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571-272-7822

Paper No. 10
Date: January 23, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NEVRO CORP.,
Petitioner,

v.

BOSTON SCIENTIFIC NEUROMODULATION CORP.,
Patent Owner.

No. IPR2019-01318
Patent No. 9,162,071

Before MICHAEL W. KIM, ROBERT A. POLLOCK, and JASON W. MELVIN, Administrative Patent Judges.

KIM, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314 and 37 C.F.R. § 42.108

I. INTRODUCTION

A. Background

Nevro Corp. ("Petitioner") filed a Petition requesting *inter partes* review of claims 1–10 of U.S. Patent No. 9,162,071 (Ex. 1001, "the '071 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."). We have jurisdiction under 35 U.S.C. § 314.

Upon consideration of the arguments and evidence presented by Petitioner and Patent Owner, we are persuaded that Petitioner has demonstrated, under 35 U.S.C. § 314(a), a reasonable likelihood that it would prevail in showing the unpatentability of the challenged claims. Accordingly, we grant Petitioner's request and institute an *inter partes* review of claims 1–10 of the '071 patent.

B. Related Proceedings

Petitioner notifies us of the following:

> The '071 patent is the subject of the following civil action: *Boston Scientific Corporation et al. v. Nevro Corp.*, Case No. 1:18-cv-00644 [(D. Del)], filed April 27, 2018. The '071 patent is related to U.S. Patent No. 7,587,241 (the '241 patent), which is the subject of civil action *Boston Scientific Corporation et al. v. Nevro Corp.*, Case No. 1:16-cv-01163 (D.E.D.), filed December 9, 2016, and PTAB proceeding no. IPR2017-01899 [("the earlier IPR")], filed July 31, 2017.

Pet. 73; *see also* Paper 3, 2–3 (indicating the same). Patent Owner indicates further that the '071 patent is related to U.S. Patent No. 7,822,480, which is the subject of the same civil action as the '071 patent, and for which Petitioner has filed a separate petition in IPR2019-01284. Paper 3, 2–3.

C. The '071 patent (Ex. 1001)

1. Effective Filing Date

Petitioner indicates that June 28, 2002 is the earliest priority date of '071 patent. Pet. 2. This is in accord with the information recited on the cover of the '071 patent. Ex. 1001, code (60).

2. Disclosure

The ’071 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, 2:62–3:2.

An embodiment of the improved microstimulator is illustrated as element 10 in FIG. 1 and is reproduced below, with colored annotations added by the panel.

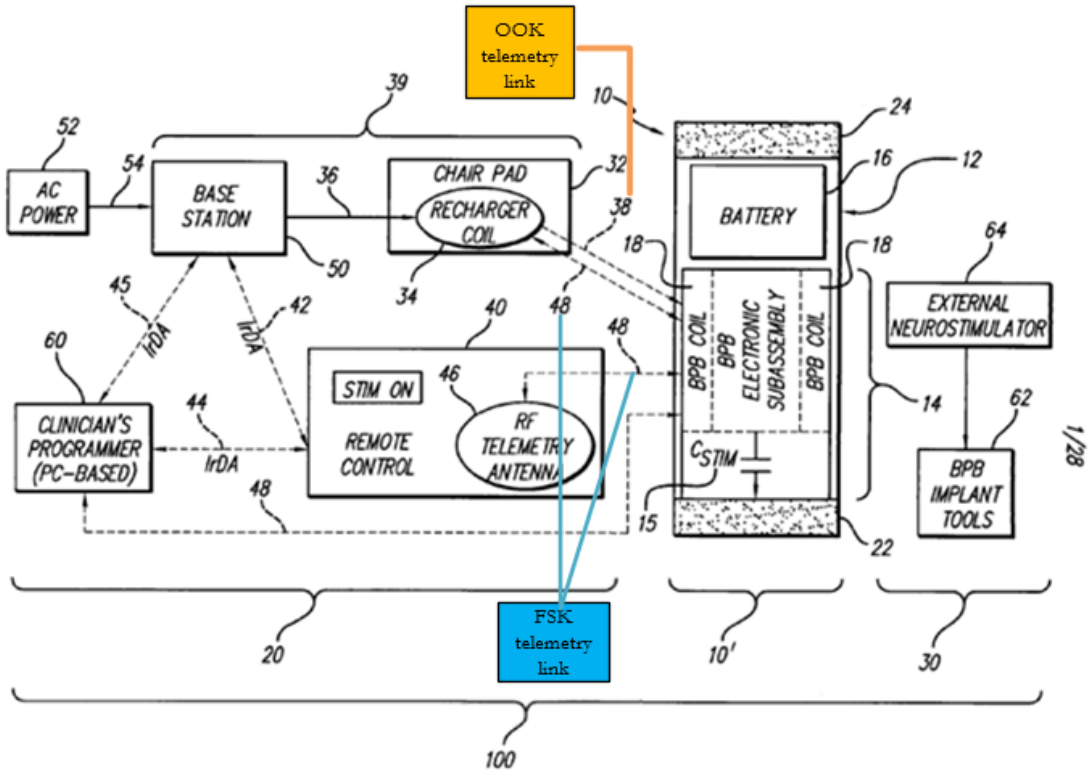


FIG. 1

"FIG. 1 is a block diagram for an exemplary battery-powered BION (BPB) system made in accordance with the present invention." Ex. 1001, 4:42–44.

Microstimulator 10, as shown in FIG. 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, 5:56–61. It is composed of (a) battery 16, which is rechargeable via external battery charging system 39, and (b) electronic subassembly 14. Ex. 1001, 8:38–46. The two components are hermetically sealed within case 12. Ex. 1001, 7:54–56, 8:38.

> 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, 11:38–42.

Microstimulator 10 contains inductive coil 18, which receives power and telemetry messages through OOK (On-Off Keying) telemetry link 38. Ex. 1001, 10:10–12, 13:63–65; *see also* Ex. 1001, FIG. 1 set forth above (orange annotation added by panel). Charging system 39 communicates with control device 10 via OOK telemetry link 38. Ex. 1001, 15:3–8.

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, 9:64–67 *see also* Ex. 1001, FIG. 1 set forth above (blue annotation added by panel). FSK telemetry link 48 is bidirectional. Ex. 1001, 14:9. 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, 10:23–27.

3. Claims

The '071 patent has 10 claims, all of which are challenged, and of which only claim 1 is independent. Independent claim 1 is illustrative, and set forth as follows:

> 1. A method for controlling an implantable medical device, the device having telemetry circuitry to receive both a first type of telemetry and to receive a second type of telemetry, the method comprising:
>
> listening for the first and second telemetry types;

monitoring a voltage of a power source within the implantable medical device; and

if the voltage falls below a first threshold, discontinuing listening for the first telemetry type while continuing listening for the second telemetry type.

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

E. Grounds Asserted

Petitioner contends that claims 1–10 of the ’071 patent are unpatentable under the following two grounds (Pet. 2):

Ground	Basis	Prior Art	Claims
I	§ 103	Torgerson ’198, Torgerson ’756, and Torgerson ’883	1, 4–10
II	§ 103	Torgerson ’198, Torgerson ’756, Torgerson ’883, and Abrahamson	2, 3

Petitioner also relies on the Declaration of Dr. Mark W. Kroll (Ex. 1003), as well as the cross-examination testimony of Dr. Ronald D. Berger (Ex. 1011), Patent Owner’s expert in a related proceeding, in support for the above contentions.

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner asserts the following:

> A POSA in the context of the '071 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. EX1003, ¶ 15–18. A POSA of the '071 patent would have had general knowledge of implantable medical devices and various related technologies as of June 28, 2002.

Pet. 9–10. Patent Owner indicates that it currently "has used Petitioner's proposed definition of a person of ordinary skill in the art," and reserves the right to alter its position, should a trial be instituted. Prelim. Resp. 6. On these facts, Petitioner's proposed level appears to be commensurate with the level of skill reflected in 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).

B. Claim Construction

"In an *inter partes* review proceeding, a claim of a patent . . . shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." *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) (codified at 37 C.F.R. § 42.100(b) (2019)) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018). That standard "includ[es] construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and

the prosecution history pertaining to the patent." *Id.; see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

1. "telemetry"

Independent claim 1 repeatedly recites "telemetry." Petitioner indicates that, in a final written decision of the earlier IPR concerning a related patent, the Board construed "telemetry" as "transmission of data or information," in the form of "transmission of energy (power)," with the clarification that "'telemetry' does not include an unmodulated 'transmission of energy (power).'" Pet. 10–11 (citing *Nevro Corp. v Boston Scientific Neuromodulation Corp.*, IPR2017-01899, Paper 35 at 9–18 (PTAB Feb. 4, 2019) (Final Written Decision)). Petitioner indicates further that it has applied this construction here. Pet. 11.

Patent Owner asserts that "telemetry" should be construed as "transmission of data or information between a transmitter and a receiver." Prelim. Resp. 8–11. In doing so, Patent Owner asserts that "the existence of an unmodulated charging field or other transfer medium (*e.g.*, wire, radio wave, infrared link, *etc*.) that does not carry encoded data or information that can be decoded by telemetry receiver." Prelim. Resp. 9.

We see no substantive difference in the two constructions. In particular, both constructions require that "telemetry" includes "data or information" and excludes an unmodulated transmission of energy (power). We have considered every citation to the '071 patent relevant to "telemetry" in both our previous final written decision and this proceeding. Ex. 1001, Fig. 1, 4:16–21, 9:1–7, 9:64–10:22, 13:63–65. At this juncture in the proceeding, and on this record, we find that they support our previous construction.

Accordingly, we preliminarily construe "telemetry" as "transmission of data or information," in the form of "transmission of energy (power)," with the clarification that "'telemetry' does not include an unmodulated 'transmission of energy (power).'" Of course, should either party disagree with this construction, it should be briefed during trial.

2. "type of telemetry"

Independent claim 1 recites both "type of telemetry" and "telemetry types." Petitioner asserts that "type of telemetry" should encompass "each of the at least four different ways in which the '071 patent itself distinguishes its two 'telemetry links,'" including "(1) directionality, (2) modality of energy transfer (although the '071 patent teaches only inductive transfer between the BPB and external devices), (3) keying or modulation scheme, and (4) functionality." Pet. 11–17. Patent Owner responds that "type of telemetry" should be limited to "energy transfer modality for the transmission of information or data between a transmitter and a receiver," i.e., radio frequency (RF) or inductive. Prelim. Resp. 11–13. Based on the above, the parties agree that "type of telemetry" includes (2). Accordingly, no further analysis of (2) is needed.

For each of (1), (3), and (4), Patent Owner's asserts that Petitioner's supporting citations to the '071 patent are misplaced because they do not refer to "type of telemetry." Prelim. Resp. 12. On this record, and for the purposes of institution only, we are persuaded that Petitioner's construction is more correct for (3), less so for (1), and not at all for (4).

For (3), the most relevant portion of the '071 patent identified by the parties reads as follows:

> The bidirectional telemetry link 48 is also known as the FSK (Frequency Shift Key) telemetry link, or RF telemetry link. In addition, the charging system 39 has a forward telemetry link 38. Such link may use OOK-PWM (On/Off Keying-Pulse Width Modulation), and is typically an inductive telemetry link.

Ex. 1001, 8:65–9:3. Of particular interest are the latter two sentences, where the use of the word "may" between "forward telemetry link 38" and "OOK-PWM" indicates that "forward telemetry link 38" may use a keying or modulation scheme other than "OOK-PWM," supporting Petitioner's assertion that (3) keying or modulation scheme is a "type of telemetry." This assertion is supported further by dependent claim 2, which explicitly identifies each of FSK and OOK as different telemetry types. The same disclosure also supports Petitioner's assertions with respect to (1) directionality, although the lack of similarly explicit language (e.g., "may" and "typically")—indicating that "bidirectional" and "forward" are variable while other options are constant—make this determination less definitive.

For (4), we agree with Patent Owner. Although the cited portions of the '071 patent (Ex. 1001, 9:64–67, 10:10–18) indicate situations (i.e., functions) when a particular "type of telemetry" is used, we are unpersuaded that those situations (i.e., functions) themselves are a "type of telemetry."

On this record, and for the purposes of institution only, we preliminarily construe "type of telemetry" as encompassing "(1) directionality, (2) modality of energy transfer . . . , [and] (3) keying or modulation scheme," but not "(4) functionality." The parties are invited to further brief this issue during trial.

C. Overview of the Prior Art References

1. Torgerson '198 (Ex. 1005)

Torgerson '198 discloses an implantable medical device [Implantable Neuro Stimulator (INS) 14]. Ex. 1005, code (54). 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, Fig. 1 (reproduced below); 4:29–31. "The physician programmer 30 . . . uses telemetry to communicate with implanted INS 14." Ex. 1005, 5:15–17.

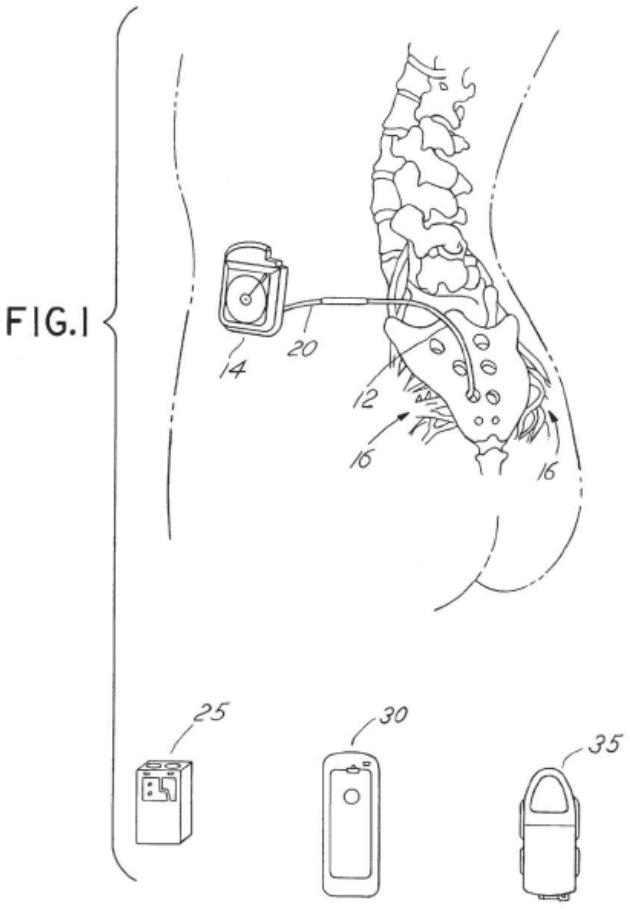


FIG. 1 depicts an implantable medical device [Implantable Neuro Stimulator (INS) 14] as implanted in a human body. Ex. 1005, 4:26–28.

"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, Fig. 3 (reproduced below); 6:14–20.

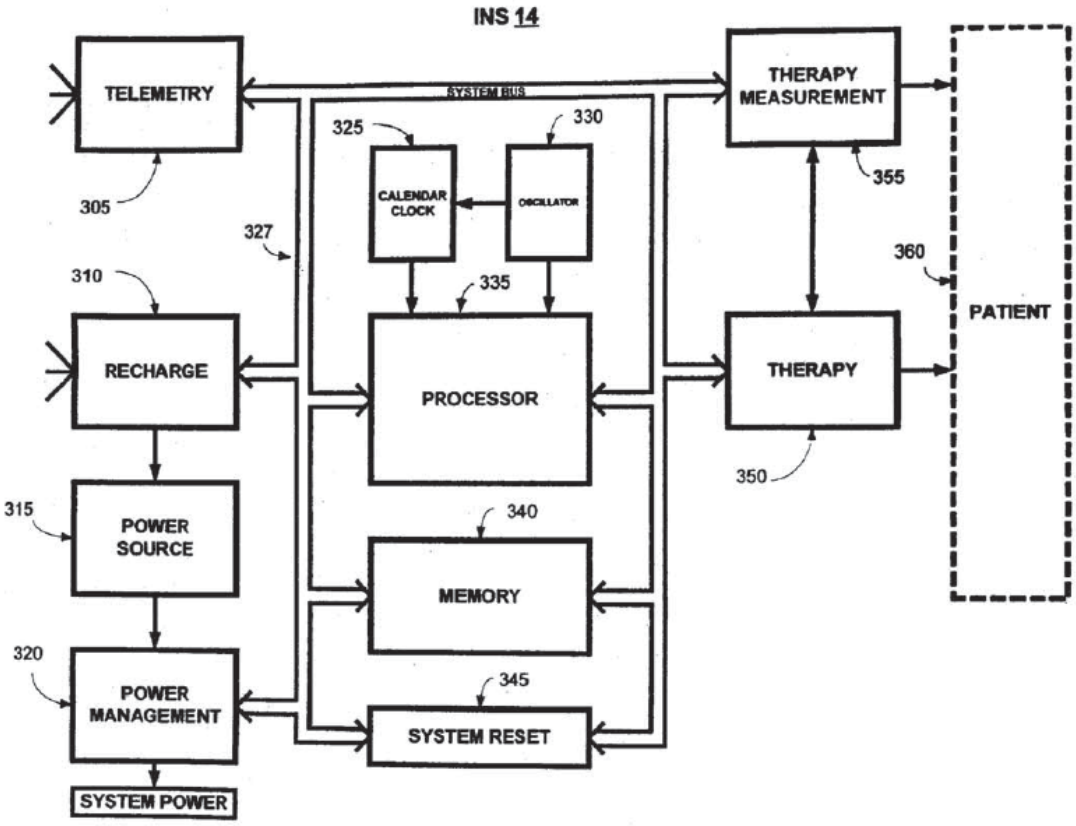


FIGURE 3

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, Fig. 3.

Torgerson '756 further includes a diagram, shown as Fig. 5, illustrating recharge module 310 of INS 14, which serves to regulate the charging rate of power source 315. Ex. 1006, Fig. 5 (reproduced below), 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.

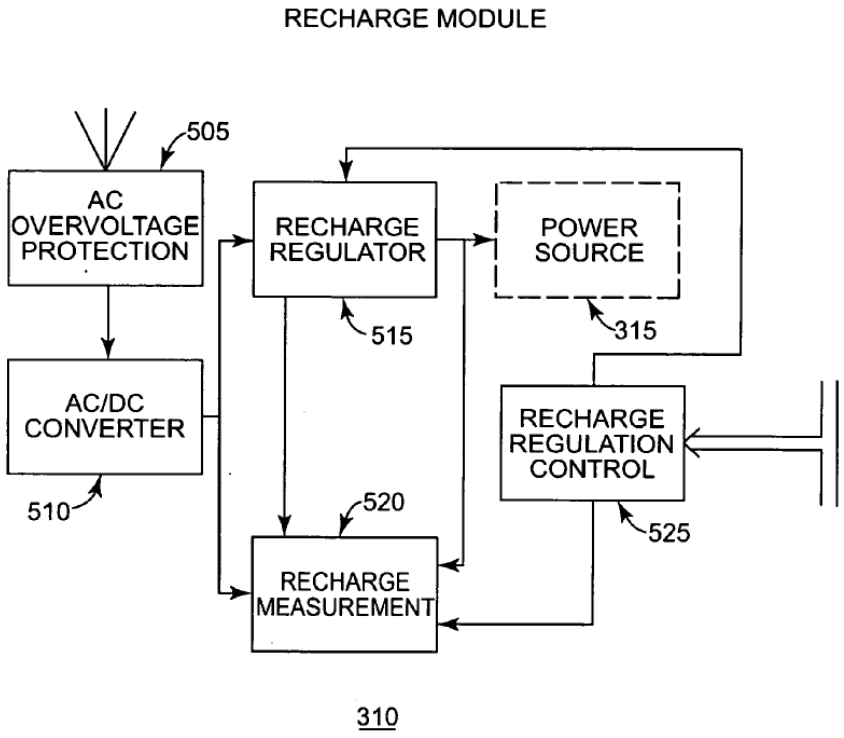


Fig. 5

Fig. 5 depicts a schematic block diagram of the recharge module 310. Ex. 1006, 3:62–64.

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; *see also* Fig. 2 (reproduced below).

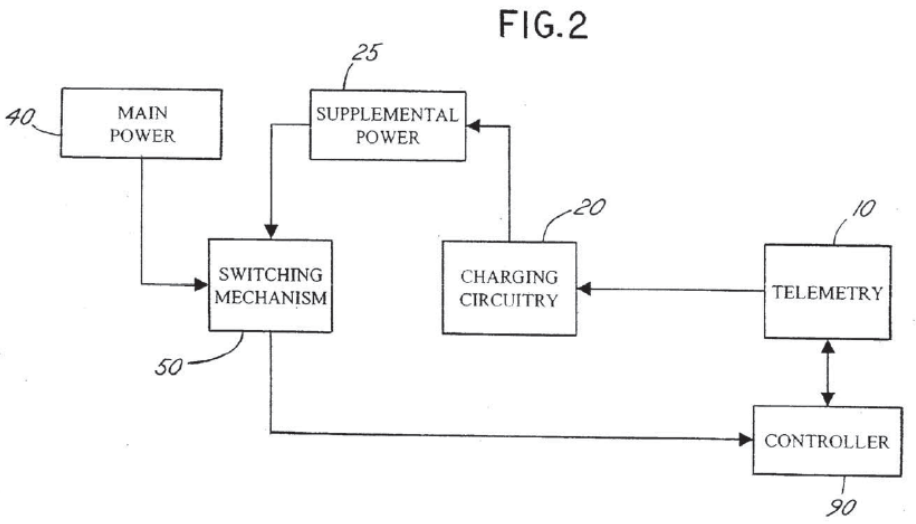


Fig. 2 depicts a block diagram of certain components of the implantable medical device. Ex. 1007, 4:45–46.

4. Abrahamson (Ex. 1008)

Abrahamson discloses implantable medical devices and a system to communicate with them. Ex, 1008, code (57). Abrahamson discloses that in a commonly employed RF coupled system, the "carrier signal is modulated

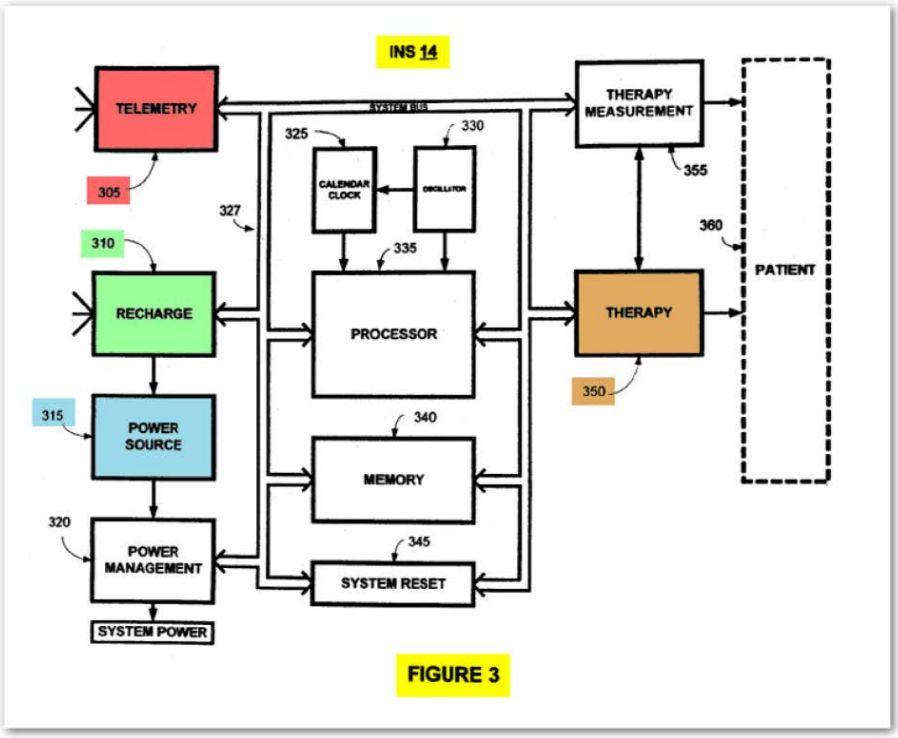
with the data that are to be transmitted using an appropriate modulation scheme, such as . . . frequency shift keying (FSK)." Ex. 1008, 1:14–21. Abrahamson also discloses using "On Off Keying (OOK)." Ex. 1008, 5:9–15.

D. Ground I

Petitioner challenges claims 1 and 4–10 as obvious under 35 U.S.C. § 103(a) over Torgerson '198, Torgerson '756, and Torgerson '883. Pet. 17–65. Patent Owner responds. Prelim. Resp. 30–46.

1. Independent Claim 1

Petitioner analyzes holistically the relevant subject matter of independent claim 1 in view of Torgerson '198, Torgerson '756, and Torgerson '883 (Pet. 17–35, 39–42), and then performs an explicit limitation-by-limitation mapping. Pet. 43–51. As foreshadowed by our claim construction, the key dispute is whether Torgerson '198, Torgerson '756, and Torgerson '883 discloses a first and second type of telemetry, as recited in independent claim 1. For the limitation of "listening for the first telemetry type," the Petition identifies telemetry module 305 of implantable neuro stimulator (INS) 14, which is disclosed in each of Torgerson '198 and Torgerson '756, as performing this function. Pet. 17–21, 45. This is not disputed by Patent Owner. *See generally* Prelim. Resp. The same Figure 3 is set forth in each of Torgerson '198 and Torgerson '756, and a version annotated by Petitioner is set forth below.



Pet. 18. As set forth above, Figure 3 is a schematic block diagram of an INS 14, with telemetry module 305 shown in red. The Petition asserts that telemetry module 305 may operate using either RF or inductive telemetry. Pet. 19–20 (citing Ex. 1003 ¶¶ 63–64; Ex. 1006, 6:50–54, 7:49–52, 8:47–57).

The central dispute centers around the limitation of "if the voltage falls below a first threshold, . . . continuing listening for the second telemetry type." For performing that function, the Petition identifies recharge module 310 in Torgerson '756. Pet. 21–30, 45–46, 48–51. Specifically, the Petition indicates that Torgerson '198 discloses that recharge module 310 operates even when the power is off, meeting the limitation of "if the voltage falls below a first threshold . . . continuing listening," as recited in independent claim 1. Pet. 31–35, 39–42, 48–50 (citing Ex. 1005, 9:31–60).

From the limitation above, we first turn specifically to "listening for the second telemetry type." In above Figure 3, recharge module 310 is shown in green. Below is Figure 5 of Torgerson '756, which is a schematic block diagram of recharge module 310.

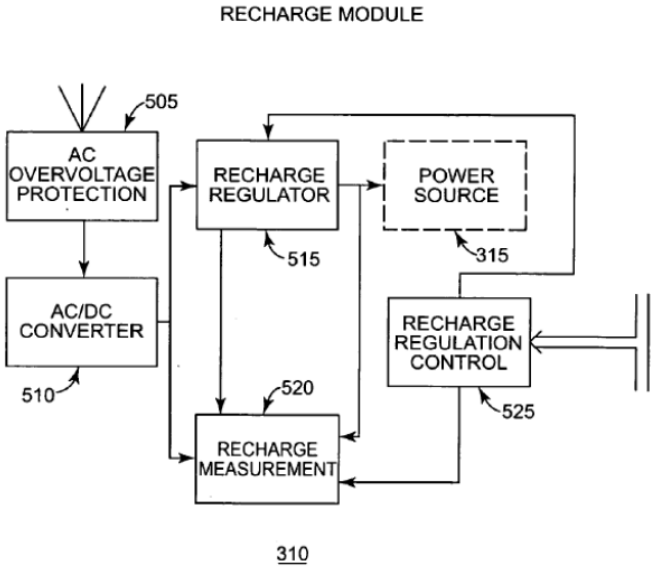


Fig. 5

Ex. 1006, Fig. 5. Of particular interest in above Figure 5 is recharge regulation control unit 525 of recharge module 310.

For the "listening" operation of recharge module 310, which is performed by its recharge regulation control unit 525, the Petition admits the following:

> Torgerson756 gives a precise example of how recharge module 310 would operate in this alternate embodiment. Specifically, it discloses that "the recharge regulation control unit 525 communicates with the external component *by modulating the load on the recharge coil*." EX1006, 9:49–53 (emphasis added). Further, "[t]his change in the load can then be sensed in the circuitry driving the source coil of the external component." *Id.* Modulating a load on a coil is the hallmark of an inductive modality of energy transfer. EX1003, ¶ 67–68. Recharge module

> 310 thus employs circuitry that uses a second type of telemetry, different and independent from that used in telemetry unit 305, through its recharge coil using an inductive telemetry link, for use in recharge operations. *See id.*

Pet. 22–23. In other words, the Petition admits that although Torgerson '756 discloses that recharge regulation control unit 525 *communicates* using a "second telemetry type," the only type of communication disclosed explicitly is *transmitting* telemetry by modulating a load on a coil (i.e., inductive telemetry), while independent claim 1 requires "*listening* for the second telemetry type." The Petition continues as follows:

> Torgerson198 and Torgerson756, however, do not disclose explicitly that recharge module 310 of INS 14 listens for telemetry (*i.e.*, data or communications) from such an external device. *Id.* But because Torgerson756 explains that a POSA would have "appreciate[d] that other communication techniques" other than that utilized by telemetry unit 305 can be employed by the recharge regulation control unit 525 of recharge module 310, EX1006, 9:35–53, a POSA would have considered other such techniques for recharge module 310. EX1003, ¶ 126.

Pet. 45. Specifically, the Petition goes on to assert that one of ordinary skill would have appreciated that recharge regulation control unit 525 could have been modified to *listen* for the "second telemetry type." In particular, the Petition further asserts the following:

> Torgerson883 discloses one such communication technique utilized by a charging circuit of an IMD. *Id. See* Section VI.A.2 *supra*. 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. EX1003, ¶ 128–129; 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, ¶ 128–129. As discussed in Section VI.A.2 above, it would have been obvious for a POSA to incorporate such teachings of Torgerson883 into the recharge module 310 of INS 14.
>
> As argued above in Section VI.A.2, the proposed combination thus listens for a "second telemetry type," irrespective of whether the second telemetry type is defined by a different modality of energy transfer (e.g., a wake up burst transmitted via an inductive telemetry link) or by a different type of transmitted information or data (e.g., information related to charging operations).

Pet. 45–46.

Patent Owner asserts that the Petition's identification of recharge regulation control unit 525 as performing the "listening for the second telemetry type" is incorrect, because in a low voltage state, regulation control unit 525 is not operational until a "wake up burst" is delivered. Prelim. Resp. 31–35. According to Patent Owner, there are several dispositive flaws that flow logically from this assertion.

Fundamentally, Patent Owner asserts that these "wake-up bursts" are not "telemetry" because they are not "received or decoded by a telemetry receiver, and they convey no information or data that Torgerson 883's microcontroller can process." Prelim. Resp. 35–36. On this record, and at this stage of the proceeding, we agree with Petitioner.

Specifically, as set forth above, we preliminarily construe "telemetry" as "transmission of data or information," in the form of "transmission of energy (power)," with the clarification that "'telemetry' does not include an unmodulated 'transmission of energy (power).'" The Petition cites Torgerson '756 as disclosing that "the recharge regulation control unit 525 communicates with the external component *by modulating the load on the*

recharge coil." Pet. 22 (citing Ex. 1006, 9:49–53). We are persuaded that such *communication* involves "transmission of data or information," and that the communication by a *modulated* load indicates that the communication is not an "unmodulated 'transmission of energy (power)." Furthermore, the Petition asserts that recharge regulation control unit 525, as modified in view of Torgerson '883, listens for wake-up burst signal 10, which is transmitted for 2.0–4.0 milliseconds, where the "wake-up burst . . functions as telemetry in the form of a command to, at a minimum, 'wake up' the INS." Pet. 26. We agree with Patent Owner that, as a matter of logic, some skepticism is warranted as to whether an energy influx that charges a previously unpowered and dormant component can also be considered data or information in the form of a "command."[1] Nevertheless, at this stage of the proceeding, Petitioner's position is supported adequately by the testimony of Dr. Knoll with sufficient factual underpinnings to, in particular, Torgerson '883. Pet. 24–30 (citing Ex. 1003 ¶¶ 69–76, Ex. 1007, 2:24–39, 5:17–57, 6:37–41, 7:24–28. 8:10–20, 8:48–9:6, 10:57–67, 12:53–65).

In particular, Torgerson '883 discloses that detection of wake-up burst signal 10 by wake-up burst detector 65 causes that device to send an interrupt to controller 95. Ex. 1007, 8:48–50. This plausibly indicates that wake-up burst signal 10 sends data or information that *commands* wake-up burst detector 65 to send an interrupt to controller 95. Accordingly, we are sufficiently persuaded, at this stage of the proceeding, that recharge regulation control unit 525, as modified in view of Torgerson '883, operates

[1] When one yells "wake up" to an individual, does the individual "wake up" because they understood the words "wake up," or because of the accompanying noise?

via a modulated transmission to receive a command (i.e., data or information) via wake-up burst signal 10, which satisfies our above construction of "telemetry." And as recharge regulation control unit 525, modified in view of Torgerson '883, operates in response to wake-up burst signal 10, we are persuaded, at this stage of the proceeding, that it is sufficient to meet "listening for the second telemetry type."

Even assuming wake-up burst signal 10 corresponds to the recited "telemetry," Patent Owner asserts that this is still insufficient to satisfy independent claim 1, because the cited portions of Torgerson '198, Torgerson '756, and Torgerson '883 all disclose the same energy transfer modality, inductive, while independent claim 1 requires two different types. Prelim. Resp. 39–43. In so asserting, Patent Owner states that "[a]lthough the Torgerson references occasionally reference 'RF coupled' or 'RF telemetry,' it is plain from the context that they are referring to the use of a telemetry type that also charges a battery in the implanted device." Prelim. Resp. 41; *see also* Prelim. Resp. 42 ("What Torgerson883 refers to as 'RF telemetry,' in context, is clearly RF induction.").

Patent Owner appears to be asserting that even when the Torgerson references refer to RF, that is only with respect to communication, and that the energy transfer only occurs via induction. That is directly contradicted by the following disclosure in Torgerson '883:

> In accordance with the present invention, should the primary or main power source of an implantable medical device become depleted, an external programmer can deliver energy to a secondary or supplemental power source in the implantable medical device using telemetry, and preferably radio frequency ("RF") telemetry.

Ex. 1007, 3:18–23. The combination resulting from Petitioner's proffered modifications, (a) telemetry module 305 using either RF or inductive energy transfer (Pet. 19–20 (citing Ex. 1003 ¶¶ 63–64; Ex. 1006, 6:50–54, 7:49–52, 8:47–57)), and (2) recharge regulation control unit 525, as modified in view of Torgerson '883, also using either RF or inductive energy transfer (Pet. 22–23, 26–27 (citing Ex. 1003 ¶¶ 67–68, 75; Ex. 1006, 9:49–53; Ex. 1007, 6:37–41, 7:51–55, 8:48–9:1)), meets even Patent Owner's narrower construction of first and second types of telemetry as limited to different energy transfer modalities. And even if Patent Owner is correct, that Torgerson '883 only discloses inductive energy transfer, we are persuaded that this does not preclude it from being a different telemetry type as compared to other inductive charging, for example, by varying (1) directionality or (3) keying or modulation scheme, as set forth in our above preliminary construction of "type of telemetry." Pet. 23 ("Recharge module 310 thus employs a 'second type of telemetry,' different from the first type of telemetry, irrespective of whether the 'type' of telemetry refers to directionality, the type of data or information transmitted . . . .").

Patent Owner makes other assertions with respect to these claim limitations. They largely fall away based on the above analysis. For example, Patent Owner asserts that telemetry IC 60 in Torgerson '883 is neither operational nor capable of "listening for the second telemetry type" when the battery is depleted. Prelim. Resp. 35–38. Although we agree this is correct, the assertion is misplaced because the relevant component is recharge regulation control unit 525 of Torgerson '756, as modified in view wake up burst 10 of Torgerson '883, which does not immediately involve telemetry IC 60.

Patent Owner asserts that Petitioner does not provide any reasoning in support of its obviousness challenge. Prelim. Resp. 43–45. The Petition asserts the following:

> It would have been obvious for a POSA to incorporate the teachings of Torgerson883 into the recharge module 310 of INS 14. EX1003, ¶¶ 71, 77–79. Recharge module 310 of INS 14 would be enabled to perform bi-directional communications with an external charger even when its main internal power source 315 becomes depleted, by listening for the "wake up burst." *Id.* Such bidirectional communications would enable an external charger to interrogate INS 14 and obtain crucial information that INS 14 includes a depleted power source that can be recharged wirelessly even when the patient's condition does not allow the patient to provide that information directly to medical personnel. *Id.*; EX1007, 2:24-39, 10:57-67.

Pet. 28–29. On this record, and at this stage of the proceeding, we are persuaded that this reasoning is adequate, and supported by sufficient factual underpinnings.

Patent Owner asserts further that Torgerson '883 includes operational features that militate against the proffered combination. Prelim. Resp. 44–45. Overall, the assertion is misplaced because the modifications are to Torgerson '198 and Torgerson '756 in view of certain portions of Torgerson '883, and so the differences in how Torgerson '883 operates relative to the others are less relevant. When the assertions are covered in more detail, we are unpersuaded, at this time, that any of the differences asserted affect dispositively the proffered modification. For example, Patent Owner asserts that "Torgerson883 does not maintain power to any telemetry receiver when the main battery depletes." Pet. 44–45. Although this is correct, we are unclear how this is relevant to the fact that recharge module 310 of Torgerson '198 and Torgerson '756 remains active even in a power off state.

2. Dependent Claims 4–10

The Petition sets forth why dependent claims 4–10 are obvious in view of Torgerson ’198, Torgerson ’756, and Torgerson ’883. Pet. 35–38, 42–43, 51–62. For example, dependent clam 4 recites “wherein the first threshold is stored in a first register in the implantable medical device.” The Petition asserts the following:

> Thus Torgerson198 discloses to a POSA that the claimed “first threshold” (T1, T2, or ST voltage values) would be stored in a register of INS 14. *Id.*, ¶¶ 146–147. Alternatively, a POSA would have found it obvious to store the claimed “first threshold” value in a register of INS 14 in view the state of the art at the time of invention, as evidenced by Saulsbury. *Id.*

Pet. 52. Patent Owner does not dispute any limitation specific to dependent claim 4. Prelim. Resp. 45. We have evaluated the assertions and evidence set forth in the Petition. We are persuaded that Petitioner has shown sufficiently that dependent claim 4 is obvious in view of Torgerson ’198, Torgerson ’756, and Torgerson ’883. We are also persuaded that Petitioner has shown the same for dependent claims 5–10, none of which Patent Owner argues specifically.

3. Conclusion

We determine that Petitioner has demonstrated a reasonable likelihood that claims 1 and 4–10 are obvious in view of Torgerson ’198, Torgerson ’756, and Torgerson ’883.

E. Ground II

Petitioner challenges dependent claims 2 and 3 as obvious under 35 U.S.C. § 103(a) over Torgerson ’198, Torgerson ’756, Torgerson ’883, and Abrahamson. Pet. 65–72. Patent Owner responds. Prelim. Resp. 46–49.

Dependent claim 2 recites "wherein the first telemetry type comprises Frequency Shift Keying (FSK), and wherein the second telemetry type comprises On/Off Keying (OOK)." The Petition admits that "[t]he Torgerson references do not specifically identify the particular modulation schemes used in operating INS 14." Pet. 66. The Petition then asserts that it would have been obvious to modify the Torgerson references, in view of Abrahamson, to meet the aforementioned claim limitation. Specifically, the Petition asserts the following:

> In particular, 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. *Id.*, ¶ 189. 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. *Id.*, ¶ 191.

Pet. 66–67; *see also* Pet. 67 ("During cross-examination, Dr. Berger actually confirmed that these two particular modulation schemes would have been the obvious choices to a POSA. EX1011, 125:19–127:6.").

Patent Owner asserts that although Abrahamson discloses FSK and OOK as two examples of telemetry, it does not disclose using two types of telemetry in a single device. Prelim. Resp. 46. The assertion is misplaced, as the Petition relies on the Torgerson references for the two types of telemetry, as analyzed above.

Patent Owner asserts further that there are at least ten known telemetry modulation techniques, resulting in at least ninety potential combinations of two types of telemetry. Prelim. Resp. 48. Patent Owner

asserts that Petitioner has not explained adequately why only one of those potential combinations, FSK and OOK, is preferable. Prelim. Resp. 48. We are persuaded that, on this record and at this point in the proceeding, Petitioner's proffered rationale for selecting FSK and OOK, as set forth above, is adequately specific.

Patent Owner asserts relatedly the following:

> Indeed, when analyzing narrow claims like Claims 2, and 3—that use highly specific methods to solve specific problems—the danger of hindsight bias is at its zenith. After all, Petitioner could claim that it would be obvious to use FSK and OOK as the first and second method of signal modulation by simply searching a patent database for prior art references that disclose FSK and OOK and then claiming that using those methods of signal modulation would have been obvious to a POSA. Moreover, every specific combination of modulations will have benefits and drawbacks—that is why so many different modulation methods exist. It cannot be enough to simply highlight the benefits of the combination used in a challenged claim or else it would be trivially easy to deem any claim that combines prior art elements "obvious."

Prelim. Resp. 46–47. On this issue, the Supreme Court has instructed as follows:

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

KSR Int'l Co. v. Teleflex, Inc., 550 U.S. 398, 417 (2007). Patent Owner admits that FSK and OOK existed as of the filing of the '071 patent. Prelim.

Resp. 48. The Petition identifies specific benefits for each of FSK and OOK, which is supported by the testimony of Dr. Kroll and cross-examination testimony of Dr. Berger. Pet. 66–71 (citing Ex. 1003 ¶¶ 189–194; Ex. 1006, 9”49–53; Ex. 1007, 8:48–9:1; Ex. 1011, 50:8–51:5, 102:4–103:18, 106:18–107:25, 125:19–127:14, 136:9–18). On this record, we are persuaded that Petitioner has shown adequately that one of ordinary skill would have implemented the proffered modifications.

The Petition also challenges dependent claim 3. Pet. 71–72. On this record, we are persuaded that Petitioner has met its burden.

We determine that Petitioner has demonstrated a reasonable likelihood that dependent claims 2 and 3 are obvious in view of Torgerson ’198, Torgerson ’756, Torgerson ’883, and Abrahamson.

III. CONCLUSION

For the foregoing reasons, on this record, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail with respect to all the claims challenged in the Petition. We emphasize that no final determination has been made for any issue, finding, ground, or claim.

IV. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the ’071 patent is hereby instituted on all claims and ground set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial commencing on the entry date of this decision.

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