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Datasheet for the decision of 19 March 2025

Case Number: T 0476/23 - 3.2.02

Application Number: 16731491.3

Publication Number: 3085304

IPC: A61B5/053

Language of the proceedings: EN

Title of invention:
CAPACITIVE SENSING HEAD DEVICE FOR MEASURING FREQUENCY OF ACUPUNCTURE POINT OF HUMAN BODY

Applicant:
Lu, Chin-Hung

Headword:

Relevant legal provisions:
EPC Art. 83, 84, 123(2)

Keyword:
Sufficiency of disclosure - (yes)
Claims - clarity (yes)
Amendments - added subject-matter (no)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

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Case Number: T 0476/23 - 3.2.02

D E C I S I O N
of Technical Board of Appeal 3.2.02
of 19 March 2025

Appellant: (Applicant)	Lu, Chin-Hung 9F. No. 58 Jianguo Rd. Bade Dist. Taoyuan City 334 (TW)
Representative:	Ter Meer Steinmeister & Partner Patentanwälte mbB Nymphenburger Straße 4 80335 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 21 October 2022 refusing European patent application No. 16731491.3 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	M. Alvazzi Delfrate
Members:	S. Böttcher
	C. Schmidt

Summary of Facts and Submissions

I. The applicant filed an appeal against the Examining Division's decision to refuse European patent application No. 16 731 491.3 which found that the main request did not meet the requirements of Article 123(2) EPC and that auxiliary request 1 did not meet the requirements of Article 83 EPC.

II. The Board summoned the appellant to oral proceedings and conveyed in a communication its preliminary opinion that the main request and auxiliary requests 1 to 4 did not meet the requirements of at least one of Articles 83 and 84 EPC. The Board further considered that claim 1 of auxiliary request 5 met the requirements of Articles 83 and 84 but infringed Article 123(2) EPC.

III. On 6 December 2024, the appellant filed a new main request based on auxiliary request 5 addressing the objections raised. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims according to the new main request or that the case be remitted to the Examination Division for the assessment of novelty and inventive step.

IV. The Board cancelled the oral proceedings.

V. Claim 1 of the new main request reads as follows.

"A detecting head device (100) for determining a capacitance value CH of an acupuncture point of a human body, comprising:
a contact head (110), which comprises two terminals (1, 1’; 2, 2’) including a first terminal (1, 1’) that

contacts with an acupuncture point (P2) of a human body to obtain a capacitance value (CH) of the acupuncture point (P2) and a second terminal (2, 2') that is grounded;
an oscillatory circuit including an LM311 comparison circuit in combination with a tank circuit that comprises an inductor L1 and a capacitor C2, the oscillatory circuit is configured to:
generate and output oscillations of a oscillation frequency F1 when the contact head (110) does not contact the acupuncture point (P2) of the human body based on mathematical formula:
$F1=1/(2\ \pi\ \sqrt{(L1\cdot C2)})$,
generate and output oscillations of an oscillation frequency F2 when the contact head (110) contacts the acupuncture point (P2) of the human body based on mathematical formula:
$F2=1/(2\ \pi\ \sqrt{(L1\cdot (C2+CH))})$,
wherein L1 is the inductor value of the tank circuit, C2 is the capacitor value of the tank circuit and CH is the capacitance value of the contacted acupuncture point (P2) of the human body,
wherein the oscillation frequency F1 is 700 KHz ± 5%, and
wherein the oscillation frequency F2 is in a range from 400 KHz to 700 KHz;
a counting module (130), which is connected to an internal oscillator (120) and is configured to count oscillations that are output from the internal oscillator (120), wherein a highest frequency value of the internal oscillator (120) is 36 MHz; and
an external interrupt service routine, ISR, module (140), which is connected to the counting module (130) and when the contact head (110) contacts with the acupuncture point (P2) of the human body, the external ISR module (140) receives an acupuncture point

frequency signal (Fin) of the contacted human body, the external ISR module (140) determines, in combination with the counted oscillations from the internal oscillator (120) and the frequency of the internal oscillator, the frequency F2 of the contacted acupuncture point (P2) of the human body,
wherein frequency samples are taken by the external ISR module (140) 10 times per second, and a total sampling time is 3 seconds,
wherein the detecting head device (100) further comprises a human body contacting sensor (150), which is connected to the external ISR module (140) and generates a trigger signal when contacting with a human body to activate the external ISR module (140) to start determining;
wherein based on the relationship of the oscillation frequency F1 and the oscillation frequency F2, the capacitance value CH of the acupuncture point (P2) of the human body is determined."

VI. The appellant's arguments relevant to the decision may be summarised as follows.

Sufficiency of disclosure

Claim 1 related to a detecting head device for calculating an acupuncture point frequency of a human body based on a capacitively measuring method. This detecting head device 100 comprised a contact head 110 having two terminals 1, 2. A first terminal 1 contacted with an acupuncture point P2 of a human body to capacitively obtain a capacitance value CH of the acupuncture point P2 of the human body. A second terminal 2 of the detecting head device 100 was grounded. The detecting head device 100 comprised an oscillatory circuit that comprised an inductor L1 and a

capacitor C2 of a tank circuit as shown in Figure 3. This oscillatory circuit was configured to generate and output oscillations of an internal oscillation frequency F1 when the contact head did not contact the acupuncture head point P2 and to generate and output oscillations of an oscillation frequency F2 when the contact head (110) contacted the acupuncture point P2 of the human body.

For the determination of F2, a counting module 130, an ISR (interrupt service routine) module 140 and an internal oscillator were used. The generated sine oscillations F1 or F2 were rectified by the circuitry LM 311 (as shown in Figure 3). These rectified signals Fl, F2 were outputted from LM 311 as an acupuncture signal Fin. This signal Fin was an input signal to the ISR module 140 (see Figure 2), which was a part of the STM32F103C8T6 integrated circuit.

Based on the presence of the signal Fin, counting module 130 counted the internal oscillations generated from an internal oscillator (reference number 120 in Figure 2) between two subsequently rising edges of this signal Fin.

It was basic common knowledge for a skilled person to implement a counting module to count internal oscillations of an internal oscillator when using the micro controller STM32F103C8T6. The same was true for implementing a software ISR to trigger the counting module based on Fin.

As soon as a value for F2 was determined, either this value F2 or a further derived capacitance value CH was logged as a health condition of the human body at the time of determination.

Hence, the person skilled in the art received sufficient information to implement the invention from Figures 2 and 3 and the description in paragraphs 21 to 24 of the application.

Reasons for the Decision

1. Subject-matter of the application

1.1 The application relates to measuring the electrical status of an acupuncture point by determining a capacitance value CH of the acupuncture point. This status may reflect human health.

1.2 This measurement is done by providing a detecting head having an oscillatory circuit (LC-circuit) comprising a capacitor having the capacitance C2 and an inductor having the inductance L1. The electric charges of the acupuncture point P2 can be seen as a further capacitor having the capacitance CH coupled in parallel to the capacitor C2 when the detecting head contacts this point.

1.3 The oscillatory circuit has a resonant frequency, the frequency F1 in the application (see the formula in claim 1). When the detecting head contacts the acupuncture point, this frequency changes to the frequency F2 (including the sum of the known capacitance C2 and the unknown capacitance CH, see the formula in claim 1). Hence, when the frequency F2 is known, the capacitance CH can be calculated by the formula given in the claim.

1.4 The frequency F2 is determined by counting the oscillations of an internal oscillator when the detecting head contacts the skin. The oscillations are counted by the counting module that is triggered by an interrupt service routine (ISR) module. The counting module counts the number of oscillations of an internal oscillator (oscillating with a frequency much higher than that of the oscillatory circuit, e.g. 36 MHz) during an interval T of one oscillation of the (rectified) input signal from the oscillatory circuit, with the ISR module triggering the start or the stop of the counter. From the number of counted oscillations in the interval and the frequency of the internal oscillator, the length of the interval T and, thus, the frequency of the input signal (i.e. the frequency F2 when the detecting head contacts the acupuncture point P2) can be determined.

2. New main request - added subject-matter

In the communication dated 27 November 2024, the Board raised an objection of added subject-matter since claim 1 of auxiliary request 5 specified that the ISR determined the frequency F2 "in combination with the counted internal oscillations from the internal oscillator" instead of "in combination with the internal oscillation frequency" as in claim 1 as originally filed. The Board referred to paragraph [0022] of the description of the application disclosing that the ISR uses both the counted oscillations ("a numerical value in the counter") and the internal oscillation frequency ("together with the frequency of the internal oscillator").

In claim 1 of the new main request, which is otherwise based on claim 1 of auxiliary request 5, the feature

"the external ISR module (140) determines, in combination with the counted oscillations from the internal oscillator (120)" is further specified by the feature "and the frequency of the internal oscillator", as supported by paragraph [0022] of the description. This amendment of claim 1 of the new main request is adequate to overcome the above-mentioned objection.

3. New main request - clarity

As mentioned in the Board's communication dated 27 November 2024, the amendments of claim 1 of auxiliary request 5 were adequate to overcome the clarity objections mentioned in point 1.3 of that communication. Hence, claim 1 of the new main request meets the requirements of Article 84 EPC.

4. New main request - sufficiency of disclosure

4.1 The Examining Division held that the determination of the frequency F2 was not sufficiently disclosed in the application as filed because there was no clear disclosure of how the output signal Fin was further processed to extract the value of F2.

Although this objection was addressed for the auxiliary request (as filed during the oral proceedings), it also applied to the then main request.

4.2 The determination of the frequency F2 is sufficiently disclosed in the description of the application.

From Figure 3 (left part) and paragraph [0015] of the description, it can be derived that the two terminals of the contact head, when contacting an acupuncture point of a human body, act as a further capacitance CH

in the oscillatory circuit comprising C2 and L1. Paragraph [0017] explains that the "output frequency" (i.e. the resonant frequency) of the oscillatory circuit changes from F1 to F2 when the contact head contacts the acupuncture point, as can be derived from the respective formulas. Hence, since the capacitance C2 and the inductance L1 are known, the frequency F1, i.e. the resonant frequency when the detecting head does not contact the acupuncture point, can be calculated, and the capacitance CH can be determined if the frequency F2 is measured.

4.3 For the person skilled in the art, it is clear that to determine the frequency F2, the time of one complete oscillation can be measured. Paragraphs [0021] to [0024] describe that this is done by providing a counting module that counts the oscillations of an internal oscillator that has a much higher frequency than the frequency to be measured (F2), as explained in paragraph [0024]. An ISR is activated "when a frequency signal is inputted", as mentioned in paragraph [0021], this meaning that the ISR is activated every time a new oscillation starts. The ISR counts the number of oscillations of the internal oscillator since the last frequency signal was read out (paragraph [0022]). Together with the known frequency of the internal oscillator, the time interval of one oscillation of the oscillatory circuit and then the frequency F2 is calculated. This process is repeated to enhance the accuracy of the calculation (paragraph [0022]). Actually, the counter, the internal oscillator and the ISR act as an electronic clock to determine the time interval of one oscillation of F2. The Board agrees with the appellant that this way of determining an unknown frequency is common general knowledge for the

person skilled in the art.

4.4 Hence, the requirements of Article 83 EPC are met.

5. Remittal to the Examining Division

There are no further grounds for refusal left for the Board to review on appeal.

The Examining Division did not assess novelty and inventive step.

In view of the primary object of the appeal proceedings to review the decision under appeal in a judicial manner (Article 12(2) RPBA 2020), there are special reasons within the meaning of Article 11 RPBA 2020 for remitting the case to the Examining Division for further prosecution under Article 111(1) EPC, in accordance with the appellant's request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Examining Division for further prosecution.

The Registrar: The Chairman:

A. Chavinier-Tomsic M. Alvazzi Delfrate

Decision electronically authenticated