

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ABBOTT LABORATORIES AND
ABBOTT DIABETES CARE INC.,

Petitioner,

v.

ALTIVERA LLC,

Patent Owner.

Case No. IPR2024-00425

Patent No. 7,969,307 B2

PATENT OWNER'S RESPONSE

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<i>LSI Corp. v. Regents of the Univ. of Minn.</i> , IPR2017-01068, Paper 58, 44 (Apr. 14, 2021).....	28
<i>Metalcraft of Mayville, Inc. v. The Toro Co.</i> , 848 F.3d 1358 (Fed. Cir. 2017)	25
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EXHIBIT LIST

PATENT OWNER'S EXHIBITS	
Exhibit No.	Description
2001	Declaration of William Bandy, Ph.D.
2002	Declaration of John P. Peeters, Ph.D.
2003	Feb. 1, 2005 email from John Melngailis, Bates numbered GEN-AB-0003666 in <i>Gentag, Inc. v. Abbott Laboratories</i> , No. 1:23-cv-00310 (N.D. Ill.)
2004	May 6, 2003 handwritten notes by John Peeters, Bates numbered GEN-AB-00001440 in <i>Gentag, Inc. v. Abbott Laboratories</i> , No. 1:23-cv-00310 (N.D. Ill.)
2005	May 7, 2003 letter from John Peeters, Bates numbered GEN-AB-0001441-1442 in <i>Gentag, Inc. v. Abbott Laboratories</i> , No. 1:23-cv-00310 (N.D. Ill.)
2006	Aug. 19, 2003 email from John Peeters, Bates numbered GEN-AB-00002974-2977 in <i>Gentag, Inc. v. Abbott Laboratories</i> , No. 1:23-cv-00310 (N.D. Ill.)
2007	Defendants' Reply Claim Construction Brief, <i>Gentag, Inc. v. Abbott Laboratories</i> , Case No. 1:23-cv-310 (N.D. Ill. May 24, 2024), ECF No. 87
2008	Nokia 1100 User Guide
2009	Declaration of Steve Warren, Ph.D.
2010	Curriculum Vitae of Steve Warren, Ph.D.
2011	Transcript of Deposition of Dr. Majid Sarrafzadeh
2012	Nokia 1100 full phone specifications (https://www.gsmarena.com/nokia_1100-512.php)

PATENT OWNER'S EXHIBITS	
Exhibit No.	Description
2013	Robert Triggs, <i>A little history of Bluetooth</i> , dated Sept. 1, 2023 (https://www.androidauthority.com/history-bluetooth-explained-846345/)
2014	Len Ott, <i>The Evolution of Bluetooth In Wireless Medical Devices</i> , Socket Mobile (July 2010)
2015	Wikipedia, <i>Near-field communication</i> , last accessed Oct. 7, 2024
2016	Nathan Lawrentschuk & Damien M. Bolton, SYSTEMATIC REVIEW, <i>Mobile phone interference with medical equipment and its clinical relevance: a systematic review</i> , Vol. 181, No. 3 (Aug. 2004)
2017	A.A. Klein & G. N. Djaiani, JAPI, <i>Mobile Phones in the hospital – past, present and future</i> , Anesthesia (2003)
2018	ME YEOLEKAR & A SHARMA, <i>Use of Mobile Phones in ICU – Why Not Ban?</i> , Vol. 51 (Apr. 2004)
2019	Hiroshi Furuhashi, JIKEI UNIV. SCHOOL OF MEDICINE TOKYO, JP, <i>Electromagnetic Interferences of Electric Medical Equipment from hand-held radiocommunication Equipment</i>
2020	P Gilligan, et al., THE BRITISH JOURNAL OF RADIOLOGY, <i>GSM cell phones can interfere with ionizing radiation dose monitoring equipment</i> (2000)
2021	Werner E. Irnich & Rolf Tobisch, <i>Mobile Phones in Hospitals</i>
2022	Greg Knell, <i>SureCall Cell Phone Signal Booster Blog</i> (Feb. 2022), https://surecall.com/surecall-cell-phone-signal-booster-blog/cellular-phone-frequency-bands-guide-2022/

I. INTRODUCTION

Abbott Laboratories and Abbott Diabetes Care Inc. (collectively, “Petitioner”) filed a Petition for *Inter Partes* Review challenging the patentability of claims 1-3, 5, 9, and 10 of U.S. Patent No. 7,969,307 (“’307 Patent”). Petitioner asserts three grounds: (1) claims 1, 2, 5, 9, and 10 are obvious over Bandy; (2) claim 3 is obvious over Bandy in view of Heller; and (3) claims 1-3, 5, 9, and 10 are obvious over Beck in view of Heller and Lovejoy. Petitioner has failed to demonstrate that the challenged claims are obvious for several reasons.

As to Grounds 1 and 2, Petitioner fails to show that Bandy qualifies as prior art “by another.” As confirmed by Bandy’s two named inventors—Dr. William Bandy and Dr. John Peeters—the portions of Bandy upon which Petitioner relies were all contributed by Peeters, the sole inventor of the ’307 Patent. Thus, as a matter of law, Bandy cannot be used—alone or in combination—to invalidate the ’307 Patent.

Further, even if Bandy qualified as prior art, Petitioner fails to show that required claim limitations are disclosed or rendered obvious by Bandy, alone or in view of Heller. The Petition fails to show that Bandy discloses a wireless reader having a “unique ID,” or “authentica[ting] said unique sensor ID associated with said unique wireless device ID.” As the Board recognized in its Institution Decision (“Inst. Dec.”), the claims require an *association* between the unique sensor ID and the unique wireless device ID. Petitioner has not even asserted such an association.

As to Ground 3, Petitioner conflates a *medical device* (a piece of equipment, such as a glucose meter or EKG machine) and the *sensor* used with that medical device (such as a test strip for a glucose meter or electrodes for an EKG machine). The claims expressly recite communication with a sensor, not a medical device, and Petitioner's repeated failure to account for this distinction infects both the motivation to combine Beck and Heller, as well as the analysis of the purported combination. Specifically, a POSITA at the relevant time would not have been motivated to combine the teachings of Beck—which discloses a system concerned with communication between medical devices, not sensors—with the sensor technology disclosed in Heller. Moreover, even if you somehow combined the medical devices of Beck with the Heller sensors, that combination would not teach all the required claim limitations, at least because it would not disclose a unique identifier for a *sensor* as required by the claim. Instead, at most, the combination would teach a unique identifier for an entire *medical device*. This combination is also deficient for the same reason as Ground 1: Petitioner fails to identify any association between a unique wireless device ID and a unique sensor ID.

The combination with Lovejoy is also problematic. Even if a POSITA would have been motivated to combine Beck's healthcare system with Lovejoy's workplace safety system—and, as detailed below, they would not have been so motivated—the combination would not teach a geolocation means in the *wireless*

device, as required by the claims. Instead, if such a combined system included a geolocation means, it would be in the *sensor*.

II. BACKGROUND

A. Overview of the '307 Patent

The invention claimed in the '307 Patent was invented by Dr. John Peeters. Ex-1001, Face. The patent is directed to a system for wireless diagnostics using radio frequency identification (RFID) tags that are combined with diagnostic sensors. *Id.* at 2:14-17. The technology allows a *modified* cell phone (or other wireless RFID reader) to perform diagnostic tests using RFID tags and sensors integrated with disposable skin patches. *Id.* at 2:21-24, 2:32-36, 3:54-61. For example, in one embodiment, the RFID tag and skin patch combination includes a plurality of sensors used for various diagnostic applications. *Id.* at 6:35-40. The “smart” patch technology described in the patent can perform any number of different diagnostic tests on a subject and be processed remotely by a wireless device such as a cell phone, which can interpret the sensor anywhere in the world. *Id.* at 5:42-43, 7:34-36. This technology allows on-the-spot processing of complex sensor data at a relatively low cost. *Id.* at 4:63-65; *see also* Ex-2009 (“Warren”) ¶21.

For example, the technology of the '307 Patent can be utilized for monitoring blood glucose levels by individuals with diabetes. Ex-1001, 8:64-9:3, Fig. 4. Prior to the invention of the '307 Patent, such a person had to regularly monitor blood

glucose levels manually, such as by pricking a finger with a needle to test glucose levels in blood using test strips and a glucometer. The invention of the '307 Patent eliminated the need for this cumbersome process, allowing a person to instead apply an adhesive skin patch capable of sensing glucose levels in interstitial fluid and automatically communicating information regarding those glucose levels to a cell phone (or other wireless reader). This invention was prescient, as cell phone technology in 2003 was still in its infancy. Warren ¶¶22, 28-34.

As shown below, Figures 1-2 of the '307 Patent depict a cell phone 2 serving as an RFID reader in conjunction with a disposable skin patch 4 including an RFID tag and sensor module 11. Ex-1001, 5:12-16, 6:46-49. Typically, the patch 4 is composed of a thin flexible support 5 that has an adhesive surface 7. *Id.* at 6:51-52. The patch includes an RFID electronic chip 10, a sensor 12, and at least one antenna 8. *Id.* at 6:49-51. The RFID tag and sensor module 11 form an integrated unit on a substrate disk 6. *Id.* at 6:64-65. Typically, disk 6 and sensing elements 12 are protected by at least one protective layer 20, which makes direct contact with the surface of the skin. *Id.* at 7:14-17.

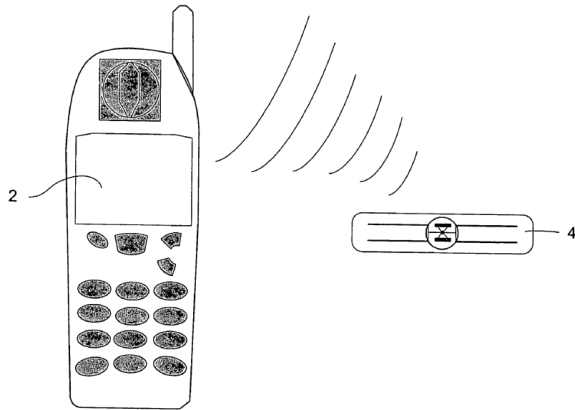


FIG. 1

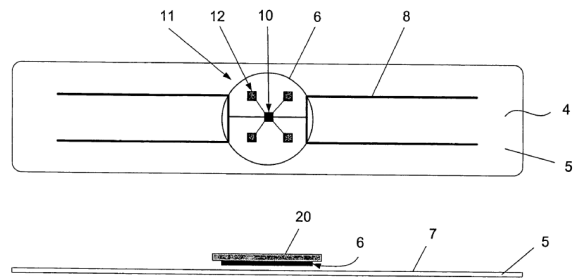


FIG. 2

Ex-1001, Figs. 1-2; *see also* Warren ¶23.

Figure 5 (reproduced below) shows the basic elements of the RFID electronic chip 10, including a power unit 60, a controller 62, an identification unit 64, a memory unit 66, a sensor table 68, a thermistor or temperature module/sensor 70, and an analog to digital converter 72. Ex-1001, 9:35-39. The electronic chip 10 is coupled to an antenna 8. *Id.* at 9:24-25.

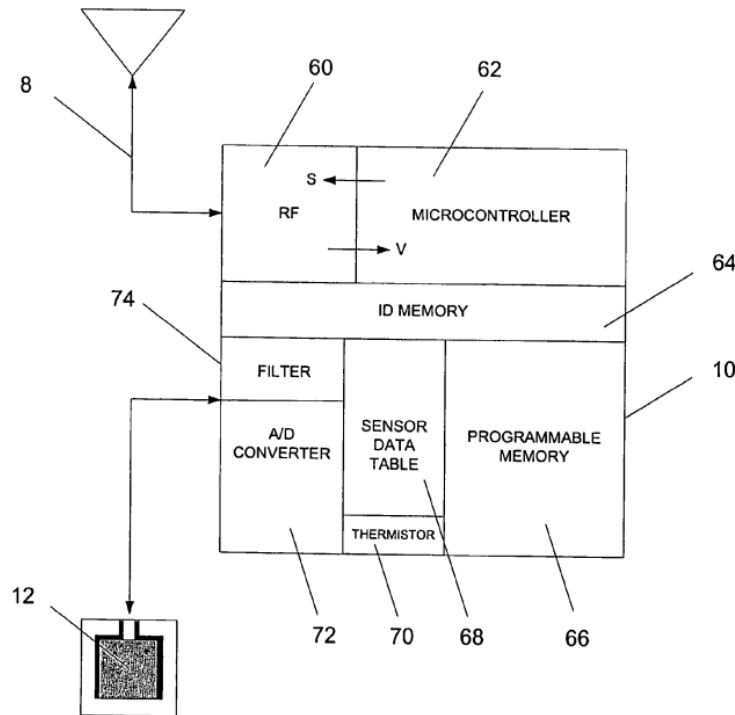


FIG. 5

Ex-1001, Fig. 5; *see also* Warren ¶24.

The RFID tag provides a unique ID to the wireless device identifying the sensor used. Ex-1001, 7:43-45. Since each RFID tag 10 contains its own electronic identification number 64, wireless device 2 can immediately recognize the type of sensor involved. *Id.* at 12:42-45; *see also* Warren ¶25. In addition to identifying the *type* of sensor, the unique ID of the *particular* sensor facilitates downloading information related to that sensor. Ex-1001, 11:49-60 (“downloading the correct sensor data tables from a remote location”); Warren ¶25.

The RFID tag and sensor module respond to a stimulus by wirelessly transmitting and receiving signals that correspond to the stimulus using the antenna.

Ex-1001, 2:46-48. The RFID reader can communicate over a network. *Id.* at 2:56-58. The diagnostic system may also include a remote storage/data access unit that stores data transmitted and/or received by the RFID tag and sensor module and the RFID reader. *Id.* at 2:59-62. The patent further discloses a remote wireless device that enables access to the RFID tag and sensor module, the RFID reader, and the remote storage/data access unit from virtually any location. *Id.* at 2:62-65; *see also* Warren ¶26.

The '307 Patent discloses on-the-spot medical testing and self-diagnostics using smart skin patches, point-of-care analyses, food diagnostics, pathogen detection, disease-specific wireless biomarker detection, remote structural stress detection and sensor networks for industrial or Homeland Security applications using wireless devices such as modified cell phones. Ex-1001, Abstract. In some embodiments, the sensor 12 may be a chemical sensor. *Id.* at 10:24-27. As noted above, the '307 Patent describes using such a sensor to perform on-the-spot diagnostics such as blood glucose monitoring via a disposable RFID-skin patch and wireless device combination. *Id.* at 8:49-52, 9:5-8, Fig. 4; *see also* Warren ¶27.

B. The State of the Art at the Relevant Time

Dr. Peeters' innovation claimed in the '307 Patent must be viewed in the context of the state of the art at the time the invention was conceived in 2003. Ex-2001 ¶6; Ex.-2002 ¶¶12-13; Ex-1001, Face. At that time, cell phone technology was

in its infancy. Warren ¶28. In particular, geolocation features and multiple connectivity options (i.e., connectivity other than through cellular service) were lacking in many cell-phone models. *Id.*

The Nokia 1100 (shown right), a basic GSM mobile phone, launched in 2003 and became the world's best-selling phone handset. *Id.* ¶29. The Nokia 1100, like many cell phones at that time, did not support GPS or other geolocation functionality and had extremely limited processing power. *Id.* For context, the first iPhone was not introduced until 2007, and did



not have a GPS chip. *Id.* The first Android phones followed in 2008, more than four years after the '307 Patent's priority date. *Id.* Abbott's expert, ignoring this reality, treats the state of the art in 2003 and 2004 as if it were identical to the state of the art today. *Id.* To the contrary, cell phones (now, years later, called "smart phones") have evolved dramatically over the past two decades. *Id.* For his part, Petitioner's expert, Dr. Sarrafzadeh, acknowledged doing testing on cellular phones in the 2003 to 2005 timeframe, but could not recall any model that had geolocation features. Ex-2011, 42:8-43:6.

As to connectivity, the first Bluetooth phone was introduced in 2001. Warren ¶30. In 2003, the FDA approved the first Bluetooth-enabled medical device, a Serial

Port Adapter (SPA) for emergency room equipment, which was designed for applications such as wireless printing of electrocardiograms or transmitting medical images. Warren ¶30. The SPA, like most early Bluetooth-enabled medical devices, used a type of Bluetooth communication referred to as the Serial Port Profile (SPP), which was designed to replace traditional cables. *Id.*

The SPP, however, had drawbacks. For example:

[T]he manufacturer of a Bluetooth enabled blood glucose meter would need to provide software to run on the laptop or PDA being used to capture data from the device. As a result, a Bluetooth medical device from one manufacturer has very little chance of working with a device from another manufacturer, since they probably format their data differently.

Warren ¶31 (quoting Ex-2014).

Near-field communication (NFC) technology employs a low-power, short-range set of communication protocols that allows electronic devices to communicate when close to each other. Warren ¶32. NFC standards are based on radio-frequency identification (RFID) technology, which allows hardware to communicate with (and supply power to) a sensor via inductive coupling. *Id.*

NFC was approved as an ISO/IEC standard in December 2003, with industry players (Nokia, Philips, and Sony) establishing the NFC Forum (a non-profit industry association) in 2004. *Id.* ¶33. Nokia launched NFC shell add-ons for certain cell-phone models in 2004 and 2005, releasing Nokia's 6131 phone (the first cell

phone with NFC functionality) even later. *Id.* Even with the limited capabilities of cellular phones at the time, the '307 Patent taught a system where such phones could be used for medical diagnostic monitoring. *Id.* ¶34.

C. The Alleged Prior Art

1. U.S. Patent No. 7,148,803 (“Bandy”)

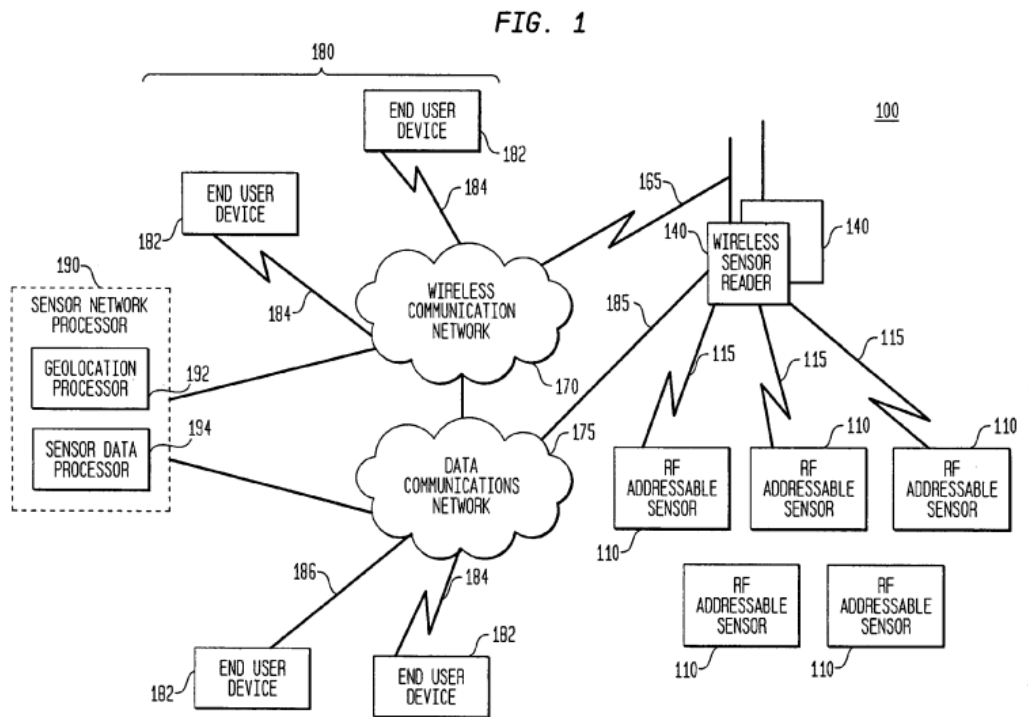
Bandy, the primary reference upon which Petitioner relies for Grounds 1 and 2, is listed on the '307 Patent among the “References Cited.” Ex-1001, 2. During prosecution of the '307 Patent, the examiner initialed the applicant's Information Disclosure Statement corresponding to Bandy, indicating that she considered the reference. Ex-1002, 383.

The application from which Bandy issued also is discussed and incorporated by reference in the specification of the '307 Patent. Ex-1001, 5:7-11, 5:16-19, 9:28-33, 14:52-58. As such, Bandy was directly before the Examiner during prosecution. Warren ¶¶35-39.

Dr. Peeters—the sole inventor of the '307 Patent—is one of two inventors listed on the face of Bandy. Ex-1005, Face.¹ Bandy is directed to RFID-based sensor networks. *Id.*, Abstract. The sensor network includes one or more RF addressable

¹ As discussed in Section IV.A.1., *infra*, the portions of Bandy relied upon by Petitioner were solely invented by Dr. Peeters.

sensors, one or more wireless sensor readers coupled to a communications network, and one or more optional end user devices coupled to the communications network. *Id.* at 1:58-62. Figure 1, reproduced below, shows an illustrative RF addressable sensor network 100 for monitoring, detecting, and geolocating RF addressable sensors (*id.* at 4:33-35):



Id., Fig. 1; *see also* Warren ¶40.

The RF addressable sensor includes one or more antennas for communicating with the wireless sensor reader, one or more sensor elements, an RF power and communications interface, an RFID control module, and a sensor interface. Ex-1005, 2:19-13, Fig. 2. The wireless sensor reader includes one or more antennas, a user

interface, a controller, a network communications module, and an RF addressable sensor logic module. *Id.* at 2:21-24, Fig. 3; *see also* Warren ¶41.

Bandy describes multiple applications—from detecting hazardous materials for homeland security applications to remote monitoring of shipping containers—but does not describe patch-based diagnostic sensors or a remote wireless device having a unique ID. Warren ¶42. In fact, Petitioner's expert confirmed that some sensors disclosed by Bandy would not be suitable for affixation to a person. *Id.*; Ex-2011, 83:20-84:7, 85:4-22.

2. U.S. Patent App. Pub. No. US 2002/0178126 A1 (“Beck”)

Unlike the '307 Patent, Beck relates to remote monitoring of medical *devices* that do not include integrated sensors with unique sensor IDs. This is meaningfully different from using a cell phone or other remote wireless device to communicate with a *sensor unit that has a unique sensor ID*, as claimed by the '307 Patent.

Further, unlike the disposable wireless skin patch sensor units described in the '307 patent, Beck is directed to bulky, stand-alone commercial medical devices for monitoring the biological or physiological conditions of patients, e.g., in a hospital setting. Ex-1007 ¶2; Warren ¶43. More specifically, Beck describes systems, client computing devices, server computing devices, and methods for accessing medical devices, providing remote access to medical devices, and/or remotely accessing medical devices. Ex-1007, Abstract, ¶4. For example, in one embodiment, client

computing devices utilize protocol components that may be obtained from a server computing device via a network to communicate with medical devices using a communications protocol supported by the medical device. *Id.*, Abstract.

More specifically, Beck describes a system including a server computing device, a client computing device, a medical device operably coupled to the client computing device via a communications link, and a network that operably couples the client computing device to the server computing device. *Id.* ¶14; Warren ¶44. The system includes a set of protocol components, which the server computing device transfers to the client computing devices. Ex-1007, ¶15. The server computing device is adapted to detect, over the network, medical devices that are operably coupled to the client computing device. *Id.* ¶16. Beck describes combining commercially available components and devices, including the server computing device (*id.* ¶17), processor (*id.* ¶18), storage device (*id.* ¶20), network interface (*id.* ¶21), client computing device (*id.* ¶¶23, 27), and medical device (*id.* ¶34).

With respect to the medical device, Beck provides little detail, noting that it is “generally operable to monitor one or more biological/physiological conditions and communicate with the client computing device.” *Id.* ¶34; Warren ¶45. The medical device includes a processor, memory, a communications interface, one or more user I/O devices, and a system bus. Ex-1007, ¶35. In one embodiment, the medical device includes “a glucose meter such as the glucose meters manufactured

by Roche Diagnostics Corporation which are generally operable to measure blood glucose levels of blood applied to test strips.” *Id.* ¶34. Beck also discloses medical devices for monitoring “electrocardio-signals, brain waves, blood pressure waves” and “respiration.” *Id.*

Given the examples of medical devices disclosed by Beck, along with the requirements of Beck’s remote monitoring system, a POSITA would have understood that Beck’s medical devices were meant to be used in a controlled clinical setting, such as a hospital or doctor’s office. Warren ¶45; *see also* Ex-2011, 98:23-99:24. As discussed below, Beck fails to disclose several limitations of the challenged claims of the ’307 Patent. As one example, while the claims of the ’307 Patent recite individual sensor units, *see, e.g.*, ’307 Patent, claim 1 (“radio frequency (RF) addressable diagnostic sensor unit” comprising “a unique identification ID number”), Beck discloses only complete medical devices that do not include a sensor with a unique sensor ID, *see, e.g.*, Ex-1007, ¶65 (authentication may be based on “the serial number of the medical device”).

3. WIPO Pub. No. WO 02/058537 A2 (“Heller”)

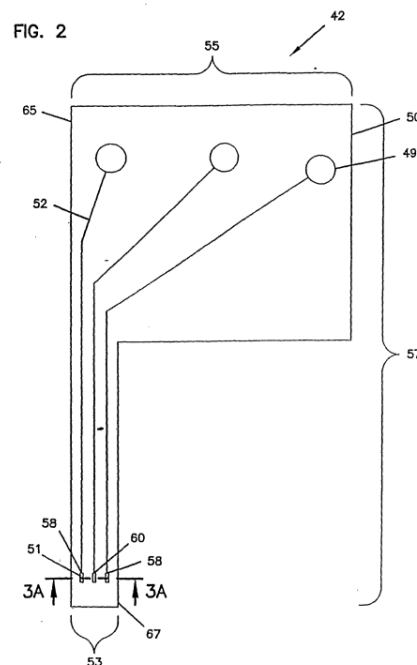
Petitioner asserts Heller as a secondary reference in connection with Grounds 2 and 3. Unlike the ’307 Patent, which discloses a system for communicating wirelessly with a diagnostic sensor unit, Heller discloses only a particular type of sensor and an accompanying sensor control unit. Specifically, Heller discloses an

analyte monitoring system using an implantable sensor for the *in vivo* determination of a concentration of an analyte (such as glucose or lactate) in a fluid. Ex-1016, 1:3-7 (“The present invention is, in general, directed to devices and methods for the *in vivo* monitoring of an analyte, such as glucose or lactate. More particularly, the present invention relates to devices and methods for the *in vivo* monitoring of an analyte using an electrochemical sensor to provide information to a patient about the level of the analyte.”), 8:12-14 (“The present invention is applicable to an analyte monitoring system using an implantable sensor for the *in vivo* determination of a concentration of an analyte, such as glucose or lactate, in a fluid.”); Warren ¶46.

More specifically, Heller describes a sensor that is implanted under the skin of a patient (i.e., subcutaneously) for the continuous or periodic monitoring of an analyte in a patient's interstitial fluid, which can be used to infer the glucose level in the patient's bloodstream. Ex. 1016, 2:27-29 (“Generally, the present invention relates to methods and devices for the continuous and/or automatic *in vivo* monitoring of the level of an analyte using a subcutaneously implantable sensor.”), 8:14-17 (“The sensor can be, for example, subcutaneously implanted in a patient for the continuous or periodic monitoring an analyte in a patient's interstitial fluid. This can then be used to infer the glucose level in the patient's bloodstream.”). Heller further describes analyte sensors “for insertion into a vein, artery, or other portion of the body containing fluid.” *Id.* at 8:17-19; *see also id.* at 10:11-12 (“implantation of

the sensor may be made in the arterial or venous systems for direct testing of analyte levels in blood”), 10:22-27; Warren ¶47.

Heller also describes a sensor control unit having a housing adapted to receive a portion of an electrochemical sensor; conductive contacts disposed on the housing and configured for coupling to contact pads on the sensor; a transmitter disposed in the housing and coupled to the conductive contacts for transmitting data obtained using the sensor; and various optional components. *Id.* at 2:30-3:9. As seen in Figure 2 below, sensor 42 includes at least one electrode 58 formed using conductive traces 52 disposed on a substrate 50 (*id.* at 11:11-13, 11:24-25):



Id., Fig. 2; see also Warren ¶48.

4. U.S. Patent No. 6,031,454 (“Lovejoy”)

As with Bandy, Dr. Peeters, the inventor on the '307 Patent, is also an inventor on Lovejoy. Ex-1009, Face. Also like Bandy, Lovejoy is listed among the “References Cited” on the '307 Patent (Ex-1001, 2), and the examiner initialed the applicant's Information Disclosure Statement confirming her review of Lovejoy (Ex-1002, 291). And Lovejoy is discussed and incorporated by reference in the specification of the '307 Patent. Ex-1001, 6:10-13, 17:21-24, 18:38-43. Thus, Lovejoy was before the examiner during prosecution. Warren ¶49.

Petitioner's use of Lovejoy is limited to the geolocation disclosure of Lovejoy, and there is not assertion that Lovejoy meets any limitations other than those related to geolocation. Lovejoy is directed to a person-specific monitor that provides sensor information regarding that person's occupational exposure to hazards, such as a radiological, chemical, or other toxic agent in the environment around the person. *Id.* ¶50; Ex-1009, Abstract, 1:25-28. Lovejoy describes a sensor module used in conjunction with an electronic monitor, which can be adapted to monitor different types of occupational exposures (e.g., heat, humidity, noise, particles, radiation, chemicals, etc.). *Id.* at 2:28-31, 6:16-19. Lovejoy further describes base stations for reading out data from the personal monitors, for recharging the monitors, and antennas for use in the geolocation of the monitors. *Id.* at 4:38-41.

III. CLAIM CONSTRUCTION

A. “the remote server authenticates said unique sensor ID associated with said unique wireless device ID”

The Board preliminarily construed the claim phrase “the remote server authenticates said unique sensor ID associated with said unique wireless device ID” as not requiring authentication of the unique wireless device ID or authentication using the unique wireless ID. Inst. Dec. 9-10. But a POSITA reading the '307 Patent at the relevant time—particularly in light of the prosecution history—would have understood that, because the claim requires an association between the unique sensor ID and the unique wireless device ID, the authentication of the sensor ID necessarily requires the unique wireless ID to be a part of the authentication process. Warren ¶54. Thus, as discussed below, Patent Owner proposes the following construction: “the remote server authenticates the unique sensor ID and the associated unique wireless device ID.”

The plain meaning of the claim term is that the remote server authenticates the unique sensor ID and that such unique sensor ID is associated with a unique wireless device ID. A POSITA would have understood that the unique sensor ID could not be authenticated in a vacuum, i.e., without reference to the unique wireless device ID. To the contrary, a POSITA would have understood the claim language to require that the unique sensor ID and unique wireless device ID are associated with each other and authenticated by the remote server. Warren ¶¶55-59.

As explained in the accompanying expert declaration, requiring an association between the unique wireless device ID and the unique sensor ID in the claim would have been meaningless unless the unique wireless ID was part of the authentication process, i.e., it would have served no purpose if not needed for authentication. Warren ¶57. A POSITA would have understood that such device information was necessary for security and privacy of the system as well as the integrity of any subsequently stored and processed information/data. *Id.* In the context of the patent, a sensor ID could not be authenticated on its own. Importantly, a POSITA would have understood that the sensor ID could have been read by any RFID reader in range of the sensor (e.g., by a nearby pedestrian's mobile phone) unless both the sensor and the particular wireless reader were authenticated. *Id.*

Indeed, authenticating the sensor ID “associated with” the wireless ID ensures a person's confidential health information is not stolen or misused. A couple of use cases make this clear. Consider a bad actor traversing a crowd, scanning sensors with a wireless device. This is referred to as RFID “skimming,” and is a major problem for RFID-enabled credit cards. Warren ¶58. If the claim required only authenticating the sensor ID, this skimming would allow the bad actor to access the health information of the person wearing the sensor, including at least “processed information relating to said sensor data.” *Id.* But by requiring—as claim 1 of the '307 patent does—that the authentication is of the sensor ID “associated with” the

wireless device ID, only the true user (using the associated authorized wireless device) would have such access. *Id.* ¶¶57-58. As another more innocent, but still potentially problematic, example: a married couple may both be using diagnostic sensor units covered by the claims of the '307 Patent. It would be important to make sure that each person's wireless device was reading the data from their respective sensor, and not accidentally reading from their spouse's sensor, even when they are in close proximity to each other, such as in bed. *Id.*

The prosecution history also supports the requirement that both the sensor ID and the wireless device ID are transmitted to the remote server. Warren ¶59. In a section cited by Petitioner, Pet. 4, and analyzed by Petitioner's expert, Ex-1003, ¶61, the Applicant distinguished prior art by noting that pending claim 65 (issued as claim 1) "actively recites limitation wherein the remote [wireless] device communicates the unique sensor ID *and* unique wireless ID to a remote server...." Ex-1002, 65. In fact, according to Petitioner's expert, "[t]he Applicant confirmed that the remote server 'uses' *the received unique sensor/wireless ID* to send the necessary software." Ex-1003, ¶61. Dr. Sarrafzadeh confirmed this understanding at his deposition. Ex-2011, 59:6-20. Therefore, both the Applicant and Examiner clearly understood that "the remote server authenticates said unique sensor ID associated with said unique wireless device ID" meant that the wireless device was transmitting

both the unique sensor ID and the unique wireless device ID to the remote server. Warren ¶59.

Even if a POSITA's understanding and the Applicant's statements made during prosecution are ignored, there *still* must be an association between the unique sensor ID and the unique wireless ID. Warren ¶60. Under the Board's preliminary view, "'associated with said unique wireless device ID' serves to further describe the unique sensor ID, specifically, that the unique sensor ID is associated with the unique wireless device ID." Inst. Dec. 10. Thus, the Board recognized that an association between the unique sensor ID and the unique wireless device ID must exist, even if only the unique sensor ID is authenticated by the remote server. Nowhere does Petitioner map *anything* in any prior-art reference to this "association" requirement of the claims. Thus, even if Patent Owner's proposed construction is not fully adopted, Petitioner has failed to show that this limitation is met in any ground.

Petitioner inserts into the limitation additional requirements not supported by the intrinsic record. In particular, Petitioner asserts that the processed information and software are sent from the remote server to the wireless device "in response to the authentication." Pet. 6. While the determination of whether the wireless device ID is transmitted as part of authentication is relevant to this proceeding because Petitioner has not shown that feature disclosed in any prior art reference, whether

the processed information and software are sent “in response to” authentication is irrelevant. Warren ¶61.

Petitioner's proposed claim construction should be rejected. At most, Petitioner shows that authentication must occur before software is downloaded. But Petitioner's proposed construction requires more than just one action happening after the other. In particular, Petitioner's proposed construction requires software to be downloaded *in response to* the authentication. Nothing in the claim language requires this limitation, and a POSITA would not have read such a requirement into the claim. Nor does Petitioner's construction indicate what it means by “in response to”: Is there a temporal limitation? Can there be intervening activities? Must the computer code be written in a specific way to meet Petitioner's “in response to” language? Notably, during his deposition, Dr. Sarrafzadeh was unable to provide *any* details of what was required by “in response to” beyond one event happening after the other. Ex-2011, 50:20-56:13; *see also* Warren ¶62.

Further, as explained by Dr. Warren, “request” and “response” are terms of art related to a particular communication paradigm used in standard internet communication. Warren ¶¶63-70. Does Petitioner's additional requirement mean that the communication of processed information and software must be provided in a “response” to an authentication “request”? While Dr. Sarrafzadeh acknowledged he was familiar with this paradigm, he failed to analyze his own proposed claim

construction in that context. Ex-2011, 32:21-33:5, 36:12-37:3. Regardless, introducing this confusion is unnecessary, as the claim language includes no such requirement.

Petitioner also relies on the word “thereby” in the final clause as “reaffirm[ing]” a “cause and effect” relationship between authentication and communication. Pet. 7. But, importantly, the word “thereby” follows the “communicates” limitation and precedes the “worldwide” limitation. Thus, to the extent “thereby” indicates any cause-and-effect relationship—and Petitioner provides no support for that assertion—Petitioner’s mapping of cause and effect is inconsistent with the language of the claim. Indeed, the proper reading of the claim is that the “cause” is communicating processed information and software, and the “effect” is interpreting the sensor worldwide. Petitioner’s reading, conversely, is nonsensical, because both the purported “cause” (authentication) and the purported “effect” (communicating processed information and software) are recited before the word “thereby.” Petitioner’s argument could make sense if the claim recited *the remote sensor authenticates said unique sensor ID associated with said unique wireless device ID, **thereby** communicating to said wireless device*. But that is not the language recited in the claim. Warren ¶71.

B. Means-Plus-Function Limitations

For purposes of this response, Patent Owner does not contest Petitioner's proposed constructions of the means-plus function limitations. Warren ¶¶72. Even applying Petitioner's proposed constructions, the Petition fails to show that any of the challenged claims is unpatentable. *Id.*

IV. PETITIONER HAS NOT ESTABLISHED THAT ANY CLAIM IS UNPATENTABLE

The Petition presents only obviousness grounds. Pet. 1. A claim is invalid under 35 U.S.C. § 103(a) only if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made” to the POSITA.² *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007); Warren ¶¶73-92. An obviousness determination must be based on four factual inquiries: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of

² For purposes of this response, Patent Owner does not contest Petitioner's asserted definition of a POSITA. *See* Warren ¶¶51-53. Even applying Petitioner's definition, the Petition fails to show that any of the challenged claims is unpatentable. Patent Owner reserves the right to challenge Petitioner's definition of a POSITA in any other forum, including in the pending litigation in the Northern District of Illinois.

ordinary skill in the art; and (4) objective indicia of non-obviousness. *Id.* (citing *Graham v. John Deere Co. Kan. City*, 383 U.S. 1, 17-18 (1966)). A party alleging obviousness is “required to place themselves in the minds of those of ordinary skill in the relevant art *at the time the invention was made*, to determine whether that which is now plainly at hand would have been obvious at such earlier time.” *Millennium Pharms., Inc. v. Sandoz Inc.*, 862 F.3d 1356, 1367 (Fed. Cir. 2017) (emphasis added).

“Obviousness requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination.” *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). “This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *KSR*, 550 U.S. at 418-19. Thus, a party challenging a patent must also articulate a reason *why* a person of ordinary skill in the art would have combined or modified the prior art references. *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1366 (Fed. Cir. 2017). It is inappropriate to use hindsight or the disclosure of the '307 Patent itself to show any claims of the '307 Patent would have been obvious. *See ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 546 (Fed. Cir. 1998) (“[O]bviousness can not be based on the hindsight combination of components selectively culled from the prior art to fit the

parameters of the patented invention.”). Petitioner has not met this burden for any challenged claim under any ground of unpatentability.

A. Ground 1 (Asserted Unpatentability of Claims 1, 2, 5, 9, and 10 over Bandy)

1. Bandy is Not Prior Art Because it was Not “by Another”

As an initial matter, Bandy cannot be used as prior art for any obviousness combination under 35 U.S.C. § 103(c) (pre-AIA) because Bandy would qualify as prior art—if at all—only under 35 U.S.C. §102(e), which applies to patents and applications “by another.” Bandy, however, is not “by another” because—as discussed below—the portions of Bandy relied on by Petitioner were conceived by John Peeters, the sole inventor of the '307 Patent. As an inventor's own work is not prior art “by another,” Dr. Peeters' own work reflected in Bandy cannot be used to invalidate the '307 Patent.

Each of the named inventors on the Bandy reference, Dr. William Bandy and Dr. John Peeters, has submitted a declaration, signed under penalty of perjury, in these proceedings. As explained in the declarations, at the time of the invention disclosed in the Bandy reference, Dr. Bandy had experience designing features of RFID systems that allowed for faster reading of large volumes of RFID tags and for reading RFID tags from increased distances. Ex-2001 ¶4. Dr. Peeters had background in sensor technologies, health, threat detection, and wireless geolocation. Ex-2002 ¶¶9, 11.

On May 5, 2003, Professor John Melngailis of the University of Maryland introduced Dr. Peeters to Dr. Bill Bandy and Mike Arneson, the founders of Matrics (an RFID chip company). Ex-2001 ¶5; Ex-2002 ¶10; Ex-2003 (email corroborating the May 5, 2003 meeting). At the meeting, Dr. Peeters conceived the idea of modifying cell phones to read RFID sensors, creating the basis for NFC cell phone sensor networks. Ex-2001 ¶6; Ex-2002 ¶¶12-13; Ex-2003 (email indicating “You [John Peeters] brought up [the] idea of using the cell phone as an RFID tag/sensor reader.”).

Dr. Bandy's contributions to the Bandy reference related to specific features for enhancing RFID systems, namely initialization of an RFID tag (as recited in claims 65, 81, and 83 of Bandy, as originally issued), as well as a method for rapid reading of multiple tags. Ex-2001 ¶8; Ex-2002 ¶18. As Dr. Bandy did not have any background in medical devices, biomarkers, diagnostic sensors, or geolocation, he did not contribute to those aspects of the claims. Ex-2001 ¶9; Ex-2002 ¶¶ 10, 18-19.

Other than the initialization of an RFID tag, and a method for rapid reading of multiple tags (neither of which is relevant to the challenged claims of the '307 Patent), Dr. Peeters contributed the remainder of the Bandy reference's disclosure, including the concept of integrating RFID into cell phones, diagnostic applications, software download for analyzing sensor data, sensor networks based on cell phones and RFID sensors, specific types of sensors (MEMS sensors/microcantilevers, food

sensors, pharma sensors, threat detection sensors, and antenna sensors), the use of reference sensors, on-person sensor cards or badges, wireless geolocation technologies, container monitoring and security, and smart shopping. Ex-2002 ¶19; Ex-2001 ¶9. Dr. Bandy did not contribute to any aspects of the Bandy reference relating to these features. *Id.*

Petitioner has not shown—and cannot show—that the relevant portions of Bandy did not originate from Dr. Peeters himself. In *Google LLC v. IPA Techs. Inc.*, the Federal Circuit held that the Board correctly placed the burden on the petitioner to establish that a reference was “by another” by showing that a person, who was not named as an inventor on the challenged patent, was an inventor of the relevant portions of the asserted reference. 34 F.4th 1081, 1086 (Fed. Cir. 2022); *see also*, e.g., *LSI Corp. v. Regents of the Univ. of Minn.*, IPR2017-01068, Paper 58, 44 (Apr. 14, 2021) (“Petitioner has not satisfied its burden to prove the portions of Tsang relied upon for anticipation represent the work of another to qualify as prior art under §102(e)”); *Sanofi-Aventis U.S. LLC v. Immunex Corp.*, IPR2017-01879, Paper 88, 24 (Feb. 14, 2019) (“Petitioner has not satisfied its burden to prove the portions of the ’132 Publication relied upon for anticipation ... represent the work of another to qualify as prior art under §102(e).”).

As further detailed in Dr. Peeters’ Declaration, the portions of Bandy upon which Petitioner and its expert rely were all contributed solely by Dr. Peeters. Ex-

2002 ¶¶21-24; *see also* Ex-2001 ¶¶ 10-11.³ Accordingly, Bandy is not prior art “by another” under 35 U.S.C. §102(e). Thus, the Board should find that Petitioner has failed to satisfy its burden that Bandy qualifies as prior art.

2. Petitioner Fails to Show That Bandy Discloses or Renders Obvious Limitations of the Challenged Claims

a. “unique ID” of the remote wireless device

Claim 1 requires that the wireless device has a “unique ID” and that the unique sensor ID is “associated with said unique wireless device ID.” None of Petitioner’s references discloses this limitation, but Petitioner nonetheless asserts that the unique wireless device ID is met based on a POSITA’s knowledge of a Media Access Control (MAC) address and/or an International Mobile Equipment Identity (IMEI)

³ Petitioner cannot get around this fact by pointing to irrelevant portions of Bandy, as “[t]he portions of the reference being considered must be relied upon *and relevant to establishing obviousness.*” *Google*, 34 F.4th at 1086 n.3 (emphasis added). “Otherwise, a party challenging a patent could artificially alter the inventive entity for comparison by citing extraneous portions of a multi-inventor prior art reference, thereby making it ‘by others’ even if the portions of the reference necessary for establishing obviousness had the same inventive entity as the challenged patent.” *Id.*

number used for wireless phones. Pet. 26–27 (citing Ex-1003 ¶¶184-85); Warren ¶93-94.

Assuming, *arguendo*, that a POSITA would have understood Bandy to disclose a wireless device with a unique identifier, Petitioner has failed to assert any association between that identifier and the unique identifier of a sensor. Warren ¶95. As recognized by the Board's preliminary claim construction of "remote server authenticates said unique sensor ID associated with said unique wireless device ID," "the last portion of the limitation reciting 'associated with said unique wireless device ID' serves to further describe the unique sensor ID, specifically, that the unique sensor ID is associated with the unique wireless device ID." Inst. Dec. 10.⁴ But Petitioner's argument is limited to purportedly showing that Bandy discloses (1) a unique wireless ID and (2) authentication based on the unique sensor ID. Pet. 30-31. Petitioner even points out that Bandy discloses that "***only the ID of the RFID-sensor*** is necessary...." *Id.* (citing Bandy, 10:37-41) (emphasis Petitioner's).

⁴ As discussed above, Patent Owner disputes this preliminary construction. But Patent Owner agrees that the claims require that the unique sensor ID be associated with the unique wireless device ID. This limitation is not met by Bandy, regardless of whether the Board adopts Patent Owner's proposed construction of the authentication limitation.

Nowhere does Petitioner even attempt to show that “the unique sensor ID is *associated* with the unique wireless device ID.” *See* Warren ¶95 (emphasis added to claim language).

b. “the remote server authenticates said unique sensor ID associated with said unique wireless device ID and communicates to said wireless device processed information relating to said sensor data and software related to the unique sensor ID”

Claim 1 further requires that “the remote server authenticates said unique sensor ID associated with said unique wireless device ID and communicates to said wireless device processed information relating to said sensor data and software related to the unique sensor ID....” As discussed above, the plain language, specification, and prosecution history require the remote server to authenticate based on the “unique sensor ID” in association with the “unique wireless device ID.” The portions of Bandy cited by Petitioner, however, do not disclose these features. *See* Warren ¶¶96-100.

First, Petitioner quotes Bandy’s disclosure that “some or all of the necessary information to handle and analyze the sensor is retrieved from processor 190.” Pet. 30 (quoting Ex-1005, 10:29-32). But this says nothing about either the “unique sensor ID” or the “unique wireless device ID.”

Second, Petitioner quotes Bandy’s disclosure that “when a sensor 110 having data table 258 is activated by wireless sensor reader 140, the sensor 110 identifies

itself (e.g., by providing its [i.e., the sensor's] identification number) and provides the cell phone reader with the necessary information for analyzing the sensor output.” Pet. 30 (quoting Ex-1005, 10:19-24). But this disclosure refers to a communication between the sensor and the wireless sensor reader. It does not refer to authentication, and it does not refer to any remote server, both of which are required by the cited limitation.

Third, Petitioner's other citations (Pet. 30-31 (quoting “Software may also be downloaded directly and transparently into the cell phone or reader 140 to ‘train’ the wireless device to recognize and analyze that given type of RFID sensor” (Ex-1005, 10:14-51); “When the necessary processing and analysis information is downloaded from a remote location, only the ID of the RFID-sensor is necessary, providing a highly streamlined solution for universal sensor analyses for wireless devices such as cell phones” (Ex-1005, 10:37-41); *id.*, claims 29, 39, 40)) relate only to what is communicated *from* the server, and do not disclose sending anything *to* the server for authentication.

Finally, Petitioner cites Bandy's statement that “*only the ID of the RFID-sensor* is necessary,” completely undermining its argument. Pet. 30 (citing Ex-1005, 10:37-41) (emphasis Petitioner's). As discussed above, authentication—as claimed by the '307 Patent—requires the sensor ID to be associated with the wireless device

ID. Authentication based only on the sensor ID does not meet the “associated with” limitation.

3. Petitioner Fails to Show that Bandy Renders Obvious Dependent Claims 2, 5, 9, and 10

As Petitioner has failed to establish that Bandy is prior art or meets all limitations of claim 1, it likewise cannot prevail on dependent claims 2, 5, 9, and 10. Warren ¶101.

B. Ground 2 (Asserted Unpatentability of Claim 3 over Bandy in view of Heller)

Ground 2 of the Petition challenges only claim 3, which recites “[t]he system according to claim 1 wherein said sensor unit is integrated into a disposable wireless skin patch for diagnostic applications.” Petitioner does not assert that this limitation is met by Bandy, instead relying on Heller’s disclosure of an “on-skin sensor control unit.” Pet. 37. Petitioner makes the conclusory argument that “[a] POSITA would have been motivated to use the same or similar technique (use of an adhesive skin patch) to affix Bandy’s RF addressable sensor proximate to the surface of the skin of an individual,” without even attempting to explain *why* a POSITA would have been so motivated. *Id.* Petitioner’s proffered expert likewise provides no explanation as to *why* a POSITA would have been motivated to combine Bandy and Heller. *See generally* Ex-1003 ¶¶222–23. This plainly fails to demonstrate a motivation to combine the asserted references. Warren ¶102.

Bandy describes diagnostic monitoring via *externally* positioned “smart cards” or “badges.” Ex-1005, 19:59-61 & Fig. 11. Heller discloses *implantable* sensors (i.e., a skin-insertion mechanism). Ex-1016, 2:27-29 (“Generally, the present invention relates to methods and devices for the continuous and/or automatic in vivo monitoring of the level of an analyte using a subcutaneously implantable sensor.”); 8:12-13 (“The present invention is applicable to an analyte monitoring system using an implantable sensor....”). Petitioner fails to demonstrate that a POSITA would have been motivated to use Heller’s implantable sensors in Bandy’s unrelated system directed to external cards or badges. When pressed, Petitioner’s expert pointed only to sensors disclosed by Bandy for purposes other than diagnostic monitoring. Ex-2011, 83:20-85:22 (citing Ex-1003 ¶130). Further, Dr. Sarrafzadeh’s testimony regarding the form factor of Bandy’s gas and chemical sensors shows a POSITA would not have been motivated to include them in a skin patch. Ex-2011, 83:20-85:22; Warren ¶103. Only hindsight could provide such a strained motivation. Indeed, nothing in either cited reference suggests their compatibility. This failure of proof is fatal to Petitioner’s argument. Warren ¶¶102-103.

C. Ground 3 (Asserted Unpatentability of Claims 1-3, 5, 9, and 10 over Beck in view of Heller and Lovejoy)

1. Petitioner Fails to Show That a POSITA Would Have Been Motivated to Combine Beck with Heller and/or Lovejoy

The Petition fails to show that a POSITA would have been motivated to combine Beck, Heller, and Lovejoy. Warren ¶¶104-123. And even if there were a motivation to combine, the resulting combination would still not meet each limitation of the challenged claims. For example, given that no reference discloses a unique sensor ID associated with a wireless device unique ID, the combination would also lack that limitation.

Beck is directed to creating secure systems by integrating various commercially available stand-alone devices, i.e., networking various off-the-shelf medical devices so that they can communicate with one another. *Id.* ¶104. A medical device of Beck includes “one or more user I/O devices 137 and a system bus 138.” Ex-1007 ¶35. Beck describes the I/O devices as including, e.g., “mechanisms for entering information into the medical device ..., receiving information from the medical device ..., and/or controlling the operation of the medical device.” *Id.* ¶40. For example, the user I/O device may include “cathode ray tubes (CRT), liquid crystal displays (LCD), light emitting diodes (LED), printers, and/or other output devices that are operable to visually present information to a user”; “sound cards, wave generators, sequencers, mixers, speakers, and/or other audio devices that are

used to audibly present information to a user”; and “a mouse, a keyboard, a touch pad, a push button, a scanner, a stylus, a touch screen, and/or another input device that provides a user of the exemplary medical device ... with an interface to directly control the operation of the exemplary medical device.” *Id.* ¶¶40-41.

The medical devices of Beck are thus large and bulky—far from disposable, wireless skin patches. Warren ¶105. Petitioner’s suggestion that it would have been obvious to a POSITA to transition from Beck’s collection of bulky stand-alone medical devices to a disposable patch is nonsensical. While the Board noted in its Institution Decision (at 19) that “it is not regarded as inventive to merely make an old device portable or movable without producing any new and unexpected result,” the ’307 Patent *does not* merely make a Beck-like system portable; rather, it employs an entirely different technology, in a different setting, for a different purpose, in a different manner. *Id.*

In addition, Beck describes a networked, wired medical system and makes no reference to RFID (or any other wireless protocol or standard). Warren ¶106. In particular, Beck states “a standard RS-232 serial port” would be used to connect the medical device to the client computing device. Ex-1007 ¶29. The RS-232 standard was one of the first serial port protocols, introduced in 1960. Warren ¶106. It originally used a 25-pin connector, but more modern implementations use a 9-pin connector, such as that of the connector cable shown below. *Id.*



A POSITA would have known that such serial connections are meant for semi-permanent connections between a computer and a peripheral device, such as a printer or, in the case of Beck, a medical device. *Id.* ¶107. While Beck refers to other wired connections, and makes a passing reference to wireless (with no detail), a POSITA would have understood that such connections were intended for extended durations. *Id.* Notably, even for the wireless connections, Beck describes using them to “establish the physical communications link 140 between the client computing device 120 and the medical device 130.” Ex-1007 ¶30. A POSITA would have understood these connections as providing communication for ongoing, continuous monitoring of a patient, such as in a hospital setting. Warren ¶107. On the other hand, the '307 Patent describes an RFID system, where a sensor is intermittently checked—not continuously monitored—by a wireless device. Unlike Beck, the '307 Patent's system facilitates use in an ambulatory setting. Indeed, the '307 Patent describes using a cell phone or PDA to read the sensor information “anywhere in the world.” Ex-1001, 5:40-43.

a. Petitioner Fails to Show That a POSITA Would Have Been Motivated to Combine Beck with Heller

The Petition fails to show that a POSITA would have been motivated to combine Beck with Heller, or that the resulting combination—even when combined with Lovejoy—would meet all the limitations of the identified claims. Warren ¶108. Petitioner asserts that Beck and Heller “are both directed to medical/diagnostic sensing systems, including systems with chemical sensors for measuring glucose,” and that “Heller provides use of known techniques that can be used implement [sic] and improve Beck’s medical devices.” Pet. 41 (citing Ex-1003 ¶225). This conclusory argument is insufficient to establish a motivation to combine.

Beck teaches remote access to medical devices through the networked integration of client computing devices, each of which interfaces to a medical device. Warren ¶109. A client computing device in this context is a computer-based host that incorporates standard operating-system support and built-in network communication interfaces, and a medical device in this context exists in the form of a stand-alone commercial-off-the-shelf (COTS) medical device with built-in interface support. *Id.* The Beck specification does not contemplate small, wearable, patch-like devices, such as the embodiments of the device disclosed in Heller, which would not offer the standard interface support and other features to connect to a client computing device host. *Id.* Nor does Beck contemplate communication by the

client computing device directly with a sensor unit, as opposed to with a medical device as a whole. *Id.*

Beck merely discloses an aggregation of pre-designed, off-the-shelf medical devices for use in a hospital setting (i.e., non-ambulatory devices). Ex-1007 ¶34. Beck *never* mentions mobile/wearable applications (e.g., terms such as “wearable,” “worn,” “mobile,” “ambulatory,” “patch,” “portable,” “battery,” “light,” “small,” and “RFID” are not found in the specification).⁵ Warren ¶110. Beck offers application examples and technology listings that are suited only to stand-alone devices that already incorporate interface/port support from the manufacturer, not to wireless disposable skin-patch formats that must utilize RFID to properly function. *Id.*

In fact, the proposed combination of Beck and Heller necessarily involves a connection to a bulky device in a hospital setting. *Id.* ¶111. Heller, however, disparages—and therefore explicitly teaches away from—“large, bulky, and/or inflexible” devices. Ex-1016, 2:4-6. The entire purpose of Heller was to provide a system that could be “used effectively outside of a controlled medical facility, such

⁵ Reference to “remote” access to medical device data does not imply “mobile” monitoring. Warren ¶110.

as a hospital or doctor's office....” *Id.* Thus, a POSITA would have considered Heller's system antithetical to—not compatible with—Beck's system. Warren ¶111.

The particular combination proposed by Petitioner involves using Heller's glucose sensor in Beck's system. But in doing so, Petitioner ignores the difference between a medical device and a sensor. The distinction between sensor and device is critically important in the analysis of the (lack of) motivation to combine Beck and Heller. Beck discloses remote access to medical devices. Ex-1007, Abstract. Beck does not disclose remote monitoring and control of medical sensors. Warren ¶112.⁶ The glucose meter disclosed by Beck “measures blood glucose levels of blood applied to test strips.” Ex-1007, ¶34. It is the *test strips*—containing, for example, enzymes that chemically react with glucose to create an electrical current—that are the glucose sensors, and Beck nowhere discloses these test strips as having unique identifiers. Warren ¶112. A POSITA would understand that Heller's “sensor control unit” or “on-skin sensor unit” would have been incompatible with the glucose meter disclosed by Beck, which uses test strips. *Id.*

Petitioner's problem is laid bare in Dr. Sarrafzadeh's opinion. In arguing that a POSITA would have been motivated to combine Beck with Heller, Dr. Sarrafzadeh

⁶ Numerous excerpts from Beck confirm the goal of self-contained, COTS medical devices. Warren ¶113 (collecting examples); *see also id.* ¶116.

refers to the glucose meter as a “medical sensor.” Ex-1003, ¶226. But that is inaccurate. Warren ¶¶112, 122-123. Again, the glucose meter is a medical *device*, and it is the test strips that are the glucose *sensors*. *Id.* Even Dr. Sarrafzadeh recognized that the test strips were part of the sensing system. Ex-2011, 32:12-16.

The only way to combine Beck with Heller would have been to replace the entire test-strip glucose meter from Beck with the entire device disclosed by Heller, which includes a display unit or other data analyzer that receives data from the sensor control unit. Ex-1016, 4:17-30, 86:6-10; Warren ¶112. But that combination would not meet the limitations of the challenged claims because it would not include, *inter alia*, a unique identifier for the *sensor*. In other words, Petitioner is trying to have its cake and eat it too. It wants to use the *sensor* from Heller and the serial number of the *device* from Beck. But that combination makes no sense. Warren ¶112.

Beck focuses on methods to connect these medical devices to the overall network via the use of client computing devices. Ex-1007 ¶14. Beck is not directed to device construction or optimization, and a POSITA would not have been motivated to make improvements to an isolated Beck device using the teachings of Heller (which describes a small, wearable, ambulatory device). Warren ¶114. Rather, a POSITA would have been interested in utilizing the teachings in Beck to implement multi-device systems comprised of already assembled, commercially

available products. *Id.* A POSITA would not have been motivated to use the unrelated implantable sensor disclosed by Heller with the system of Beck.

For example, Beck describes software protocol components, such as ActiveX and HTTP/HTML. Ex-1007 ¶¶49, 53. Heller, conversely, describes a rudimentary communication system using frequency modulation (FM) transmissions. Ex-1016, 75:3-16. Nothing would have motivated a POSITA to add the high-level protocols described in Beck to the sensor described in Heller. Warren ¶¶115-116.

Finally, while Heller focuses on details of certain features of specific wearable sensors, Beck discusses the networking of various devices at a high level. This disparity in the scope and purpose of the references would not provide a motivation to combine Beck's teachings with Heller's teachings. *Id.* ¶¶117-123. Rather, only improper hindsight, based on the '307 Patent's disclosure, could provide such a motivation.

b. Petitioner Fails to Show That a POSITA Would Have Been Motivated to Combine Beck with Lovejoy

Petitioner's assertions regarding an alleged motivation to combine Beck and Lovejoy are even flimsier: "both disclosures are directed to mobile sensing systems" (Pet. 45). Beck does not, however, disclose a mobile sensing system. Instead, Beck discloses only remote access to medical devices, which is not equivalent to either mobile access to sensors or access to mobile sensors. Warren ¶124. Beck achieves remote access via a server connected to a network. Ex-1007 ¶14. Remote access is

further enabled in Beck because each medical device is connected to a client computing device. Importantly, Beck does not disclose that a client computing device connected to the medical device is mobile, nor does Beck disclose that a medical device is itself mobile. While Beck discloses, in passing, wireless communication, a POSITA would have understood such wireless communication as an option to avoid physical cable clutter. Warren ¶124. A POSITA would not have understood Beck's system to suggest placing a sensor on an ambulatory patient. *Id.* ¶124.

Even if Beck had disclosed a mobile sensing system, that would not have provided a POSITA with motivation to combine Beck with Lovejoy. *Id.* ¶125. Mobile sensing is not a defined domain, and what would potentially be included in that definition is unclear. Importantly, Beck and Lovejoy are directed to unrelated domains. Beck is directed to medical devices which monitor and/or analyze patients. Ex-1007 ¶2. Lovejoy is unrelated to medical or diagnostic testing. Instead, Lovejoy discloses monitoring occupational exposures using a wearable external device (on clothing) that does not interact with the user's biology. Ex-1009, 1:25-35; 4:44-50.

Petitioner and Petitioner's expert rely heavily on Beck's disclosure that the client computing device can be implemented as a cellular phone to argue a POSITA would have been motivated to integrate geolocation functionality into the phone. Pet. 45-46; Ex-1003 ¶242. According to Petitioner's expert, "[l]ocation information

can provide vital information about an individual to allow timely responses. For example, it can help in identifying the location of an individual in case of emergency.” Ex-1003 ¶242. But this is a red herring and completely mischaracterizes the disclosure of Beck and the role of its client computing device. As discussed above, Beck is focused on medical monitoring in, for example, a hospital setting. Warren ¶126. In such a situation, a POSITA would have understood that patient location is obviously known. And to the extent that patient location is not known, geolocation in the client computing device—potentially in the location of the medical professional—would not be helpful in locating the patient. *Id.*

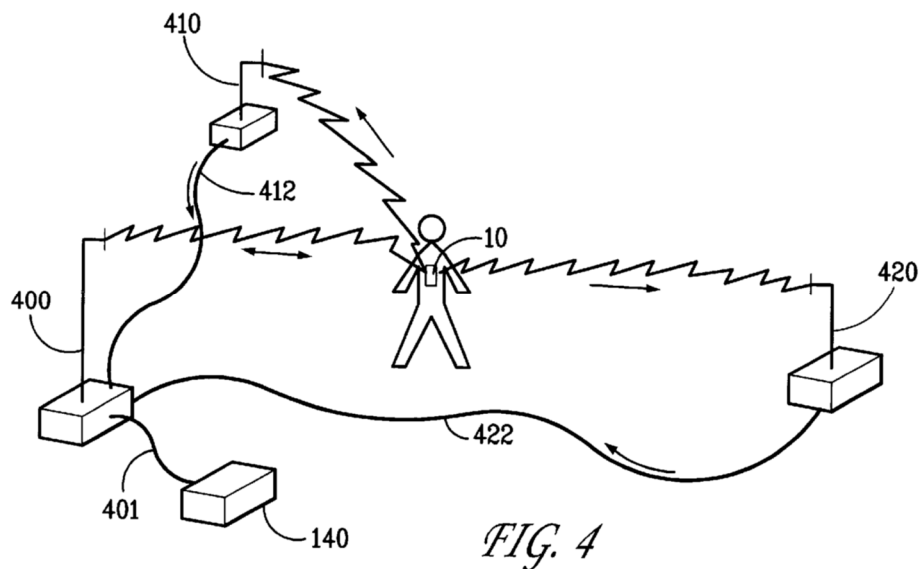
Beck does not mention—or even imply—the need to locate a device, as taught in Lovejoy. Warren ¶127. Beck’s two references to cell phones are solely in the context of connecting a cell phone to a client computing device. *Id.* (citing Ex-1007 ¶¶27, 49).

Importantly, Lovejoy refers to an entirely different application domain. Lovejoy is focused on applications, such as accumulated radiation monitoring for exposure to hazards, not on physiological monitoring as disclosed in Beck. A POSITA would not have been motivated—for any reason—to combine the two references. Warren ¶128.

Additionally, the location capabilities taught in Lovejoy refer to the location of the radiation-monitoring security badge (the device worn by the user), not to the

location of the interrogator (e.g., an RFID reader) that receives the data from the badge. *Id.* ¶129. Thus, Lovejoy's location capabilities are completely unrelated to the geolocation limitations recited in the '307 Patent, which are directed to the *remote wireless device*, not to a badge or sensor element. *Id.* (citing Ex-1009, 2:15-19, 2:42-56, 9:4-8). Lovejoy Figures 3 and 4 (and their accompanying text), confirm that the location of the tag, and not the location of the interrogator, is determined. Ex-1009, Figs. 3 & 4, 9:41-10:17; Warren ¶130.

Petitioner conveniently paints over the details of Lovejoy's disclosure in its attempt to show a motivation to combine. Lovejoy discloses a wearable "monitor" and an "interrogator system," which provides two functions: geolocation of the monitor and data transfer to and from the monitor. Ex-1009, 9:17-40. The geolocation aspect is shown in Figure 4 of Lovejoy, reproduced below. *Id.* at 4:17-19; Warren ¶131.



Petitioner's arguments for incorporating geolocation into Beck based on the teaching of Lovejoy are flawed. Warren ¶132. Petitioner points to a disclosure in Lovejoy regarding geolocation of the monitor to purportedly meet the geolocation-means limitation. Pet. 60-61. This is misplaced. To the extent Lovejoy would have motivated any revision to Beck, the revision would have entailed adding geolocation to the medical device monitoring the patient (which is akin to the claimed sensor, not to the claimed wireless reader). Warren ¶132. In such a situation, if a medical device signals an emergency, a crash team could theoretically be dispatched to the location of the medical device. *Id.*

Petitioner argues that “both disclosures are directed to mobile sensing systems” and that Beck discloses that its client computing device can be wireless and implemented as a cell phone. This, Petitioner argues, “would prompt a POSITA to implement such a cell phone with features normally found on cell phones” including GPS and non-GPS geolocation features such as those described in Lovejoy. Pet. 45-47. According to Petitioner, this “would enable the provision of emergency response to users of Beck's system in the event that the medical device detects a dangerous condition.” *Id.* at 47. But this makes no sense. Indeed, sending a crash team to the location of the client computing device—presumably in the possession of a nurse or doctor—would be pointless when the patient at issue would likely be in a different location. Warren ¶133. This is especially true in the

embodiment of a client computing device Petitioner focuses on: a cellular phone. Thus, the location of the client computing device (i.e., where the medical professional is reading the output of the medical device) is irrelevant to sending an emergency response to the location of the medical device (i.e., where the patient is located). *Id.* Hospitals rely on their own networks, IT systems, and record-management systems to locate patients by their hospital room ID. No reason existed to use a geolocation process (which, at the time, would have been imprecise) to locate a patient when healthcare providers would already have known the exact location of the patient/device. *Id.*

A POSITA would also have been dissuaded from using a cellular phone in the hospital setting of Beck for practical reasons. At the time of the invention of the '307 Patent, hospitals typically restricted the use of cellular phones due to concerns regarding electromagnetic interference with medical equipment and devices. *Id.* ¶134. For example, a concern at the time was that cellular phones could cause magnetic interference with implantable devices such as pacemakers as well as electric medical equipment, including EKG machines. *Id.* Considering these concerns, it was recommended that cellular phones not be brought within close proximity of medical equipment and devices. *Id.*

Hospitals at that time were also notoriously RF-impervious structures, as they necessarily included areas with thick walls to prevent penetration by X-rays. *Id.*

¶135. This made cellular phone use—to the extent permitted—inconsistent and unreliable, as cellular phone signals could not pass through such structures. Healthcare providers thus typically used pagers, which communicate with generally lower-frequency radio signals when compared to cell phones. The use of pagers also reduced the chance of security breaches or accidental transmission of confidential patient information, as pagers transmit only numeric messages or very basic text messages. Pagers also had much longer battery life than cell phones, making it less likely for a healthcare provider to lose power, which could interfere with communications and put patients at risk. Given all the benefits of pagers over cellular phones in the hospital setting at the time of Beck—and the climate of concern regarding cellular phones in hospitals at that time—a POSITA would not have been motivated to incorporate a cell phone into Beck's system.

In addition, at that time, geolocation in hospitals could not use triangulation; rather, patient location tracking was accomplished with a combination of patient ID, room ID and medical device ID (all of which were specific to a given hospital). *Id.*

¶136. Therefore, the idea that Lovejoy discloses geolocation of the “monitor” (i.e., sensor unit) is irrelevant to teaching geolocation of a wireless device that reads the monitor, and it would not have motivated a POSITA to add such geolocation into Beck's client computing device. *Id.*

Differences also exist between Beck's medical devices and Lovejoy's monitor that would have prevented a POSITA from combining the references. *Id.* ¶137. Lovejoy's monitor device is intended to be worn for years. Ex-1009, 2:57-65. The wearability and occupational-hazard applications for this device are different in intent from Beck, which discloses the aggregation of a collection of off-the-shelf medical devices that are static in their application (e.g., bedside devices), not wearable units. Ex-1007 ¶¶ 29-30 (describing physical connections using cables), ¶40 (describing glucose meter manufactured by Roche Diagnostics Corporation). A POSITA thus would not have been motivated to combine the device of Lovejoy with the system of Beck, nor would such a combination have resulted in the claimed diagnostic-sensor unit. Warren ¶137. "Absent reasoning supporting this specific modification, Petitioner's selectively incorporating this apparent disparate teaching from [another reference] seems based more on hindsight reconstruction of the claimed invention than an obvious modification." *Apple Inc. v. XR Commc'ns LLC*, IPR2022-01155, Paper 11, 32 (Jan. 5, 2023).

c. The FCC Report Does Not Fill in the Holes in Petitioner's Asserted Combination

Petitioner's reliance on the FCC Report is also misplaced. *See* Pet. 46. In particular, Petitioner fails to show that the disclosure of the FCC Report was inherent in the disclosure of Lovejoy or that a POSITA would have been motivated to combine Lovejoy with the FCC Report. Warren ¶138. Indeed, Petitioner does not

make *any* arguments regarding a motivation to combine the FCC Report with any other art. *Id.*

While the Board previously indicated that Petitioner is merely using the FCC Report “as evidence of what was known in the art” (Inst. Dec. 23), the FCC Report does not establish that geolocation, as used in the sense of the ’307 Patent, was a common cellular-phone feature at the time of the invention. Warren ¶139. Further, Petitioner’s statement that “geolocation features” were “normally found on cell phones,” Pet. 45, is unsupported. While the FCC Report revises certain rules, it does not establish that all (or even any) cell phones were *in compliance* with those rules (or included the claimed geolocation means) at the relevant time. Warren ¶139. Indeed, if all cell phones already included this feature, no need would have existed for the FCC Report to establish *target deadlines for compliance* with the revised rules. *Id.* When confronted with the particulars of the FCC Report, Dr. Sarrafzadeh downplayed the importance of the FCC Report, only saying that it showed that it would have been obvious to a POSITA to include geolocation features in a cellular phone. Ex-2011, 41:20-42:4, 77:17-22. But Dr. Sarrafzadeh could not distinguish between network-based geolocation and handset-based geolocation. *Id.*, 66:2-10, 68:22-71:5. That distinction is key.

The FCC Report specifically states that the Phase II requirements, on which the Petitioner relies, would “only permit network-based solutions” because it was

not “economically or logistically feasible to expect or require that all current handsets be upgraded or replaced to meet that date.” Ex-1017, 4; Warren ¶140. The FCC updated its rules to “permit” (but not require) handset-based solutions. Ex-1017, 4; Warren ¶ 140. Notably, the FCC also recognized that “handset approaches will generally require a longer phase-in period....” Ex-1017, 5; Warren ¶140; *see also* Ex-1017 at 19 (“Commenters universally agree that some transition past October 1, 2001, is necessary to deploy a handset-based or hybrid technology....”).

Regardless, Petitioner has offered no evidence that any, much less all, cell phones included the claimed geolocation means *as of the '307 Patent's priority date*. Warren ¶141. The FCC Report further describes handset-location features as being planned by various manufacturers for the future, not as already incorporated into any currently available device. Ex-1017, 15. Indeed, the FCC Report itself expressly acknowledges that its actions were “ambitious” and that “we may confront challenges as we move forward.” *Id.* at 5. The FCC Report also recognized significant problems in achieving universal coverage through handset-based solutions. *Id.* at 17. Even the FCC's forward-looking goal set a date of December 31, 2004—almost a year after the priority date of the '307 Patent—for carriers to make reasonable efforts to ensure that all customers' handsets were location-capable. *Id.*, 26. And the FCC acknowledged this was an “aggressive schedule.” *Id.* at 26.

Moreover, the FCC Report does not teach “geolocation” as taught in the ’307 Patent. At the time of the FCC Report, commercial implementations of GPS did not allow for precise geolocation. Warren ¶142 Ex-1017, 2 (“[W]hen a 911 call is placed using a wireless handset, the dispatcher at the 911 Public Safety Answering Point (PSAP) does not know where the caller is.... Wireless calls may be received by the carrier at an antenna some distance away from where the call is actually placed, because of the vagaries of radio transmission, terrain, or network congestion.”); *id.* at 3 (“PSAPs do not know the location of wireless callers, except in a very general way in those PSAPs where Phase I (providing cell site or cell sector information) has been deployed.”). While technology available to the public (i.e., technology that was not classified by the government due to safety or security concerns) could provide information regarding the general area of a target (e.g., the zip code), such geolocation was not precise enough to be useful for the applications contemplated by the ’307 Patent. Warren ¶142. Indeed, even the changes contemplated by the FCC Report would not have allowed precise geolocation:

- We adopt the following revised standards for Phase II location accuracy and reliability:
 - For network-based solutions: 100 meters for 67 percent of calls, 300 meters for 95 percent of calls;
 - For handset-based solutions: 50 meters for 67 percent of calls, 150 meters for 95 percent of calls.

Ex-1017, 7. *Even if* these standards were achieved by the time of the priority date, their imprecision would not have constituted “geolocation” as contemplated by the ’307 Patent.

d. A POSITA Would Not Have Had a Reasonable Expectation of Success

Finally, an obviousness determination requires finding “both ‘that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, *and that the skilled artisan would have had a reasonable expectation of success in doing so.*’” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367-68 (Fed. Cir. 2016) (citation omitted; emphasis added). As to how the individual teachings of Beck, Heller, and Lovejoy would have been combined into an operable system or would have had a reasonable expectation of success, the Petition provides no explanation, instead relying on the *ipse dixit* of its expert. And when asked, Dr. Sarrafzadeh refused to provide any details about the purported combination, such as which components from which references it would include. Warren ¶143; Ex-2011, 87:2390:25, 95:15-96:17. This is insufficient, and shows the proposed combination is based purely on hindsight.

2. The Petition Fails to Show that the Challenged Claims Are Rendered Obvious by Beck in View of Heller and Lovejoy

Even if there was sufficient motivation to combine Beck with Heller and Lovejoy, the resulting combination would not meet all the limitations of the

challenged claims. Warren ¶144. What Dr. Sarrafzadeh ignores, and failed to explain in deposition, is that Heller's device includes not only a "sensor control unit," but also a "receiver/display unit." Ex-1016, 10:30-33. The latter component receives data from the sensor control unit. *Id.*, 34:20-23. To the extent a POSITA would have combined Beck and Heller, such a combination would include the receiver/display unit, and it is that component—and not the sensor unit, as required by the claims of the '307 Patent—that would communicate with Beck's client computing device (the purported wireless device of the challenged claims). Warren ¶144. But Dr. Sarrafzadeh refused to say which components would be included in his proposed combination, or whether the combination would even include Heller's receiver/display unit. Ex-2011, 87:23-90:25, 95:15-96:17.

a. "unique identification ID number"

Claim 1 recites a diagnostic sensor unit comprising "a unique identification ID number." This is consistent with the specification of the '307 Patent, which describes downloading software related to a particular sensor. Ex-1001, 11:49-60. If the cited ID number merely identifies a *type* of sensor, or the *medical device* used with that sensor, this is insufficient to meet the claim limitation. Warren ¶145. Beck discloses, at most, identification numbers for the entire medical device. Petitioner's assertion is limited to a single paragraph and irrelevant cites regarding Beck's disclosure of "identification codes" and "serial number[s]" "for the *medical*

device”—not for a sensor unit as required by the claim. Pet. 51 (emphasis added); *see also* Warren ¶145.

A medical device is not a sensor unit, and the difference dooms Petitioner's invalidity ground. The invention of the '307 Patent, as described in its specification, involves a wireless device reading data directly from a sensor module. *See, e.g.*, Ex-1001, 2:66-3:5. Each sensor having a unique identifier is what ultimately allows the proper identification, retrieval, and downloading of the claimed software. *Id.*, 4:67-5:2; claim 1 (“software related to the unique sensor ID”). Beck is completely different. Because Beck works at the level of the medical device—and not the underlying sensors—it has no need for the sensors to have unique identifiers (and does not teach that they do). Warren ¶145.

As disclosed by Beck, a medical device could be, for example, a glucose meter. Ex-1007, ¶34. But the glucose meter is not a sensor or a diagnostic sensor unit. Warren ¶146. The glucose meter uses test strips, which are the sensors that detect the glucose levels. *Id.* Even Dr. Sarrafzdeh acknowledged that that “the test strip is part of the sensing system.” Ex-2011, 32:12-16. Petitioner does not assert, and Beck does not disclose, that each individual test strip, or any other sensor for the glucose meter, has a unique identification ID number. Warren ¶146.

As another example, Beck discloses a medical device that monitors electrocardio-signals. Ex-1007, ¶34. As acknowledged by Dr. Sarrafzadeh, a

POSITA would know this as an EKG. Ex-2011, 28:8-13; Warren ¶147. Dr. Sarrafzadeh also acknowledged that the electrodes and/or leads that are connected to the EKG are the sensors used by the EKG. Ex-2011, 23:10-16, 30:17-19; Warren ¶147. Even if the EKG machine has a serial number, nowhere does Beck disclose that the electrodes/leads (sensors) each have a unique identification ID number. Warren ¶147. The leads are detachable from the EKG unit, and replacing them with other leads would not change the serial number of the EKG itself. *Id.* ¶147.

Without identifying any disclosure of unique identification ID numbers of any sensors (as opposed to medical devices), Petitioner has failed to show this limitation is met for this ground. Warren ¶148.

b. “said wireless device having...a unique ID,” “wherein the remote server authenticates said unique sensor ID associated with said unique wireless device ID”

Claim 1 recites “said wireless device having...a unique ID” and later requires authentication of the “unique sensor ID associated with said wireless device ID.” Petitioner fails to show that either of these limitations is met. For the wireless device allegedly having a unique ID, Petitioner relies on Beck’s disclosure that authentication can include using a network address. Pet. 60; Ex-1007 ¶65. But the paragraph cited by Petitioner does not refer to any particular type of network address. Pet. 60; Ex-1007 ¶65. And a POSITA would have understood that some network addresses might be unique, but others, such as internal IP addresses, which identify

devices on a private network, may not be unique. Warren ¶149. As with Bandy in Ground 1, Petitioner's argument relies on features not discussed anywhere in Beck (e.g., IMEI numbers and MAC addresses). *Id.*

Finally, Petitioner makes the same fatal mistake as in Ground 1, citing only that “the serial number of the medical device” (i.e., the purported unique ID of the sensor unit) is used in authentication (Pet. 62), while ignoring that the limitation requires authentication of “said unique sensor ID *associated with said unique wireless device ID*” (Ex. 1001, claim 1) (emphasis added). Warren ¶150. Under Patent Owner's proposed claim construction, that limitation requires receipt by the remote server of the unique wireless device ID. Even under the Board's preliminary claim construction, Petitioner must show that the unique sensor ID is “associated with the unique wireless device ID.” Nowhere does Petitioner provide any disclosure in the prior art of either requirement. *Id.*

c. “geolocation means”

Claim 1 recites a “wireless device having...geolocation means....” Petitioner argues that this limitation is met because (1) “Beck discloses...an internet enabled cellular phone” and (2) “a POSITA would have been motivated to modify Beck's client computing device to add geolocation disclosed by Lovejoy....” Neither of these arguments holds water. First, as discussed above, Petitioner's assertion that a

POSITA would have been motivated to combine Beck and Lovejoy is flawed and based entirely on hindsight. Warren ¶¶151-152.

Second, Petitioner has failed to show how the existence of a cellular phone necessarily includes the particular structure (or an equivalent structure) disclosed by the '307 Patent for performing geolocation. While Petitioner asserts that an “internet cellular phone” would have been “required to have GPS and non-GPS geolocation capability before the priority date of the '307 patent,” that is patently false. Pet. 60. For this assertion, Petitioner cites the FCC Report. Pet. 60, citing Ex-1017. But Petitioner and its expert ignore that ways existed to geolocate a device that did not require any structure for geolocation in the device itself. Warren ¶153.

Indeed, the FCC Report explicitly recognizes both “network-based solutions,” which do not require implementation of a geolocation component in the wireless device itself, and “handset-based solutions,” which would require such an implementation. *See, e.g.*, Ex-1017, 4. Importantly, the entire purpose of the FCC Report was to address the lack of “handset-based solutions” for geolocation (i.e., the cellular phones at issue did *not* include internal geolocation features). *Id.* (“The Commission’s current rules, however, as a practical matter only permit network-based solutions....”). Thus, the FCC Report in no way supports that the vaguely described “Internet enabled cellular phone” in Beck would have included internal geolocation components. If anything, it suggests the opposite. And the “network-

based solutions” disclosed in the FCC Report cannot meet the “geolocation means” limitation because they do not include a geolocation component *in the wireless device*, as claimed. Warren ¶154.

Further, while the FCC Report revises certain rules, it does not establish that all (or any) cell phones were *in compliance* with those rules (or met the geolocation limitation) at the relevant time. Indeed, the revision of the rules was necessary because the rules in place at the time were preventing service providers from including geolocation features in handsets. Ex-1017, 4. And the FCC recognized that it was not “economically or logistically feasible to expect or require that all current handsets be upgraded or replaced to meet [the target date].” *Id.* Regardless, Petitioner has offered no evidence that all cellular phones included a geolocation means or that such a means was inherent in the disclosure of Beck. Warren ¶155.

Petitioner's reliance on the FCC Report as allegedly requiring geolocation in cellular phones before the '307 Patent's priority date (Pet. 45-46) is also undermined by the testimony of its own expert. When presented with the fact that the FCC Report did not require all handsets sold as of March 1, 2001, to have geolocation capability, Dr. Sarrafzadeh retreated by saying his opinion was that it would have been obvious to include geolocation capabilities, and never said that such geolocation capabilities were necessarily included. Ex-2011, 77:17-22. But that is contrary to the position he took in his declaration in support of the IPR petition. Ex-1003 ¶246 (“[T]he inclusion

of geolocation features *was required* by the FCC well before the priority date of the '307 patent....") (emphasis added). Further, Dr. Sarrazafadeh, who performed testing on cellular phones around the time of the invention, could not recall if any of the phones he tested had geolocation capabilities. Ex-2011, 42:19-43:6. Thus, Petitioner has failed to meet its burden to demonstrate that cellular phones at the relevant time period—such as the "internet cellular phone" disclosed in Beck—included a geolocation means. Warren ¶155.

Third, even combining Beck, Heller, and Lovejoy (with or without the FCC Report), the resulting system *still* does not meet the "geolocation means" limitation. Petitioner is relying on a disclosure from Lovejoy related to geolocation of Lovejoy's *personal monitors*—the components, worn by the subjects, that measure the exposure to hazards of those subjects. This maps—if at all—to the diagnostic *sensor* of claim 1. But it is the claimed *wireless device* that includes the geolocation means, not the sensor. Petitioner does not even attempt to show that any portion of Lovejoy discloses a wireless device having a geolocation means (because it does not). Warren ¶156.

While Beck includes an embodiment where an "Internet enabled cellular phone" is used as a reader, adding a geolocation means to Beck's reader would have been nonsensical, as such means would only indicate where the reader (or person performing the reading, such as a nurse) is located—not where the sensor (or the

patient wearing such a sensor who may be remote from the reader) is located. Warren ¶157. In the case of an emergency, this would result in routing a crash cart to the nurse, not the patient. *Id.* Including the geolocation means in the claimed wireless device, conversely, makes sense because the user of the wireless device *is also the patient* wearing the sensor (i.e., they are in the same location). Beck's system is simply unrelated to the claimed device.

d. “a sensor interface having an analog to digital converter coupled to the at least one sensor and reference sensor element”

Claim 1 recites a radio frequency (RF) addressable diagnostic sensor unit comprising “a sensor interface having an analog to digital converter coupled to the at least one sensor and reference sensor element.” Petitioner argues that Beck, alone or in view of Heller, renders this limitation obvious because (1) a POSITA would have understood that collected “measurement data” would be analog, and (2) the “analog data must be converted into a digital signal for processing by processor 132 of the medical device 130.” Pet. 51-52. Petitioner focuses on Beck's general disclaimer that the software components shown in Figure 2 can be replaced with hardware components, including “analog/digital hybrid circuits.” *Id.*; Ex-1007 ¶44; Warren ¶158. But Petitioner fails to indicate which portion of Figure 2 discloses a “sensor interface,” “sensor,” or “reference sensor element.” In fact, for the

“reference sensor” limitation, Petitioner relies on Heller, not Figure 2 (or any other part) of Beck, and this limitation is absent from Beck. Pet. 49-51.

Beck's lack of disclosure of this limitation is unsurprising. As discussed above, Beck discloses a system that connects to commercially available medical devices. Beck does not disclose the internal operation of any of those medical devices. Warren ¶159.

Nor is this limitation inherent in the disclosure of Beck. To the extent Beck and/or Heller disclose an analog sensor and an analog reference sensor—and Petitioner has provided no evidence that is the case—there are ways to calculate a value based on those two sensors without first converting them to digital values. Warren ¶160. In doing so, neither sensor would be coupled to any analog to digital converter. And Petitioner, which has the burden of proving unpatentability, has not demonstrated otherwise.

3. Petitioner Fails to Show that the Asserted Combination Renders Obvious Dependent Claims 2, 3, 5, 9, and 10

As Petitioner has failed to establish that claim 1 is not patentable, it likewise cannot prevail on dependent claims 2, 3, 5, 9, and 10. Warren ¶161.

In addition to the reasons set forth above, the Petition makes no attempt to show that the asserted prior art satisfies the additional requirements of dependent claims 9 and 10. The Board has construed those claims as means-plus-function claims requiring a structure of “GPS methods or processing logic for determining a

geographic position of an object” (claim 9) or “non-GPS triangulation methods or processing logic for determining a geographic position of an object” (claim 10). Inst. Dec. 12-13. Petitioner has not identified any structure of this type in the disclosures of the asserted prior art, and has failed to demonstrate that these structures were common cell phone features as of the priority date. Warren ¶¶162.

V. CONCLUSION

For the reasons set forth above, Petitioner has not met its burden of demonstrating the unpatentability of any challenged claim. Accordingly, Patent Owner requests the Board confirm the patentability of claims 1, 2, 3, 5, 9, and 10 of the '307 Patent. Warren ¶¶163-164.

Dated: October 15, 2024

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CERTIFICATE OF WORD COUNT UNDER 37 CFR § 42.24(d)

Under 37 C.F.R. § 42.24(d), the undersigned certifies that the word count for this Patent Owner's Response to the Petition for *inter partes* review totals 13,750 words excluding the parts exempted by 37 C.F.R. § 42.24(a). The word count was made using the built-in word count function in the Microsoft® Word software used to prepare this document.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I certify that I caused to be served a true and correct copy of the foregoing: PATENT OWNER's RESPONSE and accompanying exhibits by email to the electronic service addresses for Petitioner on the date indicated below:

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