

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC., MOTOROLA MOBILITY LLC, and
TOSHIBA AMERICA INFORMATION SYSTEMS, INC.,
Petitioner,

v.

GLOBAL TOUCH SOLUTIONS, LLC,
Patent Owner.

Case IPR2015-01173
Patent 7,329,970 B2

Before JUSTIN BUSCH, LYNNE E. PETTIGREW, and BETH Z. SHAW,
Administrative Patent Judges.

PETTIGREW, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

In this *inter partes* review, instituted pursuant to 35 U.S.C. § 314,
Apple Inc., Motorola Mobility LLC, and Toshiba America Information

Systems, Inc. (collectively, “Petitioner”) challenge the patentability of claims 1, 3–5, 10–14, 19, 48, 49, 51, and 52 (“the challenged claims”) of U.S. Patent No. 7,329,970 B2 (Ex. 1001, “the ’970 patent”), owned by Global Touch Solutions, LLC (“Patent Owner”). We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed below, Petitioner has shown by a preponderance of the evidence that claims 1, 3–5, 10–14, 19, 48, 49, and 51 of the ’970 patent are unpatentable, but has not shown by a preponderance of the evidence that claim 52 of the ’970 patent is unpatentable.

A. Procedural History

Petitioner filed a Petition for *inter partes* review of claims 1, 3–5, 10–14, 19, 48, 49, 51, and 52 of the ’970 patent. Paper 4 (“Pet.”). Patent Owner did not file a Preliminary Response. On November 17, 2015, we instituted an *inter partes* review of the challenged claims of the ’970 patent on all asserted grounds of unpatentability. Paper 13 (“Institution Decision” or “Dec.”). After institution, Patent Owner filed a Patent Owner Response, Paper 19 (“PO Resp.”), and Petitioner filed a Reply to the Patent Owner Response, Paper 25 (“Pet. Reply”). A consolidated oral hearing for this case and several others was held on August 3, 2016. A transcript of the hearing has been entered into the record. Paper 52 (“Tr.”).

B. Related Matters

Petitioner identifies the following district court proceedings that may be affected by a decision in this proceeding: *Global Touch Solutions, LLC v. Toshiba Corp.*, No. 3:15cv2746-JD (N.D. Cal.); *Global Touch Solutions, LLC v. VIZIO, Inc.*, No. 3:15cv2747-JD (N.D. Cal.); *Global Touch*

Solutions, LLC v. Apple Inc., No. 3:15cv2748-JD (N.D. Cal.); *Global Touch Solutions, LLC v. Motorola Mobility LLC*, No. 3:15cv2749-JD (N.D. Cal.); *Global Touch Solutions, LLC v. Microsoft Corp.*, No. 3:15cv2750-JD (N.D. Cal.). Paper 8, 1–2. Petitioner also has filed petitions for *inter partes* review of related U.S. Patent Nos. 7,994,726 B2 (IPR2015-01171), 7,498,749 B2 (IPR2015-01172), 7,781,980 B2 (IPR2015-01174), and 8,288,952 B2 (IPR2015-01175). *Id.* at 2–3. The parties also identify as a related matter IPR2015-01149, which is a petition for *inter partes* review of the '970 patent filed by a different petitioner. Paper 7, 2; Paper 8, 2.

C. The '970 Patent

The '970 patent is directed to portable electronic devices that operate on exhaustible power sources such as batteries. Ex. 1001, Abstract. The '970 patent describes using a microchip-controlled switch that manages both current-conducting and user-interface functions in an electronic device such as a flashlight without the switch itself conducting current to the load. *Id.* at 3:41–46. The '970 patent also describes an embodiment in which a visible indicator such as a light emitting diode (LED) may be provided to indicate the condition of the battery. *Id.* at 9:47–55, Fig. 11.

D. Illustrative Claims

Among the challenged claims, only claims 1 and 52 are independent. Claims 1 and 52 read:

1. An electronic module for use with a product comprising an energy consuming load and a power source or a connection to a power source, said module comprising a microchip, and a switch;

said switch being a user interface and does not form a serial link in a circuit that transfers power from the power source to power the load, and said microchip controlling a

luminous visible location indicator that is not the load according to at least one configuration selected from the following group:

a) wherein the visible indicator at least indicates a condition of the product upon receiving a signal from the user interface switch, and wherein the switch is a touch sensor type switch;

b) wherein the visible indicator is activated at least to indicate an activation signal from the switch when the load is not activated; and

c) wherein the visible indicator is also used to indicate a power level of the power source when the load is switched off and the product is not connected to a mains supply.

52. A method of operating a product which includes a visible luminous indicator, an energy consuming load and a power source for powering the load, the method including the steps of operating a user interface switch, that is a touch sensor type switch which is not a serial link in a circuit from the power source to the load to power the load, to control the operation of a microchip, using the microchip to control the connection of the power source to the load and the activation of the indicator, and to activate the indicator to show at least one of the following when the load is not activated: a condition of the product, an activation of the switch, and a power level of the power source.

Id. at 13:60–14:13, 16:31–42.

E. Grounds of Unpatentability Instituted for Trial

We instituted an *inter partes* review of claims 1, 3–5, 10–14, 19, 48, 49, 51, and 52 of the '970 patent on the following grounds of unpatentability:

References	Basis	Challenged Claims
Beard ¹ and Rathmann ²	35 U.S.C. § 103(a)	1, 3, 5, 10–12, 14, 19, 48, and 49
Beard, Rathmann, and Danielson ³	35 U.S.C. § 103(a)	4, 13, 51, and 52

Dec. 13–14.

II. DISCUSSION

A. Claim Construction

In an *inter partes* review, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144 (2016) (holding that 37 C.F.R. § 42.100(b) “represents a reasonable exercise of the rulemaking authority that Congress delegated to the Patent Office”). Consistent with the broadest reasonable construction, claim terms are presumed to have their ordinary and customary meaning as understood by a person of ordinary skill in the art in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir.

¹ U.S. Patent No. 5,898,290, issued Apr. 27, 1999 (Ex. 1005, “Beard”).

² U.S. Patent No. 5,955,869, issued Sept. 21, 1999 (Ex. 1006, “Rathmann”).

³ U.S. Patent No. 5,710,728, issued Jan. 20, 1998 (Ex. 1007, “Danielson”).

2007). An inventor may provide a meaning for a term that is different from its ordinary meaning by defining the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

In the Institution Decision, we adopted Petitioner’s proposed construction of “mains” as encompassing “the power source provided by a main distribution network, such as a utility.” Dec. 5 (citing Pet. 10). Patent Owner does not challenge this construction or explicitly propose a construction for any other claim term. After considering the complete record, we maintain our earlier construction of “mains” for this Final Written Decision. To the extent it is necessary for us to construe any additional claim terms in this decision, we do so below in the context of analyzing whether the prior art renders the claims unpatentable.

B. Obviousness over Beard and Rathmann
Claims 1, 3, 5, 10–12, 14, 19, 48, and 49

Petitioner contends that claims 1, 3, 5, 10–12, 14, 19, 48, and 49 are unpatentable under 35 U.S.C. § 103(a) as obvious over Beard and Rathmann. Pet. 19–24, 28–46. Relying in part on the testimony of Mr. Beard, Petitioner explains how the combination of Beard and Rathmann allegedly teaches all the claim limitations and contends a person having ordinary skill in the art would have been motivated to combine the teachings of the references. *Id.* (citing Ex. 1003).

1. Beard

Beard describes an intelligent battery pack with a microcontroller and battery indicators for use with a portable electronic device. Ex. 1005, 1:18–21; see Ex. 1003 ¶ 72. The microcontroller responds to a touch-sensing

circuit that detects changes in impedance or capacitance when an operator touches a pair of contacts. Ex. 1005, 7:41–52, 11:12–16; see Ex. 1003 ¶ 72. Figure 11 of Beard is reproduced below.

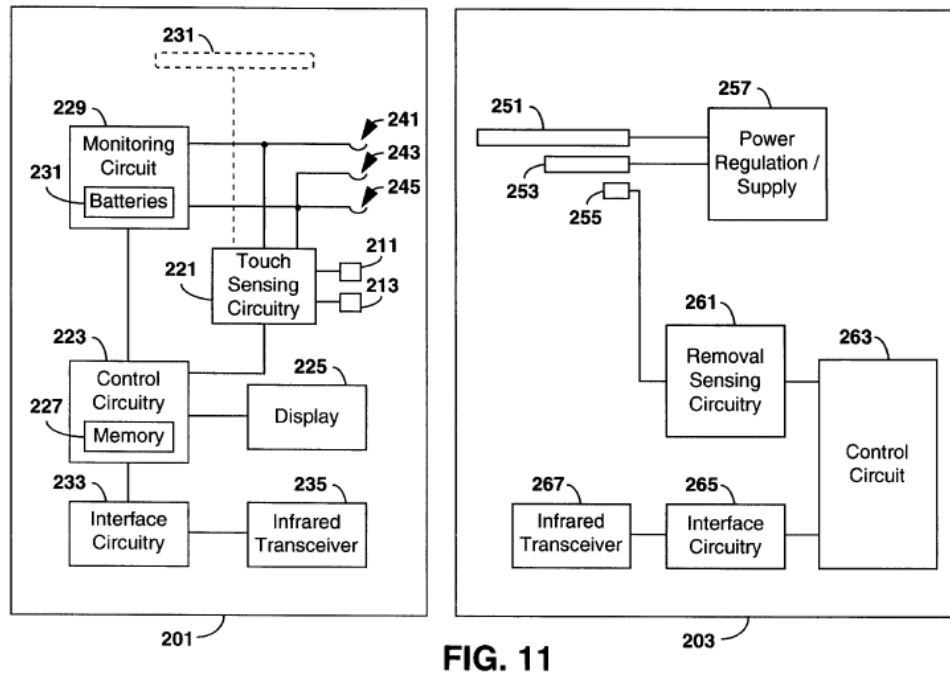


FIG. 11

Figure 11 depicts battery pack 201, which provides an operator with an indication of battery capacity whether or not it is inserted into portable electronic device 203. Ex. 1005, 11:10–13. When fully inserted, battery pack contacts 241, 243, and 245 engage corresponding portable device contacts 251, 253, and 255, and, if sufficient power is available, device 203 may enter a fully operational state when the operator desires. *Id.* at 11:67–12:4.

2. Rathmann

Rathmann describes a “smart battery for use in an intelligent device having power management capabilities.” Ex. 1006, 1:12–16, 1:65–3:30. The battery pack in Rathmann includes a microcontroller, a battery-power indicator comprising LEDs, and a user-interface switch. *Id.* at 1:65–2:2,

3:1–7, 16:24–36, Fig. 3 (microprocessor 50, LEDs 34, and manual switch 35). In response to a signal from the battery pack’s user interface, four LEDs illuminate sequentially to indicate remaining battery charge. *Id.* at 16:24–36; *see* Ex. 1003 ¶ 91. Rathmann provides detailed instructions on how the microprocessor implements illumination of the correct number of LEDs based on battery charge. Ex. 1006, 58:31–59:32, Fig. 34; *see* Ex. 1003 ¶¶ 92–93.

3. Claim 1

Petitioner asserts that the combination of Beard and Rathmann teaches all of the limitations of independent claim 1. Pet. 28–39. First, Petitioner contends that Beard describes the recited “electronic module” (Beard’s intelligent battery pack 201) “for use with a product” (electronic device 203) that comprises an “energy consuming load” (any of the energy consuming components in device 203) and a “connection to a power source” (contacts 251, 253, and 255 engaging corresponding contacts 241, 243, and 245 of battery pack 201). *Id.* at 28–30. Petitioner also contends that Beard’s battery pack 201 comprises a “microchip” (in the form of control circuit 223) and a “switch” (touch sensing circuitry 221 and touch contacts 211 and 213). *Id.* at 30. Further, Petitioner contends that Beard’s touch sensor switch is a “user interface” comprised of touch sensing circuitry 221 and contacts 211 and 213, which a user touches to initiate the display of battery capacity. *Id.* at 30–31 (citing Ex. 1005, 11:12–22; Ex. 1003 ¶¶ 135–38). In addition, Petitioner contends that the switch “does not form a serial link in a circuit that transfers power from the power source to power the load,” as recited in claim 1, because Beard’s touch sensing circuitry is not part of the circuit that transfers power between batteries 231 and the load in device 203

via battery contacts 241 and 243 and device contacts 251 and 253. *Id.* at 31–32 (citing Ex. 1005, 11:63–65; Ex. 1003 ¶¶ 139–40). We agree with and adopt Petitioner’s contentions regarding Beard’s disclosure of these limitations as set forth in the Petition.

Petitioner further contends that Beard and Rathmann teach “said microchip controlling a luminous visible location indicator that is not the load,” as recited in claim 1. *Id.* at 32–35. In one embodiment, Beard discloses LEDs that illuminate sequentially to show remaining battery capacity. Ex. 1005, 6:67–7:5, Figs. 5–6. According to Petitioner and its expert, a person of ordinary skill in the art would have viewed Beard’s LEDs as indicating the location of the device containing the LEDs as well as battery capacity. Pet. 32 (citing Ex. 1003 ¶ 142). Petitioner also argues that Beard’s LED indicator is not the load, because Beard teaches the LED display on the battery pack is separate and distinct from the energy consuming parts of the device and can be activated before insertion of the battery pack into the device. *Id.* at 32–33 (citing Ex. 1005, 6:45–7:3). Further, Petitioner asserts that Beard’s microchip controls the visible indicator (LEDs). *Id.* at 33 (citing Ex. 1005, 7:59–63).

In a second embodiment, shown in Figures 8–11 of Beard and relied on by Petitioner for teaching other claim limitations, the microchip controls a liquid crystal display (LCD) indicator rather than an LED indicator. Ex. 1005, Figs. 8–11. Like the LED indicator, Petitioner contends the LCD indicator cannot be the load because it may be activated regardless of whether the battery pack has been inserted into the electronic device. Pet. 33–34 (citing Ex. 1005, 11:10–12; Ex. 1003 ¶ 147). According to Petitioner, a person of ordinary skill in the art would have been motivated to

combine the LED indicator (a “luminous visible location indicator”) of Beard’s first embodiment with the functionality disclosed in the second embodiment because use of an LED instead of an LCD is a predictable, expected variation. *Id.* at 34 (citing Ex. 1003 ¶ 148). Moreover, Petitioner contends, a person of ordinary skill in the art would have looked to Rathmann for additional details about how the microchip (Beard’s control circuitry) controls the luminous visible location indicator. *Id.* at 34–35 (citing Ex. 1006, 16:24–29, 58:31–59:32, Fig. 34; Ex. 1003 ¶¶ 91–93, 149–50). We agree with and adopt Petitioner’s contentions regarding the disclosures of the recited luminous visible location indicator in Beard and Rathmann. *See* Pet. 32–35. We also agree with and adopt Petitioner’s reasoning for why a person of ordinary skill in the art would have combined the two embodiments of Beard and combined Beard with Rathmann. *See id.* at 24–27, 34–35.

Patent Owner argues that Beard’s LED indicator is not a “luminous visible *location* indicator” because the location of Beard’s battery pack must be known before a user can touch the contacts to illuminate the indicator. PO Resp. 13, 16. In Patent Owner’s view, “[t]he nature of indicating a location is an indication, at least in part, of a thing unknown and not in contact with the operator.” *Id.* at 16 (citing Ex. 2003 ¶ 69 (Declaration of Dr. Robert E. Morley)). Thus, Patent Owner contends that Beard’s LED indicator does not indicate location because it is activated only after a user contacts the touch sensor, and therefore the location is already known. *Id.*

We agree with Petitioner that Patent Owner’s argument relies on an interpretation of “location indicator” that is contradicted by the claims and the disclosure of the ’970 patent. *See* Pet. Reply 5–8. As will be discussed

below, claim 1 requires the luminous visible location indicator to be configured according to one of three options. Ex. 1001, 13:67–14:13. In the first option, the indicator “indicates a condition of the product upon receiving a signal from the user interface switch [which] is a touch sensor type switch.” *Id.* at 14:3–6. Thus, rather than barring activation of the location indicator by a touch sensor, as Patent Owner contends, claim 1 expressly recites that the location indicator may be activated upon receiving a signal from a touch sensor. *See* Pet. Reply 7. As Petitioner points out, this is exactly what Beard discloses—a luminous indicator that is activated by a touch sensor and indicates location and a condition of the product, e.g., battery charge status. *See id.*; Pet. 32–34.

Similarly, in the written description of the ’970 patent, the only express disclosure of a location indicator is in the embodiment shown in Figure 11. *See* Pet. Reply 7–8. That embodiment includes an LED indicator that can indicate a condition of a battery, for example, and “may also be suitable to assist in locating a device, e.g. but not limited to a flashlight, in the dark.” Ex. 1001, 9:48–55. The LED indicator is activated when a user closes a switch, which, as Petitioner asserts, could be a touch sensor. *Id.* at 9:56–57; *see* Pet. Reply 7–8. Again, this is what Beard describes—an LED indicator that is activated by closing a switch, e.g., by contacting a touch sensor. *See* Pet. 32–34; Pet. Reply 8.

Finally, claim 1 recites that the microchip controls the luminous visible location indicator according to at least one of three specific configurations (a)–(c); Petitioner contends that Beard discloses all three. *Id.* at 35–39. First, Petitioner asserts that Beard discloses a visible indicator that “indicates a condition of the product upon receiving a signal from the user

interface switch [which] is a touch sensor type switch” (configuration (a)) because Beard’s LED display indicates the condition of the product’s battery charge in response to a signal from Beard’s touch sensor switch, activated by a user. *Id.* at 35–36 (citing Ex. 1005, 6:63–7:5, 11:17–19). Second, Petitioner asserts that Beard discloses a visible indicator that “is activated at least to indicate an activation signal from the switch when the load is not activated” (configuration (b)) because Beard’s battery charge status indicator may be activated when the battery pack is not inserted into the electronic device and may use previously monitored load characteristics stored in memory rather than obtaining these characteristics from the device itself. *Id.* at 36–37 (citing Ex. 1005, 11:10–12, 11:23–30). Finally, Petitioner contends that Beard’s visible indicator is “used to indicate a power level of the power source when the load is switched off and the product is not connected to a mains supply” (configuration (c)) because Beard’s battery pack displays status charge information using previously monitored load characteristics that are stored in memory, rather than obtaining the characteristics from device 203 when it is powered on or in use, and Beard’s devices are not mains-powered. *Id.* at 38–39 (citing Ex. 1005, 11:23–30; Ex. 1003 ¶¶ 165–67, 170–71). We agree with and adopt Petitioner’s contentions regarding the visible indicator configurations recited in claim 1.

For the foregoing reasons, we conclude that Petitioner has shown by a preponderance of the evidence that claim 1 would have been obvious over the combination of Beard and Rathmann.

4. Claims 3, 5, 10, 11, 14, 48, and 49

Claims 3, 5, 10, 11, 14, 48, and 49 all depend directly or indirectly from claim 1. Patent Owner does not present any arguments with respect to

these claims other than those already discussed with respect to claim 1. *See* PO Resp. 7–24. We agree with and adopt Petitioner’s contentions as to how Beard and Rathmann teach the limitations of these claims. *See* Pet. 39–46. Accordingly, we conclude that Petitioner has shown by a preponderance of the evidence that claims 3, 5, 10, 11, 14, 48, and 49 would have been obvious over the combination of Beard and Rathmann.

5. *Claims 12 and 19*

Claim 12 depends indirectly from claim 1 and, by virtue of a dependency from claim 3, requires a user interface that comprises at least a touch sensor switch and requires selection of configuration (b) in claim 1, in which the visible indicator is activated at least to indicate an activation signal from the switch. Claim 19 depends directly from claim 1 and also requires selection of configuration (b). Claim 12 further recites “a f[u]nction, selected by a user interface activation signal is automatically shut off after a predetermined period of time.” Ex. 1001, 14:43–45. Similarly, claim 19 further requires the microchip, “upon receiving a switch activation signal from a touch sensor,” to control “at least the activation of a function that automatically shuts off a period after such activation.” *Id.* at 14:64–67.

Petitioner asserts that Beard discloses two functions, each of which satisfies the recited “function” in each of claims 12 and 19. Pet. 42–44. Specifically, Petitioner relies on two functions performed by Beard’s battery pack: (1) calculation and display of remaining battery capacity, and (2) calculation and display of a remaining time estimate. *Id.* (citing Ex. 1005, 6:67–7:5, 10:37–40; Ex. 1003 ¶¶ 192, 203); Pet. Reply 10. According to Petitioner, both of these functions are selected by an activation signal from the touch sensor and are automatically deactivated ten seconds

later. Pet. 43–44 (citing Ex. 1005, 6:63–7:5, 10:48–56, 11:12–22; Ex. 1003 ¶¶ 193, 195, 202, 204).

Patent Owner argues that the “function” of claims 12 and 19 cannot be interpreted to be the same as activation of the luminous visible location indicator of claim 1. PO Resp. 22. We are not persuaded by Patent Owner’s argument. Instead, we agree with Petitioner that “function” is a broad term that encompasses any kind of function, while activating a visible indicator is a specific type of function. See Pet. Reply 12–13. Patent Owner’s expert, Dr. Morley, agrees that activation of a visible indicator to indicate a battery condition is an example of a “function” in the context of Patent Owner’s patents. Ex. 1036, 118:21–119:3; see Pet. Reply 13. Moreover, the written description of the ’970 patent uses the term “function” broadly and identifies “battery strength monitoring” as but one example of a function. Ex. 1001, 1:31–33, 8:54–59.

Along the same lines, Patent Owner argues that the “user interface activation signal” of claim 12 and the “switch activation signal” of claim 19 cannot refer back to the same “activation signal” for activating the luminous visible location indicator recited in claim 1. PO Resp. 22. Again, we are not persuaded. We agree with Petitioner that “activation signal” in claim 1 is a broad term that encompasses a signal from a user interface or from some other component. See Pet. Reply 14. A “user interface activation signal” is a specific type of “activation signal,” and a “switch activation signal” is a specific type of “user interface activation signal,” i.e., one that comes from a switch component of the user interface. See *id.*

For these reasons, we agree with Petitioner that Patent Owner’s attempt to narrow the claim term “function” to exclude activation of a

visible indicator is contrary to the claim language, the written description of the '970 patent, and the testimony of Patent Owner's own expert. Thus, Beard's battery capacity display can be the visible indicator recited in claim 1 and also the "function" recited in each of claims 12 and 19. Similarly, the activation signal received from the touch sensor switch to activate the battery capacity display in Beard can be the "activation signal" of claim 1 as well as the "user interface activation signal" of claim 12 and the "switch activation signal" of claim 19.

Moreover, even under Patent Owner's view that the "function" in claims 12 and 19 must be different from activation of the visible indicator in claim 1, which is met by Beard's calculation and display of battery capacity, Petitioner contends that Beard discloses a second function that satisfies the "function" of claims 12 and 19—calculation and display of a remaining time estimate. Pet. 42–44; Pet. Reply 10. We agree. Specifically, Beard discloses that the function of calculating and displaying battery charge status is activated in response to an activation signal of a touch sensor. *See, e.g.*, Ex. 1005, Fig. 9, 10:48–50 (“[T]he battery pack 155 utilizes a single touch contact 155 to initiate the delivery of charge status to an LCD display 157 for viewing.”). Beard also discloses that calculating and displaying charge status may include calculating and displaying *both* (1) available capacity and (2) projected remaining time estimates of battery life. *Id.* at 10:37–40 (“FIG. 9 is a perspective view illustrating a further embodiment of the battery pack of FIG. 8 which includes an LCD (Liquid Crystal Display) screen that is used to display both available capacity and remaining time estimates.”). Beard further discloses that the charge status information in

Figure 9 automatically deactivates after ten seconds. *See, e.g., id.* at 10:51–56.

Patent Owner contends that calculation and display of battery capacity and calculation and display of a remaining time estimate are not separate functions. PO Resp. 21. Petitioner, however, points to deposition testimony in which Patent Owner’s expert agrees that these two features are different “functions.” Pet. Reply 10–11 (citing Ex. 1036, 126:16–22). This conclusion is consistent with Beard’s description of calculating and displaying battery capacity as a feature different from calculating and displaying a remaining time estimate. Ex. 1005, Abstract, 10:37–45, 11:45–48, 12:59–65. For example, Beard states that instead of—or in addition to—displaying the percentage of available battery capacity, the control circuitry interacts with the display to deliver the time estimates to the operator. *Id.* at 11:45–48. Beard’s disclosure that battery capacity can be calculated and displayed *instead of* time estimates evidences that calculation and display of battery capacity and calculation and display of remaining time estimates are different functions. Thus, even under Patent Owner’s proposed construction of “function” as something different from activation of the visible indicator, Beard teaches the limitations of claims 12 and 19.

For these reasons, we conclude that Petitioner has shown by a preponderance of the evidence that claims 12 and 19 would have been obvious over the combination of Beard and Rathmann.

*C. Obviousness over Beard, Rathmann, and Danielson
Claims 4, 13, 51, and 52*

Petitioner contends that claims 4, 13, 51, and 52 are unpatentable under 35 U.S.C. § 103(a) as obvious over Beard, Rathmann, and Danielson.

Pet. 24–27, 46–58. Relying on the testimony of Mr. Beard, Petitioner explains how the combination of Beard, Rathmann, and Danielson allegedly teaches all the claim limitations and contends a person having ordinary skill in the art would have been motivated to combine the teachings of the references. *Id.* (citing Ex. 1003).

1. Danielson

Mr. Beard is a named inventor on the Danielson patent, and Danielson and Beard have a common assignee. Ex. 1007. Danielson describes a portable data collection terminal system that may be powered by the intelligent battery pack disclosed in Beard. *Id.* at Abstract, Fig. 2. Danielson describes various aspects of such terminal devices, including embodiments that have radio frequency circuitry, a keyboard, or an on/off switch. Ex. 1007, 8:55–57, 11:51–53; *see* Ex. 1003 ¶ 98.

2. Claims 4, 13, and 51

Claims 4, 13, and 51 depend directly or indirectly from claim 1. Petitioner relies on Danielson for teaching the additional limitations of these claims. Pet. 46–48. Patent Owner does not present any arguments with respect to these claims other than those already discussed. *See* PO Resp. 7–24. We agree with and adopt Petitioner’s contentions regarding Danielson’s teachings of the limitations of these claims. *See* Pet. 46–48. We also agree with and adopt Petitioner’s articulated reasoning for combining Danielson with Beard and Rathmann, which Patent Owner does not dispute. *See* Pet. 24–27. Accordingly, we conclude that Petitioner has shown by a preponderance of the evidence that claims 4, 13, and 51 would have been obvious over the combination of Beard, Rathmann, and Danielson.

3. Claim 52

Independent claim 52 is a method claim with many limitations similar to those in claim 1, including use of a microchip to control activation of a visible luminous indicator. Ex. 1001, 16:31–43. In addition, claim 52 recites “using the microchip to control the connection of the power source to the [energy consuming] load.” *Id.* at 16:37–38. Petitioner contends that Beard in view of Danielson teaches a microchip that performs both recited functions—controlling activation of a visible indicator and controlling connection of the power source to the energy consuming load. Pet. 53–56.

Beginning with Beard, Petitioner asserts that programmable microchip control circuit 223 in Beard’s battery pack 201 controls activation of display 225, which indicates battery charge status. *Id.* at 53, 56 (citing Ex. 1005, 7:59–63, 11:14–22, Fig. 7, Fig. 11). Petitioner also contends that Beard in view of Danielson teaches using Beard’s control circuit 223 to control connection of the power source (batteries 231) to the load (energy consuming parts of device 203). *Id.* at 53 (citing Ex. 1003 ¶ 248); *see* Ex. 1005, Fig. 11. First, Petitioner argues Beard discloses that, when the battery pack is inserted into the terminal device, “the device may only enter a fully operational state ‘*if sufficient power is available*’ from the batteries.” Pet. 54 (citing Ex. 1005, 11:67–12:4). Petitioner admits, however, that Beard provides limited detail of how the system handles a low power battery on startup. *Id.* Petitioner also asserts that Beard addresses the problem of data loss caused by unsafe shutdown. *Id.* at 53–54 (citing Ex. 1005, 2:18–28, 12:4–24; Ex. 1003 ¶ 249).

For more detail on the process for handling a low power battery, Petitioner turns to Danielson, which describes a device for use with a smart

battery pack like the one described in Beard. *Id.* at 54. In particular, Petitioner refers to Figure 22 of Danielson, which is a flowchart illustrating power management procedures. *Id.* (citing Ex. 1007, Fig. 22). For example, Danielson describes testing the voltage of the battery when the user turns on the device. *Id.* (citing Ex. 1007, 23:27–34, Fig. 22; Ex. 1003 ¶ 252). If the voltage is “OK,” the prior device status is restored and the device resumes operation. *Id.* (citing Ex. 1007, 23:34–39, Fig. 22; Ex. 1003 ¶ 252). Danielson also describes shutting down power to the device if the operating voltage falls below a desirable minimum voltage. *Id.* at 55 (citing Ex. 1007, 23:17–26, Fig. 22; Ex. 1003 ¶ 252). Thus, according to Petitioner, Danielson discloses a process of controlling power from the power source to the load if the power source fails a voltage check. *Id.* (citing Ex. 1007, 23:17–26, Fig. 22; Ex. 1003 ¶ 253).

Based on these teachings, Petitioner contends it would have been obvious to a person of ordinary skill in the art to implement the power source control function described in Figure 22 of Danielson in microchip control circuit 223 in Beard’s battery pack. Pet. 55 (citing Ex. 1003 ¶¶ 254–55). Petitioner asserts that both Danielson and Beard are concerned with allowing a device to become fully operational only if sufficient power is available because a device that attempts to start up without sufficient power available could crash unexpectedly without a safe shutdown. *Id.* (citing Ex. 1003 ¶¶ 254–55). Petitioner argues further that the microchip in Beard’s battery pack “is the natural place to implement the functionality described in Danielson because it was a well-known general purpose programmable microchip capable of performing numerous functions, and as the microchip connected to the battery power source, it is the obvious choice to control the

connection of the battery power source to the device load.” *Id.* at 55–56 (citing Ex. 1003 ¶ 255).

We agree with Patent Owner that Petitioner has not shown sufficiently that the combined teachings of Beard and Danielson teach or suggest a single microchip that controls both activation of a visible indicator and connection of the power source to the energy consuming load, as recited in claim 52. *See* PO Resp. 7–12. Beard discloses a microchip in a battery pack that controls activation of a visible indicator, whereas Danielson teaches a low battery management process that is located in the terminal device into which Beard’s battery pack may be inserted. Ex. 1005, 7:59–63; Ex. 1007, 23:10–13; *see* PO Resp. 9. We are not persuaded, however, that a person of ordinary skill in the art would have moved Danielson’s battery management function to the microchip in Beard’s battery pack when the battery pack is inserted into Danielson’s device.

Petitioner places substantial weight on a teaching in Beard that the device may only enter a fully operational state if sufficient power is available. *See* Pet. 54 (citing Ex. 1005, 11:67–12:4). At oral hearing, counsel for Petitioner argued that the cited sentence discloses that the microchip in Beard’s battery pack (control circuit 223) checks to see whether sufficient power is available from the battery pack to power the device into which the battery pack is inserted. Tr. 23:11–15, 24:10–14, 26:11–14, 26:23–27:5. We do not agree. The full sentence relied on by Petitioner reads: “When fully inserted, the battery pack contacts 241, 243 and 245 engage the corresponding contacts 251, 253 and 255, and, if sufficient power is available, the device 203 may enter a fully operational state when the operator so desires.” Ex. 1005, 11:67–12:4. Nothing in this

sentence or the surrounding disclosure in the '970 patent states that the battery pack or the microchip in the battery pack, rather than the device itself, determines whether sufficient power is available from the battery pack for the device to enter a fully operational state. Therefore, although Beard may be concerned with allowing a device to become fully operational only if sufficient power is available, as Petitioner argues, Beard does not teach or suggest that the microchip in the battery pack plays a role in making such a determination.

Without a teaching in Beard that the control circuit in its battery pack is involved in power management of the device, Petitioner's obviousness argument rests on its assertion that the microchip in Beard's battery pack is the natural place to implement control of the power connection to a load in Danielson's device because Beard's microchip can be programmed to perform many functions and is the microchip connected to the battery power source. *See* Pet. 55–56 (citing Ex. 1003 ¶ 256). As Patent Owner points out, however, Beard discloses that device 203, into which battery pack 201 is inserted, also contains a microchip (control circuit 263), as shown in Figure 11 of Beard. PO Resp. 10; *see* Ex. 1005, 12:19–24, Fig. 11; Ex. 2003 ¶¶ 88, 89, 92. With support from its expert, Dr. Morley, Patent Owner argues that because Beard discloses a microchip in the terminal device, the combined teachings of Beard and Danielson would result in placement of Danielson's power management processes in the device rather than in the battery pack. PO Resp. 10 (citing Ex. 2003 ¶ 89). On the record before us, we agree with Patent Owner. In view of the disclosures in both Beard and Danielson of a microchip in the terminal device, Petitioner has not explained persuasively why a person of ordinary skill in the art would have

implemented control of the connection from the power source (Beard's battery pack) to the terminal device in the battery pack's microchip rather than the device's microchip.

Petitioner's reliance on *MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1293–94 (Fed. Cir. 2015), does not change our conclusion. *See* Pet. Reply 3–4. In that case, the United States Court of Appeals for the Federal Circuit affirmed a determination by the Board that it would have been obvious to combine the teachings of two references in a way that placed two different functions taught by the references on a single microchip. *Id.* at 1294. That case, however, does not stand for the proposition that combining two functions onto a single microchip would have been obvious in every circumstance. The record in the instant case does not support a conclusion of obviousness for the reasons explained above.

For the foregoing reasons, Petitioner has not shown sufficiently that the combination of Beard, Rathmann, and Danielson teaches or suggests a microchip that controls both activation of a visible indicator and connection of the power source to the energy consuming load. Accordingly, we conclude that Petitioner has not shown by a preponderance of the evidence that claim 52 would have been obvious over the combination of Beard, Rathmann, and Danielson.

III. CONCLUSION

Based on the evidence and arguments, Petitioner has demonstrated by a preponderance of the evidence that claims 1, 3, 5, 10–12, 14, 19, 48, and 49 of the '970 patent would have been obvious over the combination of Beard and Rathmann, and claims 4, 13, and 51 of the '970 patent would

have been obvious over the combination of Beard, Rathmann, and Danielson. Petitioner has not demonstrated by a preponderance of the evidence that claim 52 of the '970 patent would have been obvious over the combination of Beard, Rathmann, and Danielson.

IV. ORDER

Accordingly, it is:

ORDERED that claims 1, 3–5, 10–14, 19, 48, 49, and 51 of the '970 patent have been shown to be unpatentable;

FURTHER ORDERED that claim 52 of the '970 patent has not been shown to be unpatentable; and

FURTHER ORDERED that, because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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