

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ALIVECOR, INC.,
Petitioner

v.

APPLE INC.,
Patent Owner

Case No. IPR2023-00950

U.S. Patent No. 10,076,257 B2

PETITIONER'S REQUEST FOR DIRECTOR REVIEW

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Patent Trial and Appeal Board
US Patent and Trademark Office
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LIST OF EXHIBITS

Exhibit	Short Name	Description
Ex. 1001	‘257 Patent	U.S. Patent No. 10,076,257 B2
Ex. 1002	‘257 File History	Prosecution History of U.S. Patent No. 10,076,257 B2
Ex. 1003	Berger Declaration	Declaration of Dr. Ronald D. Berger
Ex. 1004	Berger CV	Curriculum vitae of Dr. Ronald Berger
Ex. 1005	Markel	U.S. Patent Appl. No. 11/492,278
Ex. 1006	Nissilä	U.S. Patent No. 6,775,566
Ex. 1007	Righter	U.S. Patent No. 5,191,891
Ex. 1008	Farrington	U.S. Patent No. 7,502,643
Ex. 1009	Cardiology Explained	EUAN A. ASHLEY & JOSEF NIEBAUER, CARDIOLOGY EXPLAINED (2004)
Ex. 1010	Cudahy	U.S. Patent No. 5,184,620
Ex. 1011	Sujdak	U.S. Patent No. 6,847,836
Ex. 1012	Geddes	U.S. Patent No. 4,606,352
Ex. 1013	Ceballos	U.S. Patent No. 6,522,915
Ex. 1014	Gilles	U.S. Patent No. 4,635,646
Ex. 1015	Weiss	U.S. Patent No. 5,623,926
Ex. 1016	Apple’s Complaint	Complaint, <i>Apple Inc. v. AliveCor, Inc.</i> , Case No. 4:22-cv-07608-HSG, Dkt. No. 1 (N.D. Cal., Dec. 12, 2022)
Ex. 1017	Hobson	U.S. Patent No. 7,876,274

Exhibit	Short Name	Description
Ex. 1018	National Judicial Caseload Profile	U.S. District Courts – National Judicial Caseload Profile (accessed via https://www.uscourts.gov/sites/default/files/cms_na_distprofile0331.2022.pdf)
Ex. 1019	Ducker Decl.	Declaration of Philip Ducker
Ex. 1020	Engstrom	U.S. Patent Application Publication No. 2008/0113650
Ex. 1021	Berger Second Decl.	Second Declaration of Ronald D. Berger, M.D., Ph.D., F.H.R.S.
Ex. 1022	Kenny Tr.	Transcript of June 19, 2024 deposition of Dr. Thomas W. Kenny
Ex. 1023	Berger Third Decl.	Third Declaration of Ronald D. Berger, M.D., Ph.D., F.H.R.S.
Ex. 1024	Petitioner’s Demonstratives	Petitioner’s Demonstratives for Oral Hearing

Petitioner AliveCor, Inc. submits this Request for Director Review of the Final Written Decision (Paper 44, “FWD”) because the Board committed clear error in its analysis of claim 1. Under Ground 1, the Board improperly conflated the terms “*electrode*” (which is **not** used anywhere in the 257 patent) and “*pad*” (which **is** used in the 257 patent’s claims), an error that infected the Board’s analysis and led to unsustainable findings and unsupported conclusions. Under Ground 2, the Board plainly misinterpreted a critical figure in a prior art reference (*Nissilä*’s Figure 5) in a manner that contradicts the express disclosure of that reference. Each error justifies Director review and vacating the FWD with respect to the affected claims 1-14.

I. LEGAL STANDARDS

Director review of a Board decision may be warranted when the decision includes “(a) abuse of discretion, (b) important issues of law or policy, (c) erroneous findings of material fact, or (d) erroneous conclusions of law.” USPTO Website, Director Review Process. Requests for Director Review must be filed within thirty days of the entry of a final written decision. 37 C.F.R. § 42.71(d).

II. ARGUMENT

A. The Director should review and vacate the FWD on Ground 1.

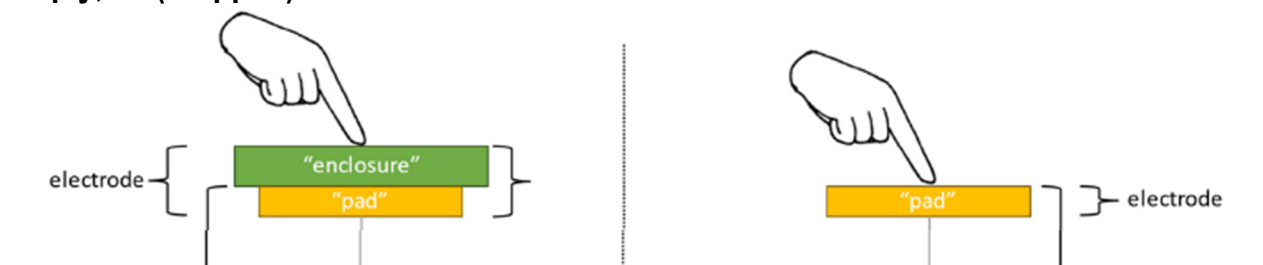
The Director should review and vacate the Board’s decision with respect to claims 1-14 of Ground 1 (Obviousness over *Markel*) because the Board improperly conflated the terms “*electrode*” (which is **not** used anywhere in the 257 patent) and

“pad” (which **is** used in the 257 patent’s claims).

Independent claim 1 of the ’257 patent requires a pad “positioned underneath the exterior surface” of an enclosure (Ex. 1001, cl. 1, element [1.c.iii]). AliveCor presented testimony from *both* parties’ experts demonstrating that a POSITA would have understood that ***“electrode”*** generally refers to what a user contacts in order to measure ECG, while ***“pad”*** is a narrower term referring to a specific component of an “electrode” (see Ex. 1003, ¶116; see also Reply, 9-11 (citing Pet., 11; Ex. 1003, ¶116; Ex. 2013, 32:7-20, 101:14-22; Ex. 1022, 71:6-71:21, 73:3-73:8, 79:6-21)).

Again, the term “electrode” does not appear in the ’257 patent. But the un rebutted evidence demonstrates that a POSITA would have understood that in some configurations—i.e., element [1.c.iii]—***“electrode”*** would be used to describe a ***“pad”*** together with an enclosure (left, below; see also Ex. 1001, Fig. 4B), and in other configurations, ***“electrode”*** refers to just an exterior ***“pad”*** (right, below).

Reply, 10 (cropped)



There is no dispute that an ***“electrode”*** is always exterior while the ***“pad”*** is not.

In finding that *Markel* does not render obvious claim 1, the Board relied on testimony from Apple’s expert (Ex. 2004, ¶84) regarding placing “the ***electrode*** [of

Markel] underneath a plastic conductive layer” (FWD, 32). The Board’s analysis was also based on a quote from Apple’s Response (POR, 30-31) relating to “placement of an *electrode* underneath an exterior layer.” But the parties agree that these “electrodes” and “pads” are *not* necessarily the same (*see* Reply, 9-11; Sur-Reply, 8-11 (“Apple agrees that the terms ‘electrode’ and ‘pad’ are not coextensive.” (citing Ex. 1022, 70:17-72:9))). The Board erred by relying on testimony and argument relating to the non-claim term “*electrode*” and failing to explain or acknowledge the difference from claim term “*pad*.” This difference matters because, even if there is no dispute that the primary reference disclosed an exterior “*electrode*” (i.e., exterior surface that is molded into audio output portion 610) that could be contacted by a user, the Board was required to evaluate whether it would have been obvious to place the “*pad*,” which was not explicitly disclosed, underneath *Markel*’s audio output portion, together forming *Markel*’s concealed “*electrode*.”

The Board’s error was not harmless. The FWD states that “[n]either [AliveCor], nor Dr. Kenny [*Apple’s Expert*] . . . meaningfully explains why a skilled artisan would have deviated from [*Markel*’s] express teachings of concealing an *electrode* via molding techniques to then arrive at an entirely different concealment approach of placing an electrode *pad* underneath the audio output portion” (FWD,

32).¹ This passage highlights the Board’s confusion between “*electrode*” and “*pad*” as it clearly conflates the terms. The Board never resolved where the “*pad*” itself would be located. This error infected how the Board weighed AliveCor’s substantial evidence of how a POSITA would have understood and/or modified the *Markel*.

The Board overlooked extensive evidence that AliveCor presented from *both* parties’ experts regarding why a skilled artisan would have placed an electrode pad underneath the audio output portion in *Markel*. As AliveCor previously explained, *Markel* discloses that the surface of “audio output portion 610” is part of and molded into a conductive enclosure (*see* Reply, 11-13 (citing Ex. 1022, 94:3-95:22, 96:1-11, 30:13-21)). But *Markel* is silent on the location of its pad. Accordingly, a POSITA would have been motivated to place a conductive electrode pad underneath the audio output portion to increase the device’s aesthetics while protecting the electrode pad (*see* Pet., 20-21 (citing Ex. 1005, [0035], [0037], [0040]; Ex. 1003, ¶¶135-36)). As Patent Owner’s expert explained, a skilled artisan would have known to implement this concealment approach by using an electrode pad with “superior conductivity,” which would maintain robust signal detection:

¹ The Board seemingly required AliveCor (*Petitioner*) to present evidence from Dr. Kenny (*Patent Owner’s* Expert) to satisfy the burden to show obviousness. This additional confusion regarding the parties’ experts further undercuts the decision.

[A] I think, in general, *one of ordinary skill in the art would see the advantages of selecting a material for the pad that has superior conductivity* relative to the other metallic compounds of the system. . . . As an engineer one knows that you can often combine things in ways that are inoptimal and they still can be made to work, but for systems like this, particularly *if you're attempting to extract medical information, physiological information about the user, I think there's a motivation to design systems where you have a high margin for success*

(Ex. 1022, 45:3-48:14; *see also* Reply, 11-14 (citing same, along with Ex. 1022, 94:3-95:22, 96:1-11, 30:13-32:11, 35:6-37:9; 67:16-69:22, 90:8-92:20, 56:17-59:14; Ex. 1005, [0037], [0040]; Ex. 1011, 1:30-31; Ex. 2013, 27:16-28:9, 35:9-18, 44:21-45:19, 115:10-116:7, 101:11-22; Ex. 1003, ¶ 135; Ex. 1001, 10:29-33, Fig. 4B, 2:44-50, 10:29-33, 8:56-67))). A POSITA would also have been motivated by the express disclosures of *Markel* itself, which teaches that that conductive plastic “may be integrated into various **molded** components of the mobile communication device,” and concealing an electrode by including “**molded** conductive plastic with little or no visible indication of the electrode presence” (Pet., 20; Ex. 1005, [0037]; Reply, 14). Indeed, Apple did not dispute that this modification would yield predictable results, or that there was a reasonable expectation of success (Reply, 14 (citing Ex.

1022, 108:8-109:10)). Thus, the evidence demonstrates that a POSITA reading *Markel* would have placed the “*pad*” underneath the enclosure (“audio output portion”) in the same was as shown in Figure 4B of the ’257 patent (*see* Ex. 1003, ¶¶134-38).

While the Board paid cursory lip service to some of AliveCor’s arguments in a “Summary” section (*see* FWD, 26-27), it dismissed the substantial evidence and argument presented by AliveCor in conclusory fashion. Without explaining why, the Board baldly stated that “Patent Owner makes a more persuasive case as to what a person of ordinary skill in the art reasonably would have understood from [*Markel*’s] disclosure” (FWD, 33). In doing so, the Board failed to explain why AliveCor’s arguments and evidence were *unpersuasive* or wrong. The Board’s failure to credit testimony presented by both experts and AliveCor’s argument relating to the claim term “*pad*” is egregious and clearly erroneous given that the Board wrongly credited parts of Apple’s testimony and argument relating to the non-claim term “*electrode*” (*compare* FWD, 30-31 *with* FWD, 32-33).

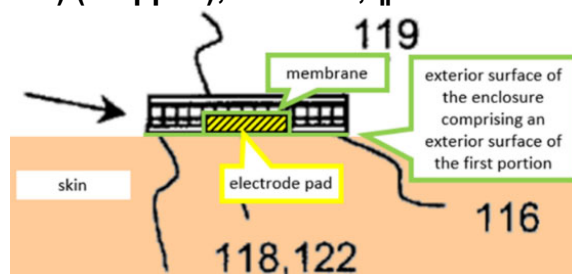
Thus, the Board improperly conflated the non-claim term “*electrode*” with the claim term “*pad*.” This was clear error. The Director should review and vacate the FWD for claims 1-14 of Ground 1.

B. The Director should review and vacate the FWD on Ground 2.

The Director should review and vacate claims 1-14 of Ground 2 (Obviousness

over *Markel* and *Nissilä*) because the Board committed clear factual error interpreting *Nissilä*'s Figure 5. *Nissilä*'s Figure 5 illustrates a cross section of an electrode structure. Ex. 1006, 4:35-36, 4:40-41. In its papers, AliveCor identified express disclosure supporting the following annotations, which emphasize that membrane 119 is separate and apart from electrodes 118, 122:

Ex. 1006, Fig. 5 (annotated) (cropped); Ex. 1003, ¶359



Contrary to AliveCor's annotations and arguments, the Board found that (1) *Nissilä*'s membrane 119 is not structurally distinct from *Nissilä*'s electrodes 118, 122; and (2) *Nissilä*'s membrane does not cover the surface of *Nissilä*'s electrodes (FWD, 51-54). However, both findings were clear factual error. The Director should review and vacate claims 1-14 of Ground 2.²

1. The Board clearly erred in determining *Nissilä*'s membrane is not structurally distinct from the electrode of *Nissilä*.

The Board committed clear factual error when it found that *Nissilä*'s membrane 119 is not structurally distinct from *Nissilä*'s electrode pads 118, 122 (*see*

² The Director should also vacate the Board's findings for motivation to combine, which exclusively relied on these findings (FWD, 54).

FWD, 52-53 (“*Nissilä* does not, itself, reasonably show or describe that its membrane 119 takes on any distinct structural characteristics of its own.”)).

Nissilä’s unambiguous disclosure demonstrates that membrane 119 is a different structure from *Nissilä*’s electrode pads 118, 122. The Board relies on Apple’s attorney argument that “*Nissilä* does not adhere to any approach that different reference characters must identify different structures” (FWD, 53 (citing Sur-Reply, 22-25)). Apple’s argument is self-serving, conclusory, and unsupported by expert testimony. The Board’s reliance on attorney argument is clear error. *See Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (“Attorney argument is not evidence.”). Moreover, it is well settled that using different reference numerals demonstrates the identified structures are distinct. *See Apple Inc. v. Masimo Corp.*, IPR2022-01465, Paper 72, 2024 Pat. App. LEXIS 670, *40 (PTAB Feb. 2, 2024); *DynaEnergetics Europe GmbH v. SWM Int’l, LLC*, IPR2022-01372, Paper 27, 2024 Pat. App. LEXIS 504, *21 (PTAB Feb. 5, 2024). Here, *Nissilä*’s Figure 5 plainly uses different reference numerals for electrode pads 118, 122 and membrane 119.³

³ Electrode pads 118, 122 are in some embodiments *without* membrane 119 (Ex. 1006, 5:25-32; POR, 47 (“[R]eference numeral 119 appears in only one figure in *Nissilä*—FIG. 5.”)). Apple argues that *those* electrodes “***are*** [] conductive adhesive” (Sur-Rely, 24 (citing Ex. 1006, 5:18-32)), but this is inconsistent with disclosures

This is consistent with the corresponding specification disclosure, which also uses different reference numerals for these structures and identifies the particular placement of the membrane with respect to the electrodes 118, 122 (*see* Ex. 1006, 5:33-38 (“**[M]embrane 119** that is *located . . . at the electrodes 118, 122*”) (emphasis added); *see also* Pet., 71-73 (citing Ex. 1003, ¶¶358-61)). The disclosure regarding the *location* of the membrane *at* the electrodes further demonstrates that the membrane and the electrodes are separate structures (Paper 43 (“Hearing”), 22:21-26). This is further supported by dependent claim 6, which adds an additional requirement that the electrodes of claim 1 “*comprise* a conductive membrane” (Ex. 1006, cl. 6 (emphasis added)). In addition, *Nissilä* teaches that “membrane 119” has distinct structural characteristics, e.g., that the membrane is “metal, electrically conductive plastic or a similar conductive material” (Ex. 1006, 5:33-38). In view of these facts and established case law, the only rational conclusion is that *Nissilä*’s membrane 119 is a different structure from *Nissilä*’s electrode pads 118, 122.

But the Board found otherwise (*see* FWD, 52-53), crediting Apple’s contrary interpretation that “membrane 119, at times, is also used to identify electrodes 118 and 122” based on (1) testimony from Apple’s expert, Dr. Kenny; (2) Apple’s

that those electrodes 118, 122 are “provided with” adhesive and that adhesive can also be applied to membrane 119 in Figure 5 (Ex. 1006, 5:18-44).

arguments regarding the phrase “consist of” in *Nissilä*’s specification; and (3) *Nissilä*’s Finnish priority application (*see* FWD, 53). This was clear error.

First, the Board committed clear factual error by relying on Dr. Kenny’s testimony that “there is no disclosure anywhere in *Nissilä* of a separate membrane positioned between the electrodes 118 and 122 of *Nissilä* and the skin of the user wearing *Nissilä*’s device” (FWD, 46 (citing Ex. 2004, ¶¶58, 105-06)). This testimony contradicts the clear disclosures of *Nissilä*, which unambiguously demonstrates that membrane 119 is a different structure from *Nissilä*’s electrode pads 118, 122 (*see, e.g.*, Ex. 1006, 5:33-49, cl. 6, Fig. 5). Expert testimony contrary to clear disclosure in the reference is entitled to no weight, so the Board clearly erred. *See Duration Media, LLC v. Rich Media Club LLC*, IPR2023-00953, Paper 78 at 9 (PTAB Dec. 12, 2024) (Decision Granting Director Review).

Consistent with the disclosures of *Nissilä*, AliveCor’s expert Dr. Berger testified that the electrodes 118, 122 and the membrane were separate structures. Dr. Berger repeatedly testified that *Nissilä* discloses each electrode 118, 122 in Figure 5 includes or *comprises* “an electrically conductive membrane” (Ex. 1003, ¶91; *see also* Ex. 1003, ¶358 (“*Nissilä* further discloses an electrode comprising a ‘membrane 119’ that ‘is made of metal, electrically conductive plastic or a similar conductive material.’ The electrode pad is [therefore] embedded in and enclosed by ‘membrane 119.’” (quoting Ex. 1006, 5:33-38))); Ex. 2013, 132:17-133:19 (“I just

don't think there's any other way to understand what 'the membrane' is referring to . . . other than . . . as a layer interposed between the skin and electrode pads 118 and 122.")). The Board erred when it disregarded Dr. Berger's testimony.

Second, the Board committed clear error by relying on Apple's arguments regarding the phrase "consist of" in *Nissilä*'s specification (FWD, 53).⁴ *Nissilä* states that "the first electrode and the second electrode of the electrode structure **consist of an electrically conductive membrane**" (Ex. 1006, 3:24-27; 3:32-37; *see also id.*, 5:32-38). According to Apple, this disclosure was intended to *equate* *Nissilä*'s membrane 119 with the electrode pads 118, 122, such that these structures are not distinct. In dependent claim 6, however, *Nissilä* claims "[a]n electrode structure . . . wherein the first electrode and the second electrode **comprise** a conductive membrane" (Ex. 1006, cl. 6 (emphasis added)). This open-ended "comprising" *claim* language demonstrates that the "conductive membrane" *must* be an *additional*, distinct structure from the structure that makes the first and second electrodes (Ex. 1022, 24:2-22). It was therefore clearly erroneous for the Board to rely on the specification phrase "consist of" to find that *Nissilä*'s membrane 119 is

⁴ Although it purports to reject Apple's "consist of" argument (*see* FWD, 46 n.16), the FWD relies on Apple's argument and testimony regarding the "consist of" language (*see, e.g.*, FWD, 53 (citing POR. 42-44; Ex. 2004 ¶¶110-123)).

not structurally distinct from *Nissilä*'s electrode pads 118, 122.

Third, the Board committed clear factual error by relying on *Nissilä*'s Finnish priority application to contradict the clear disclosures of *Nissilä* itself (FWD, 53 (citing Exs. 2006, 2007)). It is improper for the Board to “depart from the petition” and consider “a different *inter partes* review” from the one filed. *SAS Inst., Inc. v. Iancu*, 584 U.S. 357, 365 (2018). Ground 2 of AliveCor's petition relied on *Nissilä*, which expressly discloses electrode pads 118, 122 that can further include a membrane 119. Despite this, the Board reached a contradictory finding based on a translation of *Nissilä*'s Finnish priority document, which AliveCor never advanced or relied on in any ground. In doing so, the Board departed from AliveCor's original petition and considered a prior art combination that was never asserted (i.e., Obviousness over *Markel*, *Nissilä*, **and** *Nissilä*'s Finnish priority documents). But the record includes no evidence supporting any motivation for a POSITA to turn to the priority documents.⁵ It was clearly erroneous for the Board to rely on *Nissilä*'s Finnish priority document.⁶

⁵ Indeed, *Nissilä* is a U.S. patent and is presumed valid. 35 U.S.C. § 282. *Nissilä* is presumably supported by adequate written description, and a skilled artisan would not have turned to the priority documents to understand the disclosed invention.

⁶ The Board also erred because nothing in the disclosures of the Finnish priority

Thus, the Board improperly found that *Nissilä*'s membrane 119 is not structurally distinct from *Nissilä*'s electrode pads 118, 122. This was clear error.

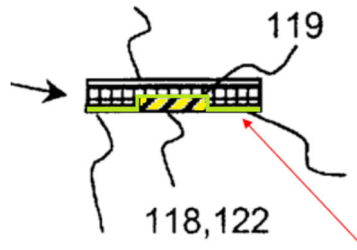
2. The Board clearly erred in determining that the membrane is not between the electrodes and the user's skin.

The Board also committed clear factual error when it found that *Nissilä*'s membrane does not cover the surface of *Nissilä*'s electrodes (*see* FWD, 53-54 (“[E]ven if membrane 119 is a distinct structure, its arrangement with respect to electrodes 118 and 122 would be one that does not cover any surface of those electrodes that contacts a user's skin.”)). The Board adopted Apple and Dr. Kenny's interpretation⁷ of *Nissilä*'s Figure 5 (below), which annotates the membrane in green using a top-hat shape that excludes *only* the portion of “inner surface 116” that is below electrodes 118, 122:

application change the clear disclosures of *Nissilä* or equate the electrodes to a membrane (Hearing, 27:3-14 (discussing Ex. 2007, 11:9-15 (“[E]lectrodes 118, 122 of the electrode structure are formed of an electrically conductive film 119 at the position of the electrodes 118, 122.”))).

⁷ The FWD reproduced this annotated figure and erroneously cited to the Petition (FWD, 50). But this annotated figure is found in the Apple's POR and in Dr. Kenny's declaration. It does *not* reflect the position of Petitioner AliveCor.

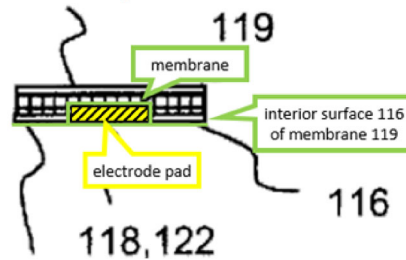
Ex. 2004, ¶128 (annotating Ex. 1006, Fig. 5) (cropped)



But the Board clearly erred. *Nissilä* discloses that the conductive membrane 119 itself contacts a user’s skin either directly or via an “electrically conductive adhesive 127.” Specifically, *Nissilä* discloses that “membrane 119 can [] come into contact with the person’s skin surface 102” or “on the inner surface 116 of the membrane[,] which is against the person’s skin[,] there can be an electrically conductive adhesive 127.”⁸ (Ex. 1006, 5:39-46). Apple’s expert confirmed that the membrane must be “located on the inner surface” (Ex. 2004, ¶128). The conductive membrane and the “electrically conductive adhesive 127” thus receive electrical signals from skin and assist with conduction (Ex. 1022, 121:10-122:3). Applying “electrically conductive adhesive 127” to the conductive membrane 119 makes no sense unless the membrane is transmitting the electrical signal to another “electrically conductive” component—i.e., electrode pads 118, 122 (Ex. 2013, 132:17-133:19). Contrary to the Board’s findings, *Nissilä*’s membrane 119 *must* cover the “inner surface 116” below electrodes 118, 122, as Dr. Berger contended:

⁸ *Nissilä* also discloses “**non**-conductive adhesive” “**outside** the electrodes 118, 122” (Ex. 1006, 5:45-49). Non-conductive adhesive does not transmit signals.

Ex. 1006, Fig. 5 (annotated) (cropped); see *also* Ex. 1003, ¶358



AliveCor submitted evidence and argument about *Nissilä*’s “electrically conductive adhesive 127” (*see, e.g.*, Reply, 20-21). In its analysis of claim 1’s obviousness under Ground 2, however, the Board *entirely ignored* this evidence and argument (*see* FWD, 51-54). Indeed, the only time the FWD ever mentions *Nissilä*’s “electrically conductive adhesive 127” is in the “*Overview of Nissilä (Ex. 1006)*” Section, where the Board quotes *Nissilä*: “In the alternative, there can be *electrically conductive adhesive 127 on the inner surface 116 of membrane 119, which is against the person’s skin.*” FWD, 42 (citing Ex. 1006, 5:41–43). But this, of course, directly contradicts the Board’s later conclusion that membrane 119 “*does not cover any surface of those electrodes that contacts a user’s skin*” (FWD, 53-54). The FWD is internally inconsistent and clearly erroneous.

Thus, the Board improperly found that *Nissilä*’s membrane does *not* cover the surface of *Nissilä*’s electrodes. This was clear error.

* * *

Because the Board committed clear error, the Director should review and vacate the FWD for claims 1-14 of Ground 2.

Date: January 22, 2025

By: /Christopher TL Douglas /
Christopher TL Douglas

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§42.6(e), 42.105, the undersigned hereby certifies that true and correct copies of the above-captioned **PETITIONER'S REQUEST FOR DIRECTOR REVIEW** was served via electronic mail to the following attorneys of record for Patent Owner:

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By: / Christopher TL Douglas /

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