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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Nevro Corp.,

Petitioner,

v.

Boston Scientific Neuromodulation Corp.,

Patent Owner.

Case IPR2017-01899
Patent No. 7,587,241

PATENT OWNER'S NOTICE OF APPEAL

By Electronic Filing
Patent Trial and Appeal Board
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By Hand Delivery
Office of the General Counsel
U.S. Patent & Trademark Office
Madison Building East, 10B20
600 Dulany Street
Alexandria, Virginia 22314-5793

By Electronic Filing
Circuit Executive and Clerk of Court
United States Court of Appeals for the Federal Circuit
717 Madison Place, NW
Washington, DC 20439

To the Director of the United States Patent and Trademark Office:

Pursuant to 35 U.S.C. §§ 141(c) and 319 and 37 C.F.R. § 90.2(a), Boston Scientific Neuromodulation Corp. ("Patent Owner") hereby appeals to the United States Court of Appeals for the Federal Circuit from the Patent Trial and Appeal Board's ("Board") Final Written Decision entered on February 4, 2019. A copy of the Final Written Decision is attached as Exhibit 1.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Patent Owner identifies that the issues on appeal include, but are not limited to: (1) whether the Board erred in determining that Nevro Corp. ("Petitioner") has shown by a preponderance of the evidence that claims 1, 3-8, 10-14, and 16-20 are unpatentable over Torgerson '198, Torgerson '756, and Torgerson '883 (Ground 1); (2) whether the Board erred in determining that Petitioner has shown by a preponderance of the evidence

that claims 2, 9, and 15 are unpatentable over Torgerson '198, Torgerson '756, Torgerson '883, and Abrahamson (Ground 2); and (3) any Board finding, determination, judgment or order supporting or related to the Final Written Decision and decided adversely to Patent Owner, including, without limitation, the Board's construction and application of the claim language, the Board's interpretation of the prior art, and the Board's interpretation of expert evidence.

The Board issued its Final Written Decision on February 4, 2019. This notice is therefore timely filed within sixty-three (63) days of the Board's decision as prescribed by 35 U.S.C. § 142 and 37 C.F.R. § 90.3(a)(1).

Patent Owner is concurrently filing this Notice of Appeal with the Director of the United States Patent and Trademark Office and the Clerk of the United States Court of Appeals for the Federal Circuit, along with the required fees.

Patent Owner does not believe that any fees are due to the United States Patent and Trademark Office with this Notice of Appeal. However, if any such fees are due, the Director is authorized to charge the fees to Deposit Account No. 50-2387.

Dated: February 22, 2019

Respectfully submitted,

/s/ David A. Caine

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CERTIFICATE OF SERVICE

The undersigned certifies that the original of this **PATENT OWNER'S NOTICE OF APPEAL TO THE U.S. COURT OF APPEALS FOR THE FEDERAL CIRCUIT** was filed via hand delivery on February 22, 2019 with the Director of the United States Patent and Trademark Office at the address below:

Office of the General Counsel
U.S. Patent & Trademark Office
Madison Building East, 10B20
600 Dulany Street
Alexandria, Virginia 22314-5793

A copy of this Notice of Appeal is being filed and served on February 15, 2019, as follows:

USPTO Patent Trial and Appeal Board:
Patent Trial and Appeal Board
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

(via PTAB E2E)

U.S. Court of Appeals for the Federal Circuit:
Clerk of Court
U.S. Court of Appeals for the Federal Circuit
717 Madison Place, N.W.
Washington, DC 20439

(via CM/ECF with filing fee)

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(via email pursuant to 37 C.F.R. § 42.6(e))

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Exhibit 1

Trials@uspto.gov
571-272-7822

Paper No.: 35
Entered: February 4, 2019

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NEVRO CORP.,
Petitioner,

v.

BOSTON SCIENTIFIC NEUROMODULATION CORP.,
Patent Owner.

Case No. IPR2017-01899
Patent No. 7,587,241 B2

Before HUBERT C. LORIN, MICHAEL W. KIM, and AMANDA F. WIEKER, Administrative Patent Judges.

LORIN, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. Background

Nevro Corp. ("Petitioner") filed a Petition requesting *inter partes* review of claims 1–20 of U.S. Patent No. 7,587,241 B2 (Ex. 1001, "the '241 patent") pursuant to 35 U.S.C. §§ 311–319. Paper 2 ("Pet."). Boston

Scientific Neuromodulation Corp. ("Patent Owner") filed a Preliminary Response to the Petition (Paper 9, "Prelim. Resp.").

On February 6, 2018, we instituted an *inter partes* review, pursuant to 35 U.S.C. § 314. Specifically, we instituted an *inter partes* review of claims 1–20 on two asserted grounds of unpatentability. Paper 10 ("DI").

Patent Owner filed a Patent Owner Response (Paper 16, "PO Resp.") and Petitioner filed a Reply (Paper 19, "Pet. Reply").

Upon request, we authorized Patent Owner to file a Sur-Reply (Paper 26, "PO Sur-Reply"). One day before the Patent Owner Sur-Reply was due, Patent Owner requested permission, pursuant to 37 C.F.R. § 42.123, to submit U.S. Patent No. 5,999,857 ("the '857 Patent") as supplemental information. The request was denied (Paper 22). The Patent Owner Sur-Reply nevertheless discussed the '857 Patent.

Upon request, we granted Petitioner's request to file a Response to the Patent Owner Sur-Reply (Paper 29, "Pet. Sur-Sur-Reply") "limited to whether the Reply presented a new argument 'that the '977 [5,752,977] Patent discloses RF telemetry' (Paper 26, 11)." Paper 28, 2–3.

An oral hearing was held on November 1, 2018, and a transcript of the hearing is included in the record. Paper 34 ("Tr."). Prior to the hearing, the parties filed Demonstrative Exhibits (Ex. 1012, Paper 31) and Joint Objections to Demonstratives (Paper 32).

We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, we determine that Petitioner <u>*has*</u> shown by a preponderance of the evidence that challenged claims 1–20 of the '241 patent are unpatentable.

B. Related Proceedings

Petitioner notifies us that "[t]he '241 patent is the subject of one civil action: *Boston Scientific Corporation et al. v. Nevro Corp*., Case No. 1:16-cv-01163 [(D. Del)], filed December 9, 2016." Pet. 71; *see also* Paper 5, 2 (indicating the same).

C. The '241 Patent (Ex. 1001)

1. Effective Filing Date

Petitioner indicates that "June 28, 2002" is the earliest priority date of '241 patent. Pet. 7. This is in accord with the information recited on the cover of the '241 patent. Ex. 1001, (60).

2. Disclosure

The '241 patent, titled "Method For Controlling Telemetry In An Implantable Medical Device Based On Power Source Capacity," is directed to a microstimulator device incorporating a self-contained power source. Ex. 1001, (57). According to the patent,

> [d]espite the various types of microstimulators known in the art, . . . , significant improvements are still possible and desirable, particularly relative to a microstimulator with a self-contained primary or rechargeable battery that: (a) can accommodate the various needs of a microstimulator; (b) can accommodate various locations in the implanted site; and/or (c) can allow the microstimulator to operate longer between charges or replacement.

Ex. 1001, 2:53–60.

The improved microstimulator is illustrated as element 10 in Figure 1, and is reproduced below, with colored annotations added by the panel.

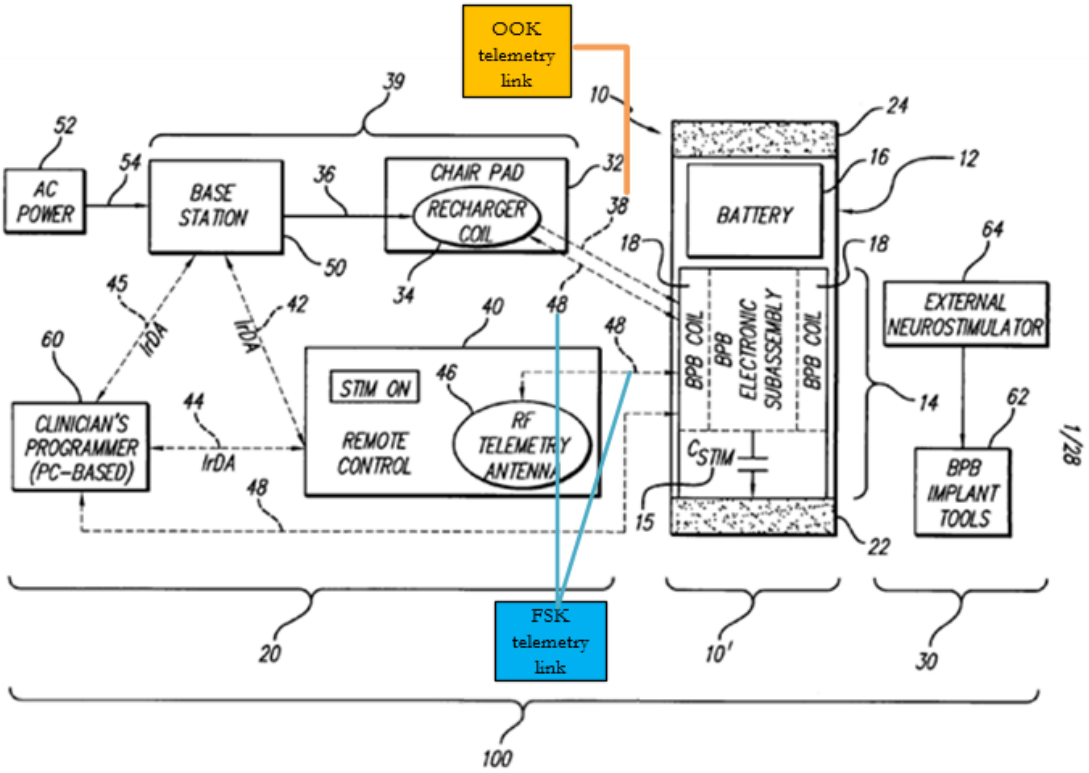

FIG. 1

"FIG. 1 is a block diagram for an exemplary battery-powered BION (BPB) system made in accordance with the present invention." Ex. 1001, 4:31–33.

Microstimulator 10, as shown in Figure 1, is

> [a] fully assembled battery-powered microstimulator (also referred to as a BION® microstimulator, or battery-powered BION ("BPB") device) made in accordance with the present invention [that] may operate independently, or in a coordinated manner with other implanted devices, or with external devices.

Ex. 1001, 5:46–51. It is composed of (a) battery 16, which is rechargeable via external battery charging system 39 (Ex. 1001, 8:36–37), and

(b) electronic subassembly 14. The two components are hermetically-sealed within case 12.

> The BPB device 10 includes a processor and other electronic circuitry that allow it to generate stimulating pulses that are applied to a patient through electrodes 22 and 24 in accordance with a program stored in programmable memory located within the electronic subassembly 14.

Ex. 1001, 11:29–33.

Microstimulator 10 contains inductive coil 18, which receives power and telemetry messages through OOK (On-Off Keying) telemetry link 38. Ex. 1001, 10:1–13, 13:55–57; *see also* Ex. 1001, Figure 1 set forth above (orange annotation added by panel). Charging system 39 communicates with control device 10 via OOK telemetry link 38. Ex. 1001, 13:63–66.

Microstimulator 10 also receives "commands and data" from remote control 40 and/or clinician's programmer 60 (or charging system 39) via "FSK (frequency shift keying) telemetry link 48." Ex. 1001, 9:55–58; *see also* Ex. 1001, Figure 1. 1 set forth above (blue annotation added by panel). FSK telemetry link 48 is bidirectional. Ex. 1001, 14:1. Thus, "[r]everse telemetry is also available through the FSK telemetry link 48. The reverse FSK telemetry link 48, allows information to be reported by the BPB device 10 to the clinician's programmer 60, the remote control 40, and/or the charging system 39." Ex. 1001, 10:14–18.

3. Claims

The '241 patent has 20 claims, all of which are challenged.

Independent claim 1 is illustrative.

> 1. A method for controlling an implantable medical device, comprising:
>
> monitoring a voltage of a power source within the implantable medical device;
>
> if the voltage is above a first threshold, enabling the following functions:
>
> listening for a first type of telemetry from a first external component;
>
> listening for a second type of telemetry from an external charging component, wherein the external charging component is used to wirelessly charge the power source; and
>
> providing stimulation to device electrodes using the power source; and
>
> if the voltage falls below the first threshold, discontinuing listening for the first type of telemetry from the first external component and discontinuing providing stimulation to device electrodes using the power source, while continuing listening for the second type of telemetry.

There are three independent claims: claims 1, 8, and 14, all to methods "for controlling an implantable medical device." They generally parallel each other, except that claim 14 provides "therapy to [a] patient" rather than "stimulation to device electrodes using the power source" (claims 1 and 8), and claim 8 includes a limitation "wherein the first external component is used to program stimulation parameters for the implantable medical device," further limits the stimulation-providing to be "in accordance with the stimulation parameters," and further limits the "while continuing listening for the second telemetry type" "so that the power source can be recharged."

Claims 2–7 depend from claim 1; claims 9–13 depend from claim 8; and claims 15–20 depend from claim 14.

D. References

Petitioner relies on the following references:

Name	Reference	Ex. No.
Torgerson ’198	U.S. 6,453,198 B1, granted Sept. 17, 2002	1005
Torgerson ’756	U.S. 7,167,756 B1, granted Jan. 23, 2007	1006
Torgerson ’883	U.S. 6,456,883 B1, granted Sept. 24, 2002	1007
Abrahamson	U.S. 6,647,298 B2, granted Nov. 11, 2003	1008

Pet. 4.

Additionally, Petitioner relies on the Declaration of Dr. Mark W. Kroll (“the Kroll Declaration,” Ex. 1003) and Patent Owner relies on the Declaration of Ronald D. Berger, M.D., Ph.D. (“the Berger Declaration,” Ex. 2006).

The parties also rely upon deposition transcripts of the aforementioned declarants: the April 13, 2018, deposition of Dr. Kroll (Ex. 2007) and the July 27, 2018, deposition of Dr. Berger (Ex. 1011[1]).

E. Asserted Grounds of Unpatentability

We instituted *inter partes* review on the following grounds. DI 35.

Ground	Basis	Prior Art	Claims

[1] Patent Owner filed an Errata to Dr. Berger’s Deposition Transcript (Ex. 2010).

I	§ 103	Torgerson '198, Torgerson '756, and Torgerson '883	1, 3–8, 10–14, and 16–20
II	§ 103	Torgerson '198, Torgerson '756, Torgerson '883, and Abrahamson	2, 9, and 15

II. LEGAL BACKGROUND

A. Claim Construction

In an *inter partes* review, "[a] claim in an unexpired patent that will not expire before a final written decision is issued shall be given its broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b); *see also Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard).[2] Under the broadest reasonable interpretation standard, claim terms are generally given their ordinary and customary meaning in view of the specification, as would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Furthermore, only those terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

[2] A recent amendment to this rule does not apply here because the Petition was filed before November 13, 2018. *See Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board*, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (to be codified at 37 C.F.R. pt. 42).

The construction of the patent claim term "telemetry" is an issue in this case.

All three independent claims (claims 1, 8, and 14) call for "listening for a first type of telemetry from a first external component" and "listening for a second type of telemetry from an external charging component."[3]

In our Decision on Institution, we stated that Petitioner had not proposed any claim construction of any term in the Petition. DI 8; Pet. 16–17. Nor does Petitioner advocate for any particular construction in its Reply. *See generally* Pet. Reply. Thus, Petitioner does not propose a construction of the patent claim term "telemetry."

In our Decision on Institution, we also stated that "Patent Owner proposes that we adopt a construction of the patent claim term 'telemetry' to mean 'transmission of data or information.' Prelim. Resp. 4." DI 8.

In our Decision on Institution, we stated that we were persuaded that the evidence supported construing "telemetry" as *covering* "transmission of data or information," but unpersuaded that the evidence supported construing "telemetry" as *limited* to the "transmission of [only] data or information." Specifically, we stated:

---

[3] The parties agree that in calling for a "first" and "second" type of telemetry, the claims implicitly call for two *different* types of telemetry. *See, e.g.*, Pet. 3 ("[T]he '241 patent claims methods that operate on a certain category of well-known IMDs [Implantable Medical Devices]—namely, those that . . . can listen for two different types of telemetry to communicate with external devices."); PO Resp. 53 ("Torgerson883 neither discloses nor suggests that the existence of two coils means that two different types of telemetry are employed or that the device listens for two different types of telemetry.").

We agree that "the '241 patent provides two examples of 'telemetry links': an FSK telemetry link and an OOK telemetry link." Prelim. Resp. 6; *see also* Ex. 1001, FIG. 1 set forth above (orange and blue annotations added by panel). "[OOK] telemetry link 38 . . . *allows commands and data* to be sent by the charging system 39 to the BPB device 10" (Ex. 1001, 10:1–2; emphasis added), as does the FSK telemetry link 48. Ex. 1001, 9:55–58.

Also, Patent Owner "believes 'telemetry' should be given its ordinary and customary meaning." Prelim. Resp. 5. To that end, Patent Owner has submitted dictionary definitions from five sources (Exs. 2001–2005). We find that they define "telemetry" as involving the transmission of "data." *See e.g.*, Ex. 2001 (Newton's Telecom Dictionary defines telemetry as "communications system for the transmission of digital or analog data . . . .").

Based on the above, we are persuaded that "telemetry" should be construed as covering the "transmission of data or information." We are unpersuaded, however, that "telemetry" can be properly construed as limited to the "transmission of [only] data or information."

Specifically, in the analysis of the prior art, Patent Owner attempts to rebut Petitioner's contention that the claims are unpatentable by narrowing certain recitations of "telemetry" (e.g., "second type of telemetry," as recited in each of independent claims 1, 8, and 14) to *only* include data or information, and, thereby, implicitly to exclude "energy" from the scope of "telemetry." We are unpersuaded that the aforementioned intrinsic evidence, and the submitted dictionary definitions, provide a sufficient basis for this more narrow construction.

More specifically, the Specification states that the telemetry links "allow[ ] commands and data" to be transmitted. Ex. 1001, 10:1–2. Patent Owner does not explain, and we are unable to ascertain independently, why the term "commands" would exclude "energy," for example. Furthermore, we have reviewed the supporting evidence cited by Patent Owner, but are

> still unable to identify a sufficient evidentiary basis for Patent Owner's narrow construction. For example, Stedman's Medical Dictionary defines "telemetry" as "[t]he science of measuring a quantity, then transmits the results by radio signals to a distant station for recording and interpretation." Ex. 2004, 5. We understand "radio signals" as encompassing, and not excluding, "energy".

DI 8–9.

Patent Owner maintains that the patent claim term "telemetry" should be construed as "transmission of data or information." PO Resp. 11 ("Patent Owner contends that 'telemetry' should be construed to mean: 'transmission of data or information.'"). In doing so, however, Patent Owner advocates for an exclusion of "transmission of energy (power)" from "transmission of data or information." PO Resp. 11–14.

We have considered the Patent Owner's arguments set forth in the Response and cited evidence, and we determine that, in light of the intrinsic and extrinsic evidence of record, the broadest reasonable interpretation of the claim term "telemetry" is a "transmission of data or information," which, by definition, is a "transmission of energy (power)." We clarify, however, that "telemetry" does not include an unmodulated "transmission of energy (power)."

In summary, any "transmission of data or information" is in the form of an electromagnetic wave. Ex. 2006 ¶ 32. And every electromagnetic wave is a "transmission of energy (power)." Ex. 2006 ¶ 33. A "transmission of data or information," however, is a subset of a "transmission of energy (power)," in that a "transmission of data or information" is a "transmission of energy (power)" where the modulation of frequency, amplitude, and/or phase of the electromagnetic wave is the "data

or information." Ex. 2006 ¶ 32. Accordingly, we agree with Patent Owner that not every "transmission of energy (power)" is a "transmission of data or information," in that an unmodulated "transmission of energy (power)" does not include "data or information." We cannot agree, however, that every "transmission of data or information" is not also a "transmission of energy (power)."

As with any claim construction, our analysis begins with the claim language itself, although none of the claims further define "telemetry." The independent claims (claims 1, 8, and 14) only call for "a first type of telemetry" and "a second type of telemetry." Dependent claims 2, 9, and 15 do identify certain types of telemetry, i.e., what the "first type of telemetry" and "second type of telemetry" can comprise; that is, "wherein the first telemetry type comprises Frequency Shift Keying (FSK), and wherein the second telemetry type comprises On/Off Keying (OOK)" (claims 2, 9, and 15). Those types, however, are unhelpful in defining "telemetry" itself.

The Specification also does not define expressly "telemetry." However, the '241 patent's use of the term "telemetry" is consistent with a "transmission of data/information" that is, by its very nature, also a "transmission of energy (power)." For example, the '241 patent discloses:

> Some embodiments of the invention provide a micro stimulator with means for receiving and/or transmitting signals via telemetry, such as means for receiving and/or storing *electrical power* within the micro stimulator and for receiving and/or transmitting signals *indicating the charge level of the internal battery*.

Ex. 1001, 4:5–10 (emphasis added). In discussing the different types of telemetry links, the Specification discloses:

> Such link may use OOK-PWM (On/Off Keying-Pulse Width Modulation), and is typically an inductive telemetry link. When used, *both power and information may be transferred* to the BPB device. When charging is not needed, e.g., when the battery comprises a primary battery, such an inductive link may still be used to transfer information and data to the BPB device.

Ex. 1001, 8:59–65 (emphasis added). The Specification also discloses other examples:

> The OOK (On-Off Keying) telemetry link 38, shown in FIG. 1, allows *commands and data* to be sent by the charging system 39 to the BPB device 10.

Ex. 1001, 10:1–3 (emphasis added).

> When the battery 16 is rechargeable, it is *recharged*, as required, from an external battery charging system 39 typically through the OOK-PWM telemetry link 38 (as shown in FIG. 1).

Ex. 1001, 11:25–28 (emphasis added).

Patent Owner argues that the Specification draws a distinction between telemetry and energy (power). According to the Patent Owner,

> [a] POSA [i.e., a person of ordinary skill in the art] would understand the '241 Patent to be drawing a clear distinction between telemetry (data and information) and power for charging the battery. Ex. 2006 ¶¶ 34–41. A POSA would understand these distinctions to be consistent with the plain meaning of the word—that telemetry requires data or information, such as a message, regardless of whether a device is deriving power from the underlying charging field. *Id*. ¶ 40. There is nothing in the '241 Patent to suggest that receiving only power would be considered as receiving telemetry. *Id*. ¶ 41.

PO Resp. 13–14. Further,

> [t]he '241 Patent states that the battery powered BION ("BPB") device 10 contains a single coil 18. *See* Ex. 1001 at Fig. 1. The '241 Patent explains "[t]he BPB device 10 contains an inductive coil 18 utilized for receiving power and telemetry

> messages through an inductive telemetry link 38." *Id*. at 13:55–57; *see also id*. at 12:33–35 ("The coil 18 (shown in FIG. 1) is utilized for receiving power for battery charging (when used) [and] telemetry."). Thus, the specification distinguishes the ability of coil 18 to receive power for battery charging from "telemetry." The specification also explains that "the BPB device 10 enables a mode in which it can receive a telemetry message and in which it can recharge the battery 16, as necessary." *Id*. at 12:36–42. Again, the specification draws a distinction between receiving a "telemetry message" and "recharging the battery" using the same charging field. *Id.; see also id*. at 3:23–27, 8:61–65; 9:55–10:13, 14:62–67.

PO Resp. 13.

We disagree that the Specification draws a distinction between "telemetry" on the one hand and a "transmission of energy (power)" on the other hand, such that "telemetry" is separate and distinct from a "transmission of energy (power)." Certainly a distinction is made between data/information (e.g., "commands and data," Ex. 1001, 10:1–3) and energy (power) (e.g., "recharg[ing] . . . typically through the OOK-PWM telemetry link"). But we see no distinction that limits the term "telemetry" to a "transmission of data/information" to the exclusion of a "transmission of energy (power)." In fact, the Specification expressly discloses an OOK-PWM telemetry link that "[w]hen used, *both power and information may be transferred*." Ex. 1001, 8:59–65. Accordingly, it cannot be the case that "a POSA would understand the '241 Patent to be drawing a clear distinction between telemetry (data and information) and power for charging the battery," as Patent Owner argues. PO Resp. 13. In light of what the Specification discloses as functions for the telemetry link, that is, a "transmission of data or information" within a "transmission of energy

(power)," one of ordinary skill would have reasonably broadly construed the claim term "telemetry" as a "transmission of both data/information" as a part of a "transmission of energy (power)."

Patent Owner argues that "[a] construction that allows for receiving only power to be 'telemetry' would be impermissibly broad." PO Resp. 14. We agree. In light of what the Specification discloses, a construction that limits the term "telemetry" to only a "transmission of energy (power)," i.e., covering both modulated and unmodulated electromagnetic waves, ignores the other component that "telemetry" contains, the "transmission of data or information." The argument is inapposite, however, as Patent Owner is asserting that a "transmission of data or information" is not a "transmission of energy (power)."

We have considered the dictionary definitions cited by Patent Owner (PO Resp. 15–17), and determine that they are consistent with understanding the broadest reasonable interpretation of "telemetry" as a "transmission of data or information" that is "transmission of energy (power)." As we stated in the Decision on Institution where we considered the same dictionary definitions cited by Patent Owner in its Response,

> [w]e find that they define "telemetry" as involving the transmission of "data." *See e.g.*, Ex. 2001 (Newton's Telecom Dictionary defines telemetry as "communications system for the transmission of digital or analog data . . . .").
>
> . . . [W]e are persuaded that "telemetry" should be construed as covering the "transmission of data or information." We are unpersuaded, however, that "telemetry" can be properly construed as limited to the "transmission of [only] data or information."

DI 8–9.

Our construction of "telemetry" is in accord with Dr. Berger's testimony. According to Dr. Berger,

> 32. Telemetry links generally use electromagnetic waves, such as radio waves, to transmit the data or information. The electromagnetic wave is modulated, using a specific telemetry modulation technique, such that the modified electromagnetic wave, or carrier wave, contains data or information that is transmitted to a receiving device. For example, the frequency, amplitude, and phase of the wave may all be modulated. A POSA would understand this data or information transmitted by the modulated carrier signal to be "telemetry."
>
> 33. *Notably, regardless of whether an electromagnetic wave is modulated to contain data or information, it may be possible to use the electromagnetic wave to transfer energy.* The '241 Patent describes using an "RF [radio frequency] charging field" so that electromagnetic charging energy may be harnessed from RF or inductive signals transmitted in the telemetry link. Ex. 1001 at 13:38–40; *see also id.* at 3:23–27. *Radio waves or magnetic coupling are capable of transmitting power regardless of whether the radio waves or energy have been modulated*, for example, using the disclosed FSK or OOK schemes, but a modulation scheme is needed to encode the radio waves or magnetic coupling so as to implement telemetry, i.e., transmit information or data over the RF waves or inductive link. In other words, *although radio waves or magnetic induction can transmit both power and data/information (if modulated using a telemetry modulation scheme),* the transmission of power alone does not constitute telemetry. An electromagnetic wave that is not modulated cannot be a telemetry link, although it can transfer energy, because it is the modulation of the electromagnetic wave that makes it a telemetry link. Any construction allowing power alone to be "telemetry" would incorrectly suggest that any radio wave or electromagnetic wave capable of transmitting power, regardless of whether it was modulated to contain information or data, was a form of telemetry. Such a broad definition would be entirely inconsistent with the '241 Patent, a POSA's

> understanding, the extrinsic evidence, and the plain meaning of the word.

Ex. 2006, 14–15 (emphasis added). As Dr. Berger explains, electromagnetic waves are "capable of transmitting power." Ex. 2006, 14 (¶ 33). It is only when electromagnetic waves are "modulated using a telemetry modulation scheme" to "*contain* information or data" that they are referred to as "telemetry." Ex. 2006, 14 (¶ 33). According to Dr. Berger, "[a]n electromagnetic wave that is not modulated cannot be a telemetry link, although it can transfer energy, because it is the modulation of the electromagnetic wave that makes it a telemetry link." Ex. 2006, 14–15 (¶ 33). Accordingly, "telemetry" is not limited to the data/information component of the modulated electromagnetic wave, but covers the modulated electromagnetic wave *containing* the data/information (due to its specific modulation). Since the modulated electromagnetic wave itself "can transfer energy," "telemetry" is reasonably broadly construed as a "transmission of data or information" in the form of a "transmission of energy (power)" of a modulated electromagnetic wave.

Finally, Patent Owner's argument is internally inconsistent. Patent Owner does not disagree that "telemetry" can contain both data/information and energy (power). "Patent Owner does not dispute, as pointed out by the Board, that a telemetry link may allow for the transmission of energy (power) in addition to data/information." PO Response 11. Given this, it is unclear why Patent Owner is further arguing that

> the transmission of energy alone, which is a capability of all electromagnetic waves regardless of whether they are modulated with a telemetry scheme, would not constitute "telemetry." If that was the case, every electromagnetic wave, including

> unmodulated electromagnetic waves, would be considered "telemetry." . . . [A]llowing "telemetry" to cover transmission of only energy (power) would impermissibly broaden the term contrary to the disclosure of the '241 Patent and a POSA's understanding of the term.

PO Response 11. We have never indicated or suggested that "telemetry" should be construed "to cover transmission of *only* energy (power)" (i.e., only unmodulated electromagnetic waves). In fact, we indicated that the supporting evidence requires more, i.e., data or information (i.e., modulation). DI 8–9. Since we expressly determined that "'telemetry' should be construed as *covering* the 'transmission of data or information'" (DI 8) (i.e., modulated electromagnetic waves), which the Patent Owner does not dispute, we could not have simultaneously determined that "telemetry" should be construed *not* to cover "transmission of data or information" (i.e., in the form of unmodulated electromagnetic waves).

In light of the foregoing, we determine that the broadest reasonable interpretation of the claim term "telemetry" is a "transmission of data or information," as advocated by Patent Owner, in the form of a "transmission of energy (power)." We clarify, however, that "telemetry" does not include an unmodulated "transmission of energy (power)."

B. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103(a) 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 a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying

factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). When evaluating a combination of teachings, we must also "determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Whether a combination of elements produced a predictable result weighs in the ultimate determination of obviousness. *Id.* at 416–417.

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). The burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must support its challenge by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

C. Level of Ordinary Skill in the Art

In our Decision on Institution, we stated

> With regard to the level of ordinary skill in the art, we determine that no express articulation is necessary based on the record before us in this case. The level of ordinary skill in the art is reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC*

> *Inc*., 57 F.3d 1573, 1579 (Fed. Cir. 1995); *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

DI 7. The record before us in this case on this matter has not changed since our preliminary Decision, and the parties apply the same definition of a POSA. *See, e.g.*, PO Resp. 5 ("For purposes of this *Inter Partes* Review, Patent Owner has used Petitioner's proposed definition of a POSA. Petition at 16[4]."). Accordingly, after considering the record anew, we adopt the definition of a POSA as proposed by Petitioner and applied by Patent Owner.

III. OBJECTIONS TO DEMONSTRATIVES

Patent Owner and Petitioner each filed demonstrative exhibits for use during oral argument (Ex. 1012 and Paper 31). The parties also filed a joint set of objections to those demonstratives. Paper 32. Patent Owner objects to Petitioner's slide numbers 14–17 and 19–24. *Id.* at 1. Petitioner objects to Patent Owner's slide number 7. *Id.*

Demonstrative exhibits are not evidence; they are merely visual aids to assist the parties in presenting their arguments to the Board. Paper 27, 3. In this Final Written Decision, we rely only on arguments made in the parties' substantive papers and evidence of record. Because we do not rely

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[4] "A POSA in the context of the '241 patent at the time of its earliest priority date of June 28, 2002, would have been a person who had (1) at least a bachelor's degree in electrical engineering, biomedical engineering, or equivalent coursework, and (2) at least one year of experience researching or developing implantable medical devices. Ex. 1003, ¶ 22. A POSA of the '241 patent would have had general knowledge of implantable medical devices and various related technologies as of June 28, 2002. *Id.*, ¶ 21." Pet. 16.

upon the cited slides in this Decision, we *dismiss* the parties' objections as moot.

IV. ANALYSIS

A. Overview of the Prior Art References

1. Torgerson '198 (Ex. 1005)

Torgerson '198 discloses an implantable medical device [Implantable Neuro Stimulator (INS) 14]. The neurostimulation system includes lead 12, which may have electrodes, which is "implanted and positioned to stimulate a specific site in the spinal cord or the brain." Ex. 1005, 4:59–60. The neurostimulation system further includes External Neuro Stimulator 25, physician programmer 30, and patient programmer 35. Ex. 1005, Figure 1; 4:29–31. "The physician programmer 30 . . . uses telemetry to communicate with implanted INS 14." Ex. 1005, 5:15–17. Figure 1 of Torgerson '198 is reproduced below:

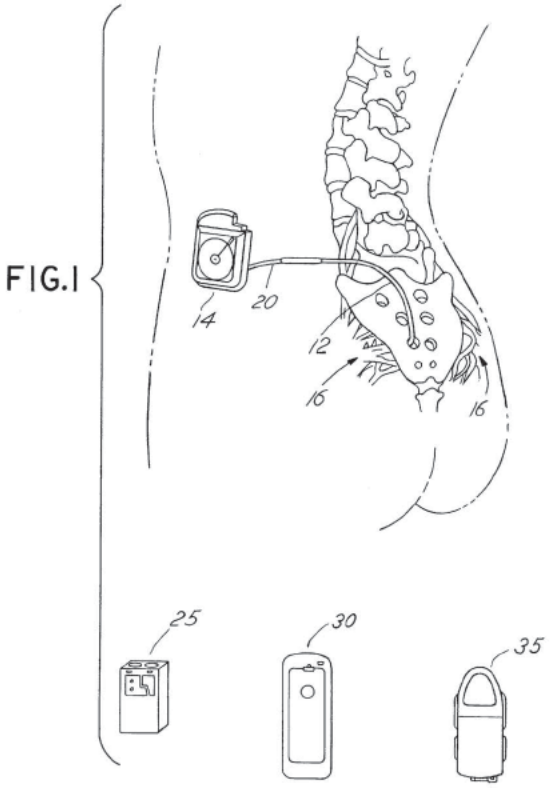

FIG. 1 depicts an implantable medical device [Implantable Neuro Stimulator (INS) 14] as implanted in a human body. Ex. 1005, 4:26–28.

"The implantable medical device generally includes a processor 335 with an oscillator 330, a calendar clock 325, memory 340, and system reset 345, a telemetry module 305, a recharge module 310, a power source 315, a power management module 320, a therapy module 350, and a therapy measurement module 335." Ex. 1005, Figure 3, 6:14–20. Figure 3 of Torgerson '198 is reproduced below:

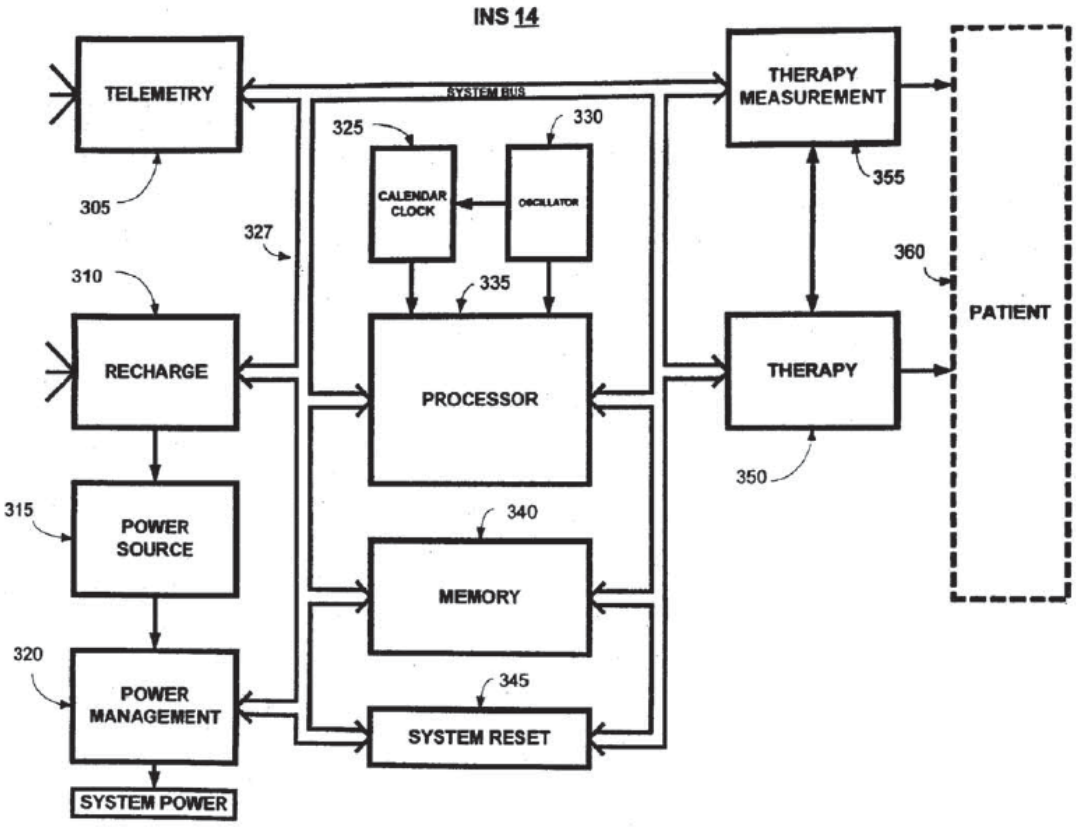

FIGURE 3

FIGURE 3 depicts a schematic block diagram of an INS.
Ex. 1005, 3:62–64.

2. Torgerson ’756 (Ex. 1006)

Torgerson ’756 discloses an INS similar to that disclosed in Torgerson ’198, and includes the same block diagram depicted in Figure 3 of Torgerson ’198 showing, *inter alia*, recharge module 310. Ex. 1006, Figure 3.

Torgerson ’756 further includes a diagram, shown as Figure 5, illustrating recharge module 310 of INS 14, which serves to regulate the charging rate of power source 315. Ex. 1006, Figure 5, 7:26–33.

Torgerson ’756 discloses that recharge regulation control unit 525 of recharge module 310 communicates with an external component via telemetry unit 305, but “[t]hose skilled in the art will appreciate that other communication techniques may be implemented.” Ex. 1006, 9:48–49. Figure 5 of Torgerson ’756 is reproduced below:

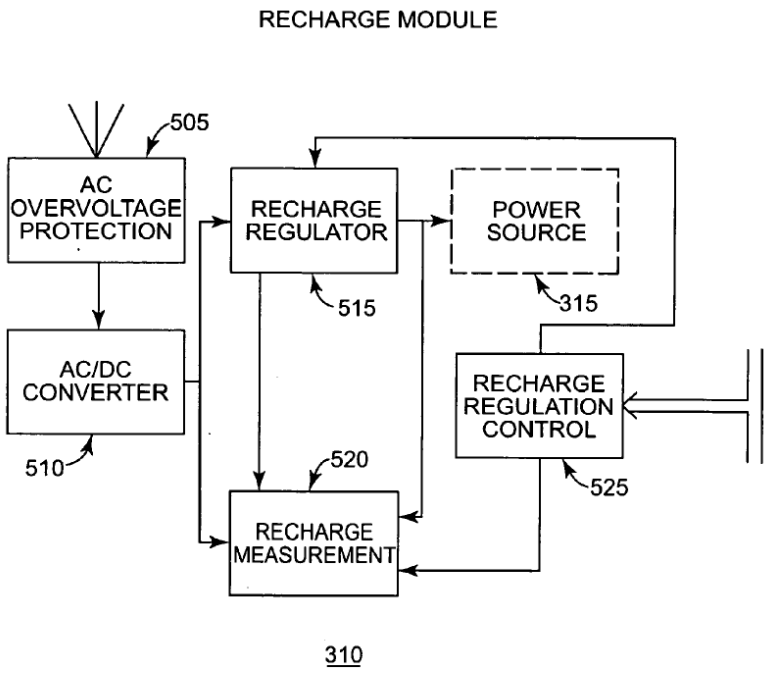

Fig. 5

FIG. 5 depicts a schematic block diagram of the recharge module 310. Ex. 1006, 3:61–63.

3. Torgerson ’883 (Ex. 1007)

Torgerson ’883 discloses implantable medical devices similar to those disclosed in Torgerson ’198 and Torgerson ’756.

Torgerson ’883 discloses “a telemetry signal 10 [that] interacts directly with a charging circuit 20 and a controller 90. Electromagnetic

energy in the telemetry signal 10 allows the charging circuit 20 to charge up the supplemental power source 25. The telemetry signal 10 also interacts with the controller 90 to deliver and receive patient and device data." Ex. 1007, 5:17–24. Figure 2 of Torgerson '883 is reproduced below:

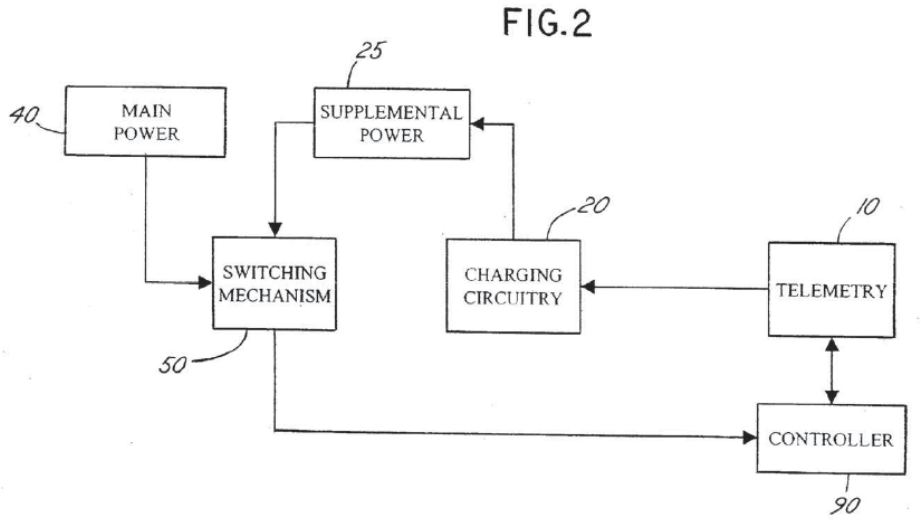

FIG. 2 depicts a block diagram of certain components of the implantable medical device. Ex. 1007, 4:45–46.

4. Abrahamson (Ex. 1008)

Abrahamson discloses implantable medical devices and a system to communicate with them. Ex, 1008, (57). Abrahamson discloses that in a commonly employed RF coupled system, the "carrier signal is modulated with the data that are to be transmitted using an appropriate modulation scheme, such as . . . frequency shift keying (FSK)." Ex. 1008, 1:14–21. Abrahamson also discloses using "On Off Keying (OOK)." Ex. 1008, 5:9–15.

B. Ground I

Petitioner contends that claims 1, 3–8, 10–14, and 16–20 would have been obvious under 35 U.S.C. § 103(a) over Torgerson '198, Torgerson '756, and Torgerson '883. Pet. 16–68.

While we delve later into the merits of Petitioner's mapping of the disclosures from these references to specific claim limitations, we determine it is prudent to address here Patent Owner's more general argument that

> [t]he Petition fails to explain with any clarity: (i) what is the asserted telemetry in Torgerson883 that Petitioner is relying on to meet the limitations of the claims; and (ii) how the combination of prior art results in a hypothetical device that "listen[s] for a second type of telemetry from an external charging component." *See* Ex. 2006 ¶¶ 89–95.

PO Resp. 41.

We disagree that the Petition is unclear as to the asserted telemetry in Torgerson '883 that Petitioner is relying on to meet the telemetry limitations of the claims.

The Petition states:

> Torgerson883 discloses a charging circuit 20 that can receive telemetry signals from an external device and charge a supplemental power source 25 when the IMD's main power source has been depleted. *Id.*, ¶ 115; Ex. 1007, 5:17–57, 7:24–48, 12:53–65. By charging the supplemental power source 25, the charging circuit 20 allows the IMD to have sufficient power to perform bi-directional communications with an external device even when its main power source has been depleted. Ex. 1007, 5:17–57, 7:24–48, 12:53–65; Ex. 1003, ¶ 115. Torgerson883 discloses that it is advantageous for an IMD to have a bi-directional communication system that can function even when its main power source is depleted so that medical personnel can always interrogate the IMD and obtain crucial information from the device. Ex. 1003, ¶ 115; Ex. 1007, 2:24–39, 10:62–67.

Pet. 48–49. The Petition cites column 5, lines 17–57, of Torgerson '883 which discloses, in part, that

> FIG. 2 [reproduced above] depicts a block diagram of a preferred embodiment of the present invention. In block diagram form, FIG. 2 illustrates that a telemetry signal 10 interacts directly with a charging circuit 20 and a controller 90. Electromagnetic energy in the telemetry signal 10 allows the charging circuit 20 to charge up the supplemental power source 25. The telemetry signal 10 also interacts with the controller 90 to deliver and receive patient and device data.

Ex. 1007, 5:17–24.

It is clear from the Petition, and the relied-on passages from Torgerson '883, that Petitioner is taking the position that Torgerson '883 discloses telemetry signal 10 interacting directly with a charging circuit 20. Consistent with what Torgerson '883 discloses, the Petition states that "Torgerson883 discloses a charging circuit 20 that can receive telemetry signals from an external device." Pet. 48. Patent Owner previously acknowledged this statement. *See* Prelim. Resp. 18 ("Petitioner asserts that Torgerson883 discloses a charging circuit 20 that can receive telemetry signals from an external device and charge a supplemental power source 25 when the IMD's main power source has been depleted.").

We also do not agree that the Petition fails to explain how the combination of prior art results in a hypothetical device that "listen[s] for a second type of telemetry from an external charging component."

The Petition states that

> [a]lthough Torgerson756 discloses that telemetry unit 305 performs bidirectional communication (Ex. 1006, 6:50–52), neither Torgerson198 nor Torgerson756 discloses explicitly that recharge module 310 (via recharge regulation control unit 525)

> performs bi-directional communication so as to receive (or listen for) communication from an external device. Ex. 1003, ¶ 55. But given that Torgerson756 indicates that various communication techniques could be implemented by recharge module 310 (Ex. 1006, 9:35–53), a POSA would have considered implementing such other known techniques for recharge module 310. Torgerson883 evidences one such known bi-directional communication technique utilized by a charging circuit of an IMD. Ex. 1003, ¶ 55; Ex. 1007, 5:17–57.

Pet. 21. The Petition continues:

> Torgerson883 discloses a charging circuit 20 of an IMD that is able to receive telemetry signals from an external device and charge a supplemental power source 25 when its main internal power source has been depleted. Ex. 1003, ¶ 57; Ex. 1007, 5:17–57, 7:24–48, 8:10–20, 12:53–65. By charging the supplemental power source 25, which may be a small capacitor, the charging circuit 20 allows the IMD to have sufficient power to perform bi-directional communications with the external device even when its main power source has been depleted. Ex. 1003, ¶ 57; Ex. 1007, 5:17–57, 7:24–48, 8:10–20, 12:53–65. Torgerson883 discloses that by doing so, the IMD is advantageously able to always perform bi-directional communications with external devices to enable medical personnel to interrogate the IMD and obtain crucial information from the device at all times. Ex. 1003, ¶ 57; Ex. 1007, 2:24–39, 10:57–67.
>
> To benefit from such advantages, it would have been obvious for a POSA to incorporate such teachings of Torgerson883 into the recharge module 310 of INS 14. Ex. 1003, ¶ 58. That would have enabled recharge module 310 of INS 14 to perform bi-directional communications with an external charger even when its main internal power source 315 becomes depleted. *Id.*

Pet. 22.

The Petition is clear. Petitioner contends that one of ordinary skill in the art would have been led to modify recharge module 310 of INS 14 of Torgerson '198 and Torgerson '756 given that "Torgerson883 discloses a charging circuit 20 of an IMD that is able to receive telemetry signals from an external device and charge a supplemental power source 25 when its main internal power source has been depleted." Pet. 21. "[B]y doing so, the IMD is advantageously able to always perform bi-directional communications with external devices to enable medical personnel to interrogate the IMD and obtain crucial information from the device at all times." Pet. 22.

1. Independent claim 1

a. "controlling an implantable medical device"

The preamble and body of independent claim 1 recite "[a] method for controlling an implantable medical device."

Petitioner contends, *inter alia*, that "Torgerson198 and Torgerson756 in view of Torgerson883 disclose a method for controlling the operation of INS 14." Pet. 40. "In particular, Torgerson198 discloses a power management method, which controls the overall operation of INS 14 by enabling and disabling various components of INS 14 based on the energy level of the INS 14's internal power source 315. Ex. 1005, Abstract, 8:3–10:33; Ex. 1003, ¶ 93." Pet. 40.

We have reviewed the relied-on passages in, in particular, Torgerson '198, and find that Petitioner accurately characterizes what is disclosed.

Patent Owner does not dispute Petitioner's contentions. *See generally* PO Resp. 45–59.

Accordingly, we find that a POSA would have found this limitation obvious over at least Torgerson '198 for the reasons stated.

b. "monitoring a voltage of a power source within the implantable medical device"

Petitioner contends, *inter alia*, that "Torgerson198 discloses that INS 14 includes a processor 335 and a power source measurement unit 515 (Ex. 1005, 6:12–20, 7:26–29) that monitors the voltage of its internal power source 315, which can be for example a rechargeable battery (*id.*, 3:18–29, 6:12–20, 7:48–8:2). Ex. 1003, ¶¶ 95–96." Pet. 40.

We have reviewed the relied-on passages in Torgerson '198 and find that Petitioner accurately characterizes what is disclosed.

Patent Owner does not dispute Petitioner's contentions. *See generally* PO Resp. 45–59.

Accordingly, we find that the cited portions of Torgerson '198 disclose the aforementioned claim limitation.

c. "if the voltage is above a first threshold, enabling the following functions"

Petitioner contends, *inter alia*, that

> Torgerson198 discloses that depending on the voltage of INS 14's internal power source 315, INS 14 is made to operate in one of three different operating states: "normal operation," "low power," and "power off." Ex. 1005, 8:3–9:16; Ex. 1003, ¶ 98. For each operating state, To[r]gerson198 discloses that a different set of components within INS 14 are enabled as shown in Table B of Torgerson198 . . . . Ex. 1003, ¶ 98; Ex. 1005, 9:14–60.

Pet. 42.

1) *"listening for a first type of telemetry from a first external component"*

Petitioner contends, *inter alia*, that

> Torgerson198 and Torgerson756 disclose that INS 14 includes a telemetry unit 305 (Ex. 1005, 6:12–20) that listens for (*i.e.*, receives) a first type of telemetry from an external physician programmer 30 and patient programmer 35 (Ex. 1006, 6:50–52). Ex. 1003, ¶ 105. More specifically, Torgerson756 discloses that "telemetry module 305 provides ***bi-directional communications*** between INS 14 and external [physician programmer] 30 or [patient programmer] 35." Ex. 1006, 6:50–52, 8:44–57; Ex. 1003, ¶ 105.

Pet. 45–46.

We have reviewed the relied-on passages in Torgerson '198 and Torgerson '756 and find that Petitioner accurately characterizes what is disclosed. Note that "telemetry unit 305" is clearly marked on Figure 3 of Torgerson '198 and Torgerson '756, reproduced above.

Patent Owner does not dispute Petitioner's contentions. *See, e.g.*, PO Resp. 22 ("Torgerson198 discloses INS 14 having a single type of telemetry, telemetry module 305, to use for communications."), 23 ("Like Torgerson198, Torgerson756 discloses INS 14 having a single type of telemetry, telemetry module 305, to use for communications.").

Accordingly, we find that the proffered combination of Torgerson '198 and Torgerson '756 accounts for the aforementioned claim limitation.

2) *"listening for a second type of telemetry from an external charging component, wherein the external charging component is used to wirelessly charge the power source"*

We discuss this limitation below in section IV.B.2.

3) "*providing stimulation to device electrodes using the power source*"

Petitioner contends, *inter alia*, that "Torgerson198 discloses that INS 14 includes a therapy module 350 for providing stimulation therapy to a patient. [Ex. 1003], ¶ 118; Ex. 1005, 5:29–50, 8:23–26." Pet. 49.

We have reviewed the relied–on passages in Torgerson '198 and find that Petitioner accurately characterizes what is disclosed.

Patent Owner does not dispute Petitioner's contentions. *See generally* PO Resp. 45–59.

Accordingly, based on the record before us, we find Torgerson '198 discloses the aforementioned claim limitation.

d. "if the voltage falls below the first threshold, discontinuing listening for the first type of telemetry from the first external component and discontinuing providing stimulation to device electrodes using the power source, while continuing listening for the second type of telemetry"

Our Decision on Institution discussed this limitation:

> For this claim limitation, Petitioner primarily relies on Table B of Torgerson '198 (Ex. 1005, 9:34–59), reproduced below. Pet. 50.

TABLE B

State of Operation	Components On	Components Off
Normal Operation	All	None
Low Power	Power Management 320	Thempy 350
	Recharge 310	Measurement 355
	Telemetry 305	Permanent Memory
	Oscillator 330	Non-volatile Memory
	Calendar Clock 325	EEPROM
	Volatile Memory	Memory Management
	High Freq Protection Circuit	System Bus 327
	High Energy Protection Circuit	Processor 335
	System Shutdown/ POR 345	
Power Off	Recharge 310	Thempy 350
	High Freq. Protection Circuit	Measurement 355
	High Energy Protection Circuit	Permanent Memory
		Non-volatile Memory
		EEPROM
		Memory Management
		System Bus 327
		Processor 335
		Power Management 320
		Telemetry 305
		Oscillator 330
		Calendar Clock 325
		Volatile Memory
		System Shutdown/POR 345

Table B lists components of INS 14 that are active and inactive during each of three states of operation. Ex. 1005, 9:31–33.

Consistent with what Torgerson ’198 discloses, Petitioner also points out that Torgerson ’198 discloses “[‘]transition points T1 and T2 [which] provide boundaries for the three states of operation: (1) normal operation state; (2) low power state; and (3) power off state[’] of INS 14. Ex 1005, 9:14–19.” Pet. 27. This is shown in Petitioner’s marked-up version of Table B

below:

TABLE B

State of Operation	Components On	Components Off
Normal Operation	All	None
Low Power	Power Management 320 Recharge 310 Telemetry 305 Oscillator 330 Calendar Clock 325 Volatile Memory High Freq Protection Circuit High Energy Protection Circuit System Shutdown/ POR 345	Therapy 350 Measurement 355 Permanent Memory Non-volatile Memory EEPROM Memory Management System Bus 327 Processor 335
Power Off	Recharge 310 High Freq. Protection Circuit High Energy Protection Circuit	Therapy 350 Measurement 355 Permanent Memory Non-volatile Memory EEPROM Memory Management System Bus 327 Processor 335 Power Management 320 Telemetry 305 Oscillator 330 Calendar Clock 325 Volatile Memory System Shutdown/POR 345

T1

T2

Pet. 51, 56.

Concerning those disclosures, Petitioner takes two alternative, but similar, positions with respect to the aforementioned claim limitation. The first position views the voltage falling below both T1 and T2, and from "Normal Operation" to "Power Off," as representing a "falling below" a "first threshold." Specifically, Petitioner asserts that "Torgerson198 discloses that if the voltage of power source 315 falls below both transition points T1 and T2 [T1/T2], INS 14 is made to operate in the 'power off' state. Ex. 1005, 8:30–9:16; Ex. 1003, ¶ 121." Pet. 51.

The second view is similar. Petitioner asserts that a single transition point is drawn between "Normal Operation" and "Power Off," which Petitioner calls "Torgerson198's obvious two-state method of operating INS 14." Pet. 52. This transition point is identified as "ST," in a different marked-up version of

Table B, provided by Petitioner at page 52 of the Petition. Pet. 52, reproduced below.

Modified Two State TABLE B

State of Operation	Components On	Components Off
Normal Operation	All	None
Power Off	Recharge 310 High Freq. Protection Circuit High Energy Protection Circuit	Therapy 350 Measurement 355 Permanent Memory Non-volatile Memory EEPROM Memory Management System Bus 327 Processor 335 Power Management 320 Telemetry 305 Oscillator 330 Calendar Clock 325 Volatile Memory System Shutdown/POR 345

ST

According to Petitioner, falling below either T1/T2 (i.e., falling below T1 and T2) or ST (i.e., falling below ST), and into the "Power Off" mode, satisfies the claim requirement for "the voltage [to] fall below [a] first threshold" (claim 1, emphasis added). Pet. 51–53. We agree.

Based on the first position, assuming "telemetry unit 305 listens for a first type of telemetry, recharge module 310 listens for a second type of telemetry, and therapy module 350 provides stimulation" (Pet. 51), an assumption with which we agree, it logically follows that "if the voltage of power source 315 falls below the claimed 'first threshold' [i.e., falls below T1 and T2 and into the "Power Off" state], INS 14 discontinues listening for a first type of telemetry and discontinues providing stimulation while continuing to listen for a second type of telemetry." Pet. 51–52. This can be seen in Table B, shown at pages 51 and 56 of the Petition, which shows telemetry unit 305 and recharge module 310 as "On" in the "Normal Operation" state, but shows

> telemetry unit 305 as "Off" and recharge module 310 as "On" in the "Power Off" state. The same is true under the second view, when voltage falls below ST. *See* Pet. 52.
>
> Accordingly, on this record, we are persuaded that Torgerson '198 discloses that "if the voltage falls below the first threshold [i.e., falls into the "Power Off" state], . . . continuing listening for the second type of telemetry [i.e., recharge module 310 is 'On'],," as claimed.

Dec. 20–23.

Patent Owner does not dispute Petitioner's contentions or our analysis of the contentions in the discussion in our Decision on Institution reproduced above. *See generally* PO Resp. 45–59.

Accordingly, we find that Torgerson '198 discloses the aforementioned claim limitation.

2. "listening for a second type of telemetry from an external charging component, wherein the external charging component is used to wirelessly charge the power source" (claim 1).

The main issue is whether any of the references disclose the claim limitation "listening for a second type of telemetry from an external charging component."

We have considered the parties' arguments and evidence and, for the following reasons, determine that the cited evidence weighs in favor of Petitioner's contentions and against Patent Owner's arguments.

a. Torgerson '198 and Torgerson '756

The Petition argued that the "INS 14 of Torgerson198 and Torgerson756 . . . communicates with external devices using two different types of telemetry." Pet. 19.

Patent Owner argues that "[n]one of the three Torgerson references disclose listening for a **second** type of telemetry." PO Resp. 45. According to Patent Owner,

> Torgerson756 describes the communication between recharge regulation control unit 525 and the external component, and explains that "[t]he recharge regulation control unit 525 **provides feedback** as to whether the power source 315 is receiving the recharge energy and whether the recharge energy is too high or too low. . . . This can be achieved . . . **by notifying the external component** via telemetry signaling to increase or decrease the delivery of magnetic recharge energy." Ex. 1006 at 9:25–46. In other words, the recharge regulation control unit can send a telemetry signal to the external component to change the amount of recharge energy through the first type of telemetry. Ex. 2006 ¶ 109. Torgerson756 does not disclose recharge regulation control unit 525 listening for or receiving a telemetry signal. *Id*.

PO Resp. 47–48.

Petitioner responds that

> Torgerson756 goes on to give a precise example of how recharge module 310 would operate in a second embodiment that implements another communication technique for battery charging operations—i.e., a second type telemetry. Specifically, it discloses that "the recharge regulation control unit 525 communicates with the external component by modulating the load on the recharge coil. This change in the load can then be sensed in the circuitry driving the source coil of the external component." Ex. 1006, 9:49–53; *see* Pet., 21, 47. Torgerson756 thus expressly discloses a second type of telemetry for use in recharge operations, namely direct communication through its recharge coil using an inductive telemetry link. Pet., 20–21.

Pet. Reply 6.

Torgerson '756 explains that the "recharge regulation control unit **525** [see Figure 5 above] communicates with the external component via

telemetry unit **305** [i.e., a first telemetry]." Ex. 1006, 9:46–47. But Torgerson '756 goes on to explain that

> [t]hose skilled in the art will appreciate that other communication techniques may be implemented. For example, the recharge regulation control unit 525 *communicates* with the external component *by modulating the load* on the recharge coil. This change in the load can then be sensed in the circuitry driving the source coil of the external component.

Ex. 1006, 9:48–53 (emphasis added).

As we pointed out earlier in the Claim Construction section (§ II.A.), Dr. Berger testified that it is only when electromagnetic waves are "modulated using a telemetry modulation scheme" to "contain information or data" that they are referred to as "telemetry." *See* Ex. 2006 ¶ 33. Accordingly, in disclosing that a "change in the load can then be *sensed* in the circuitry driving the source coil of the external component," Torgerson '756 would appear to at least suggest that recharge regulation control unit 525 employs telemetry to communicate the change in load to the external component. As Petitioner indicates, Dr. Berger conceded that said communication may involve a second telemetry. Pet. Reply 7.

> Q. Okay. So, then if you look at Line 49, sorry, if you look at Line 47, Column 9 it says, "Those skilled in the art would appreciate that other communication 11 techniques may be implemented." Do. You see that?
>
> A. Yes.
>
> Q. Okay. And, then it gives a, a specific example.
>
> It says, "For example, the recharge regulation control unit communicates with the external component by modulating the load on the recharge coil.

> "This change in the load can then be sensed in the circuitry driving the source coil of the external component."
>
> Do you see that?
>
> A. Yes.
>
> Q. Okay. Is it still your position that Torgerson '756 does not disclose a second type of telemetry in that example?
>
> MR. MARTIN: Objection to form.
>
> THE WITNESS: No. But, it is possible that that makes use of a different form of telemetry outbound to the external device.
>
> BY MR. WRIGHT:
>
> Q. So, it does use a second type of telemetry for battery charging operations. Torgerson '756 discloses at least two types of telemetry to communicate with the external module. Is that correct?
>
> MR. MARTIN: Objection to form.
>
> THE WITNESS: I think in that embodiment, it is possible that the Torgerson '756 may use two types of telemetry to, for the internal device to communicate outward to the external device.

Ex. 1011, 139:7–140:20.

Accordingly, while the contention that Torgerson '756 *expressly* discloses the use of two types of telemetry is not supported sufficiently by the evidence, that Torgerson '756 *covers* the use of a second type of telemetry for battery charging operations *is* supported sufficiently.

As to whether Torgerson '756 discloses *listening* for two types of telemetry, while the evidence supports Patent Owner's position that listening is not disclosed expressly in Torgerson '756, that is not Petitioner's contention. Indeed, Petitioner concedes that Torgerson '756 does not

disclose *listening* for a second type of telemetry. *See* Pet. 21 (emphasis added):

> Although Torgerson756 discloses that telemetry unit 305 performs bidirectional communication (Ex. 1006, 6:50–52), neither Torgerson198 nor Torgerson756 discloses explicitly that recharge module 310 (via recharge regulation control unit 525) performs bi-directional communication *so as to receive (or listen for)* communication from an external device.

In that regard, Petitioner relied instead on the combination of Torgerson ’198, Torgerson ’756, and Torgerson ’883. *See* Pet. 21–24.

We have considered the parties’ arguments and evidence, and determine that the cited evidence weighs in favor of Petitioner’s contention that Torgerson ’756 discloses recharge regulation control unit 525 communicating with the external component via telemetry unit 305 [*i.e.*, a first telemetry] and suggests the possibility of a second telemetry whereby recharge regulation control unit 525 communicates the change in load to the external component.

b. Torgerson ’883

Patent Owner argues that Torgerson ’883 does not disclose a second telemetry. *See, e.g.*, PO Resp. 27 (“Torgerson883 does not disclose two types of telemetry for communication with the implanted device.”). Patent Owner explains that

> Torgerson883 discloses a single RF telemetry signal 10. *See* Ex. 2006 ¶¶ 98–107; Ex. 1007 at 5:17–20. In every disclosed embodiment, only RF telemetry signal 10 is used for communications between the implantable device and the external component.

PO Resp. 45. "Torgerson883 only discloses using a single type of telemetry—charging circuit 20 interacts with telemetry signal 10 . . . ." PO Resp. 46–47.

However, as Patent Owner points out, "Petitioner does not assert that Torgerson883 discloses two types of telemetry." PO Resp. 45.

Patent Owner further argues that "[t]o the extent Petitioner is arguing that Torgerson883 discloses *listening* for telemetry because of the interaction between charging circuit 20 and telemetry signal 10, Petitioner is incorrect." PO Resp. 46 (emphasis added).

We have considered the parties' arguments and evidence, and determine that the cited evidence supports Petitioner's contention that Torgerson883 discloses receiving telemetry.

Petitioner contends that

> Torgerson883 discloses a charging circuit 20 that can receive telemetry signals from an external device and charge a supplemental power source 25 when the IMD's main power source has been depleted. *Id.*, ¶ 115; Ex. 1007, 5:17–57, 7:24–48, 12:53–65.

Pet. 48.

Patent Owner explains that

> Figure 2 [reproduced above] depicts "a block diagram of certain components of a preferred embodiment of the present invention." *Id.* at 4:45–46; *see also id.* at 5:15–57; Ex. 2006 ¶¶ 69–72. Figure 2 illustrates "telemetry signal 10 interacts directly with a charging circuit 20." Ex. 1007 at 5:18–20. "Electromagnetic energy in the telemetry signal 10 allows the charging circuit 20 to charge up the supplemental power source 25." *Id.* at 5:20–22. The telemetry signal 10 is shown interacting with charging circuitry 20 in one direction—going from telemetry 10 to charging circuitry 20. Likewise, the interaction of charging

> circuitry 20 and supplemental power 25 is only shown in one direction—going from charging circuitry 20 to supplemental power 25. The interaction between telemetry 10 and charging circuit 20, as well as the interaction between charging circuitry 20 and supplemental power 25, are not shown as bi-directional.

PO Resp. 29–30.

This explanation is consistent with Petitioner's contention. Patent Owner states that "telemetry signal 10 is shown interacting with charging circuitry 20 in one direction—going from telemetry 10 to charging circuitry 20." PO Resp. 29. But that is what Petitioner contends: "Torgerson883 discloses a charging circuit 20 that can *receive* telemetry signals from an external device . . . ." Pet. 48 (emphasis added).

Patent Owner argues "[t]o the extent Petitioner is arguing that Torgerson883 discloses listening for telemetry because of the interaction between charging circuit 20 and telemetry signal 10, Petitioner is incorrect . . . . As discussed with respect to claim construction, 'telemetry' requires transmission of data or information . . . . Charging circuit 20 does not receive transmissions of data or information." PO Resp. 46.

As we explained above in the Claim Construction section (§ II.A.), we are unpersuaded that a proper construction of "telemetry" is limited to the "transmission of data or information," to the exclusion of a "transmission of energy (power)." Patent Owner agrees that charging circuit 20 receives telemetry 10. As we stated in the Decision on Institution, Torgerson '883 discloses that "[t]he telemetry signal 10 also interacts with the controller 90 *to deliver and receive patient and device data*." Ex. 1007, 5:23–24 (emphasis added). Accordingly, the telemetry signal disclosed by Torgerson

’883 cannot be only “energy” (i.e., unmodulated electromagnetic waves); it must also comprise data (i.e., as a modulated electromagnetic wave). The fact that charging circuit 20 draws energy (power) from the modulated electromagnetic waves that make for the “telemetry” signals does not change the fact that it uses the “telemetry” signals transmitted to it.

We have considered the parties’ arguments and evidence, and determine that the cited evidence supports Petitioner’s contention that Torgerson ’883 discloses telemetry transmitted to charging circuit 20.

c. The combination of Torgerson ’198, Torgerson ’756, and Torgerson ’883

Petitioner contends that

> Torgerson198 and Torgerson756 disclose every feature of the IMD required by claims 1, 3–8, 10–14, and 16–20 of the ’241 patent under their broadest reasonable interpretation except one—they are silent as to whether the second type of telemetry used by the Torgerson198 INS provides bi-directional communications. The Torgerson883 reference evidences that it would have been obvious for the second type of telemetry of the INS to be bi-directional.

Pet. 18.

In particular, Petitioner contends that Torgerson ’198 discloses an implantable medical device comprising a recharge module (Ex. 1005, 6:12–20 (“The implantable medical device generally includes . . . a recharge module 310 . . . .”)). Pet. 47.

We have reviewed the relied-on passage in Torgerson ’198 and find that Petitioner accurately characterizes what is disclosed.

Patent Owner does not dispute that Torgerson ’198 discloses an implantable medical device comprising a recharge module. *See generally* PO Resp. 45–59.

Accordingly, based on the record before us, we find that Torgerson ’198 discloses an implantable medical device comprising a recharge module.

Petitioner further contends that Torgerson ’756 shows that the recharge module 310 of Torgerson ’198 includes a recharge regulation control unit 525 (Ex. 1006, 7:41–45 (“The recharge module 310 generally comprises . . . a recharge regulation control unit 525.”)). Pet. 47.

We have reviewed the relied-on passage in Torgerson ’756 and find that Petitioner accurately characterizes what is disclosed. This is clearly illustrated in Figure 5 of Torgerson ’756 reproduced above.

Patent Owner does not dispute that Torgerson ’756 discloses an implantable medical device comprising a recharge module as shown in Torgerson ’198 that includes a recharge regulation control unit. *See generally* PO Resp. 45–59.

Accordingly, in view of the above combination of Torgerson ’198 and Torgerson ’756, we find that a POSA would have found it obvious to provide an implantable medical device comprising a recharge module that includes a recharge regulation control unit.

Petitioner next contends that Torgerson ’756 discloses the recharge module (housing the recharge regulation control unit) communicating with telemetry unit 305, but “that other communication techniques may be implemented.” Pet. 47–48.

> Torgerson756 explains that while recharge regulation control unit 525 can communicate with an “external component via

> telemetry unit 305," a POSA would have appreciated that other communication techniques may be implemented for such a purpose. [Ex. 1003, ¶ 110]; Ex. 1006, 9:35–53.
>
> Torgerson756 further discloses that recharge module 310 (via its recharge regulation control unit 525) communicates with an external component such as a physician programmer 30 or a patient programmer 35 to recharge the INS 14's internal power source 315 using a wireless magnetic field. Ex. 1006, 8:40–61, 9:23–34, 9:35–53; Ex. 1003, ¶ 111.

Pet. 47. Specifically, Petitioner relies on Torgerson '756 for its disclosure that "[t]hose skilled in the art will appreciate that other communication techniques may be implemented," (Ex. 1006, 9:48–49), where the "other communication techniques" are those "other" than via telemetry unit 305.

> Thus, Torgerson198 and Torgerson756 disclose (1) that the recharge module 310 of INS 14 communicates with an external device using a second telemetry technique that is different from the one utilized by telemetry unit 305, and (2) that the external device includes a physician programmer 30 and a patient programmer 35, which are used to wirelessly charge INS 14's internal power source 315. Ex. 1003, ¶ 112.

Pet. 47–48.

It should be noted that Torgerson '756 mentions the possibility that the external device may *deliver* a "wake up" burst to the recharge module 310.

> In the event that the power source 315 is almost depleted of energy, the power source 315 may not have sufficient energy to provide the feedback control. In this event, the external component may deliver an initial large burst of energy to "wake up" the power source 315 and the recharge module 310.

Ex. 1006, 8:62–67.

Petitioner acknowledges, however, that although Torgerson '756 suggests that "other communication techniques" (i.e., other than via telemetry unit 305) may be used to communicate with an external charging component, Torgerson '756 does not explicitly disclose that the "other communication technique[ ]" is a "telemetry" (as claim 1 requires).

We have reviewed the relied-on passage in Torgerson '756 and find that Petitioner accurately characterizes what is disclosed.

Patent Owner does not dispute that Torgerson '756 discloses an implantable medical device comprising a recharge module as shown in Torgerson '198 that includes a recharge regulation control unit and that the recharge module (that houses the recharge regulation control unit) communicates with telemetry unit 305 and that Torgerson '756 suggests communication techniques other than via telemetry unit 305 may be implemented. *See generally* PO Resp. 45–59.

Accordingly, in view of the above combination of Torgerson '198 and Torgerson '756, we find that a POSA would have found it obvious to provide an implantable medical device comprising a recharge module communicating with an external charging component via a communication technique other than via telemetry unit 305.

Petitioner contends that "Torgerson883 discloses one such communication technique utilized by a charging circuit of an IMD." Pet. 48. Petitioner explains:

> Torgerson883 discloses a charging circuit 20 that can receive telemetry signals from an external device and charge a supplemental power source 25 when the IMD's main power source has been depleted. *Id.*, ¶ 115; Ex. 1007, 5:17–57, 7:24–48, 12:53–65. By charging the supplemental power source 25,

> the charging circuit 20 allows the IMD to have sufficient power to perform bi-directional communications with an external device even when its main power source has been depleted. Ex. 1007, 5:17–57, 7:24–48, 12:53–65; Ex. 1003, ¶ 115.

Pet. 48.

We have reviewed the relied–on passages in Torgerson '883 and find that Petitioner accurately characterizes what is disclosed.

Column 5, lines 17–57, which describe what Figure 2 (reproduced above) depicts, discloses, in part, that

> [w]hen the main power source 40 is depleted, a telemetry signal 10 can deliver sufficient energy to the supplemental power source 25, through the charging circuit 20, to temporarily revive the inoperable implantable medical device 5. Under these conditions, i.e., a depleted main power source 40, the supplemental power source 25 will have a larger voltage value than the main power source 40. More specifically, under these conditions, the switching mechanism 50 will allow power to be fed from the supplemental power source 25 to the controller 90. The supplemental power source 25 will have sufficient power to activate the controller 90 such that information or data relating to the patient and the implantable medical device 5 can be transmitted within milli or micro seconds, via telemetry 10, to an external programmer (shown in FIGS. 4 and 5). With pertinent information in hand, medical personnel can then take the appropriate actions for a particular patient. Once the controller 90 has transmitted its data, the implantable medical device 5 can power down.

This passage discloses telemetry signal 10 delivering energy to supplemental power source 25, through charging circuit 20, in order to temporarily revive an inoperable implantable medical device.

Column 7, lines 24–48, disclose, in part that

> [t]he present invention allows an RF programmer 1 to retrieve device and patient information when the implantable device 5

> has a depleted main power source 40 by temporarily providing power to the implantable medical device 5 through radio frequency (RF) coupling/RF telemetry 10 which allows communication to and from the implantable medical device 5.

This passage also discloses using telemetry 10 to temporarily provide power to the implantable medical device but adds that, in doing so, it "allows communication to and from the implantable medical device."

Column 12, lines 53–65, disclose preferred embodiments whereby "more complex RF signals 10 from the RF programmer 1 [could be detected] besides the simple wake up burst or RF signals 10."

These passages disclose RF telemetry as a means for delivering energy (such as a wake up burst) to a charging circuit in order to temporarily revive an inoperable implantable medical device.

Given that Torgerson '756 discloses "that other communication techniques may be implemented" – other than via telemetry unit 305 – whereby that charging circuit 20 can communicate with an external charging component, and that Torgerson '883 discloses telemetry signal 10 delivering energy to supplemental power source 25, through charging circuit 20, in order to temporarily revive an inoperable implantable medical device, we are persuaded that it would have been obvious to a POSA to provide telemetry as the other communication technique in Torgerson '756, and thereby establish a bi-directional communication between the implantable medical device and the external charging component, as Petitioner contends. Given that the use of telemetry in communicating with the charging circuit represents a second type of telemetry (see discussion above where we determined, based on Dr. Berger's deposition statements, that Torgerson '756 covers the use of a second type of telemetry for battery charging

operations), we are persuaded that it would have been obvious to a POSA, given the combination of Torgerson '198, Torgerson '756, and Torgerson '883, to "listen[ ] for a second type of telemetry from an external charging component, wherein the external charging component is used to wirelessly charge the power source" (claim 1) as Petitioner contends.

We have considered Patent Owner's arguments but we do not agree with Patent Owner.

Patent Owner's main argument is that "Petitioner's argument that it would be obvious to create a device that listens for a second type of telemetry is undercut by the absence of any disclosure or suggestion of listening for two types of telemetry in a single device in the asserted references." PO Resp. 54.

We do not agree with this argument. We have determined, given Dr. Berger's deposition statements, that Torgerson '756 covers the use of a second type of telemetry for battery charging operations. There is no dispute that Torgerson '756 discloses a first type of telemetry. *See* Section IV.B.1.c.1.

Patent Owner argues that "nowhere does Petitioner explain why a second type of telemetry is necessary to achieve the asserted benefit nor any motivation to include a second type of telemetry." PO Resp. 56 (pointing out that "[e]very embodiment disclosed in Torgerson883 achieves the asserted benefit by utilizing a single type of telemetry—RF telemetry signal 10").

We disagree. Petitioner is contending that it would have been obvious to incorporate the teaching in Torgerson '883, with respect to using

telemetry to deliver energy (such as a wake up burst) to a charging circuit, in Torgerson '756, which covers the use of a second telemetry with respect to the charging circuit, and thereby reach the claimed "listening for a second type of telemetry from an external charging component, wherein the external charging component is used to wirelessly charge the power source" (claim 1).

It is notable that Torgerson '756 mentions the possibility of the external device delivering a "wake up" burst to the recharge module 310. *See* Ex. 1006, 8:62–67. According to Dr. Berger, this may be the same "wake up" burst discussed in Torgerson '883.

> Q. Do you think it is reasonable to infer, given the overlap in inventors here that Torgerson '756 is referring to the wake up burst that is described more fully in Torgerson '883?
>
> MR. MARTIN: Objection to form.
>
> Foundation.
>
> THE WITNESS: Well, I don't know.
>
> It may be the same wake up burst.

Ex. 1011, 144:8–16.

Torgerson '756 suggests that one can employ other communication techniques with respect to the charging component. Given that Torgerson '883 employs a telemetry technique to deliver a "wake up" burst, which Torgerson '756 also discloses and is perhaps the same "wake up" burst, we are persuaded that adequate motivation has been provided for a POSA to look to Torgerson '883 for another technique (involving telemetry) to deliver a "wake up" burst with respect to the charging component of Torgerson '756.

Finally, Patent Owner argues that "including a second type of telemetry would create a more complicated and costly device, which a POSA would have no reason to create. Ex. 2006 ¶ 122." PO Resp. 58.

We do not agree with this argument. The reason for creating a device including a second type of telemetry is disclosed in the cited references, namely, because "Torgerson883 discloses that it is advantageous for an IMD to have a bi-directional communication system that can function even when its main power source is depleted so that medical personnel can always interrogate the IMD and obtain crucial information from the device." Pet. 48–49. The fact that a more complicated and costly device may result from the effort to achieve that advantageous result, given the combined disclosures, does not outweigh the reason for doing so.

For the foregoing reasons, Petitioner has shown, by a preponderance of the evidence, that claim 1 would have been obvious in view of the combined teachings of Torgerson '198, Torgerson '756, and Torgerson '883.

With respect to dependent claims 3–7, which depend from claim 1, Petitioner contends that these claims would have been obvious over the combined teachings of Torgerson '198, Torgerson '756, and Torgerson '883, providing citations to record evidence. *See* Pet. 54–62.

Patent Owner relies on the arguments rebutting the challenge as to claim 1, to also rebut the challenge as to claims 3–7. PO Resp. 39 ("Petitioner has not demonstrated that Torgerson198, Torgerson756 and Torgerson883 disclose each limitation of independent Claim 1 and thus, dependent Claims 3–7, which depend from Claim 1.").

Patent Owner's arguments rebutting the challenge as to claims 3–7 are unsuccessful for the reasons discussed above with respect to the challenge as to claim 1.

For the foregoing reasons, Petitioner has shown, by a preponderance of the evidence, that claims 3–7 would have been obvious in view of the combined teachings of Torgerson '198, Torgerson '756, and Torgerson '883. *See, e.g.*, Ex. 1003 ¶¶ 129–130, 132–133, 135–136, 138–140, 144; Ex. 1005, 7:51–54, 8:30–9:16, 9:34–60; Ex. 1009, Abstract, ¶¶ 3, 6.

2. Independent Claim 8 and Dependent Claims 10–13

Petitioner contends that claims 8 and 10–13 would have been obvious over the combined teachings of Torgerson '198, Torgerson '756, and Torgerson '883. Pet. 58–65.

We have reviewed Petitioner's contentions, and the evidence cited therein, and determine Petitioner has demonstrated that the challenged claims are unpatentable by a preponderance of the evidence.

Patent Owner relies on the arguments rebutting the challenge as to claim 1, to rebut the challenge as to claims 8 and 10–13. PO Resp. 59 ("[F]or the same reasons as claim 1, Petitioner has not demonstrated that independent claim 8, and thus dependent claims 10–13, are obvious.").

Patent Owner's arguments rebutting the challenge as to claims 8 and 10–13 are unsuccessful for the reasons discussed above with respect to the challenge as to claim 1.

For the foregoing reasons, Petitioner has shown, by a preponderance of the evidence, that claims 8 and 10–13 would have been obvious in view

of the combined teachings of Torgerson ’198, Torgerson ’756, and Torgerson ’883. See, *e.g.*, 1003 ¶¶ 91–103, 105, 106, 108, 110–113, 115, 117–122, 124, 125, 129, 130, 132, 133, 135, 136, 138, 140, 144; Ex. 1005, Abstract, 2:13–19, 3:18–29, 4:16–28, 4:37–43, 4:59–5:9, 5:15–24, 5:29–51, 5:93–6:6, 6:12–20, 7:26–29, 7:48–10:3, 10:18–19; Ex. 1006, 6:35–53, 7:41–45, 8:40–61, 9:23–53; Ex. 1007, 2:24–39, 5:17–57, 7:24–48, 10:62–67, 12:53–65; Ex. 1009, Abstract, ¶¶ 3, 6.

3. *Independent Claim 14 and Dependent Claims 16–20*

Petitioner contends that claims 14 and 16–20 would have been obvious over the combined teachings of Torgerson ’198, Torgerson ’756, and Torgerson ’883. Pet. 66–68.

We have reviewed Petitioner’s contentions, and the evidence cited therein, and determine Petitioner has demonstrated that the challenged claims are unpatentable by a preponderance of the evidence.

Patent Owner relies on the arguments rebutting the challenge as to claim 1, to rebut the challenge as to claims 14 and 16–20. PO Resp. 60 (“[F]or the same reasons as Claim 1, Petitioner has not demonstrated that independent Claim 14, and thus dependent Claims 16–20, are obvious.”). Patent Owner’s arguments rebutting the challenge as to claims 14 and 16–20 are unsuccessful for the reasons discussed above with respect to the challenge as to claim 1.

For the foregoing reasons, Petitioner has shown, by a preponderance of the evidence, that claims 14 and 16–20 would have been obvious in view of the combined teachings of Torgerson ’198, Torgerson ’756, and

Torgerson '883. See, *e.g.*, 1003 ¶¶ 91–103, 105, 106, 108, 110–113, 115, 117–122, 124, 125, 129, 130, 132, 133, 135, 136, 138, 140, 144; Ex. 1005, Abstract, 2:13–19, 3:18–29, 4:16–28, 4:37–43, 4:59–5:9, 5:15–24, 5:29–51, 5:93–6:6, 6:12–20, 7:26–29, 7:48–10:3, 10:18–19; Ex. 1006, 6:35–53, 7:41–45, 8:40–61, 9:23–53; Ex. 1007, 2:24–39, 5:17–57, 7:24–48, 10:62–67, 12:53–65; Ex. 1009, Abstract, ¶¶ 3, 6.

C. Ground II

Petitioner contends that claims 2, 9, and 15 would have been obvious under 35 U.S.C. § 103(a) over Torgerson '198, Torgerson '756, Torgerson '883, and Abrahamson. Pet. 68–70.

All three claims recite that "the first telemetry type comprises Frequency Shift Keying (FSK), and . . . the second telemetry type comprises On/Off Keying (OOK)."

Petitioner contends:

> The three Torgerson patents, however, do not explicitly disclose the specific types of telemetry used by either telemetry unit 305 or recharge module 310. [Ex. 1003], ¶ 179. Instead Torgerson198 discloses that such "components are generally known in the art" (Ex. 1005, 6:12–20, 6:35–36) and Torgerson756 discloses that a POSA would have appreciated that different types of communication techniques can be used (Ex. 1006, 9:46–53).
>
> Consistent with those disclosures, a POSA would have been aware of a variety of well-known telemetry techniques that could be employed in an IMD such as INS 14. Ex. 1003, ¶ 180. A POSA would have understood that those telemetry techniques include FSK and OOK modulation schemes as evidenced by Abrahamson. *Id.*; Ex. 1008, 1:14–25, 5:9–15. Thus it would have been obvious for a POSA to select any one of these well-known telemetry techniques such as FSK for the first type of

> telemetry used by telemetry module 305 and OOK for the second type of telemetry used by recharge module 310. Ex. 1003, ¶ 180.

Pet. 69.

Patent Owner's only argument is that "Petitioner's argument and use of Abrahamson is little more than hindsight." PO Resp. 61.

Patent Owner seeks to make the case that Petitioner used the '241 patent to select FSK as "the first telemetry type" and OOK as "the second telemetry type." Patent Owner does this by citing Dr. Kroll's admission at his deposition that he never reviewed U.S. Patent 5,752,977 (the "'977 patent"). PO Resp. 61 (citing Ex. 2007, 26:19–28:3 (wherein the '977 patent is incorporated by reference in Torgerson '756 and indicated as detailing telemetry modules generally known in the art)). Ex. 1006, 6:50–59. Also, according to Patent Owner, "[n]otably, if the Torgerson inventors had determined that FSK or OOK telemetry was the appropriate or preferred telemetry to use, they would have identified it because both types of telemetry were known at the time, as evidenced by Abrahamson." PO Resp. 62. And "Petitioner ignores . . . other modulation schemes in Abrahamson." PO Resp. 63.

We do not agree with this argument. We find that Petitioner has shown, by a preponderance of the evidence, that using FSK as "the first telemetry type" and OOK as "the second telemetry type" would have been obvious given Abrahamson's teachings.

There can be no dispute that FSK and OOK were well known types of telemetry at the time of filing of the underlying application to the '241 patent. Patent Owner concedes it. "In fact, at the time, a POSA would have been aware of at least ten telemetry modulation techniques: FSK, OOK,

PPM, PWM, PSK, amplitude-shift keying ('ASK'), FM, AM, biphasic frequency shift keying ('BPSK'), and pulse interval modulation ('PIM')." PO Resp. 65.

The question is whether one of ordinary skill in the art would have been led to select FSK as "the first telemetry type" and OOK as "the second telemetry type" and thereby reach the claimed subject matter.

In that regard, we are persuaded that one of ordinary skill reading the Torgerson references would have understood that any generally known telemetry could be used. As Petitioner contends, Torgerson '198 clearly discloses that telemetry module 305 is among "components [that] are generally known in the art" (Ex. 1005, 6:12–20, 6:35–36). Patent Owner confirms this by quoting Torgerson '756 as explaining that

> **telemetry module 305** generally comprises a telemetry antenna, a receiver, a transmitter, and a telemetry processor 335. **Telemetry modules are generally known in the art and are further detailed in U.S. Pat. No. 5,752,977**, entitled 'Efficient High Data Rate Telemetry Format For Implanted Medical Device' issued to Grevious et al. (May 19, 1998), **which is incorporated herein by reference in its entirety**.'

PO Resp. 61 (quoting Ex. 1006, 6:50–59). It is unnecessary for one of ordinary skill to further consult the '977 patent to understand that any generally known telemetry could have been used.

As far as selecting FSK and OOK among other well-known telemetry techniques that could have been used, Petitioner relies on statements made in the Kroll Declaration (Ex. 1003) to argue that

> a POSA would have chosen the FSK modulation scheme for the communication between the telemetry module 305 and an external device for programming the INS 14 because FSK provides a higher bandwidth and thus a higher capacity to

> transmit useful information. [Ex. 1003], ¶ 181. And a POSA would have chosen the OOK modulation scheme for the communication between the recharge module 310 and an external device used for recharging the INS 14 because that communication is typically simpler and can be fully achieved with the simpler OOK modulation scheme.

Pet. 69–70. Patent Owner does not dispute Dr. Kroll's assertions as to the benefits associated with selecting FSK and OOK. We are persuaded that gaining these benefits would have led one to select FSK as "the first telemetry type" and OOK as "the second telemetry type" and thereby reach the claimed subject matter.

We are persuaded that the Torgerson patents collectively suggest the employment of two telemetry units (e.g., telemetry unit 305 and via recharge module 310), and further suggest employing other generally known telemetry units. We are further persuaded that Abrahamson discloses that FSK and OOK are known telemetry units. Ex. 1008, 1:14–21, 5:9–15. Given Dr. Kroll's assertions as to the benefits associated with selecting FSK and OOK, we are persuaded that one of ordinary skill in the art would have been led to select FSK as "the first telemetry type" and OOK as "the second telemetry type" and thereby reach the claimed subject matter.

We have reviewed the information provided by Petitioner, including Dr. Kroll's declaration, as well as Patent Owner's arguments. For the foregoing reasons, Petitioner has shown, by a preponderance of the evidence, that claims 2, 9, and 15 would have been obvious in view of the combined teachings of Torgerson '198, Torgerson '756, Torgerson '883, and Abrahamson.

V. CONCLUSION

For the foregoing reasons, we determine Petitioner *has* demonstrated that the following claims are unpatentable, by a preponderance of the evidence:

challenged claims 1, 3–8, 10–14, and 16–20 are unpatentable over Torgerson ’198, Torgerson ’756, and Torgerson ’883; and,

challenged claims 2, 9, and 15 are unpatentable over Torgerson ’198, Torgerson ’756, Torgerson ’883, and Abrahamson.

VI. ORDER

Upon consideration of the record before us, it is:

ORDERED that challenged claims 1–20 have 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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