

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ANKER INNOVATIONS LTD.,
Petitioner,

v.

POWERMAT TECHNOLOGIES LTD.,
Patent Owner

Case: IPR2024-00996

U.S. Patent No. 8,626,461

**PATENT OWNER PRELIMINARY RESPONSE TO PETITION FOR
INTER PARTES REVIEW OF U.S. PATENT NO. 8,626,461**

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Patent Trial and Appeal Board
U.S. Patent and Trademark Office
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PATENT OWNER’S EXHIBIT LIST

Exhibit No.	Description
2001	U.S. Patent Publication No. US 2007/0279002 (“Partovi”)
2002	PCT Publication No. WO2010/025156 (“Cook”)

LISTING OF CHALLENGED CLAIMS¹

Claim Element	Claim Text
[13.P]	An inductive power outlet comprising at least one primary coil, for inductively coupling with a secondary coil wired to an electric load, the inductive power outlet further comprising an efficiency monitor comprising:
[13.1]	at least one input power monitor configured to measure input power received by the primary coil from the power supply;
[13.2]	at least one signal detector configured to detect signals carrying data pertaining to output power received by the secondary coil;
[13.3]	at least one processor configured to receive data pertaining to the input power and the output power, the processor further configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil;
[13.4]	wherein the index of power-loss comprises at least one of: an efficiency quotient Q , defined as the ratio of the output power to the input power; and an efficiency differential Δ , defined as the difference between the output power and the input power.
[14]	The inductive power outlet of claim 13 additionally comprising at least one circuit-breaker configured to disconnect the primary coil from the power supply.
[15.1]	An inductive power receiver comprising at least one secondary coil for inductively coupling to a primary coil and supplying power to an electric load,
[15.2]	the inductive power receiver further comprising at least one output power monitor for measuring output power received inductively by the secondary coil from the primary coil, and

¹ For convenience purposes only, Patent Owner adopts for this Preliminary Response the numbering of claim elements advanced by Petitioner in the Petition (Paper 2). Patent Owner does not concede the appropriateness of such grouping and numbering of claim elements.

Claim Element	Claim Text
[15.3]	at least one signal transmitter configured to transmit signals carrying data pertaining to the output power to the inductive power outlet of claim 13.
[16]	The inductive power receiver of claim 15 wherein the signal transmitter is selected from a group consisting of: light emitting diodes, radio transmitters, optocouplers, and transmitter circuits.
[17.1]	The inductive power receiver of claim 15 wherein the transmitter comprises: an ancillary load selectively connectable to the secondary inductive coil, a modulator for modulating a bit-rate signal with an input signal to create a modulated signal, and
[17.2]	a switch for intermittently connecting the ancillary load to the secondary inductive coil according to the modulated signal.
[18]	The inductive power receiver of claim 15 wherein the output power monitor is incorporated into an electric device.

I. INTRODUCTION

Patent Owner Powermat Technologies Ltd. (“Patent Owner”) respectfully requests that the Board deny institution because Petitioner Anker Innovations Ltd. (hereinafter “Petitioner” or “Anker”) has failed to demonstrate a reasonable likelihood of success on the grounds submitted in its Petition for challenging the patentability of claims 13-18 (the “challenged claims”) of U.S. Patent No. 8,626,461 (“the ’461 Patent”).

First, the Board should deny institution under 35 U.S.C. § 325(d) because the Petition argues the same or substantially the same art previously presented and considered by the U.S. Patent & Trademark Office (“Office”), and fails to demonstrate that the Office erred in a manner material to the patentability of the challenged claims.

Second, none of the cited references alone or in combination disclose or suggest the arrangement of each element of claims 13-18. Moreover, the Petition is filled with conclusory statements that fail to demonstrate a reasonable likelihood of success on any ground and are neither bolstered nor supported by Dr. Gary Woods’ declaration, which simply parrots Petitioner’s conclusions without additional analysis or evidence. See 37 C.F.R. §42.65(a) (“Expert testimony that does not

disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

For at least these reasons, Petitioner has failed to meet its burden of showing a reasonable likelihood of prevailing. Accordingly, the Board should deny Petitioner’s request to institute *inter partes* review.

II. BACKGROUND

A. Overview of the ’461 Patent

The ’461 Patent, entitled “Efficiency Monitor for Inductive Power Transmission,” is generally directed to a system for monitoring efficiency and controlling power transfer across an inductive power coupling. ’461 Patent at 1:20-22. As an example, an inductive power outlet may include a primary coil connected to a power supply which is configured to inductively couple with a secondary coil connected to an electric device. *See, e.g., id.* at 12:10-12. When the primary coil and the secondary coil are inductively coupled, the inductive power outlet may monitor, via an efficiency monitor, the efficiency of the system’s power transmission. *See, e.g., id.* at 12:9-10, 33-38.

Prior to the ’461 Patent, power-loss (*i.e.*, leak prevention) systems existed for detecting power emanating from a primary coil not coupled to a secondary coil and cutting of power to the uncoupled primary coil. *Id.* at 2:47-50. However, due to the lack of connecting wires in inductive power couplings, communication channels for

determining power-loss between a primary coil coupled to a secondary coil was not practical until the '461 Patent. *Id.* at 2:50-55.

The '461 Patent discloses—as illustrated below in Figure 5—an efficiency monitor that includes an input power monitor for measuring the input power delivered to the primary coil, an output power monitor for measuring the output power received by the secondary coil, a processor for determining an index of power loss, and a communication channel for communicating the input power and the output power to the processor. *Id.* at 12:38-39.

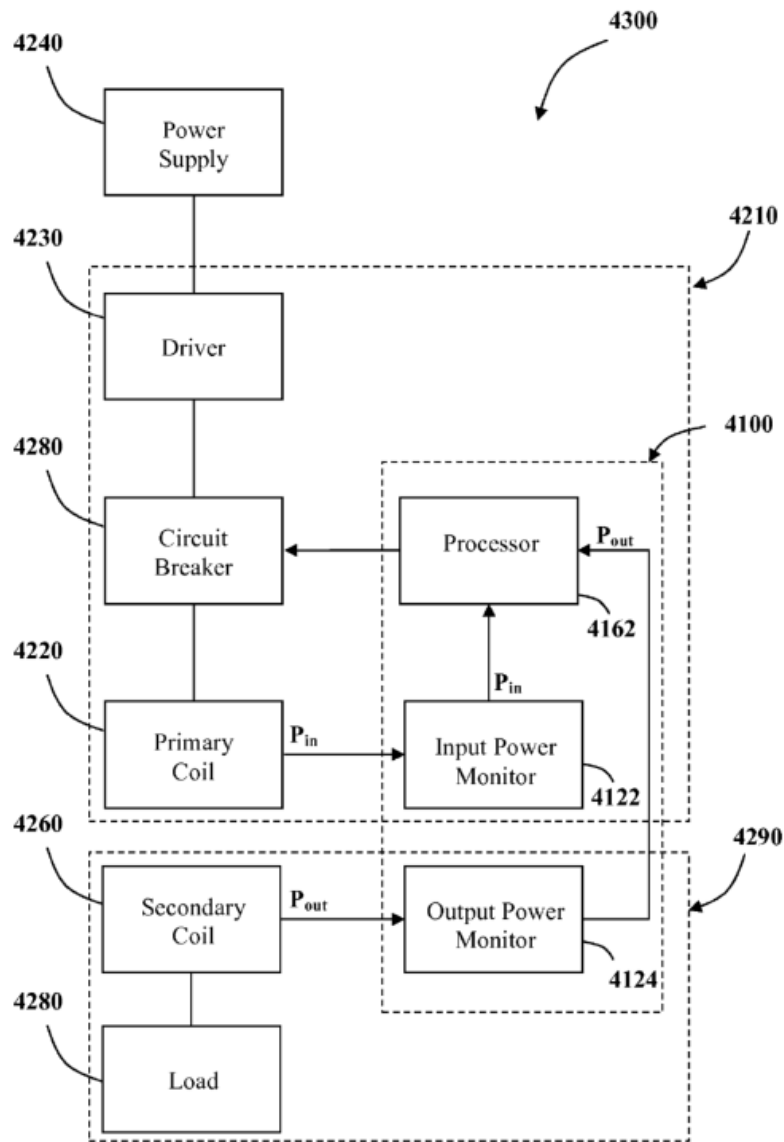


Fig. 5

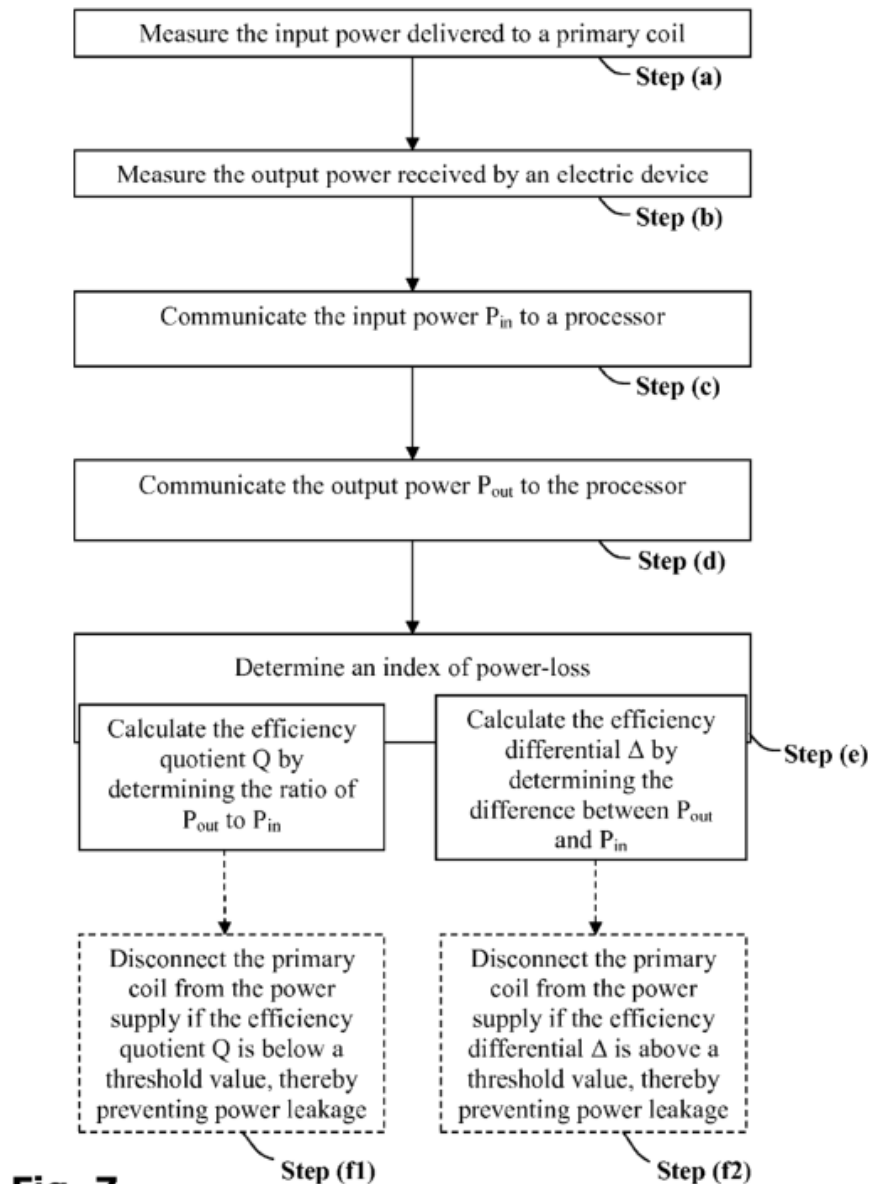
Id. at Fig. 5.

The '461 Patent explains that the processor “is configured to receive the values of the input power P_{in} and the output power P_{out} and to calculate an index of power-loss,” where the index of power-loss “indicates how much power is leaking

from the inductive couple.” *Id.* at 13:21-24. Specifically, “[t]he index of power-loss may be the efficiency quotient Q which is the ration between them, P_{out}/P_{in} , which is an indication of the efficiency of the inductive coupling” or it “may be the efficiency differential Δ which is the difference between P_{out} and P_{in} .” *Id.* at 13:24-29.

Notably, the processor may optionally be configured to trigger a circuit-breaker to cut off the primary coil from the power supply when either the efficiency quotient Q falls below a predetermined threshold or the efficiency differential Δ rises above a predetermined threshold. *Id.* at 30-35.

Figure 7 illustrates the process described above:



Id. at Fig. 7.

Accordingly, the '461 Patent proposes, among other things, a "processor . . . configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil; wherein the

index of power-loss comprises at least one of: [(1)] an efficiency quotient Q , defined as the ratio of the output power to the input power; and [(2)] an efficiency differential Δ , defined as the difference between the output power and the input power.” *Id.* at 22:9-19.

B. Patent Prosecution History

U.S. Patent Application No. 13/306,379—which would ultimately issue as the ’461 Patent—was filed on November 29, 2011, as a continuation of U.S. Patent Application No. 12/563,558. The ’461 Patent claims priority to a number of U.S. provisional applications, the earliest of which is U.S. Application No. 60/907,132, filed on March 22, 2007.

On August 29, 2012, the Examiner issued a non-final office action that, among other things, rejected the original claims under (1) 35 U.S.C. § 112 as indefinite, (2) 35 U.S.C. § 102 as anticipated based on Stevens496 (EX1013); and (3) 35 U.S.C. § 103 as obvious based on Stevens496 and U.S. Patent No. 7,791,312 (“Kook”). EX1002 at 91, 94.

In a response filed on January 29, 2013, the Applicant corrected a typographical error to overcome the § 112 rejection and traversed the Examiner’s rejections under § 102 and § 103. EX1002 at 182, 188. Addressing the § 102 rejection, the Applicant explained that Stevens496 merely discloses “a control unit

which compares measured power with a **predetermined** shutdown threshold and restricts the power supply accordingly,” as opposed to “a processor which compares a measured input power to a measured output power.” *Id.* at 184 (emphasis in original).

“ . . . the control unit 16 simply compares the measured power with a **predetermined shutdown threshold**. If the measured power exceeds the shutdown threshold value, the control unit 16 determines that the inductive power supply from the primary unit should be restricted or stopped.”

Id. (quoting Stevens496 at 12:58-62) (emphasis in original).

On March 21, 2013, the Examiner issued a final office action, maintaining the § 102 rejection based on Stevens496 and the § 103 rejection based on Stevens496 and Kook. EX1002 at 197-200. On June 12, 2013, the Applicant conducted an Examiner Interview, during which:

The examiner conveyed to the applicant’s representative claim language suggestions . . . [to] improve the clarity of the claimed invention. In particular, replacing “delivered to the primary coil” . . . with “received by the primary coil from a power supply”; . . . and including the limitations of claim 10² in claim 1, with a clarification

² Claim 10 recited:

The efficiency monitor of claim 1 wherein the index of powerloss

that the efficiency quotient Q and efficiency differential Δ are indicative of the efficiency of the inductive coupling.

EX1002 at 210.

In a June 19, 2013, response, the Applicant further amended claim 14 (issued as claim 13), in relevant part, to recite:

at least one input power monitor configured to measure input power received by the primary coil from the power supply delivered to the primary coil;

...

at least one processor configured to receive data pertaining to the input power and the output power, the processor further configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil;

wherein the index of power-loss comprises at least one of:

comprises at least one of:

an efficiency quotient Q , defined as the ratio of the output power to the input power, and

an efficiency differential Δ , defined as the difference between the output power and the input power.

EX1002 at 179 (emphasis in original).

an efficiency quotient Q , defined as the ratio of the output power to the input power, and

an efficiency differential Δ , defined as the difference between the output power and the input power.

EX1002 at 218 (emphasis in original). The Applicant noted that the “Examiner appears to acknowledge that the claimed invention may be distinguishable from Stevens[496]” based on the clarifying amendments that “more explicitly define the claimed ‘index of power loss’ within the claims.” *Id.* at 223-224.

On August 30, 2013, the Examiner issued a Notice of Allowance. EX1002 at 240. In the Notice of Allowance, the Examiner specifically noted the following:

U.S. Patent No. 7,605,496 to Stevens et al. is **the reference closest to the claimed invention**. . . . However, Stevens et al. **do not teach** the processor further configured to determine an index power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil; wherein the index of power-loss comprises at least one of: an efficiency quotient Q , defined as the ratio of the output power to the input power; and an efficiency differential A (sic) defined as the difference between the output power and the input power; and including all of the other limitations in the respective independent claims.

EX1002 at 247-248 (emphasis added).

C. Summary of Petitioner’s Proposed Grounds for Unpatentability

Petitioner alleges that claims 13-18 would have been anticipated under pre-AIA 35 U.S.C. § 102 or obvious under pre-AIA 35 U.S.C. § 103 and raises four grounds of alleged unpatentability based on three references:

1. U.S. Patent Pub. 2005/0075699 (“Olson”);
2. PCT Pub. No. WO 2005/109597 (“Stevens”); and
3. U.S. Patent Pub. 2002/0057164 (“Jin”).

The alleged invalidity grounds are as follows:

Ground	'461 Patent Claims	Type of Challenge	Primary Reference	Secondary References
1A	13-16, and 18	§ 102	Olson	
1B	17	§ 103	Olson	Stevens
2	13-18	§ 103	Stevens	Olson
3	13-18	§ 103	Stevens	Jin

D. The Relied-Upon References

The three references relied upon by Petitioner to challenge the patentability of claims 13-18 of the '461 Patent are summarized as follows:

1. Olson (EX1004)

U.S. Patent Pub. 2005/0075699 (“Olson”) is entitled “System and Method for Transcutaneous Energy Transfer Achieving High Efficiency.” Olson was filed on April 30, 2004, and was published on April 7, 2005. Olson claims priority to U.S. Provisional Application No. 60/508,110, filed on October 2, 2003.

Olson is directed to “implantable medical devices and, in particular, to energy transfer devices, systems and methods for implantable medical devices.” EX1004 ¶ [0001]. More specifically, Olson discloses “[a] system and method for transcutaneous energy transfer and/or charging in a transverse direction.” *Id.* at Abstract.

Olson explains that “[f]or implanted medical devices, the efficiency at which energy is transcutaneously transferred is crucial” because (1) “the inductive coupling, while inductively inducing a current in the secondary coil, also has a tendency to heat surrounding components and tissue,” (2) “it is desirable to limit the amount of time required to achieve a desired charge, or recharge, or an internal power source,” and (3) “amount of charging, or recharging, can be limited by the amount of time required for charging, or recharging.” *Id.* ¶ [0017]. Olson specifically discusses using efficiency measurements to determine “the best location of external antenna 52 and/or rotating core cup assembly.” *Id.* ¶ [0074].

Olson further discloses calculating an efficiency based on current to a power supply and power “induced in implantable medical device 16:”

Current measure block 226 measures current to 12 volt power supply 216. Current measured by current measure block 226 is used in the calculation of power in along with the voltage of batteries 160. As noted above, power in is used in the calculation of efficiency of

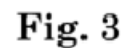
power transfer and/or charging efficiency to determine, in part, the best location of external antenna 52 and/or rotating core cup assembly 92.

. . . . External charging device 48 measures the power out of external charging device 48. The power out is gauged by the power induced in implantable medical device 16 and is determined by multiplying the voltage of rechargeable power source 24 by the charging current in implantable medical device 16. . . The power in is gauged by the power generated by charging unit 50 and is determined by multiplying the voltage of the internal voltage of charging unit 50 . .
..

Id. at [0074]-[0075].

Olson further discusses the particularity taken into consideration for efficiency measurements.

Efficiency of energy transfer is an important measure of effectiveness of energy transfer from primary coil 54 of external antenna 52 to secondary coil 34. Efficiency is measured by dividing the power in, i.e., the power received by secondary coil 34, by the power out, i.e., the power transmitted by primary coil 54. While energy efficiency can be measured at other locations in external antenna 52 and/or implantable medical device 16, for purposes of some embodiments of the present invention it is preferred that efficiency is measured coil-to-coil, i.e., from primary coil 54 to secondary coil 34.



PCT Publication No. WO 2005/109597 (“Stevens”) is entitled “Controlling Inductive Power Transfer Systems.” Stevens was filed on May 11, 2005. Stevens claims priority to Great Britain Patent Application No. 0410503.7, filed on May 11, 2004, and Great Britain Patent Application No. 0502775.0, filed on February 10, 2005.

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is a substantial parasitic load based on power drawn from the primary unit and power requirement information of the at least one secondary device. EX1005 at Abstract. Power requirement information is defined as power required (but not actual power drawn) by the secondary device(s). EX1005 36:23-37:3. Therefore, power requirement information can include, for example, a binary part used to indicate either “no power required” or “power required” or information identifying a type associated with the secondary devices, since all secondary devices of a certain type will have the same power requirement information. *Id.* Based on comparing the power requirement information with power drawn from the primary unit with a threshold value, the system determines whether to restrict or stop the inductive power supply. EX1005 at Abstract; 5:5-5:10.

A patent cited by the Examiner during prosecution of the '461 Patent, U.S. Patent No. 7,605,496 (EX1013, “Stevens496”), is a National Stage Entry of Stevens. Stevens and Stevens496 include *nearly identical* disclosures, including the same figures and accompanying descriptions. *Compare, e.g.,* EX1005 Figs. 1-12 with EX1013 Figs. 1-12. Further, each paragraph of Stevens has an almost exact replica in Stevens496. *Compare, e.g.,* EX1005 at 32:32-33:8 with EX1013 at 21:49-59; *see generally* EX1005; EX1013.

3. Jin (EX1006)

U.S. Patent Pub. No. 2002/0057164 (“Jin”) is entitled “Isolation Transformer.” Jin was filed on July 3, 1998 (filed at PCT No. PCT/JP98/03006) and was published on May 16, 2002. Jin claims priority to Japanese Patent Application No. 9-178608, filed on July 3, 1997.

Jin states that the objects of the invention are to a) “provide an isolation transformer capable of inhibiting a drop of the coupling conditions between the coils even if the gap between the cores is enlarged,” b) “provide an isolation transformer having an excellent high frequency characteristic an[d] a high transmission efficiency capable of transmitting a large current electric energy instantaneously with a simple structure,” and c) “provide a transmission control apparatus capable of igniting the air bag surely by supplying a current without a delay of time when the ignition of the air bag is required and further capable of achieving signal transmission between the primary side and secondary side of the isolation transformer effectively.” EX1006 ¶¶ [0022]-[0024].

To achieve these objects, Jin recites particular structural elements of an isolation transformer and transmission control apparatus. *See id.* ¶¶ [0025], [0030]-[0032], [0035]. For example, Jin discloses an isolation transformer made of “primary and secondary cores and primary and secondary coils,” and the primary coil and

secondary coil being disposed via a gap between the coils, as well as particular positioning and shaping associated with the primary and secondary coils. *See id.* ¶ [0025].

III. LEVEL OF ORDINARY SKILL

For purposes of this preliminary response, Patent Owner adopts the Petitioner’s proposal “that a person of ordinary skill in the art at the time of the alleged invention (‘POSITA’) would have had a bachelor’s degree or higher in electrical engineering, at least 3 years of experience designing or researching electronic circuits, and familiarity with power electronics and inductive power transfer circuits.” Pet. at 8. However, Patent Owner reserves the right to provide its own definition of a POSITA should the Board institute review of the ’461 Patent.

IV. CLAIM CONSTRUCTION

Petitioner has not identified any claim terms for construction but rather has asserted that “no claim elements need a formal construction for purposes of resolving the controversy in this proceeding.” Pet. at 8. To simplify the issues before the Board, Patent Owner has not asserted any claim constructions in this preliminary response and adopts the Petitioner’s position that “[a]ll claim terms should be construed according to the *Phillips* standard.” *Id.* (citing *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005)). However, Patent Owner reserves the right to identify

claim elements that require construction should the Board institute review of the '461 Patent.

V. LEGAL STANDARD

Under 35 U.S.C. § 102(a) (pre-AIA), an issued patent is invalid if “the invention [therein] was . . . described in a printed publication . . . before the invention thereof by the applicant.” This statute “embodies the concept of novelty—if a device or process has been previously invented (and disclosed to the public), then it is not new, and therefore the claimed invention is ‘anticipated’ by the prior invention.” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008). To anticipate, “the prior art reference . . . must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *Id.* (citing *Connell v. Sears Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)).

A claim is also not patentable if the differences between the claim and the prior art are such that the subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time of the invention. 35 U.S.C. § 103(a) (pre-AIA). Obviousness requires assessing (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of

non-obviousness such as “commercial success, long felt but unsolved needs, failure of others, etc.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966)).

It is the petitioner’s burden to prove unpatentability, *E.I. DuPont de Nemours & Co. v. Synvina C.V.*, 904 F.3d 996, 1007 (Fed. Cir. 2018), and “to demonstrate both ‘that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.’” *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367-68 (Fed. Cir. 2016) (quotations and citations omitted). However, a petitioner must first show that all of the claimed elements are disclosed in the prior art. *See Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1164 (Fed. Cir. 2006) (considering motivation to combine and reasonable expectation of success only “if all the elements of an invention are found in a combination of prior art references”).

VI. 35 U.S.C § 325(d) Weighs in Favor of Denying Institution

The Board should deny institution under § 325(d) because the Petition argues the “same or substantially the same art previously [] presented to the Office” and fails to demonstrate “that the Office erred in a manner material to the patentability of the challenged claims.” *Advanced Bionics, LLC v. MED-EL Elektromedizinische*

Geräte GmbH, IPR2019-01469, Paper 6, 8 (PTAB Feb. 3, 2020) (precedential). “Previously presented art includes art made of record by the Examiner, and art provided to the Office by an applicant, such as on an Information Disclosure Statement (IDS), in the prosecution history of the challenged patent.” *Id.* at 7-8. Further, the Board has construed “previously presented” in 35 U.S.C. § 325(d) to refer to art and arguments presented to the Office prior to the filing of the petition at issue. *Ironsource Ltd. v. Digital Turbine Inc.*, PGR2021-00096, Paper 14 at 52 (PTAB Jan. 6, 2022).

Specifically, the IPR-asserted art is “substantially the same” because the main reference for two grounds and a secondary reference for another ground—Stevens (EX1005)—is substantially the same art considered and presented to the Office during prosecution. While Stevens was not considered during prosecution of the ’461 Patent, its later specification associated with Stevens⁴⁹⁶ was a primary reference considered by the Examiner. Moreover, Stevens and Stevens⁴⁹⁶ share the same disclosure. Likewise, Olson and Jin are cumulative to or substantially the same as references already considered by the Office. The first part of the two-part framework from *Advanced Bionics* is met here. See *Google LLC v. Valtrus Innovations LTD*, IPR2022-01197, Paper 9 at 22 (PTAB Jun 13, 2023) (finding part

1 met where the same art as relied on in the petition was previously presented in the form of a European counterpart to the Petitioner's art).

Under Part 2, Petitioner fails to even allege any error regarding Stevens, indicating the appropriateness of denial under § 325(d). *Albany Int'l Corp. v. Kimberly-Clark Worldwide, Inc.*, PGR2021-00019, Paper 22, 8-9 (PTAB June 22, 2021) (denying institution because "[i]f a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute [] review"). But Petitioner's challenges here are essentially a rehash of the substantive arguments already fully considered by the Examiner. The Examiner's thorough examination and allowance of the '461 Patent claims was not material error. *Albany Int'l Corp. v. Kimberly-Clark Worldwide, Inc.*, PGR2021-00019, Paper 22, 8-9 (P.T.A.B. June 22, 2021) (denying institution because "[i]f a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute [] review."); *Vital Connect, Inc. v. Bardy Diagnostics, Inc.*, IPR2023-00381, Paper 7, 20 (PTAB July 11, 2023) ("[W]hile there are no 'magic words' necessary to address material error, Petitioner's alleged grounds of unpatentability cannot establish material error per se under our binding precedent. . . . Otherwise, the reasonable likelihood standard of §

314(a) and the second part of the Advanced Bionics framework (‘material error’) would collapse into one.”).

A. The Same or Substantially the Same Art/Arguments Were Previously Considered

The overlap between the IPR-asserted references and those submitted during prosecution of related applications meets the first part of the two-part *Advanced Bionics* framework, which considers the similarities and material differences between the two sets of art, the cumulative nature of the art, and the extent of the overlap between the arguments. *Becton, Dickinson & Co. v. B. Braun Melsungen AAG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph) (factors (a), (b), and (d)).

1. Stevens

Petitioner relies on Stevens as a secondary reference for Ground 1B and a primary reference for Grounds 2 and 3, but Stevens is substantially the same as the art and arguments presented to the Examiner during prosecution of the ’461 Patent. For example, Stevens496, a primary reference considered by the Examiner during prosecution of the ’461 Patent, is a National Stage Entry of Stevens. Notably, Stevens and Stevens496 share the same disclosure. For example, as shown in the following table, each of Petitioner’s citations to Stevens shares the exact same disclosure in Stevens496:

Case IPR2024-00996
Patent No. 8,626,461
Patent Owner Preliminary Response

Stevens (EX1005)	Stevens496 (EX1013)
Abstract	Abstract
1:3-4	1:6-8
1:10-26	1:13-33
2:8-20	1:53-2:4
4:27-5:3	3:36-54
5:23-28	4:8-16
6:1-18	4:26-48
10:22-11:9	7:26-56
11:29-12:4	8:13-28
15:1-3	10:13-16
17:7-18:28	11:39-12:39
19:10-32	12:57-13:20
21:13-24:16	14:11-16:14
30:13-31:6	19:66-20:48
32:1-10	21:11-22
32:32-33:8	21:49-59
33:19-34:15	22:9-42
37:17-28	24:51-67
38:5-39:35	25:14-26:32
FIG. 1	FIG. 1
FIG. 2	FIG. 2
FIG. 3	FIG. 3
FIG. 4	FIG. 4
FIG. 8	FIG. 8
FIG. 9	FIG. 9
FIG. 11	FIG. 11
FIG. 12	FIG. 12

Thus, Petitioner’s argument that Stevens is “an earlier § 102(b) publication” is a misleading attempt to categorize Stevens as being distinguishable from Stevens496. See Pet. at 29, note 3.

The Examiner thoroughly considered Stevens496 throughout prosecution of

the '461 Patent, as Stevens 496 was a primary reference considered by the Examiner in multiple office actions using both § 102 and § 103 rejections. *See, e.g.*, EX1002 at 91-94, 197-200, 210. The Examiner even explicitly noted Stevens as “**the reference closest to the claimed invention.**” *See, e.g.*, EX1002 at 246.

Petitioner attempts to distinguish its arguments regarding Stevens from prosecution of the '461 Patent because a “pertinent portion of Stevens (pp. 38-39, suggesting the use of an efficiency differential) was never acknowledged by the examiner nor the applicant at the time.” *See* Pet. at 29, note 3.

However, pages 38-39 of Stevens are duplicative of other sections referenced by the Examiner during prosecution of the '461 Patent. *See, e.g.*, EX1002 at 93, 199. The relevant portions of pages 38 to 39 of Stevens are directed to a comparison of power requirement information and power drawn from the primary unit, and a resultant restriction or stoppage of the power supply based on the comparison:

The power measurement unit 730 in the primary unit also measures the ***power being drawn*** by the secondary devices ***from the primary unit***, as in step S22 in Fig. 11. Then, ***the control unit 720 determines, in dependence upon the measured power and the sum of the received load measures from the secondary devices, whether or not the power supply to the secondary devices should be restricted or stopped.*** In particular, if the measured power from the power measurement unit 730 exceeds the sum of the load measures from the secondary devices by

more than a shutdown threshold, then the control unit 720 concludes that a substantial parasitic load must be present and ***places the primary unit in the shutdown mode***, as in step S24 in Fig. 11.

EX1005 at 38:34-39:6 (emphases added). This comparison between the power requirement information and power drawn from the primary unit as the efficiency differential has already been considered by the Examiner multiple times during the course of prosecution. *See, e.g.*, EX1002 at 93, 199. For example, the Examiner alleged the comparison between power requirement information and power drawn from the primary unit found in the Abstract of Stevens⁴⁹⁶ disclosed “efficiency differential.” *See* EX1002 at 93; *see also* EX1013 at Abstract (“***The system detects if there is a substantial difference between***, on the one hand, a ***power drawn from the primary unit and*** on the other hand, a ***power required by the secondary device.***” (emphasis added)). Applicant also explicitly raised this comparison to the attention of the Examiner in a response to an office action. *See, e.g.*, EX1002 at 185-186 (distinguishing the claims of the ’461 Patent from the control unit of Stevens⁴⁹⁶, which “determines whether inductive power supply from the primary unit should be restricted or stopped in dependent upon the measured power [drawn from the primary unit] and the power requirement information”); *compare* EX1005 at 38:34-39:6 *with* EX1013 24:51-55.

Therefore, Stevens was extensively considered by the Examiner during

prosecution of the '461 Patent. The Board has construed “previously presented” in 35 U.S.C. § 325(d) to refer to art and arguments presented to the Office *prior to* the filing of the petition at issue. *Ironsource*, PGR2021-00096, Paper 14 at 52.

2. Olson

Petitioner relies on Olson as the primary (and only) reference for Ground 1A, as the primary reference for Ground 1B, and as a secondary reference for Ground 2. However, Petitioner’s arguments with respect to Olson are cumulative to the art and arguments previously presented to the Office during prosecution of the '461 Patent.

For example, Petitioner’s arguments with respect to Olson are cumulative to arguments presented with Stevens⁴⁹⁶. The Petition itself highlights the similarities between Olson and Stevens (and therefore Stevens⁴⁹⁶)³ in its combination rationale the Petition alleges “they both describe concepts related to power outlet devices having a ‘primary coil’ for inductively coupling with a ‘secondary coil’ of a wireless electric device for recharging a battery.” Pet. at 30. Further, Petitioner alleges that “both Olson and Stevens are directed to wireless charging systems whose designs were concerned with power transfer efficiency and the communication of power

³ As discussed above in Section VI.A.1, Stevens (used by Petitioner) shares the same disclosure as Stevens⁴⁹⁶ (used as a primary reference during prosecution of the '461 Patent).

information from a secondary unit to a primary unit.” Pet. at 32.

Additionally, the Petition alleges multiple ways in which Stevens supposedly *augments* Olson’s disclosure. See Pet. at 29 (“To the extent Olson does not expressly disclose the elements...such features were commonly implemented in similar wireless charging systems to provide known benefits—as demonstrated by the Stevens reference.”); see also *id.* 30-33. Because Stevens is being used to *expressly* disclose elements allegedly and *implicitly* disclosed by Olson, the arguments presented with respect to Olson are substantially similar to arguments presented with respect to Stevens and therefore cumulative to the art and arguments previously presented to the Office during prosecution of the ’461 Patent.

Additionally, Olson is cumulative to several other references already considered by the Examiner during prosecution of the ’461 Patent. See, e.g., EX1002 at 297. For example, Petitioner contends that Olson discloses element [13.4], because Petitioner contends that Olson discloses an efficiency ratio that is measured “coil-to-coil.” See Pet. at 19-20, 38. However, these disclosures are already in several references marked as considered during prosecution of the ’461 Patent such as Partovi and Cook. See, e.g., EX1002 at 297; EX2001 ¶ 119; EX2002 ¶ [0044]. For example, Parvoti, U.S. Patent Publication No. 2007/0182367, discloses various teachings related to efficiency ratios between a primary coil and secondary coil. See,

e.g., EX2001 ¶ 119 (The advantages of this approach include: High efficiency (~90% coil to coil).”); *see also, e.g., id.* ¶¶ [0014], [0040] [0109]. Cook similarly discloses transfer efficiencies. EX2002 ¶ [0044] (“[R]espectively, these circuits may provide transfer efficiencies (transmit antenna input to receiver output) close to 90% at 13.56 MHz.”).

For at least these reasons, Olson is cumulative to art and arguments presented to the Office during prosecution of the ’461 Patent.

3. Jin

Petitioner relies on Jin as a secondary reference for Ground 3. However, Jin is cumulative to the art and arguments previously presented to the Office during prosecution of the ’461 Patent.

Jin is specifically cited in relation to elements [13.3] and [13.4] in relation to “an index of power loss.” *See* Pet. at 60-61; *see also* Pet. at 58-63. Jin is cited to demonstrate “that it was common to measure *an index of power loss* by calculating a transmission efficiency ratio.” *See* Pet. at 55. However, the Examiner already considered a multitude of references directed to measurements of efficiency and indexes of power loss. *See, e.g.*, EX1002 at 297, 302; EX2001 ¶ 119 (The advantages of this approach include: High efficiency (~90% coil to coil).”); EX2002 ¶ [0044] (“[R]espectively, these circuits may provide transfer efficiencies (transmit antenna

input to receiver output) close to 90% at 13.56 MHz.”).

Further, arguments regarding elements [13.3] and [13.4] were heavily considered by the Examiner during prosecution of the '461 Patent. For example, in an Interview Summary, the Examiner explicitly addressed clarifications (that were adopted into the allowed claims) regarding efficiency that would distinguish the application from prior art.

The Examiner conveyed to the applicant's representative claim language suggestions from examiner Carol Tsai which she believes would improve the clarify of the claimed invention. In particular,...including the limitations of claim 10 in claim 1 with a clarification that the efficiency quotient Q and efficiency differential Δ are indicative of the efficiency of the inductive coupling.

EX1002 at 210.

For at least these reasons, Jin is cumulative to art and arguments presented to the Office during prosecution of the '461 Patent.

B. Petitioner Failed to Demonstrate Material Error by the Office

Petitioner offers a dismissive argument that “the Examiner was led to the erroneous conclusion that the prior art did not disclose or suggest ‘wherein the index of power-loss comprises at least one of: an efficiency quotient Q , defined as the ratio of the output power to the input power; and an efficiency differential Δ , defined as the difference between the output power and the input power.” Pet. at 64. Petitioner

makes no further argument as to why the Examiner's search was not proper or what Petitioner would have done differently. Nowhere in the petition is it explained why the Examiner's allowance of the claims over Stevens⁴⁹⁶ was material error, and many of Petitioner's arguments are simply a rehash of the art and arguments already thoroughly considered by the Office.

In fact, the Examiner heavily considered this element multiple times throughout prosecution. *See, e.g.*, EX1002 at 93, 199 (citing prior art in relation this claim language in multiple office actions); EX 1002 at 210 (discussing possible distinctions regarding this claim language during interviews); EX1002 at 246, 257 (explicitly noting this element as allowable over the prior art in the Notice of Allowance).

As such, Petitioner's analysis is insufficient to meet the second part of the *Advanced Bionics* test and denial under §325(d) is appropriate. *Albany Int'l Corp.*, PGR2021-00019, Paper 22, 8-9 (denying institution because "[i]f a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute [] review."); *Advanced Bionics*, IPR2019- 01469, Paper 6, 8.

VII. THE PETITION DOES NOT SHOW A REASONABLE LIKELIHOOD OF PREVAILING WITH RESPECT TO ANY CHALLENGED CLAIM

The Petition should be denied because it does not establish a reasonable

likelihood of prevailing on any of the asserted grounds against any of the challenged claims.

A. Ground 1A: Petitioner Fails to Establish that Claims 13-16 and 18 are Anticipated by Olson

As explained below, Petitioner has not shown a likelihood of prevailing with respect to Ground 1A. Olson fails to disclose at least claim elements [13.1], [13.2], [13.3], and [13.4]. As claims 14-18 depend on 13, Petitioner cannot show that Olson anticipates any of claims 13-18.

1. Petitioner Fails to Demonstrate that Olson Anticipates Element [13.1]

Petitioner fails to demonstrate that Olson discloses or suggests “at least one input power monitor configured to *measure input power received by the primary coil from the power supply*,” as required by element [13.1]. Petitioner alleges that Olson’s current measure block 226 “in connection with” microprocessor 212 qualifies as the claimed “input power monitor” of element [13.1]. *See* Pet. at 15. This argument fails for several reasons.

First, current measure block 226 measures current *to power supply 216* instead of the input power *received by the primary coil from the power supply*, as required by element [13.1]. *See* EX1004 ¶ [0074] (“Current measure block 226 measures current to 12 volt power supply 216”); Pet. at 15. Measuring current to the power supply is fundamentally different from measuring the power received by the

primary coil. Petitioner fails to establish how or why a measurement of current input to a power supply is necessarily the same as a measurement of power received by the primary coil from the power supply.

Second, Petitioner fails to provide any evidence regarding the function of Olson’s microprocessor 212 in relation to measuring input power. Petitioner alleges that microprocessor 212 calculates power based on current measured by current measure block 216, but Olson fails to disclose the use of microprocessor 212 for any such calculation. *See* Pet. at 16, *see, e.g.*, EX1004 ¶¶ [0072].

For example, while Olson describes a power calculation in paragraph [0075], Olson does not describe this power calculation as performed by microprocessor 212. *See* EX1004 ¶ [0072]. The entirety of Olson’s description of microprocessor 212 is limited to paragraph [0072], which merely discloses the microprocessor providing “H-bridge control signals and timing” and says nothing as to whether the microprocessor performs power calculations. *See id.* Petitioner’s citations to other paragraphs in relation to alleged microprocessor actions (*e.g.*, paragraphs [0074]-[0076], [0078], [0112]) fail to even mention a microprocessor. *See id.* ¶¶ [[0074]-[0076], [0078], [0112]]; *see also* Pet. at 16. Similarly, Olson’s Figure 14, also cited by Petitioner (Pet. at 17-18), is simply a block diagram of the external charging device, and fails to disclose any sort of power calculation that would occur within

the microprocessor 212.

Petitioner fails to address or remedy any of the above deficiencies in Olson. Accordingly, Petitioner has failed to meet its burden in establishing that Olson discloses or suggests element [13.1]. Because claims 14-16 and 18 depend on claim 13, Petitioner has failed to establish that any of claims 13-16 and 18 are anticipated by Olson.

2. Petitioner Fails to Demonstrate that Olson Discloses or Suggests Element [13.2]

Petitioner fails to demonstrate that Olson discloses or suggests “at least one signal detector configured to *detect signals carrying data pertaining to output power received by the secondary coil*,” as required by element [13.2].

Petitioner alleges that “Olson describes that microprocessor 212 receives ‘by telemetry’ measurement data pertaining to ‘the power induced in implantable device 16’ (e.g., via the telemetry antenna 218)” and cites paragraphs [0072], [0075], and Figure 14 of Olson, as well as its expert declaration Pet. at 17. However, Petitioner fails to address how the “power induced in implantable medical device” in Olson is necessarily the same as “output power *received by* the secondary coil.” Pet. at 17. Instead, Petitioner makes conclusory assumptions that these measurements from Olson would necessarily satisfy element [13.2].

However, Olson merely describes that “power out is gauged by the power

induced in implantable medical device 16 and is determined by multiplying the voltage of rechargeable power source 24 by the charging current in implantable medical device 16.” EX1004 ¶ [0075]. Olson fails to disclose where the charging current or voltage are measured in rechargeable power source 24 with respect to the secondary coil to show these measurements are indeed directed to “output power ***received by the secondary coil.***” See, e.g., EX1004 ¶ [0075]. Whereas Olson specifies where current is measured with respect to the primary coil (*i.e.*, measuring current ***into*** a power supply), Olson’s figures and accompanying descriptions related to the implantable medical device 16 fail to disclose any detail on where current or power is measured with respect to the alleged secondary coil. See EX1004 Fig. 3, ¶¶ 52, 55.

Petitioner fails to address or remedy any of the above deficiencies in Olson. Accordingly, Petitioner has failed to meet its burden in establishing that Olson discloses or suggests element [13.2]. Because claims 14-16 and 18 depend on claim 13, Petitioner has failed to establish that any of claims 13-16 and 18 are anticipated by Olson.

3. Petitioner Fails to Demonstrate that Olson Discloses or Suggests Element [13.3]

Petitioner fails to demonstrate that Olson discloses or suggests “***at least one processor configured to receive data pertaining to the input power and the output***

power, the processor further configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil,” as required by element [13.3].

Element [13.3] is reliant on the “input power” defined in element [13.1], as “**input power received by the primary coil from the power supply**,” as well as the “output power” defined in element [13.2] as “**output power received by the secondary coil**.” Because Olson fails to disclose “input power” and “output power” in the first place, Olson further fails to disclose any functionality based on the recited “input power” and “output power,” such as a “processor configured to **receive data pertaining to the input power and the output power**,” as recited in element [13.3]. See *supra* Sections VII.A.1, VII.A.2.

For example, Petitioner alleges that Figure 14 of Olson depicts the “‘I_RECHRG’ output from current measure block 226, which is connected to an analog-digital input (‘A/D’) of the microprocessor 212,” and therefore discloses “one processor configured to receive data pertaining to the input power.” Pet. at 18. However, Petitioner makes the erroneous assumption that “I_RECHRG” of Figure 14 of Olson constitutes “data pertaining to the input power.” For example, current measure block 226 “measures current **to** 12 volt power supply 216” instead of “input power received **by** the primary coil **from** the power supply,” and therefore any

measurements allegedly transmitted from current measure block 226 to microprocessor 212 fail to satisfy element [13.3].

Petitioner also cites paragraph [0112] of Olson, which discloses that Efficiency of energy transfer is an important measure of the effectiveness of energy transfer from primary coil 54 of external antenna 52 to secondary coil 34. Efficiency is measured by dividing the power in, i.e., the power received by secondary coil 34, by the power out, i.e., the power transmitted by primary coil 54. While energy efficiency can be measured at other locations in external antenna 52 and/or implantable medical device 16, for purposes of some embodiments of the present invention it is preferred that efficiency is measured coil-to-coil, i.e., from primary coil 54 to secondary coil 34.

Petitioner cites to this passage of Olson several times to allege that Olson discloses the particular output power, input power, and resulting efficiency determination required by claim 13. However, this paragraph of Olson fails to describe, with any particularity, what it considers “coil-to-coil” measurements. On the other hand, claim 13 **does** recite particular measurements (*e.g.*, “input power received by the primary coil from the power supply,” and “output power received by the secondary coil”). Olson’s only disclosure of particular measurements pertains to its disclosure of current measure block 226, which measures current **into** a power supply (instead of **from** a power supply as recited in claim 13). Therefore, Olson’s general disclosure

of “preferr[ing] that efficiency is measured coil-to-coil” does not satisfy the particular elements required by claim 13.

Similarly, Petitioner’s expert declaration merely parrots back the conclusory assertion from the Petition which it is offered to support—oftentimes verbatim. *Cf.* Pet. at 18 *with* EX1002 ¶ 46. This approach is not proper. *See Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022) (precedential) (denying institution and holding declaration is entitled to little weight when it contains an exact restatement of the petition’s unsupported, conclusory assertions without any additional supporting evidence or reasoning); *see also* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

Given the above deficiencies in Olson, Petitioner has failed to establish that element [13.3] is anticipated by Olson. Because claims 14-16 and 18 depend on claim 13, Petitioner has also failed to establish that any of claims 13-16 and 18 are anticipated by Olson.

4. Petitioner Fails to Demonstrate that Olson Discloses or Suggests Element [13.4]

Petitioner fails to demonstrate that Olson discloses or suggests an “index of power-loss [that] comprises at least one of: an efficiency quotient Q , defined as the ratio of the output power to the input power; and an efficiency differential Δ , defined

as the difference between the output power and the input power.”

Element [13.4] requires at least three things: **1)** input power defined as “power received by the primary coil from the power supply,” **2)** output power defined as “output power received by secondary coil,” and **3)** an index of power loss determined based on either: **a)** a ratio of the output power to the input power (efficiency quotient) or **b)** a difference between the output power and the input power (efficiency differential).

Petitioner alleges that two sections of Olson (first, paragraphs [0074]-[0076] and second, paragraph [0112]) disclose calculating a “ratio of power out divided by power in” as the claimed efficiency quotient. Pet. at 19. Paragraph [0075] of Olson discloses “a measure of the efficiency of external charging device 48” that is calculated based on “power out of external charging device 48 divided by the power into external charging device 48.” Olson further defines that power in is “gauged by the power generated by charging unit 50 and is determined by multiplying the voltage of the internal voltage of charging unit 50...by the current driving external antenna 52.” EX1004 ¶ [0075]. Specifically, the current driving external antenna 52 is measured by current measure block 226, which “measures current *to* 12 volt power supply 215,” instead of *from* the 12 volt power supply, as recited in claim 13. See EX1004 ¶ [0075]; see also *supra* Section VII.A.1. If Olson is deficient in disclosing

“input power,” it follows that any determination based on Olson’s deficient “input power” (such as any alleged efficiency quotient) will also be deficient.

Regarding Olson’s “output power” measurement, Olson merely discloses that this measurement is “gauged by the power induced in implantable medical device 16 and is determined by multiplying the voltage of rechargeable power source 24 by the charging current in implantable medical device 16.” EX1004 ¶ [0075]. However, Olson fails to disclose with any particularity, where this measurement is taken with respect to any alleged secondary coil. *See id.; supra* Section VII.A.2. Because Olson is deficient in disclosing “output power,” it follows that any determination based on Olson’s deficient “output power” (such as any alleged efficiency quotient) will also be deficient.

Petitioner also alleges paragraph [0112] of Olson discloses element [13.4]. Pet. at 19-20. However, while paragraph [0112] states “it is preferred that efficiency is measured coil-to-coil, i.e., from primary coil 54 to secondary coil 34,” it fails to disclose the particular input power and output power measurements recited in element [13.4]. For example, while paragraph [0112] of Olson describes an efficiency of energy transfer “measured by dividing the power in, i.e., the power received by secondary coil 34, by the power out, i.e., ***the power transmitted by primary coil 54***” (emphasis added), both Petitioner and Olson fail to address whether

“power transmitted by primary coil 54” is the same as “power **received by** the primary coil **from** the power supply” of element [13.4]. See Pet. at 19-20. Instead, as alleged by Petitioner, Olson’s only disclosure of particular measurements of alleged “input power” or “output power” pertains to its disclosure of current measure block 226, which measures current **into** a power supply (instead of **from** a power supply as recited in claim 13). Therefore, Olson’s general disclosure of “preferr[ing] that efficiency is measured coil-to-coil” cannot be considered to disclose the particular elements recited in claim 13. See *supra* Section VII.A.3.

Given the above deficiencies in Olson, Petitioner has failed to establish that [13.4] is anticipated by Olson. Because claims 14-16 and 18 depend on claim 13, Petitioner has failed to establish that any of claims 13-16 and 18 are anticipated by Olson.

B. Ground 1B: Petitioner Fails to Establish that Claim 17 is Rendered Obvious by Olson in View of Stevens

Petitioner relies on Stevens solely “[t]o the extent Olson does not expressly disclose the elements of dependent claim 17,....” Pet. at 29-30. Claim 17 depends from claim 13 and is therefore patentable for at least the same reasons claim 13 is patentable.

C. Ground 2: Petitioner Fails to Establish that Claims 13-18 are Rendered Obvious by Stevens in View of Olson

For Ground 2, Petitioner relies on a combination of Stevens and Olson. For at

least the following reasons, Steven and Olson, whether taken alone or in reasonable combination, fail to disclose at least claim 13.

1. Petitioner Fails to Demonstrate that Element [13.1] is Rendered Obvious by Stevens in View of Olson

First, Petitioner fails to demonstrate that Stevens and Olson disclose or suggest “at least one input power monitor configured to *measure input power received by the primary coil from the power supply*,” as required by element [13.1].

Petitioner alleges that Stevens’s power measurement unit 100/730 acts as the claimed input power monitor. Pet. at 42. In describing the power measurement unit, Stevens discloses:

The power measurement unit 100 comprises a switch 102 between the 0v supply in the power supply 105 and the ground terminal of the electrical drive unit 14. The switch 102 is controlled by the control unit 16. The power measurement unit also comprises a capacitor 101 connected between the positive and ground terminals of the electrical drive unit 14.

EX1005 at 22:16-20 (emphasis added). Stevens further discloses:

[E]lectrical drive unit 14 has an input connected to an output of the control unit 16 supplying the AC voltage signal 106. The output nodes of the electrical drive unit 14 are connected to the primary coil 12. The electrical drive unit is connected to the power supply 105, via the power measurement unit 100. The power supply 105 supplies direct current to

the electrical drive unit 14.

EX1005 at 21:24-28, Fig. 4. Stevens also discloses that the voltage measured for power assessment is the DC voltage at the input of the electrical drive unit 14. See EX1005 at 16:18-22 (“The control unit 16 applies an AC voltage signal 106 to the electrical drive unit 14. The electrical drive unit 14 takes DC power from the power supply 105 and amplifies the AC voltage signal 106 and applies it to the primary coil 12.”).

Therefore, these paragraphs of Stevens disclose that the power measurement unit 100 measures DC power provided **to the electrical drive unit 14** instead of input power provided **to the primary coil** in the form of an AC voltage signal 106 outputted by the control unit 106 to the electrical drive unit 14. On the other hand, element [13.1] specifically recites “at least one input power monitor configured to *measure input power received by the primary coil from the power supply.*” Petitioner fails to adequately address whether the power provided to the electrical drive unit would be necessarily the same as power received by the primary coil **from the power supply**. Stevens specifically states that “the power drawn by the electrical drive unit 14 is representative of the power drawn by the primary coil 12 and hence also the power drawn by all the secondary devices 30 **plus other losses,**” indicating that power measured at one location may be representative of power measured at a different

location, but does not accurately reflect the power measurement because of power losses that can occur. EX1005 at 18:9-11.

Olson fails to remedy the above deficiencies in Stevens, nor does Petitioner make such an allegation. *See* Pet. at 42. Therefore, Petitioner fails to demonstrate that Stevens and Olson render obvious element [13.1]. Because the remainder of the challenged claims depends on claim 13, Petitioner has failed to establish that any of claims 13-18 are rendered obvious by Steven and Olson.

2. Petitioner Fails to Demonstrate that Element [13.2] is Rendered Obvious by Stevens in View of Olson

First, Petitioner fails to demonstrate that Stevens and Olson disclose or suggest “at least one signal detector configured to detect signals carrying ***data pertaining to output power received by the secondary coil.***”

Petitioner relies on Stevens to satisfy element [13.2]. *See* Pet. at 42-43. Specifically, Petitioner alleges Stevens’s “power requirement information” discloses “data pertaining to output power received by the secondary coil.” *See id.*

However, Stevens’s “power requirement information” cannot be “data pertaining to output power received by the secondary coil.” That is because the “power requirement information” is simply information representative of “amount of power ***required***” by secondary devices and not “output power ***received by*** the secondary coil.” That is, the power requirement information is a static number that

would not change even if output power received by the secondary coil changed, and therefore is distinct from “data pertaining to output power received by the secondary coil.” To further illustrate this point, Stevens states:

The power requirement of the secondary device may already be known to the primary unit. For example, it may be known that all secondary devices of a certain type will have a particular power requirement. In this case, the power requirement information may simply be a code (or some other identifying information) indicating the type of the secondary device.

EX1005 at 36:32-37-3. Here, Stevens explains that that all devices of a certain type may have a same power requirement and that power requirement information can simply be a code that identifies a certain type of device. A code identifying a type of device is irrelevant to data pertaining to output *received by* the secondary coil, as the code has nothing to do with power actually being received by the secondary coil. At most, Stevens discloses that power requirement information establishes a maximum amount of power ***required by*** the secondary device, but is not indicative of power actually ***received by*** any alleged secondary coil in the secondary device.

In another example, Stevens even states that the power requirement information may “comprise a binary part used to indicate either ‘no power required’ or ‘power required.’” EX1005 at 36:25-29. Again, Stevens states the power

requirement information has nothing to do with power ***received by*** the secondary coil, but merely an indication of power of whether the secondary device requires power or does not require power. Therefore, the “power requirement information” of Stevens fails to disclose “data pertaining to output power received by the secondary coil,” as required by element [13.2].

Petitioner additionally attempts to use the “load measure” terminology of Stevens to disclose element [13.2]. *See, e.g.*, Pet. at 43. However, Petitioner fails to establish that its “load measure” satisfies this element because Stevens states that its “load measure” simply corresponds to the “power requirement information.” EX1005 at 38:31-32 (“This load measure corresponds to the power requirement information of step S21.”). Therefore, Petitioner fails to establish that the load measure of Stevens discloses element [13.2] for at least the same reasons set forth above in relation to Stevens’s “power requirement information.”

Olson fails to remedy the above deficiencies in Stevens, nor does Petitioner make such an allegation. *See* Pet. at 42-43. Therefore, Petitioner fails to demonstrate that Stevens and Olson render obvious element [13.2]. Because the remainder of the challenged claims depends on claim 13, Petitioner has failed to establish that any of

claims 13-18 are rendered obvious by Steven and Olson.

3. Petitioner Fails to Demonstrate that Element [13.3] is Obvious Based on Stevens in View of Olson

Petitioner fails to demonstrate that Stevens and Olson disclose or suggest “at least one processor configured to receive data pertaining to the input power and the output power, the processor further configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil,” as required by element [13.3].

Petitioner alleges that both Stevens and Olson disclose element [13.3]. Petitioner first alleges that the control unit of Stevens satisfies element [13.3]. *See* Pet. at 44. Stevens’s control unit, however, determines “whether or not the power supply to the secondary devices should be restricted or stopped” based on comparing “the measured power and the sum of the received load measures from the secondary devices.” EX1005 at 39:1-2. However, as stated above in relation to element [13.1], the alleged “input power” in Stevens is deficient because Petitioner fails to establish that power into an electrical drive unit would necessarily be the same as input power “received by the primary coil from the power supply,” as recited in claim 13. *See supra* Section VII.C.1. Similarly, as stated above in relation to element [13.2], Petitioner fails to establish that Stevens’s power requirement information or load measures disclose the “output power” of element [13.3]. *See supra* Section VII.C.2.

Because Petitioner fails to establish that Stevens discloses output power of element [13.3] in the first place, Petitioner further fails to establish that Stevens discloses any additional actions based on the output power, such as “at least one processor configured to receive data pertaining to ***the input power*** and ***the output power***.”

In addition, Stevens fails to disclose a processor configured to determine “an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil,” as required by element [13.3]. While Petitioner alleges that “Stevens suggests that the control unit 720 should determine an index of power loss,” Stevens’s control unit simply compares measured power with a *predetermined shutdown threshold* and restricts power supply accordingly. *See* Pet. at 44; EX1005 19:10-11. (“[C]ontrol unit 16 simply compares the measured power with a predetermined shutdown threshold.”). Further, Stevens fails to disclose that this comparison is “indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil,” as recited in element [13.3]. *See* EX1005 38:34-39:6. Stevens is silent regarding whether this comparison is related to any efficiency measure at all. *See id.* Therefore, Stevens fails to disclose a processor “configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil,” as recited in element [13.3].

Olson fails to cure the deficiencies of Stevens. Petitioner alleges that the microprocessor 212 of Olson is configured to “determine an efficiency index calculation by receiving data (e.g., via the ‘current measure block 226’) data pertaining to the ‘power in’ at the primary coil 54 and receiving (e.g., via the telemetry antenna 218) data pertaining to the ‘power out’ for the amount of power induced at the secondary charging coil 34.” Pet. at 45. However, Petitioner never establishes that the “power in” measurement of Olson would necessarily be the same as the “input power” of element [13.3]. *See id.* For example, Olson’s current measure block 226 measures current **to power supply 216** instead of the input power **received by the primary coil from the power supply**, as required by element [13.1]. *See* EX1004 ¶ [0074] (“Current measure block 226 measures current to 12 volt power supply 216”); Pet. at 15; *see also supra* Section VII.A.1.

Petitioner similarly never establishes that Olson discloses the “output power” sub-element of element [13.3]. While Petitioner alleges that paragraphs [0074]-[0076] and [0112] disclose “output power,” none of these paragraphs actually disclose “output power **received by the secondary coil**” as recited in claim 13. *See supra* Section VII.A.2, VII.A.3. These paragraphs of Olson instead generally disclose measuring “power induced in implantable medical device.” *See* EX1004 ¶ [0075]; *see also* Section VII.A.2, VII.A.3.

In addition, Petitioner alleges that “a POSITA would have been motivated to implement Olson’s suggestion (determining the index of power-loss using an efficiency quotient, as described above) in Stevens’s system because Olson expressly suggests it was an ‘important measure of effectiveness.’” Pet. at 38. However, it is unclear how using the “efficiency quotient” from Olson would benefit Stevens. As alleged by Petitioner, Stevens discloses a comparison of load measures and measured power against a threshold (which Petitioner alleges is an “efficiency” measure). It is unclear how putting these values into Olson’s “ratio” format over a comparison format would make sense in Stevens. That is, there is no motivation to put Stevens’s values in a “ratio” format versus its existing methodology.

Additionally, Stevens is concerned with a comparison of load measures and measured power against a threshold to determine parasitic load, and discloses a resultant restricting or stopping supply of power based on the comparison. EX1005 4:14-18. On the other hand, Olson describes calculating efficiency in relation to determining the “best location of external antenna 52 and/or rotating core cup assembly.” EX1004 ¶ [0074]. Stevens and Olson are directed to different goals and a POSITA would not be motivated to combine the two art. This is because Stevens is directed to ***restricting or shutting off power transfer*** when its argued “efficiency” value (comparison of load measures and measured power against a threshold) is

undesirable and Olson is directed to **increasing power transfer** (by moving devices into a better position) when its argued “efficiency” value is undesirable.

Accordingly, Petitioner has failed to meet its burden in establishing that Stevens and Olson disclose or suggest element [13.3]. Because the remainder of the challenged claims depends on claim 13, Petitioner has failed to establish that any of claims 13-18 are rendered obvious by Steven and Olson.

4. Petitioner Fails to Demonstrate that Element [13.4] is Obvious Based on Stevens in View of Olson

Petitioner fails to demonstrate that Olson discloses or suggests an “index of power-loss [that] comprises at least one of: an efficiency quotient Q , defined as the ratio of the output power to the input power; and an efficiency differential Δ , defined as the difference between the output power and the input power,” as required by element [13.4].

Petitioner alleges that paragraphs [0074]-[0076] and paragraph [0112] of Olson disclose element [13.4]. Pet. at 46. Specifically, Petitioner alleges that “Olson teaches calculating ‘a ratio of power out divided by power in’ as the claimed efficiency quotient as the index of power loss.” *Id.* However, Olson’s “power in” measurement is based on “current to 12 volt power supply 215.” EX1004 ¶ [0075]. Petitioner never establishes that measuring current **to** the power supply is the same as measuring power received by the primary coil **from** the power supply and

therefore fails to disclose the “input power” of element [13.4]. *See supra* Section VII.A.1. If Olson is deficient in disclosing “input power,” it follows that any determination based on Olson’s deficient “input power” (such as the efficiency quotient) is similarly deficient.

Petitioner also alleges paragraph [0112] of Olson discloses element [13.4]. Pet. at 46. This paragraph describes an efficiency of energy transfer “measured by dividing the power in, i.e., the power received by secondary coil 34, by the power out, i.e., ***the power transmitted by primary coil 54***” (emphasis added). Petitioner again fails to address whether “power transmitted by primary coil 54” is the same as “power ***received*** by the primary coil ***from*** the power supply” of element [13.4]. *See* Pet. at 46; *see also supra* Section VII.A.4. Petitioner merely makes a conclusory assumption that these two are equivalent without addressing the particularity of element [13.4].

Stevens fails to remedy the above deficiencies in Olson, nor does Petitioner make such an allegation. *See* Pet. at 46-47. Therefore, Petitioner fails to demonstrate that Stevens and Olson render obvious Element [13.4]. Because the remainder of the challenged claims depends on claim 13, Petitioner has failed to establish that any of claims 13-18 are rendered obvious by Steven and Olson.

D. Ground 3: Petitioner Fails to Establish that Claims 13-18 are Rendered Obvious by Stevens in View of Jin

For Ground 3, Petitioner relies on a combination of Stevens and Jin. For at least the following reasons, Stevens and Jin, whether taken alone or in reasonable combination, fail to disclose at least claim 13.

1. Petitioner Fails to Demonstrate that Element [13.1] is Rendered Obvious by Stevens in View of Jin

Petitioner alleges Stevens (and not Jin) discloses element [13.1], and therefore Ground 3 fails for at least the same reasons given above with respect to Ground 2 (which also alleges Stevens discloses element [13.1]). *See supra* Section VII.C.1; *see also* Pet. at 58. For example, Stevens fails to disclose the “input power” recited in element [13.1] because Petitioner fails to show that Stevens’s DC voltage at the input of the electrical drive unit is necessarily the same as “input power received by the primary coil from the power supply.” *See supra* Section VII.C.1.

Jin fails to remedy the above deficiencies in Stevens, nor does Petitioner make such an allegation. *See* Pet. at 58. Therefore, Petitioner fails to demonstrate that Stevens and Jin render obvious element [13.1]. Because the remainder of the challenged claims depends on claim 13, Petitioner has failed to establish that any of

claims 13-18 are rendered obvious by Steven and Jin.

2. Petitioner Fails to Demonstrate that Element [13.2] is Rendered Obvious by Stevens in View of Jin

Petitioner alleges Stevens (and not Jin) discloses element [13.2], and therefore Ground 3 fails for at least the same reasons given above with respect to Ground 2 (which also alleges Stevens discloses element [13.2]). *See supra* Section VII.C.2; *see also* Pet. at 58. For example, Petitioner fails to establish that Stevens discloses the “output power” recited in element [13.2] because Petitioner fails to show that Stevens’s “power requirement information” or “load measure” is necessarily the same as output power ***received by*** the secondary coil.” *See supra* Section VII.C.2.

Jin fails to remedy the above deficiencies in Stevens, nor does Petitioner make such an allegation. *See* Pet. at 58. Therefore, Petitioner fails to demonstrate that Stevens and Jin render obvious element [13.2]. Because the remainder of the challenged claims depends on claim 13, Petitioner has failed to establish that any of claims 13-18 are rendered obvious by Steven and Jin.

3. Petitioner Fails to Demonstrate that Element [13.3] is Rendered Obvious by Stevens in View of Jin

Petitioner fails to demonstrate that Stevens and Jin disclose or suggest “at least one processor configured to receive data pertaining to the input power and the output power, the processor further configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and

the secondary coil,” as required by element [13.3].

Petitioner alleges both Stevens and Jin disclose element [13.3]. Petitioner first cites Stevens to disclose element [13.3] in a similar manner to Ground 2. *See* Pet. at 59. For at least the reasons presented above in relation to Ground 2, Stevens fails to disclose element [13.3]. *See, e.g., supra* Section VII.C.1. For example, Petitioner fails to establish that power measured into an electrical drive unit would necessarily be the same as input power received by the primary coil from the power supply, as recited in claim 13, and therefore further fails to disclose any other actions based on the “input power.” *See supra* Section VII.C.1, VII.C.3.

Jin fails to cure the deficiencies of Stevens. First, Petitioner only cites Jin’s transmission efficiency equation to the “processor further configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil” portion of element [13.3]. Pet. at 60. Petitioner fails to map any other part of the claim element to actual language in Jin. For example, Petitioner cites no processor in Jin to disclose the “**processor** further configured to determine an index of power-loss indicative of the efficiency of an inductive coupling between the primary coil and the secondary coil” as recited in element [13.3] or the “processor configured to receive data pertaining to the input power and the output power. *See id.* Therefore, Jin fails to cure the deficiencies of

Stevens, and Petitioner fails to demonstrate that the combination of Stevens and Jin disclose element [13.3]. Because the remainder of the challenged claims depends on claim 13, Petitioner has failed to establish that any of claims 13-18 are rendered obvious by Steven and Jin.

4. Petitioner Fails to Demonstrate that Element [13.4] is Rendered Obvious by Stevens in View of Jin

Petitioner fails to demonstrate that Stevens and Jin disclose or suggest “wherein the index of power-loss comprises at least one of: an efficiency quotient Q , defined as the ratio of the output power to the input power; and an efficiency differential Δ , defined as the difference between the output power and the input power,” as required by element [13.4].

Petitioner alleges that Jin’s “Transmission efficiency = (effective current value of secondary side x effective voltage)/(effective current value of primary side x effective voltage)” discloses this element. See Pet. at 60-61. However, Jin’s general transmission efficiency equation cannot be considered to disclose the index of power-loss of element [13.4], because element [13.4] is reliant on particular output power and input power measurements (“an efficiency quotient Q , defined as the ratio of *the* output power to *the* input power”).

Jin fails to disclose any information on “effective current value of secondary side” or “effective current value of primary side” and where these measurements are

taken. *See* EX1006 ¶¶ [0093]-[0094]. Petitioner takes for granted that “effective current value of secondary side x effective voltage” discloses the output power, when output power is recited with particularity in element [13.2] as “output power received by the secondary coil.” *See* Pet. at 60-61. Similarly, Petitioner takes for granted that “effective current value of primary side x effective voltage” discloses the input power, when input power is specified in element [13.1] as “input power received by the primary coil from the power supply.” *See id.* Jin merely discloses its transmission efficiency equation on a general level, and fails to dictate, with any particularity, where these measurements would be taken with respect to the primary coil, secondary coil, and power supply, as recited in elements [13.1] and [13.2].

Stevens fails to cure the deficiencies of Jin. For example, Petitioner fails to establish that Stevens discloses “input power” of [13.4] and therefore fails to disclose any further determinations based on the input power. *See supra* Section VII.C.1.

Therefore, Petitioner fails to demonstrate that Stevens and Jin render obvious element [13.4]. Because the remainder of the challenged claims depends on claim 13, Petitioner has failed to establish that any of claims 13-18 are rendered obvious by Steven and Jin.

VIII. CONCLUSION

For at least the foregoing reasons, the Board should deny institution of the Petition.

Dated: November 21, 2024

Respectfully submitted,

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MAYER BROWN LLP

Case IPR2024-00996
Patent No. 8,626,461
Patent Owner Preliminary Response

CERTIFICATE OF SERVICE

I hereby certify that on this 21st day of November, 2024, a copy of the attached **PATENT OWNER'S PRELIMINARY RESPONSE** was served by electronic mail to the attorneys of record, at the following addresses:

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MAYER BROWN LLP

Case IPR2024-00996
Patent No. 8,626,461
Patent Owner Preliminary Response

CERTIFICATION PURSUANT TO 37 C.F.R. § 42.24(d)

Pursuant 37 CFR 42.24(d), the undersigned certifies that this Preliminary Response complies with the type-volume limitation of 37 CFR §42.24(a). The word count application of the word processing program used to prepare this Preliminary Response indicates that the Preliminary Response contains 11,474 words, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

Respectfully submitted,

Date: November 21, 2024

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