Notice of Opposition

Number of opposed patent: EP 3 858 221 B1

Patent proprietor: IR tech Srl, Via Caravaggio 117, 20124 Milano (IT)

Opponent: Fever S.E., Boltzmannplatz 84, 1090 Vienna

Grounds for opposition: Art. 100(a) novelty, inventive step, Art. 100(c) added subject matter

Extent of opposition: Claims 1 to 3 (for the first half)

The opposition fee has been paid online.

We hereby request oral proceedings if the Opposition Division intends to reduce the request.

Name of representative: Mrs Cool

Signature of the representative: //Mrs Cool//

Claim Objects

Claim 3 has preferable features. Therefore, claim 3 has different effective parts. These will be referred to herein as claims 3a, 3b and 3c.

Claim 3a recites "The IR thermometer system of claim 2, wherein the cold-mirror portion (39) comprises alternating layers of a first and a second polymer, wherein the difference in refractive index between the two polymers is equal to or greater than 0.086" (i.e. the non-optional parts of claim 3).

Claim 3b recites "The IR thermometer system of claim 2, wherein the cold-mirror portion (39) comprises alternating layers of a first and a second polymer, wherein the first polymer is polycarbonate and the second polymer is polyethylene". As disclosed in A1[27], this combination of materials results in a difference in refractive index of exactly 0.086. However, the refractive index itself is not disclosed separately from the specific materials. Therefore, it is the material that must be recited in the claim. The refractive index is implicit from the recitation of the specific materials.

Claim 3c recites "The IR thermometer system of claim 2, wherein the cold-mirror portion (39) comprises alternating layers of a first and a second polymer, wherein the first polymer is polycarbonate and the second polymer is polymethyl methacrylate". As disclosed in A1[27], this combination of materials results in a difference in refractive index of exactly 0.096. However, the refractive index itself is not disclosed separately from the specific materials. Therefore, it is the material that must be recited in the claim. The refractive index is

implicit from the recitation of the specific materials.

Effective Dates of the Claims

A1 claims priority to IT20200017018 (referred to herein as P1). A1 was filed (15.01.21) within the 12 month priority period (15.01.20 + 12m --> 15.01.21), by the same applicant.

Claims 1 and 2 were present in the priority document. This was the first application filed by the proprietor in respect of this subject matter. Therefore, the effective date of claims 1 and 2 is the priority date (15.01.20).

Claim 3a adds matter over the application as filed. Therefore, it does not have an effective date. This will be discussed in more detail below.

Claims 3b and 3c find basis in A1[27]. This paragraph was present in the priority document. This was the first application filed by the proprietor in respect of this subject matter. Therefore, the effective date of claims 3b and 3c is the priority date (15.01.20).

Usability of the Documents

A2 is a US patent application that was published (21.11.13) before the effective date (15.01.20) of claims 1, 2, 3b and 3c. Therefore, A2 is prior art under Art. 54(2) EPC for each of claims 1, 2, 3b and 3c.

A3 is a patent application that was published (15.07.16) before the effective date (15.01.20) of claims 1, 2, 3b and 3c. Therefore, A3 is prior art under Art. 54(2) EPC for each of claims 1, 2, 3b and 3c.

A4 is identical to its priority document. Therefore, A4 validly claims priority and its effective date is 08.07.19. A4 is a European patent application that was filed before (08.07.19) and published after (07.01.21) the effective date (15.01.20) of claims 1, 2, 3b and 3c. Therefore, A4 is prior art under Art. 54(3) EPC for each of claims 1, 2, 3b and 3c.

A5 is a patent application that was published (28.02.19) before the effective date (15.01.20) of claims 1, 2, 3b and 3c. Therefore, A5 is prior art under Art. 54(2) EPC for each of claims 1, 2, 3b

and 3c.

Claim 1 lacks novelty over A4, contrary to Art. 54(3) EPC

A4 discloses:

IR radiation thermometer system for determining the core temperature of a patient, comprising:

("a thermometer that measures the body temperature of a target person by determining the radiation emitted from the eardrum.", A4[1]

"an infrared sensor SN for measuring the temperature of the eardrum 250", A4[6]);

a thermometer main body (10)

("a probe body 20", A4[6]

"a main body with a probe which is shaped such that it can be inserted into the ear canal for measurement of the eardrum temperature", A1[12]);

and a cover (30) which can be releasably attached to the thermometer main body (10),

("an exchangeable in- ear type earpiece 12 attached to the probe body 20. The earpiece 12 prevents contact between the probe body 20 and the inner walls of the ear canal 201", A4[6]

"a cover which can be releasably attached to the main body", A1[12]

exchangeable means that it can be releasably attached

The earpiece is a cover because it can be releasably attached to the main body);

the thermometer main body comprising:
an IR sensor (22);

("a probe PB including an infrared sensor SN", A4[6]

It can be seen in Figure 1 that the sensor SN is part of the probe body 20 (i.e. the main body of claim 1));

a probe portion (20) including a light-guiding element having two ends, wherein the light-guiding element is shaped to guide the IR radiation collected from the patient to the IR sensor (22) placed at the end most distant from the patient; and

("IR radiation from the eardrum 250 enters the top portion of the tubular portion 150

and is guided to the sensor SN, which generates an electrical signal. As shown in Fig. 2, arranging the sensor at the base end of tubular portion 150...", A4[8]

The tubular positon is a probe portion because it has the same structure and purpose);

a processor for calculating a temperature from the sensor signal,

("a controller 500, which calculates the body temperature from the electrical sensor signal", A4[9]

A controller is a type of processor. Furthermore, it has the same purpose and performs the same functions);

wherein the thermometer system provides at least two different operating modes,

("In addition, the thermometer may optionally comprise a sound output device 400 such as a speake... To activate the speaker feature, the user presses the mechanical push-button 14, which deactivates the temperature measurement and enables listening", A4[12]

The second mode is a sound output mode using the speaker feature);

the first operating mode being adapted to sense the radiation emitted from the eardrum,

("For the temperature sensing operation, the probe is inserted into the ear canal 201. IR radiation from the eardrum 250 enters the top portion of the tubular portion 150 and is guided to the sensor SN, which generates an electrical signal", A4[8]

The temperature sensing operation is the first operating mode);

the thermometer system further comprising electronic means (17) for compensating for the influence of environmental effects,

("The app further comprises an in-ear measurement software module allowing read-out of the sensor signal during the process of inserting the ear plug into the ear canal. Using the read-out result, a background signal level can be determined. Sending this background signal level to controller 500 and subtracting it during the actual temperature calculation finalises the temperature sensing operation. This achieves an effective suppression of the systematic measurement errors of radiation from the ear canal walls", A4[10]

A software module using a sensor signal is electronic means);

and a display (15) for displaying the core temperature.

("the controller comprises a Bluetooth module allowing the thermometer to be connected to an external mobile device such as a smartphone. Using an appropriate app on the smartphone, the
temperature determined can be displayed to the user", A4[9]

Therefore, the in-ear piece and the smartphone together form a thermometer system including a display for displaying the temperature).

Therefore, claim 1 lacks novelty contrary to Art. 54(3) EPC.

Claim 1 lacks inventive step over A3 and A5, contrary to Art. 56 EPC

A3 is the closest prior art because it is directed to the same purpose as claim 1, namely to provide "a thermometer for body temperature measurement", A3[1]. Furthermore, it is the only available Art. 54(2) EPC prior art document to disclose a removable cover. Therefore, it shares the most technical features in common with claim 1.

A3 discloses:

IR radiation thermometer system for determining the core temperature of a patient, comprising:

("Sanitising IR thermometer", A3 title);

a thermometer main body (10)

("handpiece 101", A3[6]

"a handpiece 101 and measures body temperature through a probe
portion 130, which, when inserted into the ear canal, detects infrared rays from the eardrum", A3[6]

"a main body with a probe which is shaped such that it can be inserted into the ear canal for measurement of the eardrum temperature", A1[12]);

and a cover (30) which can be releasably attached to
the thermometer main body (10),

("a probe cover 200 is provided.... When the probe cover 200 is coupled to the handpiece 101 via a ring-shaped snap joint..", A3[6]

"a cover which can be releasably attached to the main body", A1[12]

"the cover 30 is attached

15 to the main body 10 using a releasable snap-fit connection", A1[24]);

the thermometer main body comprising:
an IR sensor (22);

("The handpiece 101 includes... an infrared sensor module 140", A3[9]);

a probe portion (20) including a light-guiding element having two ends, wherein the light-guiding element is shaped to guide the IR radiation collected from the patient to the IR sensor (22) placed at the end most distant from the patient; and

("The infrared sensor module 140 is positioned
at the proximal end of a recess 145 in probe portion 130... The recess 145 is dimensioned to limit the angle of view such that only radiation from the eardrum is detected", A3[9]

The recess is a probe portion because it has the same structure and purpose);

a processor for calculating a temperature from the sensor signal,

("The handpiece 101 includes ... a control unit 150", A3[9]

"For body temperature measurement, the control unit 150 receives a signal from the sensor module 140 and processes this signal", A3[12]

A control unit is a type of processor. Furthermore, it has the same purpose and performs the same functions.);

wherein the thermometer system provides at least two different operating modes,

(In the second embodiment:

"detaching the plug from the probe cover
200, allows the passage of infrared light and thereby enables forehead temperature measurements", A3[16]

Therefore, the second mode is when the cover is on and the plug is removed from the probe cover, which enables measurement of forehead temperature);

the first operating mode being adapted to sense the radiation emitted from the eardrum,

("The infrared sensor module 140 is positioned
at the proximal end of a recess 145 in probe portion 130... The recess 145 is dimensioned to limit the angle of view such that only radiation from the eardrum is detected", A3[9]

"The handpiece 101 includes ... a control unit 150", A3[9]

"For body temperature measurement, the control unit 150 receives a signal from

the sensor module 140 and processes this signal", A3[12]);

and a display (15) for displaying the core temperature.

("The numerical value of the
calculated temperature is displayed on the monochrome, numerical-only display 180", A3[12]

"display which can be integrated directly into the
15 handpiece 101 during manufacture such that it forms an integral portion of a watertight and shock-resistant handpiece structure, A3[12]).

Therefore, A3 differs from claim 1 in that A3 fails to disclose that the thermometer system further comprising electronic means (17) for compensating for the influence of environmental effects.

The technical effect of this feature is that, in forehead measurement mode (i.e. the second mode of the second embodiment of A3), this ensures a measurement with usable reliability A1[8].

Therefore, the objective technical problem is how to improve the reliability of the measurement.

A5 is directed towards "a body temperature measuring device that can
be used in different measurement modes", A5[1]. Therefore, it is directed to the same purpose as claim 1 and A3, so it would have been read together. Furthermore, it shares many technical features in common with A3.

A5 discloses that "an ambient temperature sensor 15 is connected to control circuit
26 and mode selector switch 27. The control circuit determines the body temperature of the patient from the IR radiation sensor signal and the ambient temperature signal, thereby ensuring reliable measurements under all ambient temperature conditions", A5[7]

Therefore, A5 teaches that using an ambient temperature sensor to compensate for the influence of environmental effects (i.e. the ambient temperature), provides a solution to the objective technical problem, by ensuring reliable measurements. Therefore, the skilled person would be motivated to modify the disclosure of A3 by including the ambient temperature sensor of A5.

Furthermore, the skilled person would face no difficulty in doing so. The thermometers of A3 and A5 are very similar in terms of their structural features. In particular, the ambient temperature sensor of A5 is connected to a control circuit. The control circuit of A3 is configured to carry out "Conventional algorithms and procedures ... used to obtain a body temperature", A3[12]. Therefore, the skilled person would attempt the modification with a reasonable expectation of success.

Therefore, the skilled person would arrive at the claimed invention without exercising inventive skill. Therefore, claim 1 lacks inventive step over A3 and A5, contrary to Art. 123(2) EPC.

Claim 2 lacks invenitve step over A3 and A5 and A3 and A2, according to the partial problems approach and Art. 56 EPC

Claim 2 is dependent upon claim 1.

Therefore, A3 is the closest prior art for the same reasons as set out above.

In addition to the features set out above, A3 additionally discloses:

The IR thermometer system of claim 1

(as set out above);

further comprising a sterilisation system,

("Either the handpiece 101 or the probe cover 200 comprises a sanitisation unit 230 for emitting UV light", A3[7]);

the sterilisation system comprising a UV light source (26) and a UV-reflecting coating (38) on the inside of the cover (30),

("The sanitisation unit 230 is located so that the ultraviolet light is emitted into the coupling space 300. The inner surface 220 of the probe cover may include a reflector layer for reflecting ultraviolet light emitted by the sanitisation unit", A3[7]

"A second embodiment not shown in the figures differs from the first embodiment in that an additional recess is provided in the surface of probe portion 130, and instead of mounting the sanitisation unit 230 in the probe cover's front surface 202, it is mounted within the additional recess. The position of the recess is such that UV light

5 emitted from the sanitisation unit 230 reaches the entire surface of probe portion 130 via reflection by the coating 220 provided on the inner surface of the probe cover 200", A3[15]

These features are disclosed in relation to the second embodiment (i.e. the same embodiment as discussed above in relation to claim 1));

Therefore, claim 2 differs from A3 in that A3 fails to disclose that:

(i) the thermometer system further comprising electronic means (17) for compensating for the influence of environmental effects; and

(ii) the coating comprises a cold-mirror portion (39) to enable passage of IR light during forehead temperature measurement.Instead, the second embodiment of A3 has "a removable polymeric
plug that does not transmit UV light. Further, detaching the plug from the probe cover 200, allows the passage of infrared light and thereby enables forehead temperature measurements", A3[16].

The technical effect of difference (i) is that in forehead measurement mode (i.e. the second mode of the second embodiment of A3), this ensures a measurement with usable reliability A1[8].

The technical effect of difference (ii) is that the cold-mirror coating permits the passage of IR light while reflecting UV light. This allows the same cover to be used for sterilisation and in 10 forehead measurement mode, A1[26].

These two differences are not synergistically linked, because the reliability of the measurement is not related to the ease of use of the cover. Therefore, the partial problems approach may be used - GL G-VII 5.2, 6, 7.

In respect of difference (i), the same comments as claim 1 apply.

In respect of difference (ii), the objective technical problem is how to ensure that IR light is transmitted while UV light is reflected.

A2 is directed towards "ultraviolet cold mirrors", A2 title, which is a different technical field to claim 2 and A3. However, A2 teaches that cold mirrors can be used in many applications - "Such applications include projection systems and photocopiers as well as surgical and dental lighting, illumination systems and measuring instruments", A2[2]. Therefore, A2 would have

been read together with A3.

A2 teaches that "Ultraviolet cold mirrors are coatings that efficiently reflect ultraviolet light and
allow visible and infrared light to pass through", A2[1]. "They can be used in applications where separation of UV light from the visible 15 light and IR light is desired. ... In particular, they provide a solution whenever light sources emit UV radiation, which can be harmful to objects or persons, and it is necessary to prevent the leakage of this UV light. At the same time, openings in the respective housings allowing 20 transmission of IR light", A2[2].

Therefore, A2 teaches that a cold mirror coating provides a solution to the objective technical problem. Therefore, the skilled person would be motivated to replace the removable polymeric plug of A3 with a cold mirror coating of A2.

Furthermore, the skilled person would not face any technical difficulties in doing so. A2[8] teaches that "The resulting sheet material may be used as self-supporting sheet or laminated to polymeric or non-polymeric substrates". The skilled person would understand that the cold mirror coating could be used on the probe cover of A3. Therefore, the skilled person would attempt the modificiation with a reasonable expectation of success.

Therefore, the second objective technical problem is solved in an obvious manner.

As both the first and second objective technical problems are solved in an obvious manner, the claim 2 lacks inventive step over A3 and A5 and A3 and A2, using the partial problems approach, contrary to Art. 56 EPC.

Claim 3a adds matter over the application as filed, contrary to Art. 123(2) EPC

Claim 3 was not present in the priority document or the application as filed. The only basis for the features of claim 3 is found in A1[27]. Claim 3 is an impermissible intermediate generalisation of the disclosure of A1[27] - GL H-V 3.2.1

A1[27] discloses the specific values of a difference in refractive index of 0.086 and 0.096, but these features are inextricably linked to the specific materials disclosed. There is no suggestion that these differences in refractive index could be obtained using other materials. Claim 3a does not recite these specific materials. Therefore, claim 3a extends beyond the

content of the application as filed. - Gl H-V 3.2.1

Furthermore, claim 3a recites an open-ended range of "equal to or greater than 0.086". Such a broad range is not justified by the disclosure of two specific values of 0.086 and 0.096. there is no direct and unambiuous basis for such a broad range - G 2/10. Therefore, claim 3a also adds matter over the application as filed for this reason.

Claim 3b lacks inventive step over A3 and A5, A3 and A2 and A3, according to the partial problems approach, contrary to Art. 56 EPC.

Claim 3b is dependent on claim 2, which is dependent upon claim 1.

Therefore, A3 is the closest prior art for the same reasons as set out above.

In addition to the features set out above, A3 fails to disclose the additional features of claim 3b.

Therefore, claim 3b differs from A3 in that A3 fails to disclose:

(i) the thermometer system further comprising electronic means (17) for compensating for the influence of environmental effects; and

(ii) the coating comprises a cold-mirror portion (39) to enable passage of IR light during forehead temperature measurement.Instead, the second embodiment of A3 has "a removable polymeric
plug that does not transmit UV light. Further, detaching the plug from the probe cover 200, allows the passage of infrared light and thereby enables forehead temperature measurements", A3[16]; and

(iii) wherein the cold-mirror portion (39) comprises alternating layers of a first and a second polymer, wherein the first polymer is polycarbonate and the second polymer is polyethylene.

The technical effect of difference (i) is that in forehead measurement mode (i.e. the second mode of the second embodiment of A3), this ensures a measurement with usable reliability A1[8].

The technical effect of difference (ii) is that the cold-mirror coating permits the passage of IR light while reflecting UV light. This allows the same cover to be used for sterilisation and in

10 forehead measurement mode, A1[26].

The effect of difference (iii) is that the a cold mirror with different polymer layers is more cost-effective. The particular materials are a "favourable option", A1[27]. Although these features are technical, there is no technical effect associated with this difference.

These three differences are not synergistically linked, because the reliability of the measurement is not related to the ease of use of the cover. Therefore, the partial problems approach may be used - GL G-VII 5.2, 6, 7.

In respect of difference (i), the same comments as claim 1 apply.

In respect of difference (ii), the same comments as claim 2 apply.

In respect of difference (iii), there is no technical effect so there is also no objective technical problem.

The skilled person has already looked to A2 in respect of difference (ii).

A2 discloses that "In contrast to the prior art, the present invention provides an all-polymeric cold
mirror with a UV-reflecting and IR-transmitting function, comprising alternating layers of
30 two polymers, each having a different optical refractive index", A2[4]. A2 further discloses that "This cold mirror is superior in several aspects. First, the deposition of polymer layers does not require a vacuum, and thus the mirror can be produced at a lower cost", A2[5]. Therefore, the skilled person would be motivated to select a polymer coating including two polymers.

Furthermore, the skilled person would freely select any of the compositions disclosed by A2. Claim 2 of A2 discloses that "the first polymeric material is selected from a group comprising polystyrene and polycarbonate and the second polymeric material is selected from a group comprising polymethyl methacrylate and polyethylene". These two lists are not of "a particular length", so this is not a selection from two lists. Therefore, the selection of he first polymer as polycarbonate and the second polymer as polyethylene is a non-inventive selection. - GL G-VI 7(ii)

Therefore, the skilled person would select a two-polymer coating having the specific materials recited in claim 3a without inventive skill.

As both the first and second objective technical problems are solved in an obvious manner, and the third difference does not lead to a technical effect, claim 3a lacks inventive step over A3 and A5 and A3 and A2, using the partial problems approach, contrary to Art. 56 EPC.

Claim 3c lacks inventive step over A3 and A5, A3 and A2 and A3, according to the partial problems approach, contrary to Art. 56 EPC.

Claim 3c differs from claim 3b only in the choices of the material. As set out above, the skilled person would freely choose any of the materials disclosed in A2. A2 discloses that the first polymer is polycarbonate and the second polymer is polymethyl methacrylate - A2 claim 2.

Therefore, for the same reasons as set out above in relation to claim 3b, claim 3c lacks inventive step over A3 and A5 and A3 and A2, using the partial problems approach, contrary to Art. 56 EPC.

Addition to the Notice of Opposition

Grounds of opposition: Art. 100(a) inventive step, Art. 100(c) added subject matter

Extent of the opposition: claims 4-7

Name of representative: Mrs Cool

Signature of the representative: //Mrs Cool//

Effective Dates of the Claims

A1 claims priority to IT20200017018 (referred to herein as P1). A1 was filed (15.01.21) within the 12 month priority period of P1 (15.01.20 + 12m --> 15.01.21) by the same applicant.

Claims 4 and 6 were present in the priority document. This was the first application filed by the applicant in respect of this subject matter. Therefore, the effective date of claims 4 and 6 is the priority date (15.01.20).

Claim 5 and corresponding paragraph [30] were not present in the priority document. There was no other disclosure of a remote device in the priority document. Therefore, claim 5 is not entitled to priority. However, claim 5 and paragraph [30] were present on filing of A1. Therefore, the effective date of claim 5 is the filing date of A1, 15.01.21.

Part of claim 7 was present in the priority document. This was the first application filed by the applicant in respect of this subject matter. However, claim 7 was amended during examination of the application. In addition to the features disclosed in the priority document, claim 7 was amended to recite "wherein the switching between the first and second operating mode does not involve mechanical actuation of a push-button".

The newly introduced feature was not disclosed in the application as filed. However, A4 is prior art under Art. 54(3) EPC for claim 7 as originally filed (for the same reasons as claims 4 and 6 as set out below). Therefore, the applicant may have used an undisclosed disclaimer to delimit the claim against A4, because A4 discloses that "To activate the speaker feature, the user presses the mechanical push-button 14, which deactivates the temperature measurement and enables listening", A4[12].- GL H-V 4.2.1

An undisclosed disclaimer is, in particular, not allowable if:

(i) it is made in order to exclude non-working embodiments or remedy insufficient disclosure;

(ii) it makes a technical contribution.

(iii) the limitation is relevant for assessing inventive step;

(iv) the disclaimer, which would otherwise be allowable on the basis of a conflicting application alone (Art. 54(3)), renders the invention novel or inventive over a separate prior art document under Art. 54(2), which is a not accidental anticipation of the claimed invention;

(v) the disclaimer based on a conflicting application also serves another purpose, e.g. it removes a deficiency under Art. 83.

- GL H-V 4.2.1

As these tests relate to the prior art, this will be discussed further in relation to the novelty/ inventive step of claim 7.

Usability of the Documents

A2 is a patent application published (21.11.13) before the effective dates (15.01.20, 15.01.21) of all of the claims. Therefore, A2 is prior art under Art. 54(2) EPC for all of the claims with an effective date (claims 4, 5 and 6).

A3 is a patent application published (15.07.16) before the effective dates (15.01.20, 15.01.21) of all of the claims. Therefore, A3 is prior art under Art. 54(2) EPC for all of the claims with an effective date (claims 4, 5 and 6).

A4 is a European patent application filed before (08.07.19) and published after (07.01.21) the effective dates (15.01.20) of the claims validly claiming priority. Therefore, A4 is prior art under Art. 54(3) EPC for claims 4 and 6.

A4 is a patent application published (07.01.21)before the effective dates (15.01.21) of the claims not entitled to claim priority. Therefore, A4 is prior art under Art. 54(2) EPC for claim 5.

A5 is a patent application published (28.02.19) before the effective dates (15.01.20, 15.01.21) of all of the claims. Therefore, A5 is prior art under Art. 54(2) EPC for all of the claims with an effective date (claims 4, 5 and 6).

A6 is a screenshot of a video review of the EARIX 3.2 thermometer. The video was published (i.e. made available to the public) on 28.02.21, after the effective dates (15.01.20, 15.01.21) of

all of the claims. Therefore, the video itself is not prior art for any of the claims.

However, A6 provides evidence of prior use. The video description and the comments both discuss the disclosures of the manual (A6, page 2, lines 13-15 and A6, page 3, lines 5 and 6). A manual is a written disclosure. Furthermore, a comment on the post provides evidence of the sale of the device "four years ago", wherein the sale of the device included the manual (A6, page 3, lines 5 and 6).

An unconditional sale provides a member of the public with unlimited possession of any knowledge which may be obtained from the object - GL G-IV 7.2.1. Therefore, disclosure of the EARIX 3.2 thermometer per se was made "four years ago", before the effective dates (15.01.20, 15.01.21) of all of the claims. Therefore, the EARIX 3.2 thermometer per se is prior art under Art. 54(2) EPC for all of the claims with an effective date (claims 4, 5 and 6).

Furthermore, it was also possible from that date for the public to gain access to the written description provided in the manual (T 381/87). This is also before the effective dates (15.01.20, 15.01.21) of all of the claims. Therefore, the manual for the EARIX 3.2 thermometer is prior art under Art. 54(2) EPC for all of the claims with an effective date (claims 4, 5 and 6).

The Opponent is willing to provide further evidence of this prior use if required (e.g. by a witness testimony).

Claim 4 lacks inventive step over A5 and the prior use disclosed in A6, contrary to Art. 56 EPC

A5 is the closest prior art because it is directed to the same purpose as claim 4, namely a method of determining whether a body condition of a patient (whether a temperature falls within a normal range - A5[14]). As will be shown below, it is the only available prior art that discloses the structural features of the device in combination with a determination of whether the measured temperature ralls within a range. Therefore, it appears to be the most promising starting point for an inventive step analysis.

A5 discloses:

Method of determining a body condition of a patient,

("The present invention relates to a body temperature measuring device that can be used in different measurement modes", A5[1]

As set out below, the method of using this device results in a determination of whether the

body temperature is above or below a threshold normal temperature. This is a body condition of a patient - "body condition, i.e. the grade of severity of the fever", A1[28]);

by obtaining an IR sensor signal using a thermometer system having a thermometer main body (10) and an IR sensor (22),

("the thermometer 10 comprises a housing 12, including a probe 14 configured to be inserted into a body cavity, such as the ear canal of a patient", A5[5]

The housing is a main body - "main body with a probe", A1[12]

"The thermometer includes an IR sensor 16", A5[6]);

and using a processor to perform the following steps:
- compensating in the IR signal for the influence of environmental effects,

("The IR sensor 16 passes its signal to control circuit 26", A5[6]

"an ambient temperature sensor 15 is connected to control circuit 26", A5[7]

"The control circuit determines the body temperature of the patient from the IR radiation sensor signal and the ambient temperature signal, thereby ensuring reliable measurements under all ambient temperature conditions.", A5[7]

A control circuit is a type of processor);

- calculating a temperature value for a patient from the sensor signal,

("The control circuit determines the body temperature of the patient from the IR radiation sensor signal and the ambient temperature signal", A5[7]);

- assigning the measured temperature value to one of three distinct temperature ranges,

("This speaker allows an alarm to sound in all measurement modes when the calculated body temperature exceeds the critical threshold of 37.5 C or 99.5 F, thereby directing the user's attention to a potentially critical patient temperature 5 level", A5[14]

This implies that the measured temperature valus is assigned to one of two ranges - above or below 37.5 C

Therefore, A5 discloses part of this subject matter);

wherein the first temperature range corresponds to a normal body condition, the third temperature range corresponds to an alarming body condition requiring medical attention

("This speaker allows an alarm to sound in all measurement modes
when the calculated body temperature exceeds the critical threshold of 37.5 C or
99.5 F, thereby directing the user's attention to a potentially critical patient temperature
5 level", A5[14]

This implies that a temperature above 37.5 C corresponds to an alarming body condition requiring medical attention (i.e. temperatures above 37.5 C correspond to the third temperature range of claim 1)

Furthermore, the fact that the alarm does not sound for temperatures below 37.5 C implies that this is a normal body condition (i.e. temperatures below 37.5 C correspond to the first temperature range of claim 1));

wherein the method further comprises displaying the temperature value and indicating the corresponding body condition using indicator means provided in the thermometer system.

("In all measurement modes the calculated body temperature is shown on the
display 64", A5[2]

The temperature is displayed.

"This speaker allows an alarm to sound in all measurement modes
when the calculated body temperature exceeds the critical threshold of 37.5 C or
99.5 F, thereby directing the user's attention to a potentially critical patient temperature
5 level", A5[14]

The speaker indicates the body condition (i.e. above or below the threshold of 37.5 C corresponding to a normal/abnormal temperature)).

Therefore, claim 4 differs from A5 in that A5 fails to disclose assigning the measured temperature value to one of three distinct temperature ranges (A3 only discloses one threshold, giving two ranges), wherein the second temperature range is between the first and third temperature range and corresponds to an elevated temperature body condition.

The technical effect of this difference is that using three ranges alows the system to detemine the body condition, i.e. the grade of severity of the fever, in greater detail (A1[28]).

Therefore, the objective technical problem is how to increase the precision of the determination.

The prior use disclosed in A6 (the device and the manual) is in the same technical field as claim 1, namely a method of determining whether a temperature falls within a normal range -

A6, page 2, lines 13-15.

The prior use disclosed in A6 includes the features of "The thermometer not only displays the temperature reading numerically, it also uses letter codes to indicate normal, elevated and critical
10 body temperature. ... boundaries separating the normal, elevated and critical body temperature ranges", A6, page 2, lines 8-12. Therefore, A6 discloses three distinct temperature ranges, as required by claim 1. The second temperature range is an elevated temperature range, as required by claim 1.

It would be obvious to the skilled person that using a greater number of ranges would increase the precision of the determination. Therefore, the skilled person would be motivated to modify the disclosure of A5 to include an "elevated" temperature range, as disclosed in the prior use of A6.

Furthermore, the skilled person would have no difficulty doing so. The control unit of A5 is already adapted to perform a comparision of the measured temperature to a threshold value. The addition of a further comparison would not require any modification of the system of A5. Therefore, the skilled person would perform the modification with a reasonable expectation of success.

Therefore, the skilled person would have arrived the invention of claim 4 in an obvious manner. Therefore, claim 4 lacks inventive step over A5 and the prior use disclosed in A6, contrary to Art. 56 EPC.

Claim 5 lacks inventive step over A4 in combination with the prior use of A6, contrary to Art. 56 EPC

Claim 5 contains both technical and non-technical features. Therefore, the COMVIK approach will be used herein - GL G-VII 5.4, T 641/00, G 1/91

All of the features contribute to the technical character of the invention apart from that "the determined body condition is indicated by displaying different colours, each associated with one of the three distinct temperature ranges". This feature is non-technical because it is a presention of information under Art. 52(2)(d) EPC. Features defining a visualisation of information in a particular diagram or layout are not normally considered to make a technical contribution - GL G-II 3.7. In this case, the choice to display the information using colour

instead of other equivalent means for displaying the same information does not have a technical effect.

A4 is a suitable starting point for an inventive step analysis because it is directed to the same purpose as claim 5, namely providing a "a thermometer that measures the body temperature of a target person", A4[1] and displaying that information to a user A4[9]. It is the only available prior art document that discloses a remote display device.

(A5 (the closest prior art for claim 4) cannot be adapted to be paired with a remote display device because "The housing 12 is internally metalized to shield any radio interference between surrounding wireless devices and the control circuit 26", A5[6])/

A4 discloses:

Method of determining a body condition of a patient, by obtaining an IR sensor signal using a thermometer system

("The present invention relates to a thermometer that measures the body temperature of a target person by determining the radiation emitted from the eardrum", A4[1]

"infrared sensor SN for measuring the temperature of the eardrum 250", A4[6]);

having a thermometer main body (10)

("a probe body 20 to be inserted into the ear canal 201, a housing 10 supporting the probe body 20", A4[6]

The housing is a main body - "main body with a probe", A1[12]);

and an IR sensor (22)

("A sensor SN sensitive to IR radiation is located at the base end of the probe body 20", A4[7]);

and using a processor to perform the following steps:
- compensating in the IR signal for the influence of environmental effects,

("The app further comprises an in-ear measurement software module allowing read-out of the sensor signal during the process of inserting the ear plug into the ear canal. Using the read-out result, a background signal level can be determined. Sending this background signal level to controller 500 and subtracting it during the actual 5 temperature calculation finalises the temperature sensing operation", A4[10]);

- calculating a temperature value for a patient from the sensor signal,

("The housing further comprises a controller 500, which calculates the body temperature from the electrical sensor signal", A4[9]);

wherein the method further comprises displaying the temperature value

("the controller comprises a Bluetooth module allowing the thermometer to be connected to an external mobile 25 device such as a smartphone. Using an appropriate app on the smartphone, the temperature determined can be displayed to the user", A4[9]

Therefore, the device of A4 display the temperature but does not indicate a corresponding body condition (as it has not been determined));

wherein the measured temperature is displayed on a remote device distinct from the thermometer main body (10)

("the controller comprises a Bluetooth module allowing the thermometer to be connected to an external mobile 25 device such as a smartphone. Using an appropriate app on the smartphone, the temperature determined can be displayed to the user", A4[9]

Therefore, the device of A4 display the temperature on a remote device but does not indicate a corresponding body condition on said device (as it has not been determined)).

Furthermore, A4 discloses that:
"The display and processing of the temperature on a device external to the 10 thermometer enables the provision of customisation options, for example with respect to colour, font size, etc" - A4[11]

Therefore, the display device of A4 is suitable for displaying the body condition using different colours, even though such a choice is non-technical.

Therefore, claim 5 differs from A4 in that A4 fails to disclose:

(i) using a processor to assign the measured temperature value to one of three distinct temperature ranges wherein the first temperature range corresponds to a normal body condition, the third temperature range corresponds to an alarming body condition requiring medical attention and the second temperature range is between the first and third temperature range and corresponds to an elevated temperature body condition

(ii) wherein the method further comprises indicating the corresponding body condition using indicator means provided in the thermometer system, wherein the determined body condition is displayed on a remote device distinct from the thermometer main body

(iii) the determined body condition is indicated by displaying different colours, each associated with one of the three distinct temperature ranges

The technical effect of difference (i) is that mapping the determined temperature to one of three different temperature ranges alows the system to detemine the body condition, i.e. the grade of severity of the fever, in greater detail (A1[28]).

The technical effect of difference (ii) is to indicate the severity of the fever to a user (A1[28]) and indicate whether or not a medical condition requiring treatment or medical advice is present (A1[11]).

Difference (iii) does not have a technical effect. As the device of A4 is suitable for displaying information in colour, this feature could be part of the information "given" to the skilled person.

These two technical effects are not synergistically linked. The body condition being determined in greater detail is not related to indicating the severity of the fever to a user. Therefore, the partial problems approach may be used - GL G-VII, 5.2, 6 and 7

Difference (i)

The objective technical problem is how to increase the precision of the determination.

The prior use disclosed in A6 (the device and the manual) is in the same technical field as claim 1, namely a method of determining whether a temperature falls within a normal range - A6, page 2, lines 13-15.

The prior use disclosed in A6 includes the features of "The thermometer not only displays the temperature reading numerically, it also uses letter codes to indicate normal, elevated and critical
10 body temperature. ... boundaries separating the normal, elevated and critical body temperature ranges", A6, page 2, lines 8-12. Therefore, A6 discloses three distinct temperature ranges, as required by claim 1. The first, second and third temperature ranges correspond to a the three body conditions required by claim 1.

It would be obvious to the skilled person that using a greater number of ranges would increase the precision of the determination. Therefore, the skilled person would be motivated

to modify the disclosure of A4 to determine the three body conditions by determing which the temperature range the measured temperature falls into, as disclosed in the prior use of A6.

Furthermore, the skilled person would have no difficulty doing so. The A4[11] discloses that "advanced processing of the measurement signal can be implemented". Therefore, performing this step would not require any modification of the system of A4. Therefore, the skilled person would perform the modification with a reasonable expectation of success.

Hence, the first objective technical problem is solved in an obvious manner.

Difference (ii)

The objective technical problem is how to display the information to a user.

A4 discloses that "The app can also comprise a body temperature monitoring software displaying a status of the patient" - A4[11]

The temperature is already displayed using the remote display of A4. Therefore, the skilled person would also display the body condition without using inventive skill, as it is also an output of the system.

Furthermore, the skilled person would have already looked to the prior use of A6 to solve the first problem. It can be seen in the figures of the product that the three body conditions are indicated using 'N', 'E', 'F' - A6, page 2 figures. As set out above, the choice to display these in colour instead of using letters is non-technical. The manual also explains that the device is "self-explanatory and thus suitable for all users", A6 page 2 , ine 13-15. Therefore, the prior use manual A6 provides a solution to the objective technical problem. Therefore, the skilled person would be motivated to implement this change.

There would be no technical barrier to doing so because A4 discloses that "The display and processing of the temperature on a device external to the 10 thermometer enables the provision of customisation options, for example with respect to colour, font size, etc" - A4[11]. Therefore, no modification would be required to the device of A4.

Therefore, the first objective technical problem and the second objective technical problem

are solved in an obvious manner. Therefore, claim 5 lacks an inventive step over A5 and the prior use disclosed in A6, contraru to Art. 56 EPC.

Claim 6 lacks inventive step over A5 and the prior use disclosed in A6, contrary to Art. 56 EPC

Claim 6 is dependent on claim 4. For the same reasons as set out above, A5 is the closest prior art.

A5 discloses:

The method of claim 4

(as set out above)

further comprising receiving and storing in a non-volatile manner an input corresponding to the age of the patient

("The touch display allows the user to change from Celsius to Fahrenheit and further enables the input of the patient’s name and age. The measured temperature value can be stored together with the patient’s personal data in a non-volatile storage integrated in the control circuit", A5[13]).

Therefore, claim 6 differs from A5 in that A5 fails to disclose:

(i) assigning the measured temperature value to one of three distinct temperature ranges (A3 only discloses one threshold, giving two ranges), wherein the second temperature range is between the first and third temperature range and corresponds to an elevated temperature body condition; and

(ii) determining thresholds separating the first, second and third temperature ranges based on the age input.

The technical effect of difference (i) is that using three ranges alows the system to detemine the body condition, i.e. the grade of severity of the fever, in greater detail (A1[28]).

The technical effect of difference (ii) is that taking into account the patient's age ensures a more reliable use of the thermometer system (by a user), because the same temperature may correspond to a critical fever in a newborn, but a non-critical elevated temperture in an older child. Therefore, the user is not required to know the thresholds for different ages in order to understand the output of the device (A1[11]).

These two technical effects are not synergistically linked. The body condition being determined in greater detail is not related to the device being used more reliably by a user. Therefore, the partial problems approach may be used - GL G-VII, 5.2, 6 and 7

As set out above in relation to claim 4, the first objective technical problem is solved in an obvious manner.

Regarding difference (ii), the objective technical problem is how to ensure that the thermometer system can be used to reliably inform a user whether or not a medical condition requires treatment.

The skilled person would have already turned to the prior use disclosed in A6 to solve the first objective technical problem. For the same reasons, the skilled person would look to the prior use disclosed in A6 here.

A6 discloses "The boundaries separating the normal, elevated and critical body temperature ranges are automatically adjusted depending on the age group you select", A6, page 2, lines 11-12.

A6 discloses that "As advertised by the manufacturer in the manual, this is a complete solution for precise fever measurement in a single device that is self-explanatory and thus suitable for all users", A6, page 2, lines 13-15. Therefore, A6 teaches that it provides a solution to the objective technical problem, because it is easier for the user to use, therefore making the thermometer system more reliable for a user.

The skilled person would therefore be motivated to modify the disclosure of A5 to determining thresholds separating the first, second and third temperature ranges based on the age input.

Furthermore, the skilled person would face no difficulty in doing so. No structural modification would be required to the system of A5 because the processor and non-volatile memory are already adapted to perform all of the processes required to perform this function. Therefore, the skilled person would attempt the modifcation with a reasonable expectation of success.

Therefore, the skilled person would solve the second objective technical problem in an obvious manner.

As the first and second objective technical problems are both solved in an obvious manner, claim 6 lacks inventive step over A3 and A5, contrary to Art. 123(2) EPC.

Claim 7 adds matter, contrary to Art. 123(2) EPC

The amendment to claim 7 was an undisclosed disclaimer, as set out above.

An undisclosed disclaimer is, in particular, not allowable if:

(iv) the disclaimer, which would otherwise be allowable on the basis of a conflicting application alone (Art. 54(3)), renders the invention novel or inventive over a separate prior art document under Art. 54(2), which is a not accidental anticipation of the claimed invention

- GL H-V 4.2.1

This is the case here.

A5 discloses:

Mode-switching IR thermometer for determining the core temperature of a patient

("Multi-mode radiation thermometer", A5 title);

comprising a thermometer main body (10)

("the thermometer of the present invention comprises a housing", A5[3]);

a cover (30)

("The thermometer 10 also includes a cap 22", A5[8]);

an IR sensor (22)

("The thermometer includes an IR sensor 16", A5[6]);

a probe portion (20)

("probe 14 configured to be inserted into a body cavity, such as the ear canal of a patient", A5[5]);

and a processor for calculating a temperature from the sensor signal,

("control circuit 26... determines the body temperature of the patient from the IR radiation sensor signal and the ambient temperature signal, A5[7]

A control circuit is a processor);

wherein the thermometer system provides at least two different operating modes

("the thermometer of the present invention ... provides for in-ear measurements when the cap is in a first position and forehead contact measurements when the cap is in a second position and placed against the forehead of a patient", A5[3]);

the first operating mode being adapted to sense the radiation emitted from the eardrum

("a first sensing position... the probe 14 is exposed and insertable into the ear canal where radiation from the eardrum is sensed", A5[8]);

and the second operating mode comprising output of a sound

("The display unit may optionally comprise an integrated speaker that is connected to the control circuit. This speaker allows an alarm to sound in all measurement modes", A5[14]

Therefore, the second mode comprises output of a sound).

The only feature of claim 7 not disclosed by A5 is the amendment "wherein the switching between the first and second operating mode does not involve mechanical actuation of a push-button."

A5 is prior art under Art. 54(2) and it is a not accidental anticipation of the claimed invention because it is in the same technical field ("multi-mode radition thermometer", A5 title). Therefore, the undisclosed disclaimer is not allowed.

Instead, the amendment adds matter over the application as filed, because there is no basis in the application as filed for this amendement. Therefore, claim 7 adds matter over the application as filed, contrary to Art. 123(2) EPC.