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Datasheet for the decision of 8 August 2022

Case Number: T 0808/20 - 3.5.05

Application Number: 12777721.7

Publication Number: 2702470

IPC: G06F3/043, G06F3/041

Language of the proceedings: EN

Title of invention:
METHOD AND APPARATUS FOR ACTIVE ULTRASONIC TOUCH DEVICES

Applicant:
Sentons Inc.

Headword:
Determining the position of a user input on a touch surface using acoustic waves

Relevant legal provisions:
EPC Art. 56, 123(2)

Keyword:
Inventive step - after amendment

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Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0808/20 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 8 August 2022

Appellant: (Applicant)	Sentons Inc. Maples Corporate Services 309 Ugland House Grand Cayman 1-1104 (KY)
Representative:	Gill, David Alan WP Thompson 138 Fetter Lane London EC4A 1BT (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 19 November 2019 refusing European patent application No. 12777721.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair	A. Ritzka
Members:	P. Tabery
	E. Mille

Summary of Facts and Submissions

I. The appeal is directed against the examining division's decision to refuse the European patent application.

II. The examining division decided that the application did not meet the requirements of Articles 56 and 123(2) EPC.

III. The documents referred to by the examining division included:

D1 WO 2006/115947 A2

D9 WO 2006/131022 A1

IV. In its statement of grounds of appeal, the appellant requested that a patent be granted on the basis of the claims underlying the impugned decision.

V. The board issued a summons to oral proceedings. In its preliminary opinion on the case (Article 15(1) RPBA 2020), the board considered that the claims did not meet the requirements of Articles 56 and 84 EPC. On the other hand, the board was of the opinion that the requirements of Article 123(2) EPC were fulfilled.

VI. In a reply dated 6 July 2022, the appellant provided amendments and further arguments in favour of an inventive step.

VII. By notification dated 1 August 2022, the board informed the appellant that the oral proceedings had been cancelled.

VIII. **Claim 1** reads as follows:

"A system for determining a user input which consists of a disturbance of a propagating signal in a medium with a surface, the system comprising:

a communication interface (208) configured to send (402) a first signal to be used to propagate from a first transmitter (104), a first freely propagating signal through a propagating medium (102) having the surface, and configured to send (402) a second signal to be used to propagate from a second transmitter (106), a second freely propagating signal through the propagating medium (102), wherein the freely propagating signals have been allowed to freely propagate through the propagating medium (102) to have a first received signal and a second received signal, both including the first freely propagating signal and the second freely propagating signal that have been disturbed by the user input, be received at a plurality of sensors (112, 114, 116, 118) of the propagating medium (102);

a processor (206) coupled to the communication interface (208) and configured to process (406) the first received signal to at least in part determine the user input associated with the disturbance;

wherein the propagating signal is acoustic; and

wherein the transmitter (104) and sensor (112, 114, 116, 118) comprised in the communication interface (208) are coupled to the medium (102);

wherein determining the user input associated with the disturbance includes correlating with a first reference signal at least a portion of the first received signal including a first pseudorandom binary sequence content to determine (506) a first correlation result, the first reference signal includes the first pseudorandom binary sequence content and was determined using

information determined during calibration performed using a test signal propagated through the propagating medium, and correlating with a second reference signal at least a portion of the second received signal including a second pseudorandom binary sequence content different from the first pseudorandom binary sequence content to determine a second correlation result."

Independent **claim 14** is directed to a corresponding method.

Reasons for the Decision

1. The application concerns determining the position of a user input on a touch surface of a medium by detecting the disturbances caused to acoustic waves propagating through the medium by the user's contact.

2. Clarity (Article 84 EPC)

The board is satisfied that the amended claims fulfil the requirements of Article 84 EPC.

3. Added subject-matter (Article 123(2) EPC)

3.1 In the decision under appeal, the examining division held that, in claim 1, the combination of the features

> "*the first reference signal includes the first pseudorandom binary sequence content and was determined using information based a sensed signal of a calibration performed using a test signal propagated through the propagating medium*"

and

"*including a second pseudorandom binary sequence content different from the first pseudorandom binary sequence content*"

was not originally disclosed.

The appellant submitted that these features were disclosed in the description as published in paragraphs [0029] and [0032], respectively. Since paragraph [0032] referred back to the embodiment of Fig. 5, step 510 and paragraph [0029] belonged to that embodiment, the combination of the two features was indeed disclosed.

The board considers the appellant's arguments to be convincing. Step 510 uses the results of step 508, with the latter using a second reference signal. Hence, when reading paragraph [0032] in context with the passages it refers to and those relied on, the skilled reader is faced with the same information as contained in current claim 1. Therefore, the board holds that the application as originally filed discloses the combination of the two features in their current wording.

3.2 Furthermore, in the impugned decision, the examining division considered that the wording "*A system for determining a user indication which comprises a disturbance on a surface*" did not fulfil the requirements of Article 123(2) EPC.

The board notes that this formulation is not contained in the current wording of the claims. Amended claim 1 uses the formulation "*A system for determining a user input which consists of a disturbance of a propagating signal in a medium with a surface*" (differences underlined by the board). Hence, the board holds that the examining division's objection is not applicable to the current claims.

3.3 In view of the above, the board considers that the appellant's amendments and arguments overcome the objections pursuant to Article 123(2) EPC raised in the impugned decision.

4. Novelty (Article 54(1) EPC)

4.1 In the impugned decision, the examining division ignored the features it considered to constitute added subject-matter. It therefore held that document **D1** did not say anything about:

i) correlating with a second reference signal at least a second portion of the first received signal selected based on a first correlation result to determine a second correlation result

ii) the binary sequences to be correlated with being pseudorandom

4.2 Mostly following the examining division's analysis, the board holds that document **D1** discloses the following features of **claim 1** (the references in parentheses are to that document; strike-through is used to indicate features it does not disclose; while alternative features disclosed in it are underlined):

A system for determining a user input which consists of a disturbance of a propagating signal in a medium with a surface *(see abstract)*, the system comprising:

a communication interface configured to send a first signal to be used to propagate from a first transmitter *(sensor 130A, see Fig. 1)*, a first freely propagating signal through a propagating medium having the surface, and configured to send a second signal to be used to propagate from a second transmitter *(sensor 130B, see Fig. 1)*, a second freely propagating signal through the propagating medium, wherein the freely propagating

signals have been allowed to freely propagate through the propagating medium to have a first received signal and a second received signal, both including the first freely propagating signal and the second freely propagating signal that have been disturbed by the user input, be received at a plurality of sensors of the propagating medium;
(see page 10, lines 4-10 and page 12, lines 2-9)

a processor coupled to the communication interface and configured to process the first received signal to at least in part determine the user input associated with the disturbance *(see page 11, lines 2-9)*;

wherein the propagating signal is acoustic *(see page 19, lines 15-24)*; and

wherein the transmitter and sensor comprised in the communication interface are coupled to the medium *(see Fig. 1 and page 8, lines 20-30)*;

wherein determining the user input associated with the disturbance includes correlating with a first reference signal at least a portion of the first received signal ~~including a first pseudorandom binary sequence content~~ to determine a first correlation result, the first reference signal ~~includes the first pseudorandom binary sequence content and~~ was determined using information determined during calibration performed using a test signal propagated through the propagating medium, and correlating with a second reference signal at least a portion of the second received signal ~~including a second pseudorandom binary sequence content different from the first pseudorandom binary sequence content~~ to determine a second correlation result.
("one or more of the sensors 130 can be used ... to create vibrations that can be altered under a touch input", see page 10, lines 4-10)

4.3 Consequently, the board holds that the differences between the subject-matter of **claim 1** and document **D1** reside in that:

A) the first received signal includes a first pseudorandom binary sequence content

B) the second received signal includes a second pseudorandom binary sequence content different from the first pseudorandom binary sequence content

These differences were not disputed by the appellant.

5. Inventive step (Article 56 EPC)

5.1 In the impugned decision, the examining division held that the difference of "*the binary sequences to be correlated with being pseudorandom*" solved the problem of "*reducing a chance of error in correlation*". This was considered not to be inventive since document **D9** disclosed providing the same advantages. The skilled person would therefore have regarded it as a normal design option to include this feature in the system described in document **D1** to solve the problem posed.

5.2 The appellant argued that the distinguishing features achieved the technical effect of improving correlation performance and thus allowing to distinguish different signals propagated on the same medium. The appellant emphasised that document **D1** made no mention of propagating *ultrasonic* signals. In contrast, document **D9** related specifically to ultrasonic devices and was silent on the use of *acoustic* propagating signals. Therefore, the skilled person would not have combined documents **D1** and **D9**. Likewise, if the teachings in document **D9** were common general knowledge, the skilled person would not have combined the teaching of document

D1 and this common general knowledge. Therefore, the subject-matter of claim 1 involved an inventive step.

5.3 The board finds the arguments of the appellant to be convincing. Document **D9** discloses the use of pseudorandom binary sequences only in conjunction with supersonic frequencies. The skilled person is aware that acoustic and supersonic frequencies possess different properties, in particular when being subject to modulation. Thus, the board considers that when starting from the system disclosed in document **D1** which uses acoustic frequencies, the skilled person would not have applied the teaching of document **D9**. The skilled person might have realised that the system of document **D1** could be implemented using ultrasonic frequencies as well and might have combined such a modified system with the solution of document **D9**. However, the skilled person would have arrived at a solution using ultrasonic frequencies, whereas the claimed solution is limited to acoustic frequencies. The same considerations apply if the teaching of document **D9** is considered part of the skilled person's common knowledge.

Therefore, the board holds that the subject-matter of claim 1 is not rendered obvious by the prior art at hand.

The above reasoning applies *mutatis mutandis* to independent claim 14.

5.4 Therefore, the current claims fulfil the requirements of Article 56 EPC.

6. Consequently, the appeal is allowable.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The case is remitted to the examining division with the order to grant a patent in the following version:

Description, Pages:
3-10 as published
1, 2, 2a and 11 filed on 13 October 2015

Claims, Numbers: 1-16 filed on 6 July 2022

Drawings, Sheets: 1-6 as published

The Registrar: The Chair:

K. Götz-Wein A. Ritzka

Decision electronically authenticated