOLOGRAPHIC SENSOR

**Applicant:**  
Cambridge Enterprise Limited  
Smart Holograms Limited

**Headword:**

**Relevant legal provisions:**

EPC Art. 56  
EPC R. 103(1)(a)

**Keyword:**

Inventive step - (no)  
Reimbursement of appeal fee - (no)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern  
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Case Number: T 1478/10 - 3.4.02

**D E C I S I O N**  
**of Technical Board of Appeal 3.4.02**  
**of 13 September 2013**

**Appellant:** Cambridge Enterprise Limited  
(Applicant 1) The Old Schools  
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**Appellant:** Smart Holograms Limited  
(Applicant 2) 291 Cambridge Science Park  
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**Representative:** Jappy, John William Graham  
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The Broadgate Tower  
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**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 26 February  
2010 refusing European patent application No.  
04743509.4 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman:** A. Klein  
**Members:** F. Maaswinkel  
D. Rogers

## Summary of Facts and Submissions

I. European patent application No. 04743509.4 relating to a holographic sensor was refused in a decision of the examining division, dispatched on 26 February 2010, on the ground that the subject-matter of independent claims 1 and 9 of the main request did not meet the requirement of inventive step (Art. 52(1) and 56 EPC) *inter alia* in view of the disclosure in document D1 (US-A-5 989 923). Since the auxiliary requests on file also included these claims these requests were similarly considered to be objectionable.

II. Against this decision the applicant (appellant) lodged an appeal which was received on 23 April 2010. The fee for the appeal had been paid on 19 April 2010. In the letter of 23 April 2010 the appellant requested to set aside the decision under appeal and to grant a patent on the basis of the new claims according to a main and 1st to 3d auxiliary requests filed with this letter. The appellant also requested that the appeal fee be reimbursed. Furthermore the appellant filed an auxiliary request for oral proceedings.

III. The wording of claim 1 according to all requests reads as follows:

" A method for the detection of an analyte using a sensor comprising a medium and a hologram disposed throughout the volume of the medium, wherein an optical characteristic of the hologram changes as a result of a variation of a physical property of the medium resulting from interaction with the analyte, and wherein the hologram is formed as a non-planar mirror, wherein the method comprises remotely interrogating, with light, the holographic element of the sensor,

wherein the interrogating is via a unit that transmits the light to and from the hologram; and detecting any change in an optical characteristic of the sensor ".

The wording of the other claims is not relevant for the purpose of the present decision.

IV. In support of its request the appellant developed the following arguments in its grounds of appeal:

The claimed subject matter is novel, as acknowledged by the Examining Division. It also involves an inventive step. The prior art does not address a particular problem addressed by the present invention, i.e. the use of sensors as subcutaneous implants. Nor does the prior art address a broader problem addressed by the present invention, i.e. the use of sensors in environments where there is considerable light scatter. It may be the case that document D1 describes use in fluids where there is some light scatter, but that is not equivalent to saying that this document addresses this problem. The problem of scattering is related to yet another problem that is not addressed by the prior art, but that is addressed (and solved) by the present invention, i.e. the problem of locating the reflected signal when the reflected intensity is low and, and in particular, what might be termed "directional" issues. The present invention addresses and solves the problem that it may not always be possible to shine light so that it is well aligned with the point of analyte detection, for capture and reflection. This is of course a particular problem in using subcutaneous implants, but the present invention has more general applicability. It allows a light source to be pointed in what is merely approximately the right alignment and direction, and achieve sensing. This problem is stated

at page 1 lines 24-26, and the solution is given at page 2 lines 12-18. It is described in more detail at page 7 lines 31 - page 8 line 2, and exemplified in Example 1. This is a fundamental point underlying the present invention. The Decision under appeal states that: "This feature [of novelty] would at most represent a trivial modification of either the fibre optic 46 / linear array of fibre optics 50 disclosed in document D1 (Figs. 19, 21) for the person skilled in optical detection arrangements from his common general knowledge". However, triviality is not a consideration where the problems that are addressed are different. A structural modification is not inherently obvious, when the problem-solution approach is used correctly. Under the heading "Arguments Presented by the Applicants", the Decision under appeal states that the "argument to justify inventive step would only be of relevance to a claim directed to a method detecting analytes in a body but NOT to claims to the sensor itself". This reflects a fundamental misunderstanding of the European Patent Convention and its practice relating to considerations of inventive step. There is no requirement for novel subject matter to specify the conditions under which the relevant problem is addressed and solved. By way of example, if the last quoted statement were true, no claim to a novel chemical compound would be allowed without limitation to its use. As has often been stated in decisions of the Board of Appeal, the relevant considerations are the technical aspects of the distinguishing features and their effect. They are independent of the form of the claim.

In support of the request for a refund of the appeal fee, it is submitted that the Decision under appeal is not sufficiently reasoned in the sense of Rule 68(2) EPC 1973. In its Section 7, the Decision under appeal

fails to adopt the appropriate context for consideration of inventive step, i.e. the problem-solution approach. Insofar as this approach is addressed in the Decision, albeit only under the heading "Arguments Presented by the Applicants", the reasoning is demonstrably inconsistent with law and practice.

V. In a communication pursuant to Article 15(1) RPBA, dated 21 May 2013 and accompanying the summons to oral proceedings on 19 September 2013, the board expressed the following provisional opinion concerning claim 1:

" 1. Main Request

1.1.1 Claim 1 defines a method for the detection of analyte using a sensor comprising a volume hologram which is formed as a "non-planar mirror". In the board's opinion, this expression is not entirely unambiguous (Article 84 EPC) since the hologram is formed by using a non-planar mirror (*see page 6, lines 17 and 18 of the published patent application*); the physical hologram would rather entail a fringe pattern, which in case of forming it by using a non-planar mirror, would presumably have the shape of a curved fringe pattern (*which, upon interrogation, would reflect the incident interrogation beam as if it were a non-planar mirror*). (...)

1.1.2 In point 5 of the Decision under appeal it was discussed that documents D1 and D5 disclose methods for the detection of analyte using a sensor comprising a volume hologram which is formed as a "non-planar mirror". For the latter feature reference was made to the passage in col. 4, 1. 32 - 39 of document D1, disclosing that in the preparation of a hologram

containing sensor the fringe planes may be flat or curved. According to the Decision, point 5, line 9, in the latter case the hologram will function as a curved, non-planar mirror. Furthermore in this paragraph of the Decision reference is made to the embodiment in Fig. 19 of D1. (...)

1.1.3 In the subsequent point 6 of the Decision it is stated that claim 1 could be considered to meet the requirement of novelty over D1 or D5 by virtue of the feature "remotely interrogating the sensor via a unit that transmits light to and from the hologram". However, with respect to the feature "unit" it is observed that this feature had not been defined in the original claims, and that the only support for this feature in the original application documents appears to be on page 6, line 27 "... (in conjunction with) a unit, e.g. of optical fibres...". Therefore, to the board's understanding, the above feature merely implies that the interrogation is carried out by means emitting light to the hologram and collecting and detecting the reflected light, this means being positioned in a "unit", e.g. a housing or enclosure.

Having regard to the embodiment in Fig. 19 of document D1, the arrangement indicated by the curly brace and reference sign 30 appears to encompass a sensor system (see col. 12. 1. 43 of D1). The same applies to the embodiment of Fig. 21, which shows "sensor system" comprising the elements 33, 32, 56, 58, 60 and 50 (see col. 12, 1. 62 - 67), which are therefore parts of the sensor system.

Since the embodiments in these Figures show "sensor systems" which transmit light to and from the hologram and detect changes in an optical characteristic of the

hologram, the novelty of the method defined in claim 1 over these embodiments appears in doubt, because the only arguable difference would be that the sensor system in claim 1 comprises a "unit", without any further restrictions.

In any case the person skilled in the art immediately understands from Figures 19 and 21 of document D1 that in a practical device the sensor system would be integrated in a housing or enclosure, which automatically would imply arranging it in a "unit". Therefore, in the provisional opinion of the board, a contribution of the subject-matter of claim 1 to inventive step is questionable. "

With respect to the request of the appellant for reimbursement of the appeal fee the board expressed its view:

"3. Request for the reimbursement of the appeal fee

3.1 In the letter of 3 June 2010 the appellant motivated its request for reimbursement of the appeal fee by its contention that the Decision under appeal was not sufficiently reasoned in the sense of Rule 111(2) EPC, (formerly Rule 68(2) EPC 1973), in particular because in the discussion of inventive step (point 7) the problem-solution approach had not been followed.

3.2 It is noted that the conditions for a reimbursement of the appeal fee in Rule 103(1) (a) EPC, (formerly Rule 67, first sentence, EPC 1973), require that the appeal be allowable. Notwithstanding this fact, the further condition requires the presence of a "substantial procedural violation".



3.3 Provisionally, it appears to the board that even if the decision under appeal might be based on a wrong application of the problem-solution approach, its application is not mandatory (see *Case law of the boards of Appeal, sixth edition, July 2010, I.D.2, page 163, 2nd para*) . Furthermore, an incorrect assessment of the prior art might be regarded as a substantive error, but not as a procedural error. Therefore at present the board does not see a justification for a refund (see T367/91) "

- VI. In a letter of 27 August 2013 the appellant announced that it would not attend the scheduled oral proceedings and withdrew its request for oral proceedings. Furthermore it stated that it would not submit any further arguments and requested a written Decision issued by the board.

### **Reasons for the Decision**

1. The appeal is admissible.
2. In the communication of the board, the appellant was informed in detail of the reasons that the subject-matter of claim 1 did not involve an inventive step in view of the prior art in document D1.
3. The appellant made no substantive response to the board's communication. Having again considered its own reasoned objections as set out in that communication and making express reference thereto, the board sees no reason to deviate from the examining division's conclusion and from its own earlier assessment. Consequently, the appellant's appeal must be dismissed.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:



M. Kiehl

A. G.Klein

Decision electronically authenticated