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Paper No. 43
Date: January 19, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NEVRO CORP.,
Petitioner,

v.

BOSTON SCIENTIFIC NEUROMODULATION CORP.,
Patent Owner.

IPR2019-01318
Patent 9,162,071

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

KIM, *Administrative Patent Judge.*

JUDGMENT
FINAL WRITTEN DECISION
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

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."). On January 23, 2020, we instituted trial. Paper 10 ("Inst. Dec.").

After institution, Patent Owner filed a Response (Paper 24; "PO Resp."), Petitioner filed a Reply to Patent Owner's Response (Paper 33; "Pet. Reply"), and Patent Owner filed a Sur-Reply (Paper 36; "PO Sur-Reply"). An oral argument was held on November 10, 2020 (Paper 42 ("Tr.")).

Based on the complete record, we conclude that Petitioner has met its burden of showing, by a preponderance of the evidence, that claims 1–5 and 7–10 of the '071 patent are unpatentable under 35 U.S.C. § 103. We also conclude that Petitioner has not met its burden of showing, by a preponderance of the evidence, that dependent claim 6 of the '071 patent is unpatentable under 35 U.S.C. § 103.

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.

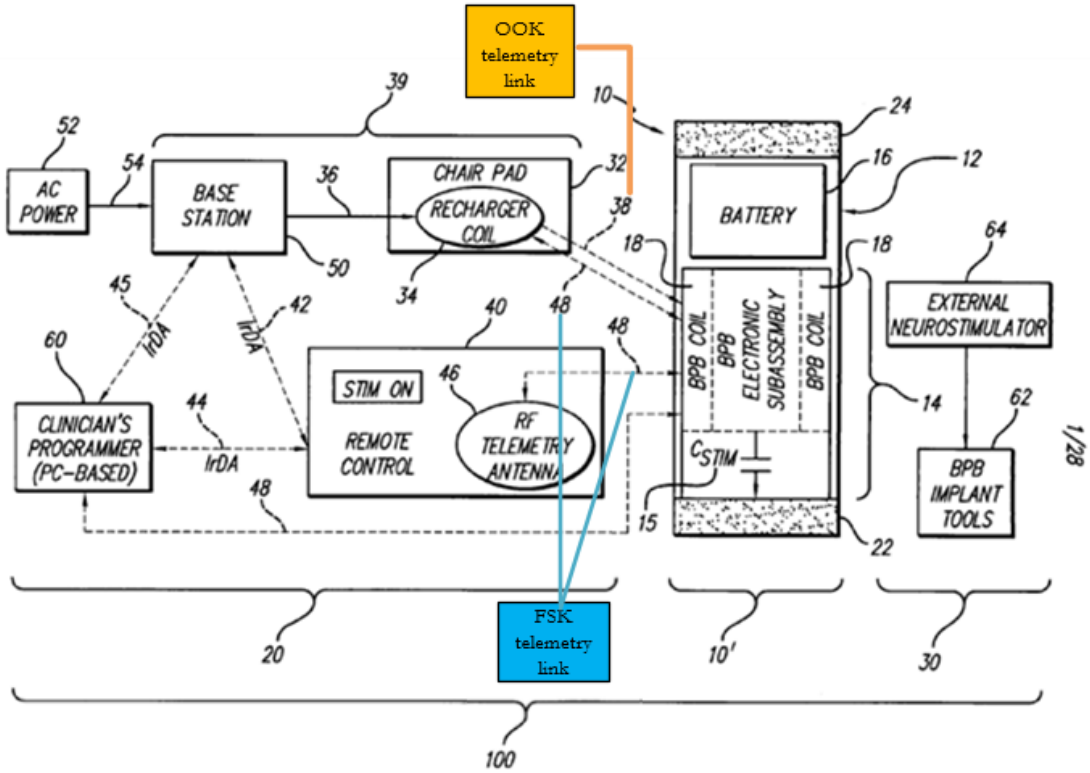


FIG. 1

"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.[1]

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.

[1] OOK (On-Off Keying) telemetry link 38 is labeled in orange, and FSK (frequency shift keying) telemetry link 48 is labelled in blue.

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 (colored annotations 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[2]	Torgerson '198, Torgerson '756, and Torgerson '883	1, 4–10
II	§ 103	Torgerson '198, Torgerson '756, Torgerson '883, and Abrahamson	2, 3

[2] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), included revisions to 35 U.S.C. § 103 that became effective after the filing of the application that led to the '071 patent. Therefore, we apply the pre-AIA version of 35 U.S.C. § 103.

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. Patent Owner relies on the Declaration of Dr. Darrin Young (Ex. 2010), as well as the cross-examination testimony of Benjamin Pless (Ex. 2012), Petitioner's expert in a related proceeding.[3]

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.[4] Patent Owner indicates that "[f]or purposes of this *Inter Partes* Review, Patent Owner adopts Petitioner's proposed definition of a POSITA." PO Resp. 7. We find that Petitioner's proposed level is

[3] Patent Owner asserts that the testimony of Petitioner's expert, Dr. Kroll, should be accorded little to no weight because, in their view, Dr. Kroll largely just repeats language in the Petition, without providing further explanation or evidentiary support. PO Resp. 11–12; PO Sur-Reply 21–23. Petitioner disputes Patent Owner's characterization of Dr. Kroll's testimony. Pet. Reply 25–26. We have considered these assertions in assessing the weight to be given to Dr. Kroll's testimony. We note that Patent Owner did not move to exclude Mr. Kroll's testimony.

[4] Person of ordinary skill in the art ("POSA") or ("POSITA").

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)." 37 C.F.R. §42.100(b) (2019). 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 an 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)[5]). Petitioner indicates further that it has applied this construction here. Pet. 11.

[5] This decision was affirmed by the Federal Circuit. *Boston Scientific Neuromodulation Corp. v. Nevro Corp.*, 813 Fed. Appx. 543 (Fed. Cir. 2020).

In its Preliminary Response, 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.

In our Decision on Institution, we preliminarily 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).'" Inst. Dec. 8–9 (citing Ex. 1001, Fig. 1, 4:16–21, 9:1–7, 9:64–10:22, 13:63–65).

In its Patent Owner Response, Patent Owner continues to assert that "telemetry" should be construed as "transmission of data or information between a transmitter and a receiver." PO Resp. 13–17 (citing Ex. 1001, 9:64–10:22, 13:63–65; Exs. 2001–2006; Ex. 2010 ¶ 33; Ex. 2012, 88:19–92:1). In doing so, Patent Owner further asserts that its construction "implements" the Board's construction, with the clarification that a proper construction would exclude "a component that merely receives power (i.e., to charge a battery) from an electromagnetic wave and lacks the capability to extract data or information therefrom." PO Resp. 17; *see also* Ex. 2010 ¶¶ 29, 34 ("It is my opinion that Patent Owner's proposed construction[] is consistent with the Board's construction but simpler to understand.").

Although Petitioner asserts that it agrees with the Board's construction, Petitioner also replies that it disagrees with Patent Owner's premise that "modulation encoding is the only way to convey data or

information," and appears to provide what it considers an example of a "simple message by unmodulated telemetry." Pet. Reply 3–6 (citing Ex. 1038, 72:20–81:14, 92:3–93:9, 104:18–108:19). Petitioner relatedly asserts the following:

> To the extent that the presence or absence of a particular signal conveys information, it is a type of telemetry. This is especially true where, as here, a transmission signal has a specific frequency and duration designed to convey a very particular command to a device that is specifically designed to detect and interpret that signal, and act on the transmitted command.

Pet. Reply 5–6.

Patent Owner disagrees with Petitioner's assertions and example, responding that "Petitioner's overbroad construction would erroneously transform scores of audio, visual, electrical and magnetic interactions into telemetry." PO Sur-Reply 2–4 (citing Ex. 1001, 3:33–36, 6:46–52, 8:65–9:7; Ex. 1038, 92:3–93:9, 101:4–108:19).

After considering all arguments and evidence, we are unpersuaded that our preliminary construction should be altered. First off, it is difficult to read Petitioner's example of "unmodulated" telemetry as anything other than a request to broaden our preliminary construction by deleting "the clarification that 'telemetry' does not include an unmodulated 'transmission of energy (power).'" We decline to do so, as we agree with Patent Owner that doing so would render the construction overbroad. In support of keeping our "clarification that 'telemetry' does not include an unmodulated 'transmission of energy (power),'" the '071 patent only mentions modulated telemetry. Ex. 1001, 2:11–19, 9:1–3. The key question within the parties' dispute relates to what degree of "modulation" is required for the claimed telemetry.

In principle, we also agree with Patent Owner's general assertion that telemetry is, in some respects, defined by the ability of a receiver to extract data or information therefrom. At oral argument, however, it became clear that Patent Owner differentiates according to the modulation complexity. Patent Owner takes the view that simple on–off modulation of a signal to represent a single bit of information does not permit the receiver of that signal to extract information, thus failing to represent "telemetry." Tr. 26:12–30:7. Patent Owner, however, fails to meaningfully explain how that boundary example falls outside of "modulation" or "telemetry" simply because only limited information is transmitted. *Id.* We disagree with Patent Owner's distinction. In the earlier IPR, the Board indicated the following:

> 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."

Nevro Corp., IPR2017-01899, Paper 35 at 11–12 (citing the testimony of Patent Owner's expert in that proceeding). Consistent with that indication, we agree with an aspect of Petitioner's assertion that a transmission with a "specific frequency and duration" is modulated, and, thus, "telemetry," insofar as it is "designed to convey a very particular command to a device that is specifically designed to detect and interpret that signal, and act on the transmitted command." Pet. Reply 5–6. This assertion is supported by the '071 patent, which discloses that telemetry includes "commands," and does not exclude transmissions that convey only limited information. Ex. 1001, 9:64–67, 10:10–12. The assertion is also supported by Patent Owner's expert, who agrees that any "relevant signal" with a "specific design" may be a command, again, without excluding transmissions with simple

modulation or conveying limited information. Ex. 92:3–21. Patent Owner's cited dictionary definitions are also consistent with this assertion. PO Resp. 15–16 (citing Exs. 2001–2006). In particular, "the Biomedical Engineering Handbook (1995) explains that '[r]eal-time telemetry is the term used to describe the ability of the pulse generator to provide information such as pulse amplitude, pulse duration, lead impedance, battery impedance, lead current, charge, and energy.'" PO Resp. 16 (citing Ex. 2006, 1263) (emphasis omitted). "Information" that includes "pulse amplitude" in the singular is consistent with Petitioner's assertion that a proper construction of telemetry does not exclude transmissions with simple modulation.

Accordingly, we 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)" and does not exclude transmissions with simple modulation.

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. In its Preliminary Response, 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).

In our Decision on Institution, we preliminarily construed "type of telemetry" as encompassing "(1) directionality, (2) modality of energy transfer . . . , [and] (3) keying or modulation scheme," but not "(4) functionality." Inst. Dec. 9–10 (citing Ex. 1001, 8:65–9:3, 9:64–67, 10:10–18). During trial, neither party had an issue with our preliminary construction of "type of telemetry." Tr. 18:6–24; 30:22–31:4. After reviewing the relevant briefing and evidence anew, we maintain our previous construction.

3. "listening for . . . telemetry"

Independent claim 1 recites "listening for . . . telemetry." The Petition does not explicitly construe "listening for . . . telemetry." *See generally* Pet. Patent Owner asserts, however, that the Petition implicitly and improperly states that "listening for . . . telemetry" is met by merely "receiving energy," and that a proper construction of "listening for . . . telemetry" is "monitoring for and processing . . . telemetry." PO Resp. 17 (citing Pet. 24). Petitioner responds as follows:

> "Listening for telemetry" refers to the ability to detect a type of telemetry. A receiver designed to react to the presence of a telemetry signal is "listening for" that type of telemetry. If the detector will not react upon exposure to the telemetry signal, either because it is not programmed to or because it is nonfunctional, then it is not listening for that telemetry.

Pet. Reply 6. Patent Owner counters that Petitioner's proposal is overbroad and ambiguous, and that "listening for . . . telemetry" requires demodulating a transmission to extract and process the information contained therein. PO Sur-Reply 4–7 (citing Ex. 2010 ¶ 33).

At the outset, we determine that the parties are in agreement that "listening for . . . telemetry" requires more than just "receiving energy." The dispute is over how much more. In that regard, we are unpersuaded that Patent Owner's inclusion of "processing" is correct, as we are unpersuaded that "listening" needs to be defined by two verbs, "listening" and "processing," especially where "monitoring" by itself is an adequate and complete substitute for "listening." Instead, the proper focus is on "telemetry," where Petitioner asserts that the telemetry must merely be capable of being reacted to, while Patent Owner, when its assertions are viewed in a light more favorable to it, asserts that the telemetry listened for must be capable of being demodulated. For the reasons stated below, we agree with Petitioner.[6]

First, we note that our above construction of "telemetry" does not require that it be capable of being demodulated. This supports Petitioner's construction. Petitioner's construction is also supported by the following disclosure from the '071 patent:

> The OOK telemetry link 38 allows the charging system 39 to communicate with the BPB device 10 even when the BPB device 10 is not actively listening for a telemetry signal, e.g., when the BPB device 10 is in the Hibernation State or the Storage State (states for the BPB device that will be discussed in detail below).

Ex. 1001, 10:14–20; *see also* Ex. 1001, 13:29–32 (disclosing the same). The '071 patent discloses two types of telemetry: FSK telemetry and OOK telemetry. Ex. 1001, 8:65–9:3. The above passage uses the verb "actively

[6] Neither party has articulated a meaningful substantive difference between "monitoring for" and "detecting" telemetry. Because we largely agree with Petitioner's construction, we use "detecting."

listening for a telemetry signal" in conjunction with only FSK telemetry, indicating that OOK telemetry may be passively (i.e., not actively) listened for. Telemetry that is capable of being passively listened for is more consistent with Petitioner's "capable of being reacted to" construction.

The '071 patent later discloses telemetry capable of conveying both valid and non-valid commands. Ex. 1001, 10:33–36, 55–59; *see also* Ex. 2013, 20:3–17 (cross-examination of Petitioner's expert concerning the same). Such a capability, however, is only discussed with respect to FSK telemetry, which requires demodulation. *See generally* Ex. 1018. The absence of such a discussion for the more passively listened for OOK telemetry indicates that such telemetry is capable of being reacted to even without demodulation. Patent Owner's expert, Dr. Young, confirmed this latter point as follows:

> Q. And would you agree that on/off keying can represent digital data, as the presence or absence of the carrier waves?
>
> A. Yeah. That's what on/off shift keying.
>
> Q. Okay. And would you agree that in its simplest form, the presence of the carrier for a specific duration represents a binary one, while the absence of -- while the absence for the same duration represents a binary zero?
>
> A. If you use a particular type of on/off keying, then what you said is true.

Ex. 1038, 90:1–11; *see also* Ex. 1011. 50:25–51:5 (Dr. Berger, Patent Owner's expert in a related proceeding, confirmed the same as follows: "So, it is true, if you know at each moment in time that you are going to receive another bit, then it could just be on or off, zeros and ones, and that would be a very simply way of using OOK"); Ex. 1038, 92:3–93:9 (Dr. Young opines that the presence of a specifically designed, relevant signal may be a

command); Ex. 1003 ¶ 46 ("On-off keying ("OOK") denotes the simplest form of amplitude-shift keying ("ASK") modulation that represents digital data at the presence or absence of a carrier wave.").

In support of its construction, Patent Owner also cites the testimony of Dr. Young. From that testimony, paragraph 33 of Dr. Young's Declaration is the most relevant, however, it merely repeats Patent Owner's position, without providing additional supporting facts or analysis. Accordingly, we accord it little weight. Furthermore, Petitioner cross-examined Dr. Young extensively on this issue. Ex. 1038, 75:17–78:4, 80:21–81:3, 84:8–11, 90:1–11, 92:3–93:9, 102:21–103:9, 108:20–109:22, 110:1–115:5, 160:18–168:3, 168:22–170:11. At deposition, Dr. Young attempted to explain how "telemetry" was consistent with, or could be differentiated from, various permutations including signals, commands, interactions, interrupts, and building blocks. Dr. Young's attempts were confusing and unpersuasive and, in fact, we find that his overall testimony is actually more consistent with Petitioner's construction, such as his testimony concerning OOK telemetry cited above.

Based on the above, including our previous construction of "telemetry," we construe "listening for . . . telemetry" as "detecting transmission of data or information in the form of transmission of energy (power) capable of being reacted to."

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, 4:29–31. "The physician programmer 30 . . . uses telemetry to communicate with implanted INS 14." Ex. 1005, 5:15–17. Figure 1 is reproduced below:

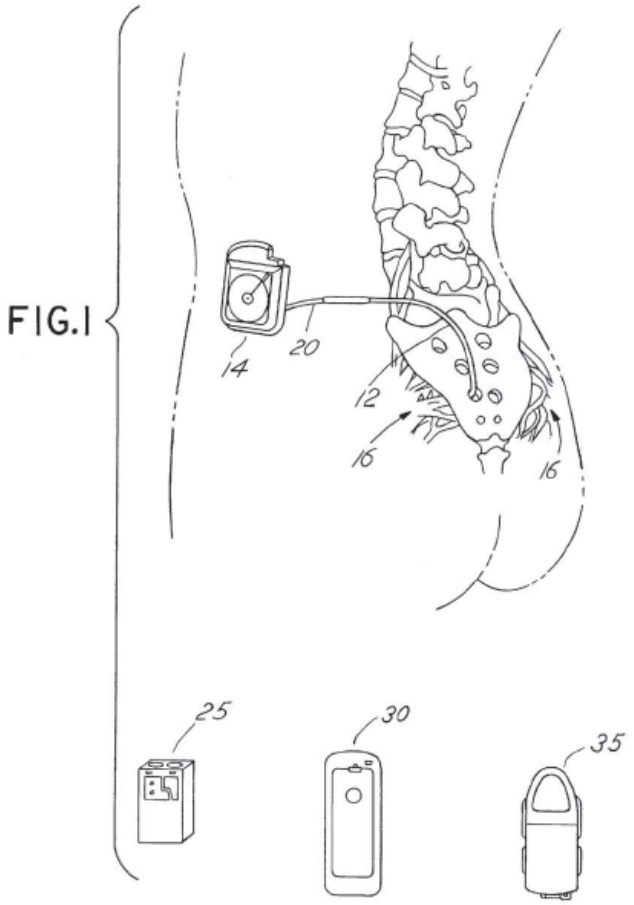


FIG. 1 depicts an implantable medical device [Implantable Neuro Stimulator (INS) 14] as implanted in a human body. Ex. 1005, 4:26–28.

"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, Fig. 3, 6:14–20. Figure 3 is reproduced below.

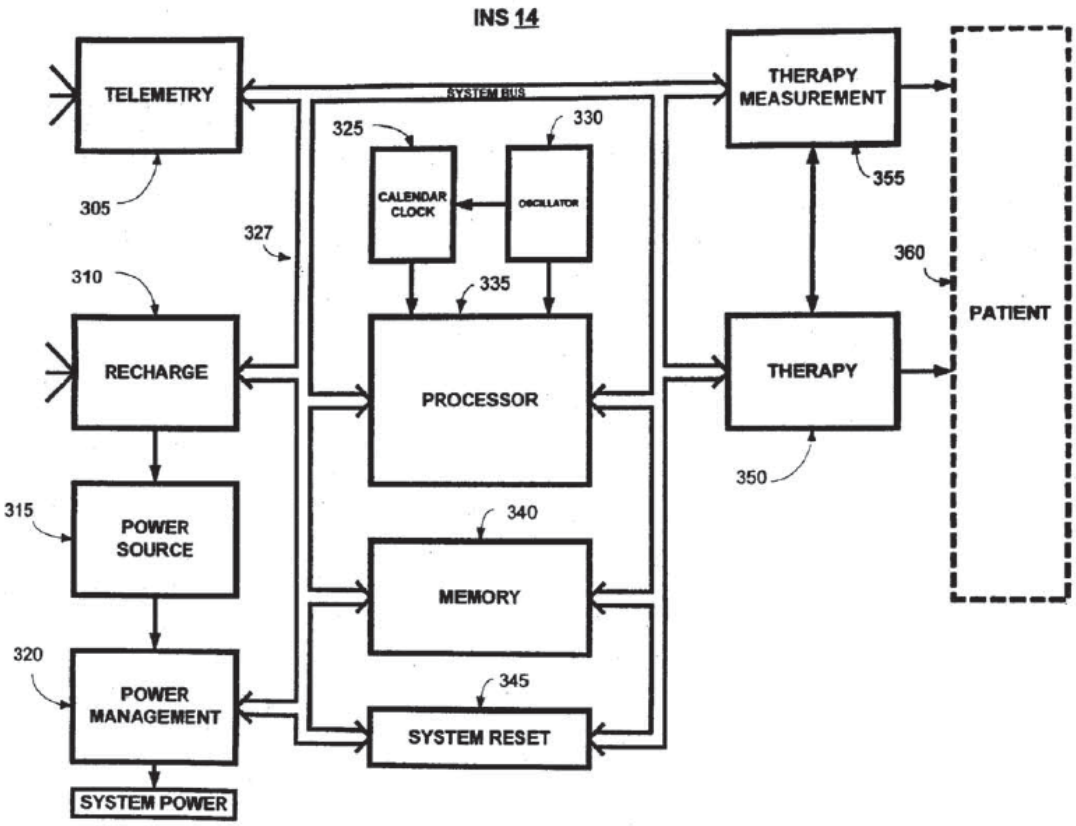


FIGURE 3

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, 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. Figure 5 of Torgerson ’756 is reproduced below.

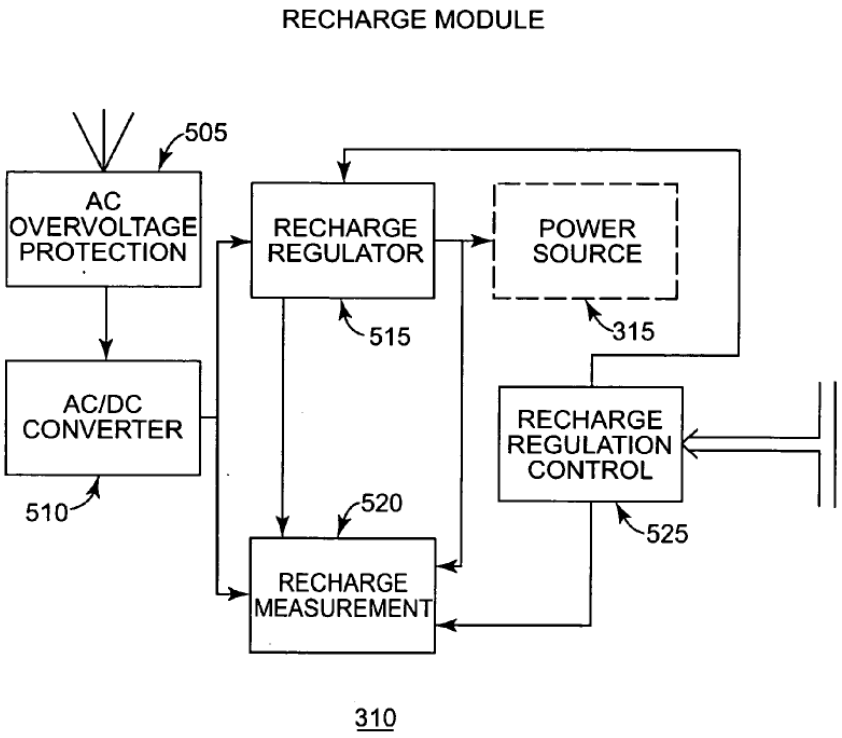


Fig. 5

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

3. Torgerson ’883 (Ex. 1007)

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

Torgerson ’883 also discloses the following:

> [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).

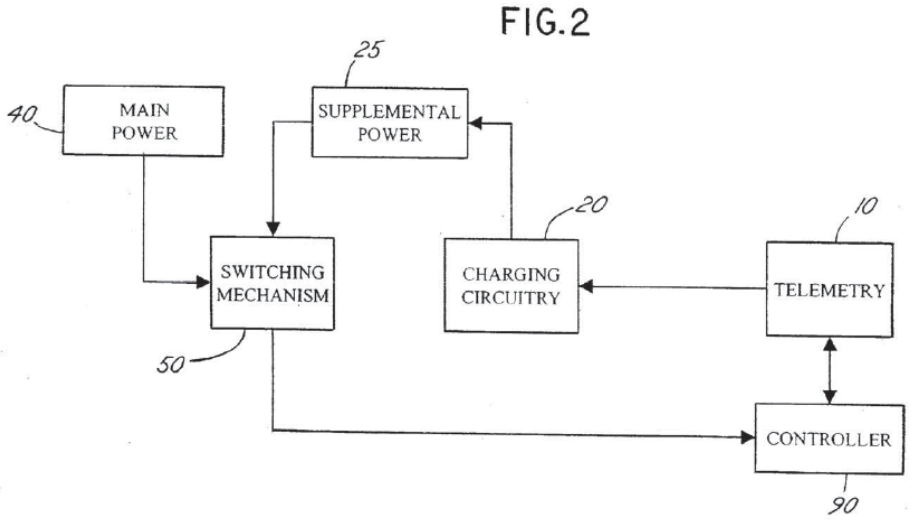


Fig. 2 depicts a block diagram of certain components of the implantable medical device. Ex. 1007, 4:45–46.

In more detail about the above operations, Torgerson '883 discloses further the following:

> In the operation of this preferred embodiment, an RF Signal, or wake up burst signal, 10 is transmitted to the implantable medical device 5 from an RF programmer 1. In a preferred embodiment, the wake-up burst signal is transmitted for 2.0–4.0 milliseconds. In addition, in a preferred embodiment, the typical frequencies of the wake up burst signal 10 for energy transferral is in a range of about 5–200 KHz, though any frequency may be used. The wake up burst signal 10 is received by antenna 15 of the implantable medical device. This wake up burst signal 10 is rectified by the rectifier circuit 20 and the wake up burst signal 10 energy is stored by the supplemental power source 25.

Ex. 1007, 7:66–8:7. "The wake-up burst, or RF signal 10, will then be detected by the wake-up burst detector 65, which will send an interrupt to the controller 95." Ex. 1007, 8:48–50.

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

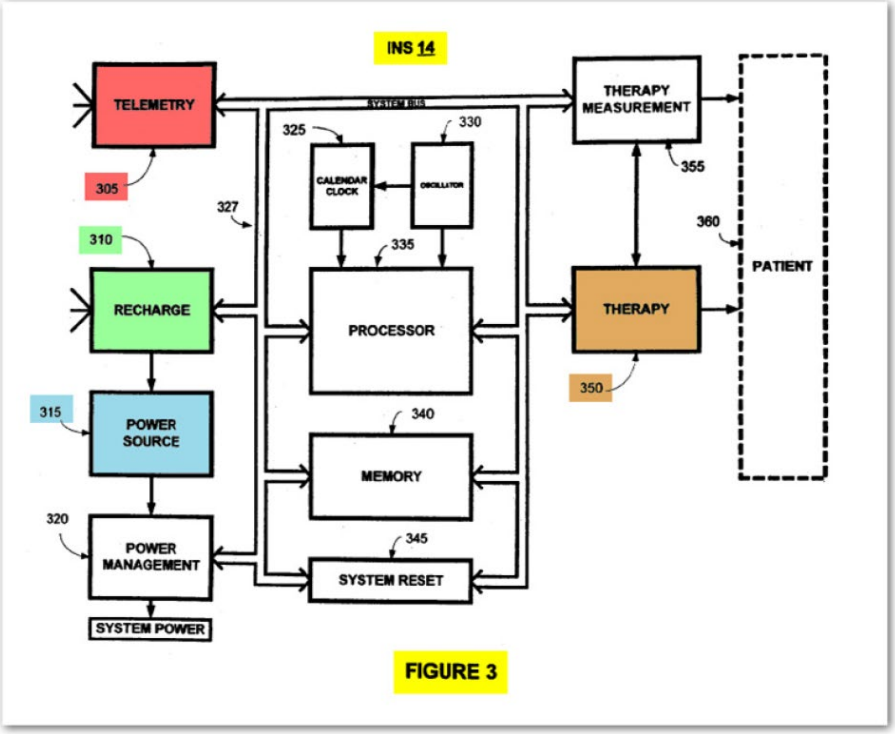
Petitioner challenges claims 1 and 4–10 as obvious under 35 U.S.C. § 103(a) over Torgerson '198, Torgerson '756, and Torgerson '883. Pet. 17–65. Patent Owner responds. PO Resp. 30–44. Petitioner replies. Pet. Reply 12–24. Patent Owner replies. PO Sur-Reply 8–21.

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. We address only the disputed limitations below.[7]

[7] We have reviewed the Petition and supporting evidence, and are persuaded that Petitioner has met its burden of showing, by preponderance of the evidence, that the undisputed limitations are disclosed or suggested by the cited references for the reasons stated and evidence provided.

For the limitation of "listening for the first telemetry type," the Petition identifies telemetry module 305 of 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* PO Resp., PO Sur-Reply. 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.[8] 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).

[8] Recharge module 310 is shown in green, power source 315 is shown in blue, and therapy module 350 is shown in brown.

For the limitation of "if the voltage falls below a first threshold, . . . continuing listening for the second telemetry type," 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).

For the rest of the limitation above, "listening for the second telemetry type," the Petition provides further explanation. Specifically, 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.

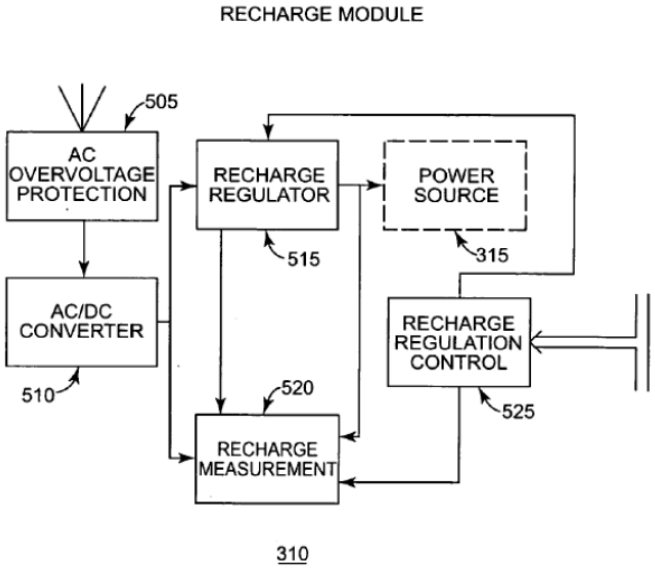


Fig. 5

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 does not account adequately for "if the voltage falls below a first threshold, discontinuing listening for the first telemetry type while continuing listening for the second telemetry type," as recited in independent claim 1, because none of Torgerson '198, Torgerson '756, and Torgerson '883 disclose "perform[ing] closed-loop feedback control in the Power Off (or hypothetical ST) state." PO Resp. 30–40; PO Sur-Reply 12. The assertion is misplaced. Specifically, Patent Owner appears to be asserting that the "listening for" limitation requires the ability to perform closed-loop feedback control. As set forth above, however, we

construe "listening for . . . telemetry" as "detecting transmission of data or information in the form of transmission of energy (power) capable of being reacted to," which does not require the ability to perform closed-loop feedback control. Without that requirement, we are persuaded that recharge regulation control unit 525 of Torgerson '756, as modified by the functions of Torgerson '883 specified by Petitioner, is "listening for . . . telemetry" by "detecting transmission of data or information in the form of transmission of energy (power) capable of being reacted to," in the form of a wake up burst.

Relatedly, Patent Owner asserts that wake-up burst detector 65 of Torgerson883 is not "listening for . . . telemetry" because of the following:

> [W]ake-up burst detector 65 it is not a receiver capable of demodulating the signal to retrieve information or data. Rather, wake-up burst detector 65 detects the wake-up burst signal and causes a pre-determined response, just as a motion detector might trigger an alarm by detecting infrared radiation. The motion detector does not demodulate and process the electromagnetic radiation; it merely triggers an alarm using an electromagnetic interaction.

PO Sur-Reply 13–14. The assertion is again misplaced because "listening for . . . telemetry," as construed above, does not require demodulating or processing the signal to retrieve information or data. Instead, our construction of "listening for . . . telemetry," as "detecting transmission of data or information in the form of transmission of energy (power) capable of being reacted to," is met by the following disclosure of Torgerson '883: "The wake-up burst, or RF signal 10, will then be detected by the wake-up burst detector 65, which will send an interrupt to the controller 95." Ex. 1007, 8:48–50. Patent Owner agrees, admitting that Torgerson '883 discloses that "wake-up burst detector 65 detects the wake-up burst signal and causes a pre-determined response." PO Sur-Reply 13–14.

Patent Owner asserts additionally that the "if the voltage falls below a first threshold, . . . continuing listening for the second telemetry type" limitation is not met by wake-up burst detector 65 of Torgerson883, because wake-up burst detector 65 does not function below 2.0 volts, which is below the 1.8 volt threshold from Torgerson '198 that Petitioner asserts corresponds to the recited first threshold. PO Sur-Reply 14–17. The assertion is misplaced, because the Petition relies on Torgerson '198 for disclosing that recharge regulation control unit 525 of recharge 310 is operational in the "Power Off" state, which is below 1.8 volts. Pet. 31–33, 48–51 (citing Ex. 1003 ¶¶ 85–88; Ex. 1005, 9:31–60).

Even assuming, however, that recharge regulation control unit 525 of recharge 310, modified to include the functions of wake-up burst detector 65, is effectively inoperative below 2.0 volts, we are persuaded the limitation is still met. Specifically, even if supplemental power source 25 of Torgerson '883 is above 2.0 volts, Petitioner measures the first threshold for the voltage from power source 315 of Torgerson '198, and the voltage of that component remains below 1.8 volts in the "Power Off" state. Pet. 33, 36 (citing Ex. 1003 ¶¶ 87, 94; Ex. 1005, 8:47–49, 9:14–60). The testimony of Patent Owner's expert Dr. Young confirms that two power sources may operate at different voltages. Ex. 2010 ¶ 77 ("Thus, a person of ordinary skill in the art would understand that telemetry IC 60 in Torgerson883 can only engage in telemetry when the voltage of the either the main power source or the supplemental power source is above 1.8 V.").

For this theory, Patent Owner replies that the limitation "monitoring a voltage of a power source" uses the article "a," indicating that *both* supplemental power source 25 and power source 315 need to be monitored,

and if *either* is above the first threshold, the limitation of "if the voltage falls below a first threshold, . . . continuing listening for the second telemetry type" is not met. PO Sur-Reply 16–17; Tr. 33:23–34:25, 52:11–53:23. We agree with Petitioner on this issue. Tr. 42:16–43:14. Certainly we agree with Patent Owner that "monitoring a voltage of a power source" *may include* monitoring one or more power sources. We disagree, however, that it *requires* doing so. The result is that if the voltage of power source 315 of Torgerson '198 is below the first threshold, the limitation of "if the voltage falls below a first threshold, . . . continuing listening for the second telemetry type" is met, even if the voltage of supplemental power source 25 of Torgerson '883 is above it.

Patent Owner asserts further that Petitioner, realizing the weakness of its initial position concerning the "listening for" limitation of independent claim 1, improperly puts forth a new theory in its Reply. PO Sur-Reply 9–11. Specifically, Patent Owner asserts that Petitioner abandons its previous position that recharge regulation control unit 525 of Torgerson '756, modified by charging circuit 20 and supplemental power source 25 of Torgerson '883, accounts for the recited "listening for" limitation, and now relies instead on wake-up burst detector 65 of Torgerson '883 for the modifications. PO Sur-Reply 9–11. Patent Owner contends that the Petition relies on "wake-up burst detector 65 only in the context of arguing that the wake-up burst delivered both power and data," and not for the other aspects of the "listening for" limitation. PO Sur-Reply 10 (citing Pet. 27, 58, 69). The assertion is unavailing for the following reasons.

Procedurally, the Petition has a section entitled "Torgerson883 renders obvious the one feature not explicitly disclosed by Torgerson198

and Torgerson756" (Pet. 24–30), which indicates that recharge regulation control unit 525 of recharge module 310 of Torgerson '756 is what is missing that feature, further indicates that "[c]entral to Torgerson883's operation is its 'wake up burst'" (Pet. 26), and then specifically and explicitly refers to functions performed by wake up burst detector 65 as providing the one feature missing from recharge regulation control unit 525 of recharge module 310 of Torgerson '756. Pet. 27–28 (citing Ex. 1003 ¶¶ 71, 77–79; Ex. 1007, 6:37–41, 8:48–50). We are persuaded that the Petition provided sufficient notice that Petitioner intended to rely on specifics related to wake-up burst signal 10 of Torgerson '883, including those of supplemental power source 25 and wake-up burst detector 65, to account for the "one feature not explicitly disclosed by Torgerson198 and Torgerson756" (Pet. 24), and that any details of wake-up burst detector 65 discussed for the first time in the Reply were within the bounds of a proper response to arguments made in the Patent Owner Response.

Substantively, even if Petitioner was indeed relying only on charging circuit 20 and supplemental power source 25 of Torgerson '883 for the "listening for . . . telemetry" limitation, it would still be sufficient. Specifically, beginning with "telemetry," we construed it above 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)" and does not exclude transmissions with simple modulation. Wake-up burst signal 10 of Torgerson '883 meets that construction of "telemetry," in that Torgerson '883 discloses modulating the signal, in a preferred embodiment, at a frequency between 5–200 KHz. Ex. 1007, 8:3–6. Indeed, Patent Owner

confirms as much in its briefing in the earlier IPR concerning the related patent, that wake-up burst signal 10 is "telemetry," as follows: "The purported invention of Torgerson '883 is not a new form of telemetry receiver but, rather, having a secondary rechargeable power source that can be charged with a wake-up burst that also carries telemetry." Ex. 1037, 47; *see also Boston Scientific Neuromodulation Corp.*, 813 Fed. App'x at 547–48 ("We therefore agree with the Board that '[g]iven 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, . . . 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.'").[9]

Turning to "listening for . . . telemetry," which we construed above as "detecting transmission of data or information in the form of transmission of energy (power) capable of being reacted to," wake-up burst signal 10 is detected by charging circuit 20 in that it is rectified on its way to being stored at supplemental power source 25 (Ex. 1007, 5:17–57, 8:8–10, Fig. 4A), and "capable of being reacted to" by wake-up burst detector 65 (Ex. 1007, 8:48–51). And since what is being detected by charging circuit 20 is telemetry for the reasons set forth above, the "listening for . . . telemetry" limitations are met.

[9] At oral argument, Patent Owner asserted that even if wake up burst 10 of Torgerson '883 does correspond properly to the recited "telemetry," because Torgerson '883 does not disclose a component that demodulates that "telemetry," the "listening for . . . telemetry" limitation is not met. Tr. 24:21–25:14. As addressed above, we are persuaded that "listening for . . . telemetry" does not require demodulation.

For these reasons, we are persuaded that Petitioner has met its burden of showing, by a preponderance of the evidence, that independent claim 1 is obvious in view of Torgerson '198, Torgerson '756, and Torgerson '883.

2. Dependent Claims 4, 5, 7–10

The Petition sets forth why dependent claims 4, 5, and 7–10 are obvious in view of Torgerson '198, Torgerson '756, and Torgerson '883. Pet. 35–38, 42–43, 51–56, 58–62. 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. PO Resp. 43; Sur-Reply 17. We have evaluated the assertions and evidence set forth in the Petition. We are persuaded that Petitioner has met its burden of showing, by a preponderance of the evidence, 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 and 7–10, none of which Patent Owner argues specifically. PO Resp. 43; Sur-Reply 17.

3. Dependent Claim 6

The Petition sets forth why dependent claim 6 is obvious in view of Torgerson '198, Torgerson '756, and Torgerson '883. Pet. 37–38, 56–58. Specifically, dependent claim 6 recites "the voltage falls below a second threshold lower than the first threshold, detecting a charging field and

continuing to listen for the second telemetry type." The Petition relies on transition points T1 and T2 in the below annotated table from Torgerson '198 as corresponding to the recited "first threshold" and "second threshold," respectively.

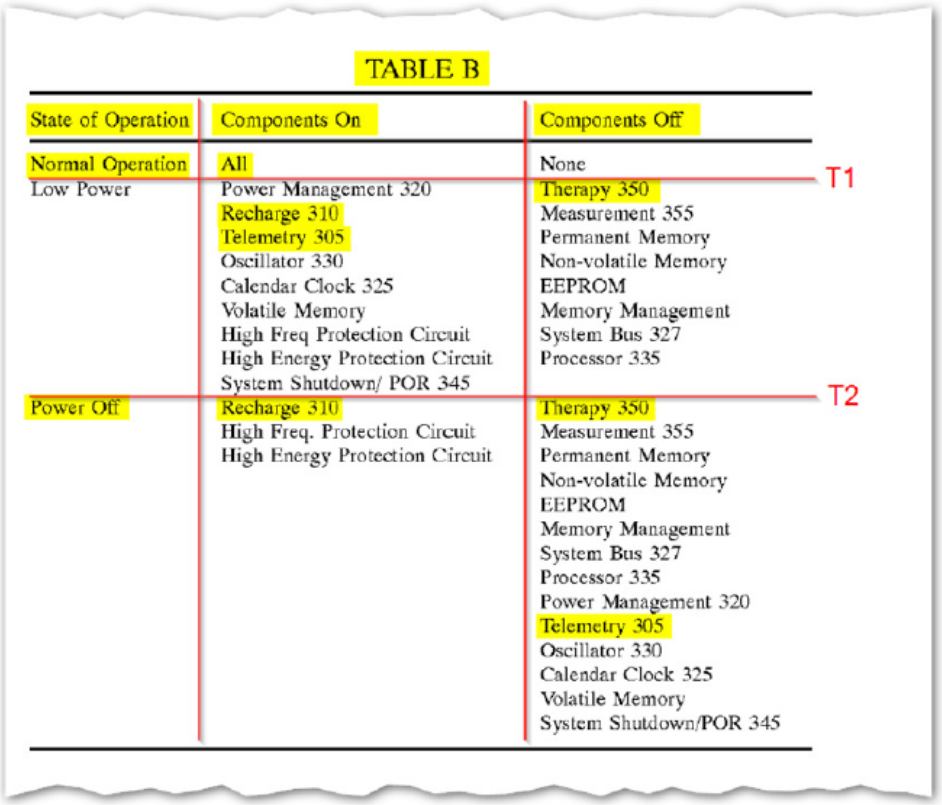


TABLE B

State of Operation	Components On	Components Off
Normal Operation	All	None
Low Power	Power Management 320	Therapy 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	Therapy 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

T1

T2

Table B above lists components of INS 14 that are active and inactive during each of three states of operation. Ex. 1005, 9:31–33.[10]

[10] Between red lines depicting transition points T1 and T2, telemetry module 305 and recharge module 310 are highlighted and listed in a column labeled "Components On," and therapy module 350 is highlighted and listed in a column labeled "Components Off." Below a red line depicting transition point T2, recharge module 310 is highlighted and listed in a column labeled "Components On," and telemetry module 305 and therapy module 350 are highlighted and listed in a column labeled "Components Off."

Pet. 32 (citing Ex. 1005, 9:34–60). Patent Owner asserts that transition point T2 cannot simultaneously correspond to both the recited "first threshold" in independent claim 1 and the recited "second threshold" in dependent claim 6. PO Resp. 43–44. Petitioner replies that any "power-off" does not need to "be the first threshold in every embodiment of the system," and that "[t]here is nothing legally impermissible about the Petition citing a different embodiment for the limitations of claim 6, which includes the limitations of claim 1, than for claim 1 standing alone." Pet. Reply 22–24. Patent Owner responds as follows:

> Petitioner's theory would leave telemetry unit 305 turned ON in the Low Power state, which Petitioner identifies as the state of the Torgerson198/756/883 device below the claimed "first threshold." This means that Petitioner's proposed device cannot practice Claim 6 because it would not practice Claim 1's step of "if the voltage falls below a first threshold, discontinuing listening for the first type of telemetry."

PO Sur-Reply 19–20; *see also* Tr. 52:24–53:22 (asserting the same). We agree with Patent Owner.

Independent claim 1 recites "a first threshold," and dependent claim 6 recites "the first threshold." The use of the articles "a" and "the" respectively indicates that this "first threshold" limitation is subject simultaneously to all relevant limitations of dependent claim 6, which also includes the relevant limitations of independent claim 1, which are as follows: "if the voltage falls below a first threshold, discontinuing listening for the first telemetry type" and "a second threshold lower than the first threshold." To that end, at transition point T1 telemetry 305 is "on," failing to meet the former limitation, and at transition point T2 there is no lower "second threshold," thus failing to meet the latter limitation.

At oral argument, Petitioner appears to be asserting that a person of ordinary skill would have understood that placing a "second threshold" below transition point T2 would have been a design choice to conserve battery. Tr: 47:14–50:10. We have carefully read the portions of the Petition and Petitioner's Reply concerning dependent claim 6. Pet. 37–38, 56–58; Pet. Reply 22–24. At no point do these papers use the word "design choice," or articulate placing a "second threshold" below transition point T2 to conserve battery. Furthermore, even at oral argument, Petitioner did not articulate any rationale as to why placing a "second threshold" below transition point T2 would conserve battery.

We are not persuaded that Petitioner has met its burden of showing, by a preponderance of the evidence, that dependent claim 6 is obvious in view of Torgerson '198, Torgerson '756, and Torgerson '883.

4. Conclusion

We determine that Petitioner has met its burden of showing, by a preponderance of the evidence, that claims 1, 4, 5, and 7–10 are obvious in view of Torgerson '198, Torgerson '756, and Torgerson '883. We also determine that Petitioner has not met its burden of showing, by a preponderance of the evidence, that dependent 6 is obvious in view of those same references.

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. For example, 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."). The Petition also sets forth a challenge to dependent claim 3. Pet. 71–72.

During trial, Patent Owner asserts the following: "Dependent Claims 2 and 3 depend from independent Claim 1. The Board should confirm the patentability of dependent Claims 2 and 3 because independent Claim 1 is patentable for the reasons discussed herein." PO Sur-Reply 21; *see also* PO Resp. 44 (asserting the same). Patent Owner's assertion is misplaced because, as set forth above, Petitioner has met its burden of showing, by a preponderance of the evidence, that independent claim 1 is unpatentable.

We have reviewed the assertions and evidence set forth in the Petition, and determine that Petitioner has met its burden of showing, by a

preponderance of the evidence, that dependent claims 2 and 3 are obvious in view of Torgerson '198, Torgerson '756, Torgerson '883, and Abrahamson.

VII. CONCLUSION[11]

Petitioner has met its burden of showing, by a preponderance of the evidence, that claims 1–5 and 7–10 of the '071 patent are unpatentable under 35 U.S.C. § 103. Petitioner has not met its burden of showing, by a preponderance of the evidence, that dependent claim 6 of the '071 patent is unpatentable under 35 U.S.C. § 103.

Our conclusions are summarized as shown below:

Claims	35 U.S.C. §	References/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 4–10	§ 103	Torgerson '198, Torgerson '756, and Torgerson '883	1, 4, 5, 7–10	6
2, 3	§ 103	Torgerson '198, Torgerson '756, Torgerson '883, and Abrahamson	2, 3	

[11] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

VIII. ORDER

For the reasons provided, it is:

ORDERED that claims 1–5 and 7–10 of the ’071 patent are unpatentable;

FURTHER ORDERED that it has not been shown that dependent claim 6 of the ’071 patent is 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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