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**Datasheet for the decision
of 18 September 2015**

Case Number: T 0361/11 - 3.5.02
Application Number: 04795658.6
Publication Number: 1706942
IPC: H03L7/00
Language of the proceedings: EN

Title of invention:

FREQUENCY AND/OR PHASE COMPENSATED MICROELECTROMECHANICAL
OSCILLATOR

Applicant:

Robert Bosch GmbH

Relevant legal provisions:

EPC Art. 123(2), 56, 113(1)
EPC R. 103(1)(a)

Keyword:

Amendments - added subject-matter - main request (yes)
Inventive step - auxiliary request 2 (no)
Inventive step - auxiliary request 3 (yes)
Right to be heard - substantial procedural violation (no)
Reimbursement of appeal fee -
violation of the right to be heard (no)



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Chambres de recours**

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Case Number: T 0361/11 - 3.5.02

D E C I S I O N
of Technical Board of Appeal 3.5.02
of 18 September 2015

Appellant: Robert Bosch GmbH
(Applicant) Postfach 30 02 20
70442 Stuttgart (DE)

Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 14 September
2010 refusing European patent application No.
04795658.6 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman M. Léouffre
Members: H. Bronold
W. Ungler

Summary of Facts and Submissions

I. The appeal concerns the decision of the Examining Division of the European Patent Office posted on 14 September 2010 refusing European patent application No. 04795658.6 pursuant to Article 97(2) EPC.

II. The appellant (applicant) requests that the decision under appeal be set aside and that a patent be granted to him on the basis of the claims of the main request, filed together with the statement setting out the grounds of appeal, or on the basis of auxiliary request 2 or on the basis of auxiliary request 3, both filed during the oral proceedings held before the board on 18 September 2015.

Further, the appellant requests reimbursement of the appeal fee due to an alleged violation of his right to be heard during the oral proceedings before the examining division.

III. The following documents which were cited in the proceedings before the examining division are relevant for the present decision:

D1: US 6,124,765

D2: US 5,604,468

IV. Claim 1 of the main request reads:

"A compensated microelectromechanical oscillator, comprising:

a microelectromechanical resonator to generate an output signal wherein the output signal includes a first frequency;

frequency adjustment circuitry, coupled to the microelectromechanical resonator, to generate an output signal having a second frequency using the output signal of the microelectromechanical resonator and a set of values, wherein:

- i) the frequency adjustment circuitry includes first frequency multiplier circuitry, and
- ii) the second frequency is greater than the first frequency; and

wherein the set of values is determined using information which is representative of 1) the frequency of the output signal of the microelectromechanical resonator, and/or 2) an operating temperature of the microelectromechanical resonator."

- V. Claim 1 of auxiliary request 2 differs from claim 1 of the main request in that the last feature reads:

"wherein the set of values is determined using 1) the frequency of the output signal of the microelectromechanical resonator, and/or 2) information which is representative of an operating temperature of the microelectromechanical resonator."

- VI. Claim 1 of auxiliary request 3 is restricted to the first alternative of claim 1 according to auxiliary request 2.

Claims 2 to 10 are dependent on claim 1.

- VII. The appellant essentially argued as follows

Main request

The amendment in the first alternative of claim 1 according to the main request, which reads "the set of

values is determined using information being representative of 1) the frequency of the output signal of the microelectromechanical resonator" was disclosed in the originally filed description on page 3, lines 6 to 9 reading "In one embodiment, the values may be determined using the frequency of the output signal of the microelectromechanical resonator, which depends on the operating temperature of the microelectromechanical resonator and/or manufacturing variations of the microelectromechanical resonator." Therefore, claim 1 of the main request did not violate Article 123(2) EPC.

Auxiliary request 2

The compensated oscillator of document D2 was based on a crystal resonator, not on a MEMS resonator as claimed in claim 1. Further, according to claim 1 the temperature of the MEMS resonator was used for temperature compensation whereas according to document D2 the temperature of an oscillator was used. The difference between a resonator and an oscillator was that the oscillator comprised a resonator and a driving circuit connected to the resonator. Thus, according to the invention, the temperature of the frequency determining device (resonator) was used instead of the temperature of the oscillatory system (oscillator) as in document D2. Thus, the subject matter of claim 1 according to auxiliary request 2 was not obvious over a combination of the disclosure of document D2 with the general knowledge of the skilled person.

Request for reimbursement of the appeal fee

Although the minutes of the oral proceedings before the examining division were correct in that the representative was given the possibility of filing

another request at the end of the oral proceedings, the representative felt put under pressure by the announcement made by the chairman of the examining division at the beginning of the oral proceedings that the division was going to apply Rule 137(3) EPC in a strict manner. This announcement implied that the division did not wish to receive a further request. Consequently, the division attempted to deny the representative his right to file requests and therefore the applicants right to be heard according to Article 113(1) EPC was violated.

Reasons for the Decision

1. Main request - Article 123(2) EPC

Claim 1 of the main request contains the feature that "the set of values is determined using information which is representative of (1) the frequency of the output signal of the microelectromechanical resonator, and/or (2) an operating temperature of the microelectromechanical resonator."

According to the originally filed description see e.g. page 3, lines 6 to 9 or page 4, second paragraph, however, the set of values is "determined using the frequency of the output signal of the microelectromechanical resonator and data which is representative of the operating temperature of the microelectromechanical resonator".

The originally filed documents do not disclose that "the set of values is determined using information

being representative of the frequency of the output signal of the microelectromechanical resonator" (emphasis added by the board). It is originally disclosed that "the set of values is determined using the frequency of the output signal of the microelectromechanical resonator". However, "the frequency" and "information being representative of the frequency" are not identical. The latter expression can mean any information having an influence on the frequency of the microelectromechanical resonator. The originally filed application does not contain an example of such information.

Therefore, the subject matter of claim 1 according to the main request cannot be derived directly and unambiguously from the application as originally filed.

Consequently, the main request is violating Article 123(2) EPC.

2. Auxiliary request 2 - Article 56 EPC

2.1 It appears that the contested point with respect to inventive step is whether the second alternative of claim 1, i.e. the following feature of claim 1 is disclosed in document D2:

- "wherein the set of values is determined using ... information which is representative of an operating temperature of the microelectromechanical resonator."

2.2 The appellant argues that the term "using information representative of an operating temperature of the microelectromechanical resonator" is to be interpreted as "the operating temperature of the microelectromechanical resonator is used to". However,

the formulation used in claim 1 could for example also be interpreted in the sense of merely indicating the presence of a value of an operating temperature of the microelectromechanical resonator.

- 2.3 The board is not convinced by the argument of the appellant that according to the invention the operating temperature of the microelectromechanical resonator instead of the temperature of the oscillator is used as "information representative of the operating temperature of the microelectromechanical resonator".

The description states for example on page 19, lines 23 to 25 that even the ambient temperature can be used as temperature of the MEMS oscillator 10 for the purpose of compensation. According to the disclosure of document D2 (column 6, lines 7 to 10) the temperature of the oscillator is used for compensation, as according to the application.

Therefore, claim 1 of auxiliary request 2 differs from the disclosure of document D2 only in that the resonator is of microelectromechanical type.

- 2.4 As objective problem may therefore be regarded to provide an alternative resonator for a temperature compensated oscillator.

The skilled person knows different types of resonators such as microelectromechanical resonators, quartz resonators or mass-spring systems. Further, the fact that oscillators need to be temperature-compensated in order to achieve stable output frequencies is also known to the skilled person. Therefore, the board can not identify any obstacle that would have hindered the skilled person from applying the temperature

compensation of the whole oscillator of document D2 to microelectromechanical resonators.

- 2.5 The solution to the objective problem provided by the subject matter of claim 1 of auxiliary request 2 is therefore obvious for the person skilled in the art.

Consequently, the subject matter of claim 1 of auxiliary request 2 does not imply an inventive step in the sense of Article 56 EPC.

3. Auxiliary request 3

- 3.1 The feature that "the set of values is determined using the frequency of the output signal of the micro-electromechanical resonator" is neither known from the disclosure of document D1 nor from the disclosure of document D2.

The subject matter of claim 1 therefore differs from the disclosure of document D2 in that:

- the oscillator comprises a microelectromechanical resonator, and
- the set of values is determined using the frequency of the output signal of the microelectromechanical resonator.

Neither of documents D1 and D2 discloses to temperature compensate an oscillator via a frequency adjustment circuitry using a set of values that is determined using the frequency of the output signal of a microelectromechanical resonator. According to document D1 or D2 it is the temperature of a resonator or an oscillator that is used for that purpose, see for example document D2, column 3, lines 8 to 12, according

to which the temperature of the crystal resonator is used. Nothing in document D1 or D2 hints towards replacing the temperature of the resonator or oscillator with the frequency of the resonator for the purpose of compensating the frequency shift due to the temperature. Therefore, the solution provided by claim 1 of auxiliary request 3 is not obvious having regard to the available prior art.

3.2 Thus, the subject matter of claim 1 of auxiliary request 3 involves an inventive step in the sense of Article 56 EPC.

4. Reimbursement of the appeal fee

4.1 The appellant argues that his right to be heard according to Article 113(1) EPC was violated during the oral proceedings before the examining division.

To this end, the appellant argues that he felt put under pressure by the announcement by the chairman of the examining division at the beginning of the oral proceedings that Rule 137(3) EPC would be applied in a strict manner and only one further request would be admitted. According to the appellant, this announcement had adversely affected his position during the oral proceedings.

4.2 According to the minutes of the oral proceedings under point 5, "The chairman informed the representative of the applicant that Rule 137(3) EPC will be applied and therefore one further request might be allowed, provided that it dealt with all the objections mentioned during the examining phase" and further under point 10, "The chairman asked if the representative of the applicant wants to state further requests" and

under point 11, "The representative of the applicant stated that he did not wish to submit any further requests".

- 4.3 The board does not share the appellant's view that an announcement at the beginning of the oral proceedings that Rule 137(3) EPC would be applied in a strict manner implies a substantial procedural violation.

A substantial procedural violation would have been committed if a request of the appellant had in fact not been dealt with, or if the Board had prevented the appellant from submitting any further request. In the present case however, the appellant was explicitly asked at the end of the oral proceedings, i.e. after the requests on file had been dealt with, whether he wanted to file further requests during oral proceedings, in response to which he declared that he did not wish to do so.

Even if the appellant's representative had the impression from the statement made at the beginning of the oral proceedings that no further requests would have been admitted into the proceedings, he was explicitly asked after the requests on file had been dealt with, whether he wished to file any further request. Moreover, this information appears to have been in line with the division's statement at the beginning of the oral proceedings, that "*one further request might be allowed*". Thus, the applicant was in no way prevented by the division from filing a further request, on the contrary, the representative himself chose not to do so. The fact that there would have been the need to discuss the issue of admissibility of requests filed at a late stage cannot be considered as preventing the filing of such requests at all and thus

cannot be seen as a restriction of the right to be heard.

Thus, neither a violation of the appellant's right to be heard nor any other substantial procedural violation is apparent.

Therefore, according to Rule 103(1) (a) EPC, the board is not in a position to order reimbursement of the appeal fee.

Consequently, the appellant's request for reimbursement of the appeal fee is refused.

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 in the following version:
Claims: 1 to 10 of auxiliary request 3 filed during the oral proceedings of 18 September 2015.
Description: Pages 1 and 2 as originally filed; pages 3a, 4A and 6 to 34 filed during the oral proceedings of 18 September 2015; page 35 as originally filed.
Drawings: Sheets 1/78 to 78/78 as originally filed.
3. The request for reimbursement of the appeal fee is refused.

The Registrar:

The Chairman:



U. Bultmann

M. Léouffre

Decision electronically authenticated