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**Datasheet for the decision
of 25 September 2006**

Case Number: T 0603/04 - 3.4.02

Application Number: 96305828.4

Publication Number: 0762078

IPC: G01B 11/06

Language of the proceedings: EN

Title of invention:

System for determining the thickness and index of refraction
of a film

Applicant:

Agilent Technologies, Inc.

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 52(1), 54, 56, 109(1), 113(1), 113(2)

EPC R. 67, 68(2)

Keyword:

"Inventive step (yes)"

"Reimbursement of appeal fee (no: no substantial procedural violation) - refusal decision following re-opening and continuation of proceedings after interlocutory revision of a previous refusal decision tainted by a substantial procedural violation and reimbursement of the appeal fee; decision raising essentially the same substantive issues as the previous decision: ultra vires (no)"

Decisions cited:

J 0032/95, T 0139/87, T 0047/90, T 0691/91, T 0219/93,
T 0647/93, T 0808/94, T 0919/95, T 0939/95, T 0016/96,
T 0142/96, T 0677/97, T 0685/98, T 1203/02, T 0861/03,
T 1356/05

Catchword:

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Case Number: T 0603/04 - 3.4.02

D E C I S I O N
of the Technical Board of Appeal 3.4.02
of 25 September 2006

Appellant: Agilent Technologies, Inc.
395 Page Mill Road
Palo Alto, CA 94303 (US)

Representative: Jehan, Robert
Williams Powell
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 16 December 2003
refusing European application No. 96305828.4
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: A. G. Klein
Members: F. J. Narganes-Quijano
C. Rennie-Smith

Summary of Facts and Submissions

I. The examining division refused European patent application No. 96305828.4 (publication No. 0762078) by a (first) decision dated 24 February 2003. The decision was issued after the applicant had submitted an amended set of claims in reply to the summons to oral proceedings, which were cancelled after the applicant announced that he would not attend the oral proceedings and requested a decision according to the state of the file. The grounds given in the decision consisted of a reference to the previous communications issued by the examining division. These communications referred to documents

D1: "Simultaneous thickness and group index measurement using optical low-coherence reflectometry", W. V. Sorin *et al.*, IEEE Photonics Technology Letters (US), Vol. 4 (1992), No. 1; pages 105 to 107 (XP000244587),

D2: US-A-4647205,

D3: US-A-5341205, and

D4: "White-light interferometric thickness gauge", P. A. Flournoy *et al.*, Applied Optics, Vol. 11 (1972), No. 9; pages 1907 to 1915 (XP002027922),

and contained, among other objections, a series of objections of lack of novelty and of lack of inventive step (Articles 52(1), 54 and 56 EPC) raised by the examining division with regard to previous sets of claims.

The applicant lodged an appeal against this decision. In the statement of grounds of appeal the applicant

alleged that the decision "was not based on the state of the file at that time but upon a former version of the application which the applicant had abandoned" and submitted that for this reason the decision "contravenes the provisions of Article 113(2) EPC, representing a substantial procedural violation in accordance with the provisions of Rule 67 EPC". The applicant also submitted arguments in support of the patentability of the set of claims then on file, and requested the grant of a patent and the reimbursement of the appeal fee.

In reply to the appeal filed by the applicant, the examining division ordered interlocutory revision under Article 109 EPC on the grounds that the decision was tainted by a procedural violation, reimbursed the appeal fee pursuant to Rule 67 EPC, and reopened the first-instance examination proceedings.

The examining division subsequently summoned the applicant to attend oral proceedings in order to discuss the substantive merits of the case. In reply to the summons, the applicant submitted that the examining division failed to grant a patent following rectification of the decision and that the examining division did not have the jurisdiction to refuse to allow the entirety of the appeal nor to rectify only a part of the decision; in addition, by reiterating objections forming the grounds of the decision following rectification of that decision, the examining division failed to apply correctly the provisions of Article 109(1) EPC. The applicant submitted that the course of action followed by the examining division amounted to a substantial procedural violation, and

requested cancellation of the oral proceedings and the grant of a patent.

The examining division informed the applicant that the oral proceedings were maintained. In reply, the applicant addressed a letter to the Legal Division of the EPO contesting the jurisdiction of the examining division to continue with the proceedings, informed the examining division that he would not attend oral proceedings and requested that the proceedings be continued in writing or that a decision according to the state of the file be reached.

Oral proceedings were held before the examining division in the absence of the applicant. Subsequently, the examining division refused the application by a decision dated 16 December 2003 on the grounds that the invention defined in the then valid set of claims did not involve an inventive step (Articles 52(1) and 56 EPC) with regard to the disclosure of documents D1 and D2.

The present appeal is against this second decision.

- II. In the notice of appeal the appellant (applicant) requests that the decision under appeal be set aside in its entirety and a patent be granted. The appellant also requests the reimbursement of the appeal fee under Rule 67 EPC on the grounds that the examining division committed a substantial procedural violation in issuing the decision under appeal and that the proceedings had not been conducted with impartiality by the examining division.

The appellant also requested oral proceedings in the event that the Board would consider disposing of the appeal other than by setting aside the decision under appeal.

III. In a communication pursuant to Article 110(2) EPC the Board expressed its preliminary view on the appellant's case.

As regards the allowability of the request for grant, the Board noted some deficiencies in the then valid application documents and commented on the issue of inventive step of the claimed invention.

As regards the request for reimbursement of the appeal fee, the Board commented as follows:

"a) According to the established case law, an appeal is considered "well founded" under Article 109 EPC when amendments overcoming the reasons for the refusal of the application have been filed (T 139/87 (OJ EPO 1990, 68), point 4, T 47/90 (OJ EPO 1991, 486), point 6, and T 219/93, points 2.3 and 4 to 4.3), but also when the decision under appeal is tainted by a procedural violation affecting the decision itself (T 677/97, points 2.3, 2.4, 2.7 and 3 to 5, T 16/96, points 2 and 3, T 1203/02, points 2 to 4, T 808/94, points 4 to 7, T 685/98 (OJ EPO 1999, 346), points 5.1 to 5.3 and 6, and T 861/03, points 5 and 5.1), and in particular when the decision is not based on the then valid requests, in contravention of Article 113(2) EPC (T 647/93 (OJ EPO 1995, 132), point 2.6).

b) It is also established case law that when a decision is tainted by a procedural violation, the examining division has no discretion, but must rectify the decision pursuant to Article 109 EPC. Not granting interlocutory revision in such circumstances may even amount to a further procedural violation (see T 677/97 (*supra*), point 3, T 16/96 (*supra*), point 2.3, T 808/94 (*supra*), point 5, T 685/98 (*supra*), point 6.2, T 647/93 (*supra*), point 2.6).

c) As alleged by the appellant and as acknowledged by the examining division, the first decision was tainted by a procedural violation under Article 113(2) EPC. The Board does not dispute this finding, it even has doubts as to whether the decision was sufficiently reasoned within the meaning of Rule 68(2) EPC and whether the examining division took duly into account pursuant to Article 113(1) EPC the appellant's arguments in the reply letter preceding the decision, both of which may have amounted to two further procedural violations (T 1356/05, points 6, 17 and 18). In such circumstances, the examining division had no choice but to rectify the decision pursuant to Article 109 EPC, see paragraph b) above.

d) The arguments of the appellant and the case law cited by the appellant (in particular T 142/96, T 139/87 (*supra*), T 219/93 (*supra*) and T 939/95) are not considered pertinent in the present case. Firstly, they concern interlocutory revision, not in the case in which the decision is tainted by a procedural violation, but under the circumstances of the first alternative mentioned in paragraph a) above (see points 5.3 and 5.5 of T 142/96, point 3 of T 139/87,

point 2.3 of T 219/93 and point 3.2.1 of T 939/95). Secondly, contrary to the appellant's contentions, interlocutory revision does not presuppose or require that the application is subsequently granted (see T 139/87, point 4, J 32/95 (OJ EPO 1999, 733), point 2.2.4, T 219/93 (*supra*), point 4.4, and T 919/95, point 2). This is in particular the case when the decision is rectified only by reason of a procedural violation since a fundamental procedural right - in particular that enshrined in Article 113(2) EPC - must be safeguarded irrespective of the substantive merits of the case (T 685/98 (OJ EPO 1999, 346), point 6.2). The Board also notes that decision T 691/91 also cited by the appellant recommends a practice (see point 10 of the reasons) that precisely corresponds with the procedure followed by the examining division in the present case.

In view of the above, the Board is of the preliminary opinion that the examining division proceeded correctly when rectifying the first decision under Article 109 EPC, and that the division was then entitled to reopen proceedings and had the competence to continue with the examination of the substantive merits of the case and to issue the (second) decision. It was certainly regrettable for the appellant that a procedural violation on the part of the examining division led to rectification of the decision and to reopening of proceedings in which the examining division maintained in essence its previous view on the substantive merits of the case, but the latter situation could hardly have been avoided if the procedural rights of the appellant were to be preserved; in any case, the procedural costs of the appellant were appropriately compensated by the

reimbursement of the appeal fee ordered by the examining division.

The appellant has also questioned the impartiality and fairness of the examining division. However, the observations and allegations made by the appellant in this regard only concern the evaluation of facts by the examining division and in the preliminary view of the Board they are not sufficient to cast doubt on the impartiality of the examining division.

It follows that no procedural violation can be identified as affecting the decision under appeal in the present appeal proceedings. In particular, none of the circumstances referred to by the appellant would allow the conclusion that the examining division acted *ultra vires* in issuing the decision presently under appeal. In these circumstances, in the event that the Board finds the present appeal allowable, there would be no reason for reimbursing the (second) appeal fee under Rule 67 EPC as requested by the appellant."

- IV. In reply to the Board's communication and to a telephone consultation with the rapporteur, the appellant filed by letter dated 5 July 2006 amended description pages 1 to 3, 3B, 4, 5 and 8 and by letter dated 13 July 2006 an amended set of claims 1 to 8, which together with description pages 6 and 7 and drawing sheets 1/5 to 5/5 as originally filed and pages 3A and 9 as filed with the letter dated 24 August 2001 constitute the present request of the appellant for the grant of a patent.

In the letter dated 5 July 2006 the appellant stated that he did not wish to have oral proceedings on the question of the alleged substantial procedural violation and that, as long as the Board was prepared to allow the appeal on the basis of the proposed amendments, no oral proceedings were necessary nor were requested under such circumstances.

V. Independent claims 1 and 5 according to the present request of the appellant read as follows:

"1. Apparatus (10) for measuring the thickness of the layers of a multi-layer transparent film (15; 216) having top and bottom surfaces and one or more internal layer interfaces, comprising means for generating a probe light signal from a low coherence light source (12) and for applying said probe light signal to the film; a partial reflector (25; 26) positioned on one side of the film so as to reflect a portion of said probe light signal; means (14, 16; 210, 212) for collecting light reflected by said reflector and the film; and a receiver (18) that receives said collected reflected light and that determines from only said collected reflected light the respective difference in optical path between light reflected by said partial reflector and light reflected by said top surface, by said bottom surface and by each of said internal layer interfaces of the film, the reflectivity of said partial reflector being greater than that of said internal layer interface or interfaces."

"5. A method of measuring the thickness of the layers of a multi-layer transparent film (15; 216) having top and bottom surfaces and one or more internal layer

interfaces, comprising the steps of generating a probe light signal from a low coherence light source (12) and applying said probe light signal to the film (15); providing a partial reflector (25; 26) to reflect a portion of said probe light signal; collecting light reflected by the film (15) and said reflector; and determining from only said collected reflected light the respective difference in optical path between light reflected by said partial reflector and light reflected by said top surface, by said bottom surface and by each of said internal layer interfaces of the film (15)."

The request of the appellant includes dependent claims 2 to 4 and 6 to 8 referring back to claims 1 and 5, respectively.

VI. The arguments of the appellant in support of its requests are essentially the following:

Substantive matters

The measurement of the distances with reference to the partial reflector on the surface of the film provides a much simpler and more reliable determination of the thickness of the film and of its individual layers. In document D1 there is no disclosure of there being provided a partial reflector positioned on one side of the film so as to reflect a portion of the probe light signal and which is used in the determination of the thickness of a layer. Neither document D2 nor a combination of its teaching with that of document D1 would result in the claimed invention, and in particular in the specific operation of the partial

reflector in the measurement of the thickness of the layers as claimed.

Reimbursement of the appeal fee

The examining division decided to rectify its earlier decision in accordance with the provisions of Article 109(1) EPC. However, instead of following the procedure of Article 109(1) EPC, the examining division issued a summons to attend oral proceedings raising objections against the claims that had been on file at that time and which had been the subject of the first appeal, the objections following the objections previously raised during the original examination proceedings. Article 109(1) EPC does not provide a department of first instance with the opportunity to revise its earlier decision and to correct any errors in it, while maintaining a substantial part of the objections raised in that earlier decision. This approach would undermine the appeal procedure and the appellant's right to have a decision of a first-instance department reviewed by a Board of Appeal, and would also unduly prolong the examination proceedings. Thus, in decision T 142/96 it was held that the practice of reopening examination after rectification was contrary to the principle of procedural economy underlying Article 109 EPC and so constituted a substantial procedural violation. The cited decision concurred with the earlier decision T 691/91 in that Article 109 EPC provides only two legally viable alternatives, to maintain or to annul the decision under appeal, and in that Article 109 EPC does not provide a third alternative of maintaining a previous decision, even if on the basis of another ground of

objection. The fact that the rectified decision was incorrect by having been based upon an incorrect text (Article 113(2) EPC) does not detract from the fact that the only route provided for in Article 109(1) EPC is for rectification of the entirety of the decision under appeal. Consequently, the examining division, which chose to carry out re-examination of the application on exactly the same basis as it had prior to and for its first decision, was not entitled to reopen the proceedings as Article 109(1) EPC did not provide such route, with the consequence that the examining division did not have the authority to continue examination of the application as it had already come to a decision on this case on the basis of the same facts and grounds (T 139/87, T 219/93 and T 939/95).

The re-examination proceedings were not conducted by the examining division with an entirely open mind. In particular, there are serious concerns about the impartiality of an examining division which chooses to re-examine a case and an earlier decision it has reached since the division will be wary of criticising itself and is therefore more than likely to be tempted to seek to reassert its earlier decision rather than looking at the case with an open mind. In addition, the examining division did not demonstrate total impartiality to the applicant's case in view of statements such as "the receiver D1 is clearly *adapted* to ...", "not only could" in relation to what a skilled person might have done, and "when considering the *successful* teachings of D2" made in the decision under appeal, and also in view of the attempts by the examining division to extend the disclosure of the

prior art to try to make it fall within the scope of the claims.

For these reasons, the proceedings culminating in the decision under appeal were tainted by a procedural violation that justifies the reimbursement of the appeal fee pursuant to Rule 67 EPC.

Reasons for the Decision

1. The appeal is admissible.
2. *Amendments*

After due consideration of the amendments made to the application documents according to the appellant's request, the Board is satisfied that the amended application documents comply with the formal requirements of the EPC, and in particular with those set forth in Article 123(2) EPC. More particularly, independent claims 1 and 5 are respectively based on independent claims 5 and 10 as originally filed together with the passages of the description on page 4, lines 8 and 9, and page 7, lines 2 to 7, and the disclosure with reference to Figures 1, 3 and 5; dependent claims 2 and 6 are respectively based on independent claims 1 and 6 as filed together with page 6, lines 15 to 17 and the disclosure with reference to Figure 2; and dependent claims 3, 4, 7 and 8 are based on dependent claims 2, 4, 7 and 9 as filed, respectively. Furthermore, the description has been appropriately amended and brought into conformity with the invention as defined in the claims (Article 84 EPC,

second sentence and Rule 27(1)(c) EPC) and the pertinent prior art has been appropriately acknowledged in the introductory part of the description (Rule 27(1)(b) EPC).

3. *Novelty*

Novelty of the independent claims upon which the contested decision was based was not contested by the examining division and, as will be apparent in the following discussion on the issue of inventive step, the Board is also satisfied that the subject-matter of present independent claims 1 and 5 is novel over the available prior art (Articles 52(1) and 54 EPC).

4. *Inventive step*

4.1 Independent claim 5 is primarily directed to the measurement of the thickness of the layers of a multi-layer transparent film having one or more internal layer interfaces. This object is also addressed in document D2 (see column 5, lines 38 to 62), not however in document D1 which merely addresses the problem of the determination of the thickness of a film (abstract). Thus, among the documents considered by the examining division in the decision under appeal, the closest state of the art for the assessment of inventive step of the claimed subject-matter is considered to be represented by the disclosure of document D2.

4.2 In the embodiment disclosed in document D2 with reference to Figure 3 a first portion of a probe light from a low-coherence light source 21 (column 2, lines 58 to 62, and column 3, lines 24 and 25) is

directed towards a reference mirror 23 (paragraph bridging columns 2 and 3) and a second portion is directed towards a transparent multilayer film (column 4, lines 29 to 31) located in front of a partial reflector 24 having a reflectivity greater than that of the internal layer interfaces of the film (column 4, lines 31 to 35 together with column 4, line 67 to column 5, line 5, and column 5, lines 38 to 42). The light reflected by each of the front surface, the rear surface and the internal layer interfaces of the film and by the partial reflector is then collected (column 3, lines 13 to 18) and brought into interference with the light reflected by the reference mirror (column 4, lines 35 to 38 together with column 5, lines 38 to 42). The resulting interference light is then detected by a detector 25 (column 3, lines 17 and 18) and the resulting detection signal is processed (column 3, line 19 to column 4, line 19) by a processing device (figure 2) so as to determine the relative positions of - and therefore the difference in optical path between -, on the one hand, the reference mirror and, on the other hand, each of the front surface, the rear surface and the internal layer interfaces of the film (column 3, lines 56 to 66, column 4, lines 35 to 66, column 5, lines 38 to 62, and column 6, lines 10 to 12 and 50 to 53). This determination step amounts to the measurement of the thickness of the layers of the multi-layer film (column 5, lines 40 to 42).

While in the method defined in independent claim 5 the measurement of the thicknesses of the multi-layer film relies on the detection and the processing of only the light reflected by the multi-layer film and the partial

reflector, document D2 requires in addition light from a reference mirror. Thus, while document D2 relies on the interference between the reference light beam and the portions of light reflected by the partial reflector and by each of the external surfaces and the internal interfaces of the film, and the measurement of the thickness of the layers is based on the determination of the distances between the reference mirror and the external and the internal interfaces of the film, the method defined in independent claim 5 relies on a different interference and determination approach, namely on only the interference of the light reflected by the partial reflector and the light reflected by each of the external surfaces and the internal interfaces of the film with itself, and on the determination of the thickness of the layers on the basis of only the difference in optical path between the partial reflector and the external surfaces and internal interfaces of the film.

- 4.3 The problem solved over the disclosure of document D2 by the distinguishing features of the claimed method identified above can at least be seen in the provision of an alternative method of determination of the thickness of the layers of a multi-layer transparent film.

However, none of the remaining documents in the file discloses or suggests the interference and measurement approach defined in the method of claim 5. In particular, document D1 (abstract and Figures 1 and 2) considered by the examining division in the decision under appeal only concerns the determination of the thickness of a monolayer film and, in addition, relies

on the interference between the light reflected by a transparent film and a reference light beam (the light beam reflected by mirror MM in Figure 2), i.e. contrary to the claimed method also requires the use of a reference light beam as is the case with document D2.

Document D3 (Figure 6 and the corresponding disclosure) and document D4 (Figures 4 and 5 and the corresponding disclosure) considered by the examining division during the examination proceedings disclose the determination of the thickness of a layer by an interferometric approach analogous to that of the claimed invention, i.e. without requiring a reference light beam.

Nonetheless, the teaching of document D3 is confined to monolayer films (abstract) and is silent as to the use of a partial reflector operating as claimed. And although document D4 mentions the applicability of the disclosed measurement methods to multilayer films (Figures 6 and 7 and the corresponding disclosure), the document teaches at the most the use of a reflective beam splitter and only in connection with the simultaneous measurement of the thickness and the refractive index of a single film (Figure 8 and the corresponding disclosure). Thus, the application of the interferometric approach taught in document D3 or D4 to the disclosure of document D2 would not result in the use of a partial reflector operating as required by claim 5 nor in the improvements achieved therewith, namely the use of a reflector as a reference surface with respect to which the optical paths and therefore the positions of the external surfaces and the interfaces of the multi-layer film can be detected and measured with improved reliability (page 6, line 22 to page 7, line 22 of the description as originally filed).

4.4 In view of the above, the Board concludes that the method defined in independent claim 5 involves an inventive step with regard to the available prior art (Articles 52(1) and 56 EPC). The same conclusion applies to claim 1, which defines an apparatus for measuring the thickness of the layers of a multi-layer transparent film and comprising means the functional features of which are essentially in one-to-one correspondence with the different steps of the method of claim 5, and also to dependent claims 2 to 4 and claims 6 to 8 directed to particular embodiments of the subject-matter of claims 1 and 5, respectively.

5. *Request for reimbursement of the appeal fee*

The appellant has requested the reimbursement of the appeal fee pursuant to Rule 67 EPC on the grounds that the examining division was not correct in rectifying under Article 109 EPC the previous decision to refuse the application with the consequence that the examining division did not have the competence to reopen and continue examination proceedings that ended in the second decision to refuse, the subject of the present appeal. The appellant has also raised criticisms against the impartiality of the examining division.

In the communication pursuant to Article 110(2) EPC the Board explained in detail (see point III above) why in its preliminary opinion none of the circumstances alleged by the appellant amounted to a procedural violation affecting the decision under appeal in the present appeal proceedings. In particular, the Board did not see any circumstance that would allow the

conclusion that the examining division acted *ultra vires* in issuing the decision presently under appeal or acted with partiality in the assessment of the substantive issues of the case.

In reply to the Board's communication, the appellant did not dispute the view expressed by the Board on a preliminary basis nor submitted counter-arguments or comments on the reasons given by the Board.

In these circumstances, and in the absence of any attempt by the appellant to refute the Board's preliminary opinion expressed in the aforementioned communication, the Board sees no reason to depart from that opinion and concludes that there is no reason for reimbursing the (second) appeal fee under Rule 67 EPC as requested by the appellant for the reasons already communicated in detail to the appellant and reproduced in point III above.

6. *Request for oral proceedings*

With the statement of grounds of appeal the appellant requested oral proceedings under Article 116 EPC in the event that the Board would consider disposing of the appeal other than by setting aside the decision under appeal (point II above), and with a subsequent letter the appellant announced that he did not wish to have oral proceedings on the question of the alleged substantial procedural violation and confirmed that no oral proceedings were necessary nor requested as long as the Board allows the appeal on the basis of the proposed amendments (point V above).

In view of the request for oral proceedings formulated by the appellant and the fact that the appellant has had due opportunity to comment on the Board's preliminary view on the issue of the reimbursement of the appeal fee (Article 113(1) EPC), and since the decision is being set aside and a patent granted, the Board has considered it neither necessary nor appropriate to hold oral proceedings under Article 116 EPC for the sole purpose of discussing the request for reimbursement of the appeal fee.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to grant a patent on the basis of the following application documents:
 - claims 1 to 8 as filed with the letter dated 13 July 2006,
 - description pages 6 and 7 as originally filed, pages 3A and 9 as filed with the letter dated 24 August 2001, and pages 1 to 3, 3B, 4, 5 and 8 as filed with the letter dated 5 July 2006, and
 - drawing sheets 1/5 to 5/5 as originally filed.
3. The request for reimbursement of the appeal fee is refused.

The Registrar:

The Chairman:

M. Kiehl

A. G. Klein