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**Datasheet for the decision
of 8 February 2013**

Case Number: T 1131/12 - 3.5.03

Application Number: 95400425.5

Publication Number: 670641

IPC: H04B 10/06

Language of the proceedings: EN

Title of invention:

Apparatus for detecting a light signal

Applicant:

Kabushiki Kaisha TOPCON

Headword:

Light signal detection/TOPCON

Relevant legal provisions:

EPC Art. 56, 84
RPBA Art. 12(1)(a), 12(2)

Keyword:

"Inventive step - yes (after amendment)"
"Substantive procedural violation - raised one week prior the
oral proceedings and partly substantiated only during the
oral proceedings"
"Reimbursement of the appeal fee - no"



Case Number: T 1131/12 - 3.5.03

DECISION
of the Technical Board of Appeal 3.5.03
of 8 February 2013

Appellant: Kabushiki Kaisha TOPCON
(Applicant) 75-1, Hasunuma-cho
Itabashi-ku
Tokyo 174 (JP)

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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 24 October 2011
refusing European patent application
No. 95400425.5 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: A. S. Clelland
Members: B. Noll
M.-B. Tardo-Dino

Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division to refuse European application no. 95400425.5.
- II. The procedure of substantive examination before the examining division can be summarized as follows.

In a first communication dated 27 August 2002, inter alia objection of lack of inventive step (Article 56 EPC) was raised against various claims, having regard to the documents

D1: EP 0106029 A1 and

D2: DE 3741050 A1.

In a second communication dated 28 June 2004 an objection was raised that "essential features" were missing from claim 1 and that the feature of the amplifying circuit lacked clarity (Article 84 EPC).

In a third communication dated 29 June 2006 the previous objection of missing "essential features" was withdrawn and a further objection of lack of clarity as regards the expressions "binary signal" and "binary digital signal" was raised.

The applicant amended the claims in response to each of the three communications. Two requests for accelerated examination were filed, on 23 February 2009 and 7 June 2011.

On 24 October 2011, i.e. more than five years after the third communication was issued, the examining division

- refused the application on the grounds that claim 1 lacked clarity (Article 84 EPC) due to the expression "binary digital" and that the subject-matter of claim 1 lacked an inventive step (Article 56 EPC).
- III. The applicant filed an appeal against this decision. In the notice of appeal the appellant requested that the decision be cancelled. Oral proceedings were conditionally requested.
- IV. In the statement of grounds the appellant requested that a patent be granted on the basis of a set of claims accompanying the statement of grounds.
- V. The board issued a summons to oral proceedings. In a communication accompanying the summons the board gave a preliminary opinion on the case.
- VI. In a letter filed on 31 January 2013 the appellant contended that the examining division had committed a "breach of the principle of legitimate expectations" and expressed doubts as to whether its right to be heard had been correctly exercised by the examining division. The appellant argued that although an objection of lack of inventive step had been raised by the examining division in its first communication of 27 August 2002, the two subsequent communications were silent on inventive step. The fact that the main reason in the decision to reject the application was lack of inventive step was surprising for the appellant.
- VII. Oral proceedings before the board were held on 8 February 2013.

In the oral proceedings the appellant maintained its submissions filed on 31 January 2013 with respect to the violation of the right to be heard regarding the inventive step issue. The appellant additionally argued at the oral proceedings that a further ground for the refusal, namely a lack of clarity caused by the wording "binary digital", was raised for the first time in the reasons for the decision whilst the clarity issues raised in the examining division's communications preceding the decision concerned different features. These complaints were only raised for the first time shortly before the oral proceedings as they had not been the subject of the appeal. The appellant argued that it was usual that such violations were not initially noticed by an appellant when filing an appeal.

In the course of the oral proceedings the appellant filed claims of a new main request replacing all requests on file. The appellant requested that the decision under appeal be set aside, that the appeal fee be reimbursed, and that a patent be granted on the basis of the main request as submitted during the oral proceedings.

After deliberation, the board's decision was announced.

VIII. Claim 1 as filed during the oral proceedings reads as follows:

"An apparatus for detecting a light signal, comprising:
- a light emitting portion comprising a first frequency source (1) for generating a first clock signal (CL) having a fixed frequency and a light emitting element (5) that is driven based on said first clock signal of

said first frequency source and emits rectangular light signal (P) pulses, of period T with a duty ratio of less than 50%,

- and a light receiving portion (6) disposed apart from said light emitting portion, said light receiving portion (6) including:

a light receiving element (7) that receives said light signal emitted from said light emitting element to convert the received light signal to an electrical signal;

an amplifying circuit (10) that amplifies the electrical signal;

a converter (11) that converts the amplified electrical signal and a noise superimposed thereon from said amplifying circuit into a binary digital signal;

a secondary frequency source (13) for generating a second clock signal having a fixed frequency; and a summing portion (12),

characterized in that

- the summing portion (12), synchronous with said second frequency source, samples said binary digital signal given from said converter plural times at regular intervals during one period (T) of said light signal, and then, during a plurality of the periods of said light signal, sums and stores sampled values obtained in turn during said one period and the summing portion (12) detects the light signal from the stored and summed data by converging the noise."

Reasons for the Decision

1. *Procedural matters: The alleged procedural violations*

1.1 In the letter of 31 January 2013 the appellant requested a remittal to the department of first instance on two grounds: firstly that there was a "breach of the principle of legitimate expectations" in that the examining division failed to point out in its second and third communications that the inventive step objection raised in the first communication was still considered relevant; and secondly that the right to be heard was not "correctly exercised". No reasoning accompanied the second ground.

1.2 It is sufficient here, with respect to the conduct of the first instance proceedings, to note that from the file history as well as from the grounds advanced by the appellant no fundamental deficiency, in the sense of an objective deficiency only ascribable to the examining division and having a direct causal link with the outcome of the decision under appeal, could be detected which would justify an immediate remittal to the first instance as provided by Article 11 RPBA. The board wishes to emphasise that, although a delay of five years between a last communication and the written decision is wholly unacceptable, all the more so as a clear request for accelerated proceedings was made and ignored, action only being taken after the request was repeated, there is no causal link between this excessive delay and the outcome of the examining division's decision.

1.3 As to the grounds as raised by the appellant (see point 1.1), the appellant raised the issue of "legitimate expectations" only a week before the oral proceedings and the issue of a violation of the right to be heard only during the oral proceedings themselves; the board considers that a finding of a substantial procedural violation is not appropriate for the following reasons.

1.4 The board sees no reason to disregard Article 12(2) of the Rules of Procedure of the Boards of Appeal (RPBA) according to which the statement of grounds of appeal shall contain the party's complete case. From this it follows that a party appealing a decision for the reason that it did not have an opportunity to comment on grounds on which the impugned decision is based is obliged to argue this ground of appeal in the statement of grounds. This applies all the more in ex parte proceedings since a further effect of such a complaint being raised late, i.e. later than filing the statement of grounds, is that the examining division was prevented from considering the complaint within the scope of Article 109 EPC, when deciding whether it would rectify its decision. The appellant's argument that the examining division in the present case would in any case have refused an interlocutory revision is merely speculative and therefore not convincing.

1.5 Since the board cannot detect any fundamental deficiency as noted at point 1.2 supra, the request for reimbursement of the appeal fee filed and substantiated shortly before the oral proceedings (cf. point 1.4 supra) is refused pursuant to Article 12(1)(a) and (2) RPBA.

2. *Clarity (Article 84 EPC)*

At point 3.3 of the reasons of the impugned decision it is stated that the term "binary digital signal" in claim 1 "leaves the reader in doubt as to the meaning of the technical features to which it refers, thereby rendering the definition of the subject-matter of said claim unclear". However, the examining division itself was apparently in a position to give a meaningful interpretation of the expression "binary digital" (cf. point 3.2 of the reasons) and was moreover able to assess inventive step of the claimed apparatus (point 4 of the reasons) using the given interpretation. Therefore, the board considers that the expression "binary digital" is clear as regards its meaning in the given context of claim 1.

3. *Claim 1 - inventive step (Article 56 EPC)*

3.1 D1 discloses an apparatus for measuring the amplitude of a periodic optical signal which is affected by noise. The apparatus includes a light emitting portion and a light receiving portion. The light emitting portion consists of a generator of optical radiation sinusoidally modulated in amplitude, and the light receiving portion includes a photo detector followed by an amplifier (cf. page 1 lines 7 to 10). A block diagram of the signal processing part of the light receiving portion is shown in the sole figure of D1. According to this figure, a periodic electrical signal obtained from the detection of the modulated optical radiation is received at port 1 and converted by a sample and hold element SH followed by an A/D-converter

AD into samples C_k and C'_k mutually phase-shifted by $\pi/2$ and each being a 12-bit binary word. The samples C_k are filtered and averaged over N samples, i.e., using the wording of claim 1, summed and stored during a plurality of periods of the light signal to produce a measure for the amplitude of the periodic optical signal (cf. the equation at page 4 line 20).

In the impugned decision the examining division considered the sample and hold circuit SH and the A/D-converter AD in D1 as being a converter (11) in the sense of claim 1 and argued that the output of the A/D-converter was a "binary digital signal" in the sense of claim 1 (cf. the third paragraph from bottom at page 4 and point 3.2 of the impugned decision). The board does not dispute this interpretation. However, on the basis of this interpretation of D1 there is no disclosure in D1 of a summing portion which samples the binary digital signal from the converter plural times at regular intervals during one period of the light signal. More specifically, the 12-bit word samples C_k are filtered at a block FR and subsequently summed in an accumulator AC2; however, no further sampling of the 12-bit words is carried out in D1. As a basis for a disclosure of the feature of sampling the binary digital signal, the last paragraph at point 4 of the reasons of the impugned decision refers to a passage in D1 at page 4 line 30 to page 5 line 2. However, this passage explains the operation of the SH circuit and the A/D-converter, i.e. the elements in D1 which in the examining division's own interpretation correspond to the converter (11) in claim 1.

3.2 Consequently, the apparatus as claimed in claim 1 differs from D1 by the following features:

- (a) the light signal emitted by the light emitting portion consists of rectangular light signal pulses of a period T with a duty ratio of less than 50%, and
- (b) the summing portion, synchronous with the second frequency source, samples the binary digital signal given from the converter plural times at regular intervals during one period (T) of the light signal.

3.3 Regarding feature (a) it is stated in the impugned decision that "Even assuming the interpretation of a clock signal as a rectangular signal, the use of rectangular signals in optical communications has already been employed for the same purpose in a similar apparatus, see document D2, Fig. 1 and col. 4, lines 19-63" (cf. point 4.2 of the reasons).

Although the use of optical signals having the shape of rectangular pulses is known per se in the art (cf. D2), the board is not convinced that the skilled person would actually consider modifying the apparatus of D1 such that the emitted light signals are rectangular light signal pulses. More specifically, the apparatus of D1 is configured to detect the amplitude of a sinusoidally modulated signal, by sampling the zero crossings of the sinusoidally modulated signal and accordingly adjusting the timing for sampling so that the sinusoidally modulated signal is sampled at its maximum value for obtaining samples C_k . Therefore,

having the emitted light signal other than being sinusoidally modulated would be incompatible with the adjustment of the sampling timing in D1.

Furthermore, the board does not see any motivation for the skilled person to add to the D1 apparatus the feature that the binary digital signal, i.e. the 12-bit words output from the A/D-converter AD in D1, is once more sampled in synchronism with a second frequency source.

3.4 For the above reasons the skilled person, starting out from D1 either alone or taking into account that the use of a rectangular optical signal is known from D2 would not arrive at an apparatus as claimed in claim 1 without the exercise of inventive skill.

4. For the above reasons the grounds for refusal on which the impugned decision is based have been overcome. Hence, the decision under appeal is to be set aside.

5. *Remittal*

The board's decision is only on inventive step and clarity of claim 1 (cf. points 2 and 3 above). The board notes that there is still an inconsistency of the wording of dependent claim 7. It is therefore appropriate to remit the case to the examining division for further examination.

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 for further prosecution on the basis of claim 1 of the main request as submitted during the oral proceedings.
3. The request for reimbursement of the appeal fee is refused.

The Registrar:

The Chairman:

G. Rauh

A. S. Clelland