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Datasheet for the decision of 12 October 2018

Case Number: T 0342/14 - 3.2.02

Application Number: 08788463.1

Publication Number: 2194843

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Language of the proceedings: EN

Title of invention:
SCANNING TERAHERTZ PROBE

Applicant:
Teraview Limited

Headword:

Relevant legal provisions:
EPC Art. 54, 84
RPBA Art. 15(3)
EPC R. 115(2)

Keyword:
Novelty - main request (no)
Clarity - first auxiliary request (no)
Oral proceedings - opportunity to present comments (yes)

Decisions cited:

Catchword:

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Beschwerdekammern

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Case Number: T 0342/14 - 3.2.02

D E C I S I O N
of Technical Board of Appeal 3.2.02
of 12 October 2018

Appellant: (Applicant)	Teraview Limited Platinum Building St John's Innovation Park Cambridge CB4 0WS (GB)
Representative:	Granleese, Rhian Jane Marks & Clerk LLP 90 Long Acre London WC2E 9RA (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 18 September 2013 refusing European patent application No. 08788463.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	E. Dufrasne
Members:	M. Stern
	S. Böttcher

Summary of Facts and Submissions

I. The applicant lodged an appeal against the decision of the Examining Division, despatched on 18 September 2013, refusing European patent application No. 08 788 463.1. The application was refused on, *inter alia*, the grounds that the subject-matter of claim 1 of the third auxiliary request lacked novelty over the following document:

D2: WO-A-2005/019810.

II. Notice of appeal was filed on 28 November 2013, and the fee for appeal was paid the same day. With the statement setting out the grounds of appeal, received on 28 January 2014, the appellant filed a main request and three auxiliary requests.

III. On 31 July 2018 the appellant was summoned to attend oral proceedings. In a communication annexed to the summons, the Board indicated its intention to concur with the Examining Division on its assessment that the subject-matter of the third auxiliary request lacked novelty over D2.

IV. In a letter dated 12 September 2018, the appellant filed a new main request, corresponding to the third auxiliary request filed with the statement setting out the grounds of appeal, and a new first auxiliary request. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of one of the main and the first auxiliary requests. The main, first and second auxiliary requests filed with the statement setting out the grounds of appeal were withdrawn.

V. In a letter dated 10 October 2018, the appellant advised that it would not be represented at the oral proceedings.

VI. Oral proceedings were held on 12 October 2018 in the absence of the appellant (in accordance with Rule 115(2) EPC and Article 15(3) RPBA).

VII. Claim 1 of the **main request** reads as follows:

"1. A THz radiation probe (1) for examining an object, the probe (1) comprising a first portion configured to be inserted into an opening of said object in a first direction (5), said probe further comprising

at least one THz emitter (15),

directing means (9) for directing THz radiation emitted from said emitter to said object via an aperture (2) located at said first portion, wherein said emitted THz radiation is focussed at said aperture (2), and subsequently from said object to at least one THz detector (17), wherein said means for directing (9) said THz radiation comprises a surface reflective to THz radiation and said surface is substantially planar and oriented such that the normal to said surface is at an angle of approximately 45° to said first direction and,

means for scanning (11) said emitted THz radiation across said object in a scan direction, said scan direction having a component in said first direction (5)."

VIII. Claim 1 of the **first auxiliary request** reads as follows (amendments to claim 1 of the main request highlighted by the Board):

"1. A THz radiation probe (1) for examining human or animal tissue ~~an object~~, the probe (1) comprising a first portion configured to be inserted into an opening of ~~said object~~ in a first direction (5), wherein the opening is a surgical opening, a bodily orifice or an incision in a human or animal body, said probe further comprising

at least one THz emitter (15),

directing means (9) for directing THz radiation emitted from said emitter to said ~~object~~ tissue via an aperture (2) located at said first portion, wherein said emitted THz radiation is focussed at said aperture (2), and subsequently from said ~~object~~ tissue to at least one THz detector (17), wherein said means for directing (9) said THz radiation comprises a surface reflective to THz radiation and said surface is substantially planar and oriented such that the normal to said surface is at an angle of approximately 45° to said first direction, wherein the surface directs THz radiation from said emitter to said tissue and subsequently from said tissue to said at least one THz detector; and~~,~~

means for scanning (11) said emitted THz radiation across said ~~object~~ tissue in a scan direction, said scan direction ~~having a component in~~ being said first direction (5),

wherein said THz emitters (15) and/or said THz detectors (17) are photoconductive antennas."

IX. The arguments of the appellant that are relevant for the present decision may be summarised as follows:

Main request

The subject-matter of claim 1 was novel over D2. The device in Figures 9 and 10 of D2 was not disclosed as

being inserted into an opening in an object. The probe head shown in Figures 9 and 10 of D2 had a cable (umbilical 195) extending from the left-hand side. Therefore the probe head could not be considered to be configured to be inserted into an opening of an object in a first direction (downward in Figure 10) since it was clear that the arrangement of the cable was not configured to be inserted into an opening in such a direction. D2 therefore did not disclose a probe in which the scanning direction had a component in an insertion direction. Moreover, the mirror 141 in Figure 8 of D2 was provided to allow both incident and reflected radiation to transmit along the same path through the primary focusing member 61. However, the mirror 141 did not direct THz radiation from object 63 to the THz detector 77.

First auxiliary request

Claim 1 had been clarified to recite that the scan direction was the direction of insertion of the probe into a surgical opening, a bodily orifice or an incision in a human or animal body. In the claimed device, a surface having a normal at an angle of approximately 45° to the insertion direction directed THz radiation from the emitter to the tissue and subsequently from the tissue to the detector. These features were not disclosed in D2, since the size of the disclosed device made it unsuitable for insertion into a surgical opening, a bodily orifice or an incision. Moreover, D2 did not disclose a probe in which the scanning direction was the insertion direction into a surgical opening, a bodily orifice or an incision.

Reasons for the Decision

1. The appeal is admissible.

2. The invention

The invention relates to a probe for examining an object using THz radiation comprising a THz emitter, a THz detector and means for scanning the emitted THz radiation across the object in a scan direction. The scan direction may have a component in the direction in which the probe is inserted into an opening of an (unspecified) object or, according to a preferred embodiment (page 4, paragraph 1; page 3, lines 1 to 3; page 5, last sentence), the scan direction may be in the direction in which the probe is inserted into a surgical opening, a bodily orifice or an incision in a human or animal body.

3. Main request - novelty

3.1 Document D2, a previous application from the appellant, discloses, according to the example depicted in Figures 9 and 10, a probe for examining an object (189) in the THz range comprising a THz emitter (173) and a THz detector (179) (page 24, paragraph 2), means for directing the THz radiation emitted from said emitter to said object via an aperture (187) located at a first portion (153, 151) of the probe, wherein said emitted THz radiation is focused at said aperture (187) (page 24, paragraph 3), and subsequently from said object to the THz detector (page 24, paragraph 4), and means (translating head unit 157; page 24, paragraph 5) for scanning the emitted THz radiation across the object in two perpendicular directions across the

planar surface (185) of the fixed section (153) of the probe (page 25, lines 1 to 3; Figure 10).

As correctly held by the Examining Division under point 5 of the impugned decision, the claimed definition that the scan direction should have a component in the direction in which the probe is insertable through an opening of an (unspecified) object does not amount to any further limitation of the probe. The claim does not specify in any way the object into which the probe should be insertable. Thus, there will always be an object with an opening into which the probe disclosed in D2 may be insertable in a direction parallel to the planar surface 185 of the fixed section 153 of the probe. Consequently, the scan direction will have a component in the "first direction" as claimed, i.e. the direction of insertion into an opening of an object.

3.2 Claim 1 defines, moreover, that the means for directing the emitted radiation comprises a planar reflective surface at an angle of approximately 45° to the direction of insertion of the probe into an opening of the object.

The embodiment of Figure 8 of D2 comprises means for directing THz radiation from an emitter (71) to an object (63) and subsequently from said object (63) to a THz detector (77). These means for directing THz radiation to the object comprise several components, such as a mirror (141), a beam splitter (143) and a primary focusing member (61), wherein the mirror (141) comprises a surface reflective to THz radiation which is substantially planar and oriented such that the normal to said surface is at an angle of approximately 45° to the axial direction of the probe (page 22, last

paragraph). Some components of the means for directing THz radiation to the object, such as the beam splitter (143) and the primary focusing member (61), are also means for directing THz radiation subsequently from the object (63) to the THz detector (77) (page 23, paragraph 1; Figure 8), as claim 1 defines. While the appellant's observation is correct that the mirror (141) does not direct THz radiation from the object (63) to the THz detector (77), it is noted that claim 1 does not define this specific feature.

The aforementioned embodiment of Figures 9 and 10 comprises a head unit (157) which is translatable over a secondary focusing member (153, 151). The latter aspect is claimed in claim 10. The embodiment of Figure 8 relates to a head unit with different components in which the incident and the reflected radiation travel along the same path through the focusing member (61) (page 12, paragraph 5; page 23, second paragraph), an aspect which is claimed in claim 14. From the fact that claim 14 is dependent on claim 10 (via claim 11), the two aforementioned aspects - described in more detail in the description of Figures 9 and 10 on the one hand, and in the description of Figure 8 on the other - are disclosed in combination. D2 therefore discloses that the translatable head unit of Figures 9 and 10 may comprise the specific features of the head unit of Figure 8. The Board notes that the combined disclosure of these aspects in D2 was mentioned in the impugned decision (under point 6) and was not contested by the appellant.

Since D2 discloses the translatable head unit of Figures 9 and 10 with the specific features of the head unit of Figure 8, the Board concludes that the THz probe comprises the claimed "directing means for

directing THz radiation emitted from said emitter to said object via an aperture located at said first portion, wherein said emitted THz radiation is focussed at said aperture, and subsequently from said object to at least one THz detector, wherein said means for directing said THz radiation comprises a surface reflective to THz radiation and said surface is substantially planar and oriented such that the normal to said surface is at an angle of approximately 45° to said first direction".

3.3 Consequently, the subject-matter of claim 1 of the main request lacks novelty over D2 within the meaning of Article 54(1) EPC.

4. First auxiliary request - clarity

4.1 The first auxiliary request was filed one month before the oral proceedings, which the appellant chose not to attend.

It is established case law of the boards of appeal that appellants who submit amended claims shortly before the oral proceedings, and subsequently do not attend those proceedings, must expect a decision based on objections which might arise against such claims in their absence (as cited in Case Law of the Boards of Appeal, 8th edition 2016, IV.E.4.2.6d)). In accordance with Rule 115(2) EPC and Article 15(3) RPBA, the Board shall not be obliged to delay any step in the proceedings by reason only of the absence at the oral proceedings of the appellant duly summoned who may then be treated as relying only on its written case.

4.2 Claim 1 of the first auxiliary request amends claim 1 of the main request by reciting that the probe's scan

direction is the direction of insertion of the probe into a surgical opening, a bodily orifice or an incision in a human or animal body. As a consequence, it is with respect to this direction of insertion of the probe that the claimed planar reflective surface forms an angle of approximately 45°. The appellant saw these amended features as providing a distinction with respect to the probe of D2.

That is, structural components of the claimed probe, such as the scan direction and the angle of the reflective surface, are defined in relation to the direction in which the probe, in use, is inserted into a surgical opening, orifice or incision in a human or animal body.

4.3 In contrast, according to the description (page 8, lines 1 to 5; Figures 1a, 1b), the aforementioned structural components of the probe are defined in relation to the "first probe direction 5", which is the direction in which THz radiation exits the transmitter cartridge 15. As shown in Figures 1a and 1b, the "first probe direction 5" corresponds essentially to the longitudinal direction of the probe. The emitted THz radiation is reflected by the planar reflective surface 7 angled at approximately 45° to the "first probe direction 5", so that the radiation travels substantially perpendicular to the "first probe direction 5" (page 8, paragraphs 3 and 4). The THz radiation is scanned along the "first probe direction 5" (Figure 2b; page 11, paragraph 2).

4.4 As explained on page 4, lines 1 to 6, the probe enables a method of scanning an object in the direction in which the probe is inserted into an opening of an object. It is clear that a given probe with its

specific scan direction does not change when the probe is inserted into a surgical opening in a direction which differs from the scan direction.

4.5 As the probe does not change as a result of the way it is used, it is ambiguous that its structural elements are claimed as being dependent on the direction it is inserted into a surgical opening, orifice or incision in a human or animal body.

4.6 The Board therefore concludes that the subject-matter of claim 1 of the first auxiliary request is not clearly defined, contrary to the requirement of Article 84 EPC.

4.7 By not attending the oral proceedings at which the aforementioned clarity objection was raised by the Board, the appellant forfeited its opportunity to comment on the same (see point 4.1 above).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Hampe E. Dufrasne

Decision electronically authenticated