Trials@uspto.gov
571-272-7822

Paper 7
Date: November 14, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

ALIVECOR, INC.,
Patent Owner.

IPR2022-00873
Patent 10,342,444 B2

Before JEFFREY N. FREDMAN, ERIC C. JESCHKE, and DAVID COTTA *Administrative Patent Judges.*

COTTA, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

On April 27, 2022, Apple Inc. ("Petitioner")[1] filed a Petition to institute *inter partes* review of claims 1–15 of U.S. Patent No. 10,342,444 B2 (Ex. 1001, "the '444 patent"). Paper 1 ("Pet." or "Petition"). AliveCor, Inc. ("Patent Owner")[2] filed a Preliminary Response. Paper 6 ("Prelim. Resp.").

Under 35 U.S.C. § 314(a), *inter partes* review may not be instituted unless the Petition "shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." For the reasons discussed below, Petitioner has not established a reasonable likelihood of prevailing on its assertion that the challenged claims are unpatentable based on the grounds advanced here. Accordingly, we deny institution of *inter partes* review of claims 1–15 of the '444 patent.

A. Related Matters

Petitioner represents that it is not aware of "any litigation, disclaimers, reexamination certificates or petitions for *inter partes* review for the '444 patent." Pet. 68. Patent Owner identifies IPR2022-00872, challenging U.S. Patent No. 8,509,882 ("the '882 patent") as relating to this matter. Paper 4, 2. The '882 patent issued from U.S. Patent Application No. 12/796,188, which is one of many applications cited in the priority chain of the '444 patent. Ex. 1001, code (60).

[1] Petitioner identifies itself as the real party-in-interest. Pet. 68.
[2] Patent Owner identifies itself as the real party-in-interest. Paper 4, 2.

B. The '444 Patent

The '444 patent discloses that "[t]he prior art includes numerous systems wherein ECG [(electrocardiogram)] data or the like is monitored and/or transmitted from a patient to a particular doctor's office or health service center." Ex. 1001, 1:48–50. However, such devices are limited in that they "utilize[e] transtelephonic and audible acoustic signals [and] include a signal to noise ratio that is diminished by talking or any other noisy activity in the vicinity, thus potentially jeopardizing the integrity of the heart monitoring data signals." *Id.* at 2:28–32. In addition, the audible signals of prior art devices "can be heard by anyone in the vicinity of the computer and heart monitor, which can be bothersome to the user as well as to others in the vicinity." *Id.* at 2:32–35. According to the '444 patent, "[o]ther applications fail to provide a reliable, inexpensive personal monitoring device that is readily compatible with existing computing devices such as smartphones." *Id.* at 2:35–38. The '444 patent thus asserts that it would be "advantageous" to address these issues in "a personal monitoring device transmitting real time physiological data." *Id.* at 2:38–40.

The '444 patent discloses:

> The inventive concept(s) disclosed herein is directed to a personal monitoring device, methods and systems for measuring physiological signals and transmitting those measurements wirelessly and soundlessly using frequency modulated ultrasonic signals having a much improved signal to noise ratio compared to traditional transtelephonic methods. Also provided are methods and algorithms to receive and demodulate the ultrasonic signals with excellent accuracy using existing computer and smart phone technology.

Ex. 1001, 4:42–50.

C. Challenged Claims

The ’444 patent includes 15 claims, all of which are challenged in the Petition. Claims 1 and 12, are illustrative of the challenged claims and reads as follows:

> 1. A mobile ECG sensor comprising:
> an electrode assembly comprising electrodes, wherein the electrode assembly senses heart-related signals when in contact with a user’s skin, and produces electrical signals representing the sensed heart-related signals;
> a converter assembly electrically connected to the electrode assembly, configured to convert the electrical signals to a modulated signal, wherein the modulated signal carries the electrical signals representing the sensed heart-related signals;
> a transmitter that transmits the modulated signal wirelessly to a computing device; and
> a housing containing the electrode assembly, the converter assembly, and the transmitter, wherein the housing is a credit card form factor.
>
> 12. A mobile ECG sensor comprising:
> an electrode assembly comprising electrodes, wherein the electrode assembly senses heart-related signals when in contact with a user’s skin, and produces electrical signals representing the sensed heart-related signals;
> a converter assembly electrically connected to the electrode assembly, configured to convert the electrical signals to a modulated signal, wherein the modulated signal carries the electrical signals representing the sensed heart-related signals;
> a transmitter that transmits the modulated signal wirelessly to a computing device; and
> a housing containing the electrode assembly, the converter assembly, and the transmitter, wherein the housing is a mobile phone case form factor, and wherein the electrodes are positioned on an exterior surface of the mobile phone case form factor.

Ex. 1001, 12:60–13:7, 14:19–35.

D. Asserted Grounds of Unpatentability

Petitioner asserts five grounds of unpatentability in this Petition (Pet. 1), which are provided in the table below:

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1–4, 6, 8–12, 14	103	Libbus,[3] Faarbaek[4]
12, 14	103	Libbus, Batkin[5]
5, 13	103	Libbus, Faarbaek, Vyshedskiy[6]
13	103	Libbus, Batkin, Vyshedskiy
7, 15	103	Libbus, Faarbaek, Headset Profile[7]

Petitioner relies on the declaration of Dr. Richard Fletcher, among other evidence. Ex. 1003.

II. ANALYSIS

A. Legal Standards

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review

[3] Libbus et al., U.S. Patent Publication No. 2009/0234410 A1, published Sept. 17, 2009 (Ex. 1004, "Libbus").
[4] Faarbaek et al., U.S. Patent Publication No. 2008/0275327 A1, published Nov. 6, 2008 (Ex. 1007, "Faarbaek").
[5] Batkin et al., U.S. Patent Publication No. 2005/0239493 A1, published Oct. 27, 2005 (Ex. 1011, "Batkin").
[6] Vyshedskiy et al., U.S. Patent Publication No. 2004/0220488 A1, published Nov. 4, 2004 (Ex. 1008, "Vyshedskiy").
[7] Bluetooth Specification: Headset Profile, dated Dec. 18, 2008 (Ex. 1010, "Headset Profile").

petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")).

To show obviousness under 35 U.S.C. § 103 the differences between the subject matter sought to be patented and the prior art must be such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which that subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary considerations of nonobviousness when presented. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

In determining the level of skill in the art, we consider the problems encountered in the art, the art's solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986).

Petitioner contends that the person of ordinary skill in the art ("POSA") would have had either:

> (1) at least a bachelor of science in electrical engineering, mechanical engineering, or biomedical engineering, or a related discipline, with at least two years of relevant multidisciplinary work experience designing wearable devices and/or sensors for measuring physiological signals or parameters of mammals, or (2) a medical degree and at least five years of relevant work experience designing wearable devices and/or sensors for measuring physiological signals or parameters of mammals.

Pet. 6. According to Petitioner, a "greater amount of education . . . with a focus on designing wearable devices and/or sensors for measuring physiological signals . . . would also qualify for the hypothetical person of ordinary skill in the art in lieu of fewer years of multidisciplinary work experience." *Id.* Patent Owner does not challenge Petitioner's proposed definition of the POSA. *See generally* Prelim. Resp.

Petitioner's definition appears to be consistent with the level of skill in the art reflected in the prior art of record and the disclosure of the '444 patent. Accordingly, for purposes of this Decision, we accept Petitioner's proposed definition of the person of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) ("the prior art itself [may] reflect[] an appropriate level" as evidence of the ordinary level of skill in the art) (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp*., 755 F.2d 158, 163 (Fed. Cir. 1985)).

C. Claim Construction

We interpret a claim "using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b) (2021). Under this standard, we construe the claim "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." *Id.*

Neither party identifies any claim terms as needing construction. *See generally* Pet.; Prelim. Resp. We do not find it necessary to construe any claim terms in order to resolve this proceeding. *See Vivid Techs. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) ("[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.").

D. Overview of the Asserted Prior Art

1. Libbus

Libbus is a U.S. Patent Publication. Ex. 1004. Petitioner asserts that Libbus is prior art under 35 U.S.C. § 102(a) and (e). Pet. 2. Libbus discloses "systems and methods for the detection of an impending cardiac decompensation," including by using an adherent patch. Ex. 1004 ¶ 7. Libbus teaches that the adherent patch may be "continuously adhered to the patient for at least one week" (*id.* ¶ 11) and "can comprise many shapes, for example at least one of a dogbone, an hourglass, an oblong, a circular or an oval shape" (*id.* ¶ 49).

Libbus's adherent patch may include "components to take physiologic measurements, transmit data to remote center **106** and receive commands from remote center **106**." *Id.* ¶ 56. To transmit data to the remote center, Libbus's patch may include "wireless communications circuitry **132**." *Id.* ¶ 59. According to Libbus:

> The wireless communication circuitry can be coupled to the impedance circuitry, the electrocardiogram circuitry and the accelerometer to transmit to a remote center with a communication protocol at least one of the hydration signal, the electrocardiogram signal or the accelerometer signal. In specific embodiments, wireless communication circuitry is configured to transmit the hydration signal, the electrocardiogram signal and the accelerometer signal to the remote center with a single wireless hop, for example from wireless communication circuitry **132** to intermediate device **102.** The communication protocol comprises at least one of Bluetooth, Zigbee, WiFi, WiMax, IR, amplitude modulation or frequency modulation. In many embodiments, the communications protocol comprises a two way protocol such that the remote center is capable of issuing commands to control data collection.

Id. ¶ 59.

2. Faarbaek

Faarbaek is a U.S. Patent Publication. Ex. 1007. Petitioner contends that Faarbaek is prior art under 35 U.S.C. § 102(b). Pet. 2. Faarbaek discloses "microelectronic systems embedded in a three-dimensional adhesive device, which may be attached to the surface, suitably the skin, of a mammal." Ex. 1007 ¶ 1. "The microelectronic systems suitably utilize[] wireless communication and are useful for measuring ECG (Electro CardioGraphy), EMG (Electro MyoGraphy), EEG (Electro EncephaloGraphy), blood glucose, pulse, blood pressure, pH, and oxygen." *Id.*

Faarbaek discloses that "[w]hen monitoring physiological or neurological conditions of the human body it is important that the attached microelectronic system is as comfortable to wear as possible," and that "[t]he user should preferably not feel the attached microelectronic system and the monitoring should preferably be kept in private." *Id.* ¶ 11. To this end, Faarbaek teaches that "[t]he adhesive bodies according to [Faarbaek's] invention . . . are shaped three dimensionally, having a varying thickness from the centre to the peripheral edge of the adhesive body and having the micro electronic sensing system embedded within the adhesive body, suitably where the adhesive body is thickest." *Id.* ¶ 60. Preferably, the thickness of the adhesive device at its periphery is "between 0.05–0.4 mm" and the thickness at its center is suitably "between 1–5 mm." *Id.* ¶¶ 67–68. Faarbaek teaches that the thickness of the peripheral edge "must be shaped to a thickness less than half of the thickest part of the sensor, normally the central part." *Id.* ¶ 65. A "special advantage" of this configuration is that "the adhesive device will less easily involuntarily fall off due to the

bulkiness and adhesiveness at the edge." *Id.* ¶ 61. According to Faarbaek, "[t]his is very important to the very function of the device." *Id.*

E. Ground 1

In Ground 1, Petitioner contends that the combination of Libbus and Faarbaek teaches or suggests each of the limitations of claims 1–4, 6, 8–12, and 14 of the '444 patent. We focus our discussion on two limitations: the "credit card form factor" limitation and the "converter assembly" limitation. Because our discussion of each of these two limitations is dispositive with respect to Ground 1, we need not discuss any of the other limitations of the challenged claims

1. The "credit card form factor" limitation

Claim 1 is directed to a "mobile ECG sensor" and requires that "the housing [of the mobile ECG sensor] is a credit card form factor." Ex. 1001, 12:60–13:7. Claim 8 requires "a credit card form factor" that "houses" the components of a mobile ECG sensor. *Id.* at 13:40–14:9. The parties appear to agree that the term "form factor," as used in claims 1 and 8, refers to the size and shape of a particular component, in this case, a credit card. Pet. 14 (acknowledging that Libbus does not disclose a housing with a "credit card form factor" and arguing that it would have been obvious to "turn to Faarbaek for other size and shape options"), 46 (arguing that a POSA "would have understood 'mobile phone case form factor' to define the size and shape of the ECG device to be similar to a mobile phone case"); Prelim. Resp. 7 (stating that "the term 'form factor' refers to the size, shape, and other physical characteristics of components, particularly in electronics") (citing Ex. 2001 (defining "form factor" as "a fancy way of referring to the shape and size (width, depth, height) of some device"); Ex. 2002 (defining "form factor" as "[t]he size, shape, and configuration of a piece of computer

hardware" often applied to "subcomponents . . . and small devices, such as handheld PCs")).

Petitioner contends that the combination of Libbus and Faarbaek renders the claimed "credit card form factor" obvious. Petitioner points to Libbus's disclosure that its "device can comprise many shapes, for example at least one of a dogbone, an hourglass, an oblong, a circular, or an oval shape." Ex. 1004 ¶ 49, *cited at* Pet. 14. According to Petitioner, from this disclosure, a POSA "would have understood or found obvious that the ECG device could come in a variety of sizes and shapes and would have had reason to explore other size and shape options for Libbus's housing." Pet. 14. Petitioner contends that Faarbaek discloses "a mobile physiological monitoring device with a housing that may come in several shapes, including 'rectangular.'" *Id.* (citing Ex. 1007 ¶¶ 48, 70). From these teachings, Petitioner argues that a POSA "would have been motivated to incorporate Faarbaek's housing shape and size (e.g., thickness) into Libbus's ECG device because it would provide a more convenient device to monitor physiological signals." *Id.* at 15.

Patent Owner argues that Faarbaek does not disclose a rectangular housing, but rather a "curved structure with tapered edges." Prelim. Resp. 12. Patent Owner further argues that Faarbaek repeatedly emphasizes the importance of having a curved profile and tapered edges, noting that such a profile "can be seen in each and every figure of Faarbaek depicting a housing." *Id.* at 12–13. According to Patent Owner, this is fatal to the Petition because "Petitioner never explains how such a curved structure would provide for the shape or form of a credit card." *Id.* at 14. On the current record, we agree with Patent Owner that Petitioner has not shown a

reasonable likelihood of prevailing in demonstrating that Faarbaek does not disclose a "credit card form factor."

We begin our analysis by considering the size and shape dictated by a "credit card form factor." We understand a "credit card form factor" to have a size and shape similar to that of the device depicted in Figure 9A of the '444 patent, which is reproduced, in excerpted form, below.

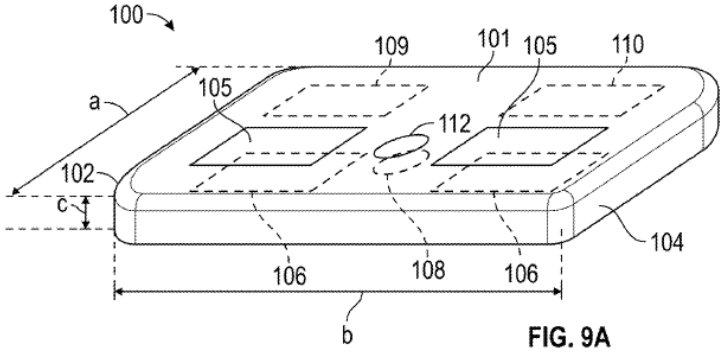

FIG. 9A

Figure 9A is "a perspective view of one embodiment of the [the '444 patent's] invention with a credit card form factor." Ex. 1001, 3:7–8. The device in Figure 9A has a "width a, length b and thickness c." *Id.* at 7:54. As depicted in Figure 9A, the device is substantially rectangular and has a uniform thickness, "c." *Id.* The thickness "c" may range "between 0.65 mm to 0.85 mm" and the device "may be flexible and made of a plastic or polymer." *Id.* at 7:38–40. "Embodiments of the credit card like sensor may have a bending stiffness or flexibility permitting a user to place it in a purse or wallet in a similar manner to how a normal credit card is stored and carried." *Id.* at 7:47–50.

Faarbaek's device does not have the size and shape of a credit card; rather, it is "shaped three-dimensionally, having a varying thickness from the centre to the peripheral edge of the adhesive body." Ex. 1007 ¶ 60. Preferably, the thickness of the adhesive device at its periphery is "between 0.05–0.4 mm" and the thickness at its center is suitably "between 1–5 mm."

Id. ¶¶ 67–68. The shape of Faarbaek's device can be seen in Figure 1, which is reproduced below.

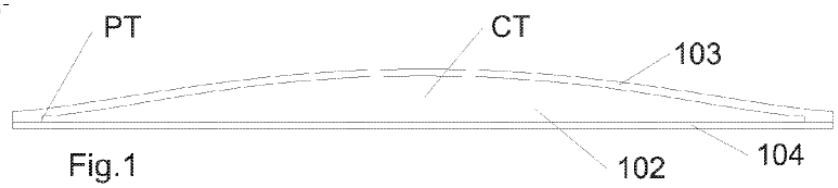

Fig.1

Figure 1 shows "a die section [sic, dissection] of the shape of a typical representative of the adhesive device according to [Faarbaek's] invention. CT is the maximal thickness of the device and PT is the thickness in the periphery of the device." Ex. 1007 ¶ 27. As can be seen, the device of Figure 1 has a curved shape tapering from its thickest point (in the center) to its thinnest point (at the peripheral edges). Every figure in Faarbaek that depicts a housing shows the housing to have a shape similar to that of the device depicted in Figure 1. This can be seen, for example, in Figures 15, 17, and 20, each of which is reproduced below.

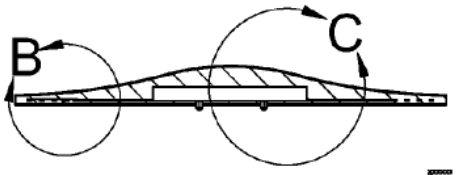

Fig.15

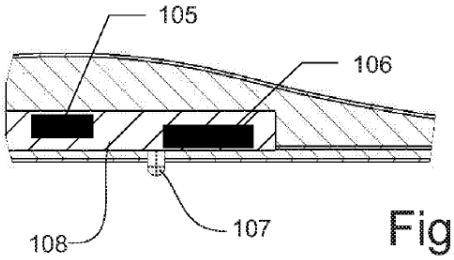

Fig.17

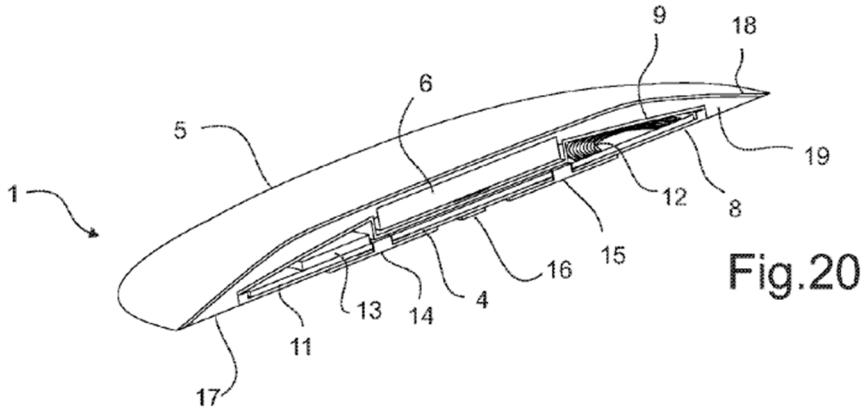

Fig.20

Figure 15 is a cross-section of an embodiment of Faarbaek's invention. *Id.* ¶ 41. Figure 17 magnifies the center portion of the cross-section shown in

Figure 15. *Id.* And Figure 20 shows a sectional view of an embodiment of Faarbaek's invention. *Id.* ¶ 43. Like Figure 1, each of Figures 15, 17, and 20 depicts a device that is thickest in the center and tapers at the periphery.

Not only does Faarbaek consistently depict its device as having a curved profile tapering at its edges, Faarbaek explains that this shape is critical to its function:

> A device with such a shape and suitably with beveled edges provides a smooth interface with the skin. The adhesive device will give a gentle feel and will not tend to give friction to clothes and linen. A special advantage will be that the adhesive device will less easily involuntarily fall off due to bulkiness and adhesiveness at the edge. ***This is very important to the very function of the device.***

Id. ¶ 61 (emphasis added). Consistent with its teaching that a tapered shape was "very important to the very function of the device," Faarbaek identifies this shape as a required feature:

> Common for all constructions are that the three dimensional geometries provide good protection for the microelectronics and at the same time give the device as smooth a surface as possible. Especially the shaping of the edges of the device need paid attention, otherwise linen will easily stick to them and cause rolling. Therefore ***the outer rim of the adhesive device with the embedded micro electronic system must be shaped to thickness less than half of the thickest part of the device***, normally the central part comprising the microelectronic electronic system.

Id. ¶ 263 (emphasis added); *see also id.* ¶ 65 ("The outer rim or ***the peripheral edge of the adhesive device must be shaped to a thickness less than half of the thickest part of the sensor***, normally the central part.") (emphasis added).

The shape of Faarbaek's device differentiates it from the claimed "credit card form factor." In particular, a credit card form factor has a

rectangular shape and a uniform thickness. *See, e.g.,* Ex. 1001, Fig. 9A. We recognize that outline of Faarbaek's device may be rectangular. *See* Ex. 1007 ¶ 70 ("The outer rim of the adhesive body may suitably be . . . shaped rectangular"). But unlike a "credit card form factor," its thickness is not uniform. To the contrary, Faarbaek requires a curved profile that thickens in the center and tapers at the edge. *Id.* ¶ 65 ("The outer rim or the peripheral edge of the adhesive device ***must*** be shaped to a thickness less than half of the thickest part of the sensor, normally the central part.") (emphasis added).

Petitioner's obviousness ground relies upon modifying Libbus's ECG to have the shape and thickness of Faarbaek's device. Pet. 15 (stating that "a [POSA] would have been motivated to incorporate Faarbaek's housing shape and size (e.g., thickness) into Libbus's ECG device"), 30 ("a [POSA] would have been motivated to modify the shape and thickness of Libbus's ECG device to that of Faarbaek"). Because Faarbaek does not have at least the thickness of a credit card form factor, Petitioner has not carried its burden to establish that it is likely to prevail in showing that the prior art teaches or suggests an ECG sensor having a credit card form factor as required by claims 1 and 8.

Petitioner's citation of Albert's "Heart Card" (Pet. 30 (citing Ex. 1012, 1:57–64, 3:10–41)) does not compel a different result for two reasons. First, regardless of what Albert discloses, Petitioner proposes to modify Libbus to have Faarbaek's dimensions. Pet. 15, 30. Second, Petitioner does not direct us to anything in Albert that discloses the dimensions—and particularly the thickness—of Albert's "Heart Card." The cited portions of Albert do reference a "Heart Card," but do not disclose its size and shape. Ex. 1012, 1:57–64, 3:10–41, *cited at* Pet. 30. Albert's

Figure 1 does depict the "heart card" as rectangular. *Id.* at Fig. 1 (element 12). But even if we accept the schematic diagram of Figure 1 as an accurate representation of the two-dimensional shape of the "Heart Card," it provides no information about its thickness or its three-dimensional shape.[8]

Accordingly, on the current record, Petitioner has not carried its burden to establish that it is reasonably likely to prevail in showing that claims 1 and 8 and the claims depending therefrom would have been obvious over the combination of Libbus and Faarbaek.

2. The "converter assembly" limitation

Each of independent claims 1, 8, and 12 requires a "converter assembly electrically connected to the electrode assembly." Ex. 1001, 12:60–13:7, 13:40–14:9, 14:19–14:35. Claims 1 and 12 additionally require that the converter assembly be "configured to convert the electrical signals to a modulated signal, wherein the modulated signal carries the electrical signals representing the sensed heart-related signals." *Id.* at 12:60–13:7, 14:19–14:35. Claim 8 lacks this additional requirement, but also specifies that the converter assembly "compris[es] a processor." *Id.* at 13:40–14:9.

Petitioner relies on Libbus as disclosing the claimed "converter assembly." Petitioner points to Libbus's disclosure that its device includes "wireless communications circuitry," and asserts that a POSA "would have understood the wireless communication circuitry to include a converter assembly and a transmitter because the wireless communication circuitry is

[8] We give no weight to the picture identified as "Instromedix, Inc.'s Heart Card" at page 17 of the Petition because the Petition does not identify the source or date of the picture. Moreover the photograph does not reveal the thickness of the "Heart Card" or otherwise make it possible to discern its three-dimensional shape.

connected to the electrocardiogram circuitry, modulates an ECG signal, and wirelessly transmits the ECG signal to another device." Pet. 24 (citing Ex. 1003 ¶ 84; Ex. 1004 ¶¶ 48, 59).

Patent Owner argues that Petitioner relies principally on paragraph 59 of Libbus, which "is directed to using 'wireless communications circuitry 132' to 'communicate with remote center 106' and 'transmit[ting] to a remote center with a communication protocol at least one of the hydration signal, the electrocardiogram signal or the accelerometer signal.'" Prelim. Resp. 32. According to Patent Owner, "[n]othing in [paragraph 59 of Libbus] describes the wireless communications circuitry as modulating or otherwise converting the original electrical signals collected from the electrodes." *Id.* Patent Owner argues that "[i]t does not follow from the mere fact that [paragraph 59] describes transmitting modulated information that the wireless transmission circuitry necessarily performs a conversion as recited." *Id.* at 32–33. Thus, Patent Owner asserts, "Petitioner's assertion that a POSA would have understood Libbus's wireless communications circuit to include a converter assembly that performs the recited function is an unexplained and unsupported assumption." *Id.* at 33.

On the current record, we agree with Patent Owner that Petitioner has not shown a reasonable likelihood of prevailing in demonstrating that the prior art teaches or suggests a "converter assembly." As discussed above, Petitioner asserts that a "[POSA] would have understood [Libbus's] wireless communication circuitry to include a converter assembly and a transmitter because the wireless communication circuitry is connected to the electrocardiogram circuitry, modulates an ECG signal, and wirelessly transmits the ECG signal to another device." Pet. 24. As support, Petitioner cites paragraphs 48 and 59 of Libbus. Pet. 24.

Paragraph 59 is quoted, in its entirety, *supra* § II.D.1. Paragraph 59 discloses: 1) the circuitry to which the wireless communications circuitry may be coupled, 2) the types of information that the wireless communications circuitry may transmit, and 3) the options for communication protocols the wireless communication circuitry can use to transmit information. Ex. 1004 ¶ 59. We agree with Patent Owner that paragraph 59 does not expressly describe the wireless communications circuitry as including a converter assembly. Prelim. Resp. 32. We further agree that it does not expressly describe the wireless circuitry modulating or otherwise converting the original electrical signals collected from the electrodes. *Id.*

It is not clear how Petitioner contends Paragraph 48 supports its position that Libbus's wireless communication circuitry includes a converter assembly. Paragraph 48 teaches that "the adherent device may continuously monitor physiological parameters, communicate wirelessly with a remote center, and provide alerts when necessary." Ex. 1004 ¶ 48. It further teaches that Libbus's system may include "wireless communication capabilities" and that the adherent device may "communicate with [a] remote center, via [an] intermediate device in the patient's home." *Id.* Finally, paragraph 48 teaches that the "remote center receives the data and applies [a] prediction algorithm." *Id.* As with paragraph 59, nothing in paragraph 48 expressly discloses that the wireless communication circuitry includes a converter assembly or that it modulates electrical signals collected from the electrodes.

Petitioner also cites the testimony of Dr. Fletcher to support its position that the POSA would have "understood" Libbus's wireless communication circuitry to include a converter assembly. Pet. 24 (citing

Ex. 1003 ¶ 84). As an initial matter, Dr. Fletcher's testimony that a POSA would understand Libbus's wireless communications circuitry to include a converter is not well explained, nor is it supported by evidence beyond Dr. Fletcher's assertion that it is so. Dr. Fletcher merely parrots the statement in the Petition that a POSA "would have understood the wireless communication circuitry to include a converter assembly and a transmitter because the wireless communication circuitry is connected to the electrocardiogram circuitry, modulates an ECG signal, and wirelessly transmits the ECG signal to another device." Ex. 1003 ¶ 84. And Dr. Fletcher's evidentiary support is the same unpersuasive evidence cited in the Petition—paragraphs 48 and 59 of Libbus. *Id.* We give Dr. Fletcher's testimony some weight, but that weight is substantially diminished by the absence of persuasive explanation and supporting evidence. *See Rohm & Haas Co. v. Brotech Crop.*, 127 F.3d 1089, 1092 (Fed. Cir. 1997) ("Nothing in the rules or in our jurisprudence requires the fact finder to credit the unsupported assertions of an expert witness."); *see also* 37 C.F.R. § 42.65 ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.").

Absent citation to supporting evidence or further exposition from Dr. Fletcher, it is difficult to discern what legal theory Petitioner relies upon. It may be that Petitioner contends that the claimed "converter assembly" is inherently present in Libbus's wireless communication circuitry.[9] But, Dr.

[9] Consistent with the position set forth in the Petition that the claimed "converter assembly" is included in Libbus's "wireless communication circuitry" (Pet. 24), we limit our consideration to that assertion. We do not consider, for example, whether the claimed converter assembly is present elsewhere in Libbus. Nor do we consider whether it would have been obvious to include a "converter assembly" in Libbus's device.

Fletcher's testimony falls short of asserting that "a converter assembly" *must* be included in Libbus's wireless communication circuitry, as would be required to establish inherency. *PAR Pharm., Inc. v. TWi Pharms., Inc*., 773 F.3d 1186, 1196 (Fed. Cir. 2014) (holding that a prior art reference may inherently anticipate a claim limitation, where "the limitation at issue necessarily must be present, or [is] the natural result of the combination of elements explicitly disclosed by the prior art"). Absent such an assertion, and absent persuasive evidence to support such an assertion, we can only speculate as to whether the wireless transmission circuitry would need to include a "converter assembly" in order for it to function as described in Libbus.

It may also be that Petitioner contends that the POSA would at once envisage that the converter assembly is present in Libbus's wireless communication circuitry. *See Kennametal, Inc. v. Ingersoll Cutting Tool Co.,* 780 F.3d 1376 (Fed. Cir. 2015) ("[A] reference can anticipate a claim even if it 'd[oes] not expressly spell out' all the limitations arranged or combined as in the claim, if a person of skill in the art, reading the reference, would 'at once envisage' the claimed arrangement or combination."). But Dr. Fletcher's testimony does not include "at once envisage" language. Moreover, the Federal Circuit has cautioned:

> *Kennametal* does not stand for the proposition that a reference missing a limitation can anticipate a claim if a skilled artisan viewing the reference would "at once envisage" the missing limitation. Rather, *Kennametal* addresses whether the disclosure of a limited number of combination possibilities discloses one of the possible combinations.

Nidec Motor Corporation v. Zhongshan Broad Ocean Motor Co., Ltd. 851 F.3d. 1270, 1274 (Fed. Cir. 2017). Here, Dr. Fletcher does not discuss

whether there are other possibilities beyond including a "converter assembly" in Libbus's wireless communication circuitry. Accordingly, we can only speculate as to whether the conditions here are sufficient to invoke *Kennametal's* "at once envisage" standard. *Id.* at 1274–75 ("*Kennametal* does not permit the Board to fill in missing limitations simply because a skilled artisan would immediately envision them.").

Finally, Petitioner's assertions with respect to the "converter assembly" of claim 8 diminish the credibility of its assertions with respect to claims 1 and 12. Petitioner illustrates the position of the "converter assembly" in Libbus's device in annotated Figure 1D,[10] which is reproduced below.

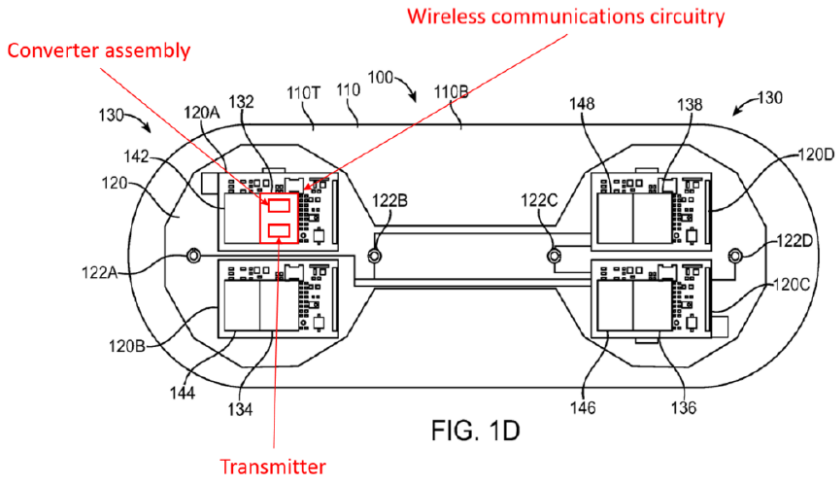

FIG. 1D

Pet. 25. Figure 1D of Libbus shows "printed circuit boards and electronic components over [Libbus's] adherent patch." Ex. 1004 ¶ 36. The electronic components shown in Figure 1D include "wireless communication circuitry 132." *Id.* ¶ 59. Petitioner has annotated Figure 1D to include a two

[10] Patent Owner argues that Petitioner's addition of a "converter assembly" to Figure 1D is unsupported because "[n]o such converter assembly (or any other subcomponents) are part of the wireless communication circuitry 132 Libbus depicts or describes in relation to FIG. 1D." Prelim. Resp. 34. For the reasons discussed above, we agree.

rectangular boxes within "wireless communications circuitry 132." Pet. 25. The first annotated rectangular box is labeled "converter assembly," and the second box is labeled "transmitter." *Id.*

As discussed above, claim 8 requires a "converter assembly . . . comprising a processor." Ex. 1001, 14:1–3. Petitioner contends that Libbus's converter includes a processor. Pet. 38 ("The converter assembly portion further includes a 'processor' to control the collection and transmission of data from the electrocardiogram circuitry.") (citing Ex. 1004 ¶¶ 58, 59, 71, 72, 74). This is problematic for Petitioner because Libbus identifies the processor in Figure 1D as element 146.[11] Ex. 1004 ¶ 58 (identifying the processor as element 146 and teaching that it "can be configured to control a collection and transmission of data"). As can be seen, "[p]rocessor 146" is not part of the "converter assembly" that Petitioner identified in annotated Figure 1D. Nor is it part of the "wireless communication circuitry 132."

Neither Petitioner nor its expert, Dr. Fletcher, seeks to explain the apparent conflict between its assertion that the "converter assembly . . . includes a 'processor'" (Pet. 38) and Libbus's identification of the processor as element 146, which is not part of the circuitry that Petitioner alleges comprises the converter assembly. Pet. 38; Ex. 1003 ¶ 122.[12] Absent further

[11] Libbus's paragraph 58 also references a "processor 136." This appears to be a typographical error, as element 136 is referred to as "impedance circuitry 136" or "ECG circuitry 136" in other paragraphs. *See, e.g.,* Ex. 1004 ¶¶ 56, 64. Regardless, even if element 136 is a processor, it is not part of the converter assembly identified by Petitioner in annotated Figure 1D of Libbus.

[12] Petitioner and Dr. Fletcher do not assert, for example, that Libbus's device uses multiple processors. Pet. 38; Ex. 1003 ¶ 122

explanation, we find Petitioner's assertions as to the makeup and location of the converter assembly to be at odds. This diminishes the weight and credibility of Petitioner's other assertions about the converter assembly.

In sum, the Petition asserts that the claimed "converter assembly" is present in Libbus as part of the "wireless communication circuitry," but the evidence cited in support does not persuade us that Petitioner is reasonably likely to prevail in establishing that: 1) that Libbus fairly suggests that its wireless communication circuitry includes a converter assembly, 2) that a converter assembly is inherently present in Libbus's wireless communication circuitry, or 3) that the POSA would have at once envisaged that Libbus's wireless communication circuitry includes a converter assembly. In reaching this conclusion, we give Dr. Fletcher's testimony diminished weight because he does not provide or explain the underlying facts or data on which his opinion is based and because his assertion that the converter assembly includes a processor appears contrary to Libbus's disclosure of where the processor is located.

F. Ground 2

In Ground 2, Petitioner asserts that claims 12 and 14 would have been obvious over the combination of Libbus and Batkin. Pet 48–56. As with Ground 1, Petitioner relies on Libbus as disclosing the claimed "converter assembly." *Id.* Petitioner does not introduce any additional evidence in connection with Ground 2 bearing on the "converter assembly" limitation. *Id.* For the reasons already discussed, Petitioner has not carried its burden to establish that Libbus's "wireless communications circuitry" includes a "converter assembly."

G. Ground 3

In Ground 3, Petitioner asserts that claims 5 and 13 would have been obvious over the combination of Libbus, Faarbaek, and Vyshedskiy. Pet 56–64. As with Ground 1, Petitioner relies on Libbus as disclosing the claimed "converter assembly" (for claims 5 and 13) and on Faarbaek as disclosing a "credit card form factor" (for claim 5). *Id.* Petitioner does not introduce any additional evidence in connection with Ground 3 bearing on the "converter assembly" or "credit card form factor" limitations. *Id.* For the reasons already discussed, Petitioner has not carried its burden to establish that Libbus's "wireless communications circuitry" includes a "converter assembly" or that Faarbaek discloses a "credit card form factor."

H. Ground 4

In Ground 4, Petitioner asserts that claim 13 would have been obvious over the combination of Libbus, Batkin, and Vyshedskiy. Pet 64–65. As with Ground 1, Petitioner relies on Libbus as disclosing the claimed "converter assembly." *Id.* Petitioner does not introduce any additional evidence in connection with Ground 4 bearing on the "converter assembly" limitation. *Id.* For the reasons already discussed, Petitioner has not carried its burden to establish that Libbus's "wireless communications circuitry" includes a "converter assembly."

I. Ground 5

In Ground 5, Petitioner asserts that claims 7 and 15 would have been obvious over the combination of Libbus, Faarbaek, and the Headset Profile. Pet. 65–68. As with Ground 1, Petitioner relies on Libbus as disclosing the claimed "converter assembly" (for claims 7 and 15) and on Faarbaek as disclosing a "credit card form factor" (for claim 7). *Id*. Petitioner does not introduce any additional evidence in connection with Ground 5 bearing on

the "converter assembly" or "credit card form factor" limitations. *Id.* For the reasons already discussed, Petitioner has not carried its burden to establish that Libbus's "wireless communications circuitry" includes a "converter assembly" or that Faarbaek discloses a "credit card form factor."

III. CONCLUSION

Petitioner has not demonstrated a reasonable likelihood of prevailing in showing that at least one of the challenged claims is unpatentable based on the grounds advanced in the Petition.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that an *inter partes* review of the challenged claims is not instituted in this proceeding.

PETITIONER:

Walter K. Renner
Jeremy J. Monaldo
FISH & RICHARDSON P.C.
axf-ptab@fr.com
jjm@fr.com

PATENT OWNER:

Michael T. Rosato
Matthew A. Argenti
Tasha M. Thomas
Yahn-Lin Chu
WILSON SONSINI GOODRICH & ROSATI
mrosato@wsgr.com
margenti@wsgr.com
tthomas@wsgr.com
ychu@wsgr.com