

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

GRAPHITE CHARGING COMPANY, LLC,
Patent Owner.

IPR2024-00387
Patent 8,103,391 B2

Before KEN B. BARRETT, MIRIAM L. QUINN,
and MATTHEW S. MEYERS, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining All Challenged Claims Unpatentable

Denying In Part and Dismissing In Part Patent Owner's Motion to Exclude

Denying In Part and Dismissing In Part Patent Owner's Motion to Strike

35 C.F.R. § 318(a), 37 C.F.R. § 42.64

I. INTRODUCTION

A. *Background and Summary*

Tesla, Inc. (“Petitioner”)¹ filed a Petition requesting *inter partes* review of U.S. Patent No. 8,103,391 B2 (“the ’391 patent,” Ex. 1001). Paper 2 (“Pet.”). The Petition challenges the patentability of claims 1–20 of the ’391 patent. We instituted an *inter partes* review of all challenged claims on all proposed grounds of unpatentability. Paper 15. Graphite Charging Company, LLC (“Patent Owner”)² filed a Response to the Petition. Paper 24 (“PO Resp.”). Petitioner filed a Reply (Paper 26, “Pet. Reply”) and Patent Owner filed a Sur-reply (Paper 27, “PO Sur-reply”).

Patent Owner filed a Motion to Exclude (Paper 32), to which Petitioner filed an Opposition (Paper 33), and Patent Owner filed a Reply (Paper 36). Patent Owner filed a Motion to Strike (Paper 35), to which Petitioner filed an Opposition (Paper 41).

An oral hearing was held on May 6, 2025, and a transcript of the hearing is included in the record. Paper 42 (“Tr.”).

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons discussed below, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–20 of the ’391 patent are unpatentable. Additionally, Patent Owner’s Motion to Exclude is denied in part and dismissed in part, and Patent Owner’s Motion to Strike is denied in part and dismissed in part.

¹ Petitioner identifies Tesla, Inc. as the real party in interest. Pet. 1.

² Patent Owner identifies Graphite Charging Company, LLC as the real part in interest. Paper 4, 2; Paper 8, 2.

B. Related Proceedings

Both parties identify, as a matter involving or related to the '391 patent, *Graphite Charging Company LLC v. Tesla, Inc.*, No. 1:23-cv-00925 (W.D. Tex.). Pet. 1; Paper 4, 2; Paper 8, 2. That case has been transferred to the United States District Court for the Northern District of California, and is captioned *Graphite Charging Company LLC v. Tesla, Inc.*, No. 3:24-cv-02717 (N.D. Cal.). *See, e.g.*, Paper 8, 2; Ex. 2004, 1.

C. The '391 Patent

The '391 patent is titled “System for Detecting Interrupt Conditions During an Electric Vehicle Charging Process” and “is related generally to an improved data processing system, and in particular, to a method and apparatus for managing electric vehicle charging transactions.” Ex. 1001, code (54), 1:8–11. “More particularly, the ['391 patent] is directed to a computer implemented method, apparatus, and computer usable program code for monitoring a charging process for interrupt conditions that terminate the charging process.” *Id.* at 1:11–14. According to the '391 patent, as of the time of the filing of the patent application, “electric vehicle manufacturers and electric utility companies have only planned and provided infrastructure and methods for the most rudimentary charging scenario in which the electric vehicle is plugged into a common electric outlet.” *Id.* at 1:58–62.

The Specification explains that “[t]he illustrative embodiments discuss an energy transaction interrupt monitor that monitors a charging process for interruptions,” and “[d]etection of interruptions enables an interrupt monitor to notify an energy transaction execution engine to terminate the charging process.” *Id.* at 10:8–12. In the context of Figure 4,

the Specification further explains that “[i]nterruptions 406 is a set of one or more events or circumstances that terminates charging process 404 when detected by energy transaction interrupt monitor 402.” *Id.* at 11:9–12.

“Interruptions 406 may be of different types, such as, for example, device capability interruptions, preference interruptions, and data services interruptions.” *Id.* at 11:12–14. These different types are discussed in the context of Figure 5. *Id.* at 11:15–17.

Device capabilities interruption 502 is a set of one or more interruptions that originates from components of an electric vehicle energy transaction infrastructure, such as electric vehicle energy transaction infrastructure For example, device capabilities interruption 502 may include battery temperatures, transaction plan amperage, charging device connectivity, charging device ground wire functionality, stability of charging devices, or any other condition or status associated with components of an electric vehicle energy transaction infrastructure.

Id. at 13:11–20.

Preferences interruption 504 is a set of one or more interruptions that are caused from a violation of a user-specified preference. The user-specified preference may be, for example, a preference specified by an owner or operator of an electric vehicle or a utility provider. Thus, a user may specify a preference for a threshold cost for charging an electric vehicle. If the cost of charging the electric vehicle during a charging process exceeds the user cost preference, then an energy transaction interrupt monitor identifies the cost as preference interruption 504.

Id. at 13:22–31.

Data services interruption 506 is a set of one or more interruptions caused by the inability for information to be exchanged with data services sources. Data service sources are sources of data, such as, for example, energy data services 308 of FIG. 3. Data services interruption 506 may be caused by

power outages, broken transmission lines, or any other problems preventing a data service from exchanging information with other components of an electric vehicle transaction infrastructure.

Id. at 13:38–46.

D. Illustrative Claim

Of the challenged claims of the '391 patent, claims 1, 8, 15, and 20 are independent claims. Claim 1, reproduced below with bracketed annotations inserted, is illustrative.

1. [1Pre] A computer implemented method of managing a charging process of an electric vehicle, the computer implemented method comprising:

[1A] responsive to receiving, from an energy transaction execution engine, a request signaling a start of the charging process, monitoring a set of operational parameters of the charging process during the flow of electricity for one or more interruptions;

[1B] detecting the one or more interruptions during the flow of electricity from the set of operational parameters which conform to a set of predefined interrupt conditions, [1C] wherein the one or more interruptions comprise at least one of a device capabilities interruption, a preference interruption, and a data services interruption; and

[1D] responsive to detecting the one or more interruptions, sending a response to the energy transaction execution engine to terminate the charging process.

Ex. 1001, 16:43–59.

E. Evidence

Petitioner relies on the following references:

Name	Reference	Exhibit No.
Kimura	US 5,596,258, issued Jan. 21, 1997	1002
Hotta	US 5,650,710, issued July 22, 1997	1003
King	US 5,659,240, issued Aug. 19, 1997	1004

Keith	US 5,696,367, issued Dec. 9, 1997	1005
Nor	US 5,548,200, issued Aug. 20, 1996	1006

Petitioner also relies on the declaration of C. Arthur MacCarley, Ph.D., P.E. (Ex. 1009)³ in support of its arguments, and Patent Owner relies on the declaration of Kirk W. Cameron, Ph.D. (Ex. 2005) in support of its arguments. The parties also rely on other exhibits as discussed below.

F. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §⁴	Reference(s)/Basis
1, 4–8, 11–15, 18–20	103(a)	Kimura
2, 5, 9, 12, 16	103(a)	Kimura, Hotta
3, 10, 17	103(a)	Kimura, King
1, 2, 4–9, 11–16, 18–20	102(b)	Keith
3, 8–19	103(a)	Keith
6, 13	103(a)	Keith, Nor

³ Patent Owner argues that Dr. MacCarley’s testimony should be given little or no weight due to a purported bias and conflict of interest concerning Tesla. PO Resp. 70–71; PO Sur-reply 26–28. We have considered Patent Owner’s arguments, and decline to give Dr. MacCarley’s testimony no weight. We give Dr. MacCarley’s testimony the weight it is due, evaluating each of his assertions on their own, in light of the explanation offered and the other evidence of record.

⁴ The application that issued as the ’391 patent was filed before the effective date of the Leahy Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), and we apply the pre-AIA versions of 35 U.S.C. §§ 102 and 103. *See* Ex. 1001, code (22); *see also* Pet. 2 (asserting that “the pre-AIA statute controls”).

II. ANALYSIS

A. *Principles of Law*

Petitioner bears the burden of persuasion to prove unpatentability of the claims challenged in the Petition, and that burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must establish by a preponderance of the evidence that the challenged claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

A patent claim is unpatentable under 35 U.S.C. § 103 “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” 35 U.S.C. 103; *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) if present, any objective evidence of obviousness or non-obviousness.⁵ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. *The Level of Ordinary Skill in the Art*

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active

⁵ The parties have not directed our attention to any objective evidence of obviousness or non-obviousness.

workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey–Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)).

Petitioner contends that:

[a] person of ordinary skill in the art (“POSA”) would have had a bachelor’s degree in computer science or electrical engineering, along with at least two to three years of experience working on software and/or hardware used to manage charging processes for electric vehicles. Ex-1009 ¶¶ 16–20. Additional advanced educational degrees could substitute for some years of industry experience and vice versa. *Id.*

Pet. 6.

Patent Owner contends that:

a POSITA would have had a bachelor’s degree in computer science or electrical engineering, along with at least two to three years of experience working on data processing systems in the field of energy management, with additional education substituting for professional experience and vice versa.

PO Resp. 18–19.

The parties do not disagree on the level of education or the number of years of work experience required. *See id.* at 17 (Patent Owner setting out the points on which it agrees with Petitioner’s proposal). The main dispute relates to the precise nature of professional experience. *See id.* at 17–18. Patent Owner asserts that Petitioner’s proposed definition is too narrow and argues that the experience should not be limited to specifically working on software and hardware to manage electric vehicle charging processes. *Id.* Rather, according to Patent Owner, “the ’391 Patent is focused on data processing concepts such as execution engines, interrupt monitors, and data services for managing an energy transaction.” *Id.* at 18; *see also* Tr. 41:7–17 (“Patent Owner would take the position that this is a data processing system

first and foremost . . . [and] this is more in the realm of computer science and data processing than it is in the realm of electric vehicles or chargers.”). However, Patent Owner recognizes that the patent also is directed to electric vehicle charging. *See* Tr. 41:15–17 (Patent Owner’s counsel at the hearing: “So, the inventors considered the invention a data processing system that they are applying to electric vehicle charging.”).

The statement of the “Field of the Invention” in the ’391 patent implicates both data processing and charging transactions, stating: “The present invention is related generally to an improved data processing system, and in particular, to a method and apparatus for managing electric vehicle charging transactions.” Ex. 1001, 1:8–11; *see also id.* at 1:11–13 (the next sentence stating: “More particularly, the present invention is directed to a computer implemented method . . . for monitoring a charging process.”).

We understand Petitioner’s phrase “experience working on software and/or hardware used to manage charging processes for electric vehicles” to encompass data processing systems similar to that proposed by Patent Owner, but with a slightly narrower area of application. We determine that Petitioner’s definition, as set out in the block quote above, is consistent with the level of ordinary skill reflected in the prior art references of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (recognizing that the prior art itself may reflect an appropriate level of skill in the art). For the purposes of this decision, we apply Petitioner’s definition, as block quoted above, of the person of ordinary skill in the art. We note, however, that were we to adopt Patent Owner’s assessment, the outcome of this Decision would be the same. *Cf.* Pet. Reply 15 (Petitioner asserting that “[Patent Owner] takes issue with the level of ordinary skill in the art . . . , but

never argues that the level impacts how the Board should understand the arguments. Petitioner’s positions apply regardless.”).

The Petition, under the “Level of Ordinary Skill” heading, asserts that a person of ordinary skill in the art would have been familiar with standards and regulations regarding electrical vehicle charging, including the Society of Automotive Engineers (SAE) J1772 standard, and would have had knowledge of certain principles and technologies. Pet. 6. Patent Owner argues that “a POSITA would not require knowledge of standards and regulations relevant to charging of electrical vehicles (including J1772, EX-1011).” PO Resp. 18. We do not reach, as part of this determination of the general description of the level of ordinary skill in the art, Petitioner’s contentions regarding the purported familiarity with and knowledge of specific information, including the J1772 standard. We address below, in the context of Petitioner’s grounds, the parties’ contentions regarding the specific knowledge of the ordinary artisan.

C. Claim Construction

We apply the same claim construction standard used in district court actions under 35 U.S.C. § 282(b), namely that articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). See 37 C.F.R. § 42.100(b). In applying that standard, claim terms generally are given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc.*

v. Medtronic Sofamor Danek, Inc., 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). “[W]hile extrinsic evidence can shed useful light on the relevant art, . . . it is less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Phillips*, 415 F.3d at 1317 (internal quotation marks omitted).

“There are only two exceptions to this general rule [that claim terms are given their ordinary and customary meaning]: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (citing *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1580 (Fed.Cir.1996)).

Patent Owner argues that, as to certain claim terms, the patentees acted as their own lexicographers. *See, e.g.*, PO Resp. 20. According to Patent Owner, “[t]he patentees clearly expressed intent to define certain terms and disavow the full scope of their plain and ordinary meaning, and [Patent Owner’s proposed] definitions are present *verbatim* in the specification.” PO Sur-reply 1; *see* Tr. 55:12–22 (Patent Owner’s counsel arguing: “[L]exicography is in fact a disavowal. . . . [W]hen I was saying disavowal, I was referring to lexicography because if I define a term a certain way, then I am disavowing other definitions of that term.”). Patent Owner also argues that “the patentees used the claim terms throughout the specification consistent with a single meaning, thus they—at a minimum—defined those terms by implication.” PO Sur-reply 2 (citing *Astrazeneca AB, Aktiebolaget Hassle, KBI-E, Inc. v. Mut. Pharm. Co.*, 384 F.3d 1333, 1339 (Fed. Cir. 2004) (“*Astrazeneca*”)). Patent Owner additionally argues that

certain features of Petitioner’s relied-on reference are “characteristic of rudimentary energy transactions which are disparaged in the ’391 patent” and impliedly argues that such purported disparagement supports a claim construction narrower than the plain and ordinary meaning. *See* PO Resp. 28, 45; PO Sur-reply 3 (“Here, PO explained that by using their own definitions, the patentees disavowed . . . disparaged less sophisticated systems.”); *see also* Tr. 55:18–20 (Patent Owner’s counsel arguing that “the disparagement, for example, column six beginning at line 60, also supports Patent Owners[’] claim constructions.”).

“To act as its own lexicographer, a patentee must ‘clearly set forth a definition of the disputed claim term’ other than its plain and ordinary meaning.” *Thorner*, 669 F.3d at 1365 (quoting *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed.Cir.2002)). Lexicography does not require rigid formalism and a claim term may be clearly redefined by implication. *Astrazeneca*, 384 F.3d at 1339; *see also Bell Atl. Network Servs., Inc. v. Covad Commc’ns Grp., Inc.*, 262 F.3d 1258, 1268 (Fed. Cir. 2001) (“[A] claim term may be clearly redefined without an explicit statement of redefinition. . . . [T]he specification may define claim terms ‘by implication’ such that the meaning may be ‘found in or ascertained by a reading of the patent documents.’” (quoting *Vitronics*, 90 F.3d at 1582)). However, “[i]t is not enough for a patentee to simply disclose a single embodiment or use a word in the same manner in all embodiments, the patentee must ‘clearly express an intent’ to redefine the term.” *Thorner*, 669 F.3d at 1365 (quoting *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1381 (Fed. Cir. 2008)).

“The standard for disavowal of claim scope is similarly exacting.” *Thorner*, 669 F.3d at 1366. “The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.” *Teleflex, Inc. v. Ficoso N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). “Mere criticism of a particular embodiment encompassed in the plain meaning of a claim term is not sufficient to rise to the level of clear disavowal.” *Thorner*, 669 F.3d at 1366 (citing *Epistar Corp. v. Int’l Trade Comm’n*, 566 F.3d 1321, 1335 (Fed.Cir.2009)).

Regarding disparagement, the Federal Circuit has explained:

We found disclaimer when the patent repeatedly disparaged an embodiment as “antiquated,” having “inherent inadequacies,” and then detailed the “deficiencies [that] make it difficult” to use. *Chicago Bd. Options Exch., Inc. v. Int’l Sec. Exch., LLC*, 677 F.3d 1361, 1372 (Fed. Cir. 2012) (“[T]he specification goes well beyond expressing the patentee’s preference ... and its repeated derogatory statements about [a particular embodiment] reasonably may be viewed as a disavowal. . . .”). Likewise, we found disclaimer limiting a claim element to a feature of the preferred embodiment when the specification described that feature as a “very important feature . . . in an aspect of the present invention” and disparaged alternatives to that feature. *Inpro II Licensing, S.A.R.L. v. T-Mobile USA Inc.*, 450 F.3d 1350, 1354–55 (Fed. Cir. 2006).

Hill-Rom Servs., Inc. v. Stryker Corp., 755 F.3d 1367, 1372 (Fed. Cir. 2014) (alterations in original). Thus, disclaimer of claim scope has been found through disparagement of an embodiment along with a detailing of its deficiencies and through disparagement of alternatives to a feature

characterized as a “very important feature . . . in an aspect of the present invention.” *Id.*

Before addressing Patent Owner’s specific lexicography, disavowal, and disparagement arguments, we note that the Specification contains indicia of the patentees’ intent for the Specification to *not* be limiting on the otherwise broad scope of the claims. For example, the Specification states, “[t]he terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention.” Ex. 1001, 15:29–31; *but see* PO Sur-reply 2 (Patent Owner arguing that “Petitioner’s quotation about non-limiting terminology in the ’391 patent concerns use of singular and plural forms, articles, and the open-ended term ‘comprising’—but is silent regarding definitions.” (citing Ex. 1001, 15:29–39)). As another example, the Specification explains that “[t]he description of the present invention has been presented for purposes of illustration and description, but is not intended to be exhaustive or limited to the invention in the form disclosed.” Ex. 1001, 15:44–46; *see also id.* at 16:32–35 (same or similar statement).

We address certain claim construction issues here. Below, in the context of the discussion of Petitioner’s Kimura obviousness challenge to dependent claim 7, we discuss Patent Owner’s arguments regarding the scope of that claim. *See infra* Section II.D.5 (Ground 1). We also discuss below, in the context the discussion of Petitioner’s Kimura-Hotta obviousness challenge to dependent claim 2, we discuss Patent Owner’s arguments regarding the meaning of the claim term “manual override interruption.” *See infra* Section II.E.2 (Ground 2).

1. “Request” and “Response”

The independent claims each recites “a request” and “a response” in the context of starting and terminating the charging process. Independent claim 1, for example, recites: “receiving, from an energy transaction execution engine, a *request* signaling a start of the charging process,” and “sending a *response* to the energy transaction execution engine to terminate the charging process.” Ex. 1001, 16:46–59 (limitations 1A and 1D) (emphasis added).

Patent Owner argues the patentees acted as their own lexicographers and that the Specification contains explicit definitions for the claim terms “request” and “response,” contending that those terms are defined as messages. *See* PO Resp. 27–28 (quoting Ex. 1001, 12:3–4, 12:12–14, 12:48–49); PO Sur-reply 4 (asserting lexicography); *id.* at 11 (“The specification defines them as messages.” (citing Ex. 1001, 12:3–4, 12:12–19)); Tr. 48:13–14 (Patent Owner’s counsel arguing: “The patent is very clear that request and response are messages. And so, in that sense, the patentees were being their own lexicographers.”). Patent Owner asserts that, by defining the terms, the patentees “disavow[ed] the full scope of their plain and ordinary meaning,” PO Sur-reply 4; *see* Tr. 55:12–22 (Patent Owner asserting that defining a term a certain way is a disavowal of other definitions). Patent Owner further asserts that, “[i]n a data processing system, a message is a unit of data or information sent from one device to another that includes a header and a body.” PO Resp. 28; *see* PO Sur-reply 11. Thus, Patent Owner argues that “request” and “response” should be construed as limited to a message that includes a header and a body. *See, e.g.,* PO Sur-reply 11. Patent Owner additionally argues that the Specification disparages the use of signals. PO Resp. 28; PO Sur-reply 11;

cf., *e.g.*, PO Resp. 28 (Patent Owner asserting that Petitioner’s prior art reference Kimura uses signals rather than messages).

First, we turn to the claim language. Petitioner asserts that the language of claim 1 does not indicate that the request and response must be a message, and that the claim language does not impose the structural requirements of a header and footer. Pet. 11–12. Petitioner also points to the language of claim 1 that recites “a request *signaling* a start of the charging process,” and argues that “[t]he attempt to read out a signal ignores this plain language.” *Id.* at 11. Patent Owner does not point to any claim language that supports its proposed construction. *Cf.* PO Sur-reply 11 (Patent Owner arguing that Petitioner’s claim language arguments fail because of lexicography and disavowal). We determine there is nothing in the language of the claims that suggests limiting “response” and request” to a message that includes a header and a body. The claims do not recite the terms “message,” “header,” or “body” or contain any other terms surrounding the request or response indicating the specific use of a message, with header or body.

Next, we turn to the specification. Patent Owner (PO Resp. 27) notes that the Specification states: “Request 414 is a message signaling the start of charging process 404. . . . Response 418 is a message that may instruct energy transaction execution engine 416 to terminate charging process 404.” Ex. 1001, 12:3–4, 12:12–14. Patent Owner argues that the patentees acted as their own lexicographer in redefining the claim terms and disavowed claim scope, namely disavowing the inclusion of signals. *See* PO Sur-reply 3, 11; *see also* Tr. 55:20–22. Petitioner contends that Patent Owner is relying only on non-limiting, illustrative embodiments for their

argument, and asserts that Patent Owner is improperly “seeking to import the message examples in one illustrative embodiment from the specification into the claims.” Pet. Reply 12. Petitioner further asserts that neither “header” nor “body” appears anywhere in the specification. *Id.*

We are not persuaded that the Specification evidences a clear intent by the patentees to redefine (either explicitly or by implication) or to otherwise narrow the scope of the claim terms “request” and “response,” as Patent Owner urges. The statements in the Specification upon which Patent Owner relies are referring to “Request 414” and “Response 418.” *See* PO Resp. 27 (quoting Ex. 1001, 12:3–4, 12:12–14). As indicated by the reference numbers, the Specification is discussing a specific request and a specific response in the context of Figure 4, which is described as depicting “an illustrative embodiment.” *See* Ex. 1001, 10:51–53 (“FIG. 4 is a system for managing a charging process of an electric vehicle in accordance with an illustrative embodiment.”), 12:1–19, Fig. 4. By stressing the illustrative nature of the embodiment of Figure 4, the patentees indicated an intent for it to *not* be limiting. *See also* Ex. 1001, 15:44–47 (the Specification stating: “The description of the present invention has been presented for purposes of illustration and description, but is not intended to be exhaustive or limited to the invention in the form disclosed.”); *Hill-Rom Servs., Inc.*, 755 F.3d at 1373 (“[T]hose terms [including, datalink 39] are used synonymously *only* in describing a particular numbered component in the figure depicting the preferred embodiment, and never in describing the datalink of the invention generally.”).

At oral argument, Patent Owner’s counsel, relying on the opinion of Dr. Cameron, argued that a person of ordinary skill in the art would “read

the definition without the reference numbers.” Tr. 43:23–44:9. Thus, we understand Patent Owner to argue that the Specification provides an explicit definition when one reads out a portion of the Specification—converting, for example, “Request 414 is a message” to “Request is a message.” This is not persuasive as it involves editing the evidence to conform to Patent Owner’s argument, rather than an argument supported by the Specification as written by the patentees.

Patent Owner does not direct us to any portion of the Specification that clearly defines “request” and “response” generally or, for example, uses phrasing implying that those terms are defined for “the present invention.” *See, e.g., Hill-Rom Services, Inc.*, 755 F.3d at 1372 (“For example, we have held that disclaimer applies when the patentee makes statements such as “the present invention requires . . .” or “the present invention is . . .” or “all embodiments of the present invention are”); *Astrazeneca*, 384 F.3d at 1339 (discussing defining by implication and determining that the “specification’s statement that “[t]he solubilizers suitable according to the invention are defined below” provides a strong signal of lexicography.”).

Although the parties refer to the prosecution history, we do not find it helpful in analyzing Patent Owner’s claim construction arguments. Patent Owner does not rely on the prosecution history in arguing that the patentees defined the claim terms through lexicography and scope disavowal. *See* PO Resp. 27–28; PO Sur-reply 2–3, 11–12. Petitioner asserts that the Examiner did not understand the subject claim terms to be limited to a message, but Petitioner does not provide us with a pinpoint citation to prosecution history as support for its position and does not assert that the patentee commented

on or, for example, indicated agreement with the Examiner’s purported understanding. *See* Pet. Reply 12.

We determine that the patentees did not clearly express an intent to redefine “request” and “response.” *See Thorner*, 669 F.3d at 1365. We also determine that the Specification lacks “expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.” *Teleflex, Inc.*, 299 F.3d at 1325.

We also are not persuaded by Patent Owner’s argument that the patentees disparaged the use of signals and thereby narrowed the scope of “request” and “response.” *See* PO Resp. 28; PO Sur-reply 11. Patent Owner argues that, “[u]se of signals is characteristic of rudimentary energy transactions which are disparaged in the ’391 patent (*e.g.*, Ex. 1001 at 6:65–7:2) and is not suitable for more complex, flexible, and interoperable systems and methods disclosed in the ’391 patent.” PO Resp. 28 (citing Ex. 1001, 7:12–16); *see also* PO Sur-reply 11 (Patent Owner arguing that “[t]he ’391 patent also disparages systems using signals as less ‘complete, flexible, and interoperable.’” (quoting Ex. 1001, 7:15–16)).

The Specification states:

Currently, electric vehicle manufacturers and electric utility companies have only planned and provided infrastructure for *the most rudimentary charging scenarios, such as, merely plugging the electric vehicle into a common electric outlet that is owned by the owner and operator of the electric vehicle*. The illustrative embodiments recognize that charging electric vehicles will frequently be conducted under much broader and more complex sets of circumstances than this simple scenario and infrastructure is needed to accommodate these complex transactions.

Ex. 1001, 6:60–7:2 (emphasis added).

The illustrative embodiments recognize that the charging transactions by which electric vehicles obtain electricity from an off-vehicle charging station to charge the electric vehicle requires a much more complete, flexible, and interoperable system governing all aspects of the charging transaction.

Ex. 1001, 7:12–16.

We fail to discern a clear disparagement of the use of signals in the Specification that would justify excluding signals from the scope of the claimed invention. The Specification does not mention in these excerpts the use of signals, and thus does not characterize “using signals as less ‘complete, flexible, and interoperable,’” as Patent Owner impliedly argues. PO Sur-reply 11. The Specification characterizes “the most rudimentary charging scenarios” as including situations such as a car owner merely plugging the electric vehicle into a common electric outlet at the owner’s house, and suggests that *illustrative embodiments* are an improvement in that they apply to “much broader and more complex sets of circumstances than this simple scenario.” See Ex. 1001, 6:60–7:2. An example of a “complex transaction[]” is the car owner using a charging station located away from the owner’s house and being required to pay for the charge. See *id.* at 7:2–11. To the extent there is any disparagement, it is merely of the simple scenario of the owner plugging the car into the standard household outlet. Cf. *Epistar Corp. v. Int’l Trade Comm’n*, 566 F.3d 1321, 1336 (Fed. Cir. 2009) ([T]his court also recognizes that disparaging comments alone do not necessarily show a manifest or express disavowal of the criticized subject matter.”).

Additionally, Patent Owner does not direct us to any portion of the Specification that indicates, for example, that the use of messages is a very important feature of the claimed invention and that alternatives (*e.g.*, signals)

are disparaged. See *Hill-Rom Servs., Inc.*, 755 F.3d at 1372 (citing *Inpro II Licensing, S.A.R.L.*, 450 F.3d at 1354–55); see *id.* at 1377 (holding that there is no disavowal or lexicography where “[t]here is no language that extolls the virtues of interfaces that both send and receive messages or language that disparages interfaces that only send messages.”).

We are able to resolve the claim construction issue based on the intrinsic evidence alone, and we need not rely on the parties’ extrinsic evidence. See *Vitronics Corp.*, 90 F.3d at 1583 (“In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence.”). However, even considering it, the extrinsic evidence does not affect our ultimate determination. Both parties point to dictionaries and argue that certain definitions therein support their respective position, but neither party persuasively argues that a particular definition is applicable to the ’391 patent. See Pet. Reply 13 (citing Exs. 1022, 1023); PO Sur-reply 12–13 (citing, *inter alia*, Exs. 1022, 1023). Dr. Cameron’s declaration testimony appears to repeat, nearly verbatim and without further elaboration, Patent Owner’s unpersuasive arguments in the Response, including the assertion that “Both the ‘request signaling a start’ and ‘response . . . to terminate’ recited in claim 1 must be messages,” followed by the same quotations from the Specification. Compare Ex. 2005 ¶ 93 with PO Resp. 27.⁶ Patent Owner also cites the cross-examination testimony of

⁶ Petitioner asserts that “[t]he declaration notably has numerous portions that appear to have been copied-pasted from the POR [(Patent Owner Response)]. For example, the declaration’s internally cross-referenced sections only appear in the POR.” Pet. Reply 9 (citing, *inter alia*, Ex. 1021, 30:4–11, 31:17–18). Dr. Cameron, on cross-examination, admitted that the

Dr. Cameron concerning “message”—a term not in the claims—for the unpersuasive proposition that the ’391 patent disparages the use of signals. *See* PO Sur-reply 11 (citing numerous portions of Exhibit 1021 with parenthetical explanations all involving messages and messaging). We do not find Dr. Cameron’s testimony helpful. *See Vitronics Corp.*, 90 F.3d at 1584 (“[E]xtrinsic evidence in general, and expert testimony in particular, may be used only to help the [tribunal] come to the proper understanding of the claims; it may not be used to vary or contradict the claim language. . . . Nor may it contradict the import of other parts of the specification.”).

We do not adopt Patent Owner’s proposed claim construction. We decline to read into the claim terms “request” and “response” the requirement of a message that includes a header and a body, and we decline to exclude from the claim scope the use of a signals.

2. “Data Services Interruption”

Several challenged claims recite a “data services interruption.” Petitioner contends the Board should apply the plain and ordinary meaning, and that no express construction is required. Pet. 6.

Patent Owner argues that “[t]he patentees acted as their own lexicographers in defining the term ‘data services interruption.’” PO Resp. 20. Patent Owner asserts that the term should be construed as “a set of one or more interruptions caused by the inability for information to be exchanged with a set of one or more third party data sources providing information relevant to the energy transaction,” where the term “third party” means “an entity or person that is not a party to the electric vehicle charging

“supra” cross-references in paragraph 159 of his declaration are to sections that do not exist in the declaration. *See* Ex. 1021, 30:7–11, 31:11–18.

transaction.” *Id.* at 21 (citing Ex. 1001, 7:41–47). Patent Owner further argues that, “[b]y defining the term ‘data services interruption’ in this way, the inventors disavowed claims covering intra-system communications abnormalities, such as communication failures between the battery and the charging station.” *Id.* at 21 (citing Pet. 28).

Petitioner replies that Patent Owner “improperly engrafts a third-party requirement on ‘data services.’” Pet. Reply 4.

First, we turn to the claim language. Claim 1, for example, recites “detecting the one or more interruptions during the flow of electricity from the set of operational parameters which conform to a set of predefined interrupt conditions, wherein the one or more interruptions comprise at least one of a device capabilities interruption, a preference interruption, and a *data services interruption*.” Ex. 1001, 16:51–56 (emphasis added). Dependent claim 6 further recites, “wherein the one or more interruptions is the data services interruption, and the data services interruption originates from a failure in data transmission.” *Id.* at 17:12–15; *see also id.* at 18:1–4 (dependent claim 13). The claim language does not mention third-party sources. Nor does any surrounding claim language implicate third-party sources.

Next, we turn to the Specification of the ‘391 patent. Patent Owner contends that the patentees acted as their own lexicographer by defining “data services interruption” in column 13 of the Specification. PO Resp. 20 (quoting Ex. 1001, 13:38–46). That portion of the Specification states:

Data services interruption 506 is a set of one or more interruptions caused by the inability for information to be exchanged with data services sources. *Data service sources are sources of data, such as, for example, energy data services 308 in FIG. 3.* Data services interruption 506 may be caused by

power outages, broken transmission lines, or any other problems preventing a data service from exchanging information with other components of an electric vehicle transaction infrastructure.

Ex. 1001, 13:38–46). Patent Owner also points to a discussion earlier in the Specification, namely at column 8, which states:

Energy data services 308 are a set of one or more *third party data sources* providing information relevant to the energy transaction. Energy data services 308 may include, without limitation, weather information sources, traffic information sources, map and travel information sources, charging station price information sources, or any other third party information sources.

Ex. 1001, 8:38–44 (quoted at PO Resp. 20) (emphasis added). Patent Owner’s position is that the column 13 block quote defines “data services sources” as limited to “energy data services,” and then the column 8 block quote further defines “energy data services” as limited to third party sources. *See* PO Resp. 20–21.

We do not find Patent Owner’s arguments persuasive. As an initial matter, the Specification’s phrase “[d]evice capabilities interruption 502 is . . .” refers to the specific interruption 502 shown in Figure 5, which is a depiction of “an illustrative embodiment.” Ex. 1001, 13:4–5, 11. The drafter, via the “illustrative” qualifier, indicated a desire for broad coverage, rather than a narrow definition that applies to the overall claimed invention. *See also id.* at 15:29–31 (“The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention.”). “It is not enough for a patentee to simply disclose a single embodiment or use a word in the same manner in all embodiments, the patentee must ‘clearly express an intent’ to redefine the term.” *Thorner*, 669 F.3d at 1365.

However, even if this column 13 description is a lexicographical definition, it is not limited to the third-party sources described in column 8, as Patent Owner argues. The Specification clearly indicates that energy data service 308 of Figure 3 is one example of a “data service source” with which a failure to exchange information could cause a “data services interruption 506.” As Petitioner points out (Pet. 7), the Specification states that “[d]ata service sources are sources of data, *such as, for example*, energy data services 308 in Fig. 3.” Ex. 1001, 13:40–42; *cf.* Pet. 7 (Ppetitioner noting that the claim phrase “a data services interruption,” does not contain the word “energy” and thus does not limit the data to “energy” data). In using the term “example,” the patentees indicate the possibility of other data services sources and it would be improper for us to import an energy data source into the claims. By extension, it also would be improper to import a third-party source limitation into the claims.

Although Patent Owner argues that the Specification evidences the patentee’s intent to define data services interruption, Patent Owner also argues that the drafter made a mistake by using the phrase “for example.” *See* Tr. 53:1–4. We decline to read out that phrase from the Specification. Rather than indicate a clear intent to limit the scope of the disclosed and claimed invention, the drafter clearly indicated a desire for broad scope.

We determine that the Specification does not indicate, explicitly or by implication, a clear intent by the patentees to redefine “data services interruption” as limited to interruptions involving third-party sources. *See Thorner*, 669 F.3d at 1365 (“To act as its own lexicographer, a patentee must ‘clearly set forth a definition of the disputed claim term’ other than its plain and ordinary meaning.”).

We are similarly not persuaded by Patent Owner's arguments concerning disavowal. *See Teleflex*, 299 F.3d at 1325 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.").

Patent Owner does not direct our attention to any portion of the prosecution history that would support a narrowing of the claim scope. *Cf.* Pet. Reply 7 (Petitioner asserting that the Examiner understood the claims to cover a user, and thus not limited to a third party); PO Sur-reply 6–7 (Patent Owner arguing that the applicants/patentees did not admit that the Examiner's prior art reference disclosed data services interruptions and, therefore, "PO is not estopped from advancing new arguments before the Board.").

For its lexicography and disavowal arguments, Patent Owner relies on extrinsic evidence in the form of the opinions of Dr. Cameron. *See, e.g.*, PO Sur-reply 1 ("Dr. Cameron explained that a POSITA would understand the portions of the specification that PO cited as definitions. (citing Ex. 1021, 92:23–94:16)). We do not find that testimony persuasive because Dr. Cameron's opinions are inconsistent with the intrinsic evidence. *See, e.g.*, Ex. 1021, 92:23–94:16 (Dr. Cameron asserting that the Specification's phrase "[d]ata services interruption 506 is . . ." is "defining what data services interruption is more generally," and therefore a person of ordinary skill in the art would read the phrase "[d]ata services interruption 506" without the "506"); *see Vitronics Corp.*, 90 F.3d at 1584 ("[E]xtrinsic evidence in general, and expert testimony in particular, may be used only to help the [tribunal] come to the proper understanding of the claims; it may

not be used to vary or contradict the claim language. . . . Nor may it contradict the import of other parts of the specification.”).

We do not adopt Patent Owner’s proposed claim construction. We decline to read into the claim phrase “a data services interruption” the requirement that the interruption pertains to a third-party source, and we decline to exclude from the claim scope intra-system communications abnormalities.

D. The Asserted Obviousness of Claims 1, 4–8, 11–15, and 18–20 Over Kimura (Ground 1)

Petitioner contends that claims 1, 4–8, 11–15, and 18–20 of the ’391 patent would have been obvious over Kimura. Pet. 7–51. Of those challenged claims, claims 1, 8, 15, and 20 are independent. Patent Owner argues that Kimura fails to teach or suggest “a request signaling a start of the charging process” and “a response . . . to terminate the charging process,” as recited in the independent claims. *See, e.g.*, PO Resp. 27–28 (addressing independent claim 1).

1. Kimura (Ex. 1002)

Kimura discloses “a charging apparatus and method for an electric vehicle.” Ex. 1002, 1:43–44. Electric vehicle 10 has “[a] battery controller 14 [which] includes a microcomputer . . . and is used to control the charge in the battery 11.” *Id.* at 3:15–17.

[T]he charger 20 installed at the charge station includes: a high voltage power supply 21 which rectifies an AC power supplied from an external transformer; a switch 22 to open and close the charge current; a sensor 23 which detects the charge voltage v

and charge current i ; and a charger controller 24 which is so constructed as to control the charge operation.

Id. at 3:24–30. Electric vehicle 10 and charger 20 are connected via cable 25, which “includes two power supply lines 30 and 31 and six control lines 32 through 36.” *Id.* at 3:34–35.

Kimura’s Figure 1 is reproduced below.

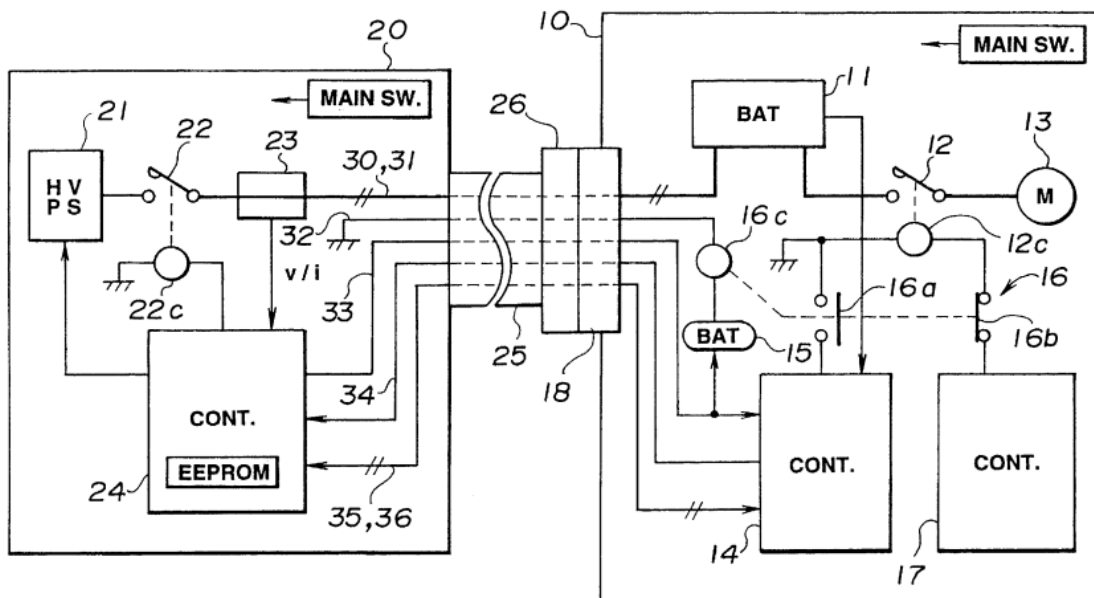


Figure 1 is a block diagram of the charging apparatus for an electric vehicle. *Id.* at 3:6–8.

Kimura discloses various instances in which the charging process may be stopped. For instance, charging is halted “when a target value of the terminal voltage during the charging operation is set according to the type of the battery and the terminal voltage reaches this target value.” *Id.* at 5:24–27.

[T]he charger controller 24 determines whether an abnormality such as a leakage in voltage or current of the charger 20, a breakdown, overheat, or power failure in the high voltage power supply 21. . . . In a case where some abnormality occurs

in the charger 20, the routine goes to step S18 in which an operation of the high voltage power supply 21 is halted and the switch coil 22c is deenergized to open the switch 22 so that the charging process is halted.

Id. at 7:32–35, 7:40–44.

2. *Independent Claim 1*

a. *[1Pre] A computer implemented method of managing a charging process of an electric vehicle, the computer implemented method comprising:*

Petitioner contends that, if the preamble is limiting, Kimura teaches a computer implemented method of managing a charging process of an electric vehicle. *See* Pet. 7–11 (citing Ex. 1002, 1:11–13). Petitioner asserts that Kimura discloses using a charger 20 with a charger controller 24 to charge the battery 11 of an electric vehicle 10 with a battery controller 14. *Id.* at 7 (citing Ex. 1002, Fig. 1). Petitioner also asserts that “Kimura teaches that charger controller 24 executes a charge control program (Figures 10A–10C) and battery controller 14 executes an electrical vehicle charge control program (Figures 12–13). *Id.* at 8 (citing Ex. 1002, 2:49–61). Petitioner contends that the figures and specification therefore “collectively illustrate a method of managing a charging process of the electric vehicle” as recited by the preamble. *Id.* (citing Ex. 1002, 6:9–10:65).

Patent Owner does not raise any arguments regarding these contentions. *See* PO Resp. 27–28.

b. *[1A] responsive to receiving, from an energy transaction execution engine, a request signaling a start of the charging process, monitoring a set of operational parameters of the charging process during the flow of electricity for one or more interruptions;*

Petitioner contends that Kimura teaches this limitation 1A. Pet. 11–21 (citing, *inter alia*, Ex. 1009 ¶¶ 54–68). Petitioner asserts Kimura teaches

that control lines 33 “transmit a charge start signal and a stop signal from the charger 20 to the electric vehicle [10].” *Id.* at 11; Ex. 1002, 3:53–55.

Petitioner contends that “[t]he charge start signal acts as a request to the battery controller 14 [of the electric vehicle] signaling the start of the charging process.” Pet. 12 (citing Ex. 1002, 6:14–18, Figs. 10A, 12).

Petitioner further contends that “[t]he source of the charge start signal—including portions of charger controller 24 implementing S1 [(the step labeled Output Charge Start Signal in Figure 10A)]—qualifies as an *energy transaction execution engine*.” *Id.* at 13. Petitioner additionally contends that Kimura’s charger 20 includes its controller 24 and therefore qualifies as an *energy transaction execution engine* for similar reasons.” *Id.*

Petitioner contends that “the battery controller 14 then monitors operational parameters responsive to receiving the [start] signal.” *Id.* at 14 (citing Ex. 1002, 9:31–35, 10:19–50, Figs. 12, 13). Petitioner asserts that “[t]he operational parameters monitored by the battery controller 14 include amount of power leakage in the electric vehicle 10, state of the battery 11, state of the charge circuit, voltage of the battery 11, quantity of the battery 11, and communication delay time.” *Id.* at 15 (citing Ex. 1002, 10:18–49); *see also id.* at 18–21 (Petitioner’s contention that Kimura also teaches, on the charger side, receiving a “request,” monitoring, and interruption detection).

Petitioner asserts that the vehicle-side monitoring operations S41, S46, and S47 [of Figures 12 and 13] occur during the flow of electricity in Kimura. *Id.* at 16–17 (citing Ex. 1002, Fig. 12). Petitioner further asserts that “the battery controller 14 monitors the operational parameters to determine when to terminate.” *Id.* at 17 (citing Ex. 1002, 10:45–48).

According to Petitioner, “[t]his is just like the ’391 Patent, which explains that interruptions include events or circumstances that warrant termination of the charging process.” *Id.* (citing Ex. 1001, 11:8–12).

Patent Owner argues that Kimura uses signals rather than messages having a header and a body and therefore Kimura fails to teach or suggest the recited “request.” PO Resp. 28. Patent Owner’s arguments are based on its proposed construction of “request” and “response,” which is premised on, *inter alia*, the assertion that the patentees acted as their own lexicographers by redefining those terms. For the reasons discussed above, we do not agree with Patent Owner’s construction and we decline to limit the scope of “request” and “response” to messages having a header and a footer, and we decline to construe those terms as excluding signals. *See supra* Section II.C.1.

We determine that Petitioner has demonstrated by a preponderance of the evidence that Kimura teaches limitation 1A, including the recited “request signaling a start of the charging process.”

c. [1B] detecting the one or more interruptions during the flow of electricity from the set of operational parameters which conform to a set of predefined interrupt conditions,

Petitioner contends that Kimura teaches this limitation. Pet. 21–32 (citing Ex. 1009 ¶¶ 75–82). Petitioner asserts that Kimura discloses interruption detection which involves determining whether the monitored operational parameters in Kimura conform to predefined interrupt conditions. *Id.* at 21–22 (citing Ex. 1002, Figs. 12, 13). Petitioner contends that Kimura teaches detecting communication abnormalities and electric vehicle abnormalities. *Id.* at 22–23 (citing Ex. 1002, 10:19–22, 10:42–45, Fig. 12). Petitioner further contends that, “[t]o detect these abnormalities,

Kimura teaches that information exchanged between battery controller 14 . . . and charger controller 24 . . . establishes relevant thresholds (e.g., a voltage target value . . .) for detection of predefined interrupt conditions.” *Id.* at 23 (citing Ex. 1002, 7:27–31, 10:32–37, Figs. 6, 12); *see also id.* at 23–24 (Petitioner asserting, as an example, that Kimura describes monitoring voltage and current, and asserting that “detecting predefined interrupt conditions in Kimura involves comparing monitored values against the set values.”). Petitioner contends that “the thresholds or states defining unacceptable values or limits for Kimura’s parameters” correspond to the recited “set of operational parameters which conform to a set of predefined interrupt conditions.” *Id.* at 24–25.

Patent Owner does not raise any arguments regarding these contentions. *See* PO Resp. 27–28.

d. [1C] wherein the one or more interruptions comprise at least one of a device capabilities interruption, a preference interruption, and a data services interruption; and

Petitioner contends that Kimura teaches a device capabilities interruption, a preference interruption, and a data services interruption. Pet. 25–32 (citing Ex. 1009 ¶¶ 83–91).

First, Petitioner contends that Kimura teaches of the device capability interruption via electric-vehicle and charger abnormalities. *Id.* at 25. Petitioner asserts that “[t]hese abnormalities lead to termination of the charging process based on capabilities of the devices involved.” *Id.* (citing Ex. 1002, 7:33–36, 10:19–22, Figs. 10A, 10B, 12, 13). Petitioner, using annotated versions of Figures 10A–10B and 12–13, asserts that Kimura’s S51 (“Output Charge Inhibit Signal”) occurs responsive to detection of a device capabilities interruption S41 (“Electric Vehicle

Abnormality Generated?”), and that S20 (“Output Charge Stop Signal”) occurs responsive to device capabilities interruption S17 (“Generate Charger Abnormality?”). *Id.* at 25–27. Petitioner additionally contends that connectors 18 and 26 allow for the flow of electricity from the charger to the vehicle battery and a loose connection at those connectors can indicate a device capabilities interruption. *Id.* at 31–32.

Petitioner then turns to the recited “preference interruption.” *Id.* at 27–28. Petitioner contends that “[p]reference interruptions, which can occur based on third-party defined preferences . . . , occur in Kimura when the voltage of the battery 11 reaches a threshold set by a third-party.” *Id.* at 27 (citing Ex. 1001, 13:22–33). Petitioner asserts that Kimura’s terminal voltage is set according to the type of battery, and that “Kimura further explains that ‘target values of the voltages and currents . . . may be set through a DIP switch and/or jumper switch.’” *Id.* (citing Ex. 1002, 5:21–27; quoting Ex. 1002, 6:3–8) (alteration in original). According to Petitioner, “[s]et voltage or current values constitute a preference with respect to the charging process, the violation of which causes a preference interruption.” *Id.* at 28 (citing Ex. 1001, 7:64–8:3).

Petitioner additionally contends that Kimura teaches the recited data services interruption. *Id.* at 28–32. Petitioner asserts that “a data services interruption occurs when the charger controller 24 fails to communicate with the battery controller 14 regarding threshold values and corresponding operational parameters.” *Id.* at 29 (citing Ex. 1002, 10:41–44). Petitioner also asserts that Kimura discloses a data services interruption when a loose connection is detected between charger connector 26 and vehicle-side

connector 18, which are used to convey data signals via control lines 34 and 35. *Id.* at 29–30 (citing Ex. 1002, 3:60–65, Fig. 1).

In addressing independent claim 1, Patent Owner does not raise any arguments regarding these contentions. *See* PO Resp. 27–28; PO Sur-reply 14 (arguing that “Petitioner failed to rebut Dr. Cameron’s testimony that Kimura’s processors do not even have capability to receive messages.”). In particular, Patent Owner does not dispute that Kimura teaches or suggests an interruption that “comprise[s] at least one of” the three listed types, as recited in limitation 1C, and does not dispute Petitioner’s contentions regarding the “device capabilities interruption.” *See* PO Resp. 27–28; *see also id.* at 28 (Patent Owner offering no additional arguments for dependent claim 4, which specifies that the “the one or more interruptions is the device capabilities interruption.”). However, we note that Patent Owner, in addressing certain dependent claims, disputes Petitioner’s contentions regarding Kimura’s teachings of a “preference interruption” and a “data services interruption.” *See, e.g.,* PO Resp. 29–33.

We determine that Petitioner has shown that Kimura teaches or suggests teaches a “device capabilities interruption” for the reasons set forth in the Petition. *See* Pet. 25–27 (addressing independent claim 1); *see also id.* at 36–38 (addressing dependent claim 4, which requires an interruption of the independent claim to be a device capabilities interruption). For the reasons discussed below in the context of the respective dependent claims, we determine that Petitioner also has shown that Kimura teaches or suggests a “preference interruption” and a “data services interruption.” *See infra* Sections II.D.3 (dependent claim 5, “preference interruption”), II.D.4. (dependent claim 6, “data services interruption”).

- e. [1D] responsive to detecting the one or more interruptions, sending a response to the energy transaction execution engine to terminate the charging process.*

Petitioner contends that Kimura teaches this limitation. Pet. 32–36 (citing Ex. 1009 ¶¶ 92–94). Petitioner asserts that Kimura discloses battery controller 14 sending a charge inhibit signal to charger controller 24 (mapped to the energy transaction execution engine) via control line 34 after detecting an interruption. *Id.* at 32 (citing Ex. 1002, 11:30–33). According to Petitioner, this signal is a response to terminate because it causes charger controller 24 to terminate the charging process. *Id.* at 32–33 (citing Ex. 1002, 7:55–61). Petitioner further asserts that Kimura’s Figures 12–14 illustrate battery controller 14 sending a charge inhibit signal to charger controller 24 in response to detecting an interruption, and with the output charge inhibit signal (e.g., S51 and S84) depicted in the flowchart as being downstream of detecting an interruption (e.g., S41, S46, and S47–S49). *Id.* at 34–35 (citing Ex. 1002, Figs. 12–14); *see also id.* at 36 n.8 (Petitioner asserting that Kimura also discloses sending a response on the charger side, citing Ex. 1002, 7:33–44, Fig. 10B).

Patent Owner’s arguments are similar to those for limitation 1A. *See* PO Resp. 27–28. Patent Owner argues, based on its proposed claim construction, that Kimura uses signals rather than messages having a header and a body and therefore Kimura fails to teach or suggest the recited “response.” *Id.* at 28. For the reasons discussed above, we do not agree with Patent Owner’s proposed construction and we decline to limit the scope of “request” and “response” to messages having a header and a footer, and we decline to construe those terms as excluding signals. *See supra* Section II.C.1.

We determine that Petitioner has demonstrated by a preponderance of the evidence that Kimura teaches limitation 1D, including the recited “response . . . to terminate the charging process.”

f. Conclusion as to Independent Claim 1

Having considered the parties’ arguments and evidence, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of claim 1 would have been obvious over Kimura.

3. Dependent Claim 5

Claim 5 depends directly from independent claim 1 and recites that “the one or more interruptions is the preference interruption, and the preference interruption is detected from a violation of a preference selected by a participant to the charging process.” Ex. 1001, 17:8–11.

Petitioner contends Kimura teaches or discloses this dependent claim. Pet. 38–40 (citing Ex. 1009 ¶¶ 100–103); *see also id.* at 27–28 (Petitioner’s contention that Kimura teaches a “preference interruption” as recited in independent claim 1). Specifically, Petitioner contends that Kimura teaches a preference interruption that is the voltage reaching a predetermined target value (a threshold), and that this preference is set by a participant in the charging process. *Id.* at 38–39 (citing Ex 1002, 5:21–27, 11:24–28); *see also id.* at 39 (Petitioner contending that “setting the voltage threshold constitutes participation in the charging process.”).

Patent Owner argues that the patentees acted as their own lexicographers and defined “preference interruption” as an interruption specified by a user.⁷ *See* PO Resp. 25 (arguing that “preference

⁷ Patent Owner also contends that the terms “users,” “parties,” and “participants” are used synonymously in the ’391 patent. PO Sur-reply 9;

interruption” should be construed as a set of one or more interruptions that are caused from a violation of a user-specified preference.” (citing Ex. 1001, 13:22–36)).⁸ Patent Owner further argues that, “[i]n Kimura, the voltage threshold on which Petitioner relies must be preset at the factory because it is saved in EEPROM memory [(Electrically Erasable Programmable Read Only Memory)] and there is no teaching or suggestion of a user interface that would permit alteration of the preset.” *Id.* at 30 (citing Ex. 1002, 5:24–34); *see* Ex. 2005 ¶ 97 (Dr. Cameron stating the same). Patent Owner additionally argues that, in redefining “preference interruption,” “the inventors disavowed claims covering, among other things, factory presets, which are not user-specified.” PO Resp. 25–26. Patent Owner further argues that, in Kimura, “there is no user-interface or other programming means available to the user, the pre-installed voltage target values stored in the EEPROM cannot be changed by the user and are [sic] therefore cannot be user-specified preferences.” *Id.* at 30 (citing Ex. 1002, 7:39, 7:49–53); *see* Ex. 2005 ¶ 97 (Dr. Cameron stating the same).

see Tr. 56:3–5 (arguing that the terms are used interchangeably). Thus, Patent Owner’s lexicography theory—that a “user” specifies the preference—appears to have no effect on the purported scope of dependent claim 5, where the “participant” selects the preference.

⁸ Patent Owner also states: “[U]nder the ’391 patent, the parties must agree to conditions relevant to their role in the transaction prior to the charge commencing, ‘[d]uring the pre-charge phase.’” PO Resp. 29 (citing Ex. 1001, 7:39, 7:49–53) (emphasis omitted; alteration in original). To the extent that this is Patent Owner urging a narrowed claim construction, we do not agree. The claim language does not specify *when* a preference must be selected, and Patent Owner does not explain adequately why such a chronological limitation should be imported into the claim.

Patent Owner’s arguments are not persuasive. In impliedly arguing that Kimura discloses only the use of a factory preset EEPROM, Patent Owner fails to address Petitioner’s contentions based on Kimura’s teaching of the use of DIP (Dual In-line Package) switches or jumpers. *See* PO Resp. 29–30; PO Sur-reply 9–11, 14. Although Kimura does discuss storing the voltage target value on an EEPROM (Ex. 1002, 5:29–32), it also discloses, as Petitioner notes (Pet. 27), “target values of the voltages and currents determined according to the type of the battery to be used may be set through a DIP switch and/or jumper switch” (Ex. 1002, 6:3–6). Dr. MacCarley explains that “a DIP (Dual In-line Package) switch is a set of seven or eight miniature switches in the form of a DIP integrated circuit,” and that “[i]t is common to use this type of switch to manually set values of seldom-changed parameters for control of an electric system.” Ex. 1009 ¶ 157. A participant to the charging process (including a user under Patent Owner’s proposed construction) could use the DIP switches to set a preference, namely the target voltage. *See id.* ¶¶ 157–158 (Dr. MacCarley testifying, in the context of the Kimura-Hotta ground, that a user selection of preferences could be read from Kimura’s DIP switch).

Having considered the parties’ arguments and evidence, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of dependent claim 5 would have been obvious over Kimura.

4. Dependent Claim 6

Claim 6 depends directly from independent claim 1 and recites that “the one or more interruptions is the data services interruption, and the data services interruption originates from a failure in data transmission.” Ex. 1001, 17:12–15.

Petitioner contends that Kimura teaches dependent claim 6. Pet. 41 (citing Ex. 1009 ¶¶ 104–106). Specifically, Petitioner contends that Kimura teaches the data services interruption when charger controller 24 fails to communicate with battery controller 14 within a predetermined amount of time. *Id.* at 40 (citing Ex. 1002, 10:41–44); *see also id.* at 28–32 (Petitioner’s contentions for the “data services interruption” in the context of the underlying independent claim 1). Petitioner asserts that the failure of charge controller 24 to communicate threshold values and corresponding operational parameters for the charging process to the battery controller 14 originates from a failure in data transmission. *Id.* (citing Ex. 1002, 10:41–44).

Patent Owner argues that Kimura fails to teach or suggest a data services interruption because it fails to meet the purported requirement of the third-party data source. PO Resp. 31. Patent Owner asserts that communication between Kimura’s charger controller 24 and battery controller 14 is via control lines 33 through 36, and therefore it does not implicate a third party. *Id.* at 31–32 (citing Ex. 1002, 3:6–52, Fig. 1).

Patent Owner’s arguments are premised on its proposed claim construction for “data services interruption.” For the reasons discussed above, we decline to adopt Patent Owner’s definition that limits the claim scope to interruptions caused by the inability for information to be exchanged between third party data sources, and we decline to construe the claim as excluding intra-system communications abnormalities. *See supra* Section II.C.2.

Dr. MacCarley persuasively testifies that Kimura teaches a “data services interruption” when the charger controller fails to communicate with

the battery controller within the predetermined time, and that this is failure in data transmission. Ex. 1009 ¶ 105 (referring to steps S47 and S49; citing Ex. 1002, 10:41–44); *see* Ex. 1002 (Kimura stating: “At the step S47, if the controller 14 does not receive them for the predetermined period of time, the routine goes to the step S49 in which the communication abnormality processing is executed.”). That testimony is un rebutted. *Cf.* Ex. 2005 ¶¶ 99–100 (Dr. Cameron opining that Kimura’s failure of communication between charger controller and battery controller does not involve a third-party, and that Dr. MacCarley did not apply Patent Owner’s proposed construction.).

Having considered the parties’ arguments and evidence, we determine that Petitioner has demonstrated that Kimura renders obvious claim 6.

5. Dependent Claim 7

Claim 7 depends directly from independent claim 1 and recites that “the one or more interruptions are detected by identifying an operational parameter from the set of operational parameters that conform to the set of predefined interrupt conditions.” Ex. 1001, 17:16–19.

Petitioner contends Kimura teaches dependent claim 7 “when the battery controller 14 detects that the voltage of the battery 11 (operational parameter) conforms to a predetermined voltage threshold (predefined interrupt).” Pet. 42 (citing Ex. 1002, 10:45–48); *see id.* at 43 (citing Ex. 1009 ¶¶ 107–109). Petitioner further states that, in Kimura, after the voltage exceeds the voltage threshold, the charger controller 14 outputs a charge inhibit signal and terminates the charging process. *Id.* (citing Ex. 1002, 10:45–48, 10:54–56).

Patent Owner argues that the claim should be read as requiring the operational parameter to be “identified before each new charging transaction.” *See* PO Resp. 33–34 (citing Ex. 1001, 7:12–25; referring to an

explanation from Dr. Cameron). Patent Owner impliedly argues that the claim also requires that the parameter must be capable of being changed in the pre-charge phase of a charging transaction. *See id.* at 35 (citing Ex. 1001, 7:41–49; Ex. 2005 ¶¶ 101–105); *see also* PO Sur-reply 13 (Patent Owner arguing that “Dr. Cameron’s unrebutted testimony shows that identifying an operational parameter happens during the pre-charge phase, and a user may change an interrupt condition involving one or more operational parameters at that time. (citing Ex. 2005 ¶¶ 101–103)). Based on this proposed claim construction, Patent Owner argues that “a predetermined voltage threshold [in Kimura] is a factory preset that cannot be changed in the pre-charge phase of a charging transaction, as required in the ’391 patent.” PO Resp. 35. According to Patent Owner, “[a] factory preset is not changeable and cannot be an operational parameter.” PO Sur-reply 13 (citing Ex. 2005 ¶¶ 104–105). Thus, we understand Patent Owner to argue that the recited “operational parameter” must be changeable, and that it must be changeable during the pre-charge phase.

We do not agree with Patent Owner’s proposed construction. The pertinent claim phrase, “identifying an operational parameter,” does not contain Patent Owner’s proposed chronological limitation of “before each new charging transaction.” The claim language does not mention a pre-charge phase, and does not recite a limitation requiring the parameter to be changeable during that phase.

Patent Owner points to statements in the Specification, and emphasizes the portions stating: “requires a much more complete, flexible, and interoperable system” and “During the pre-charge phase of decision enablement, all parties are presented with the conditions governing the

charging transaction.” PO Resp. 33–34 (quoting Ex. 1001, 7:12–25). Patent Owner does not explain adequately how those statements support its proposed additions to the claim language. We note that the quoted portion of the Specification starts with the phrase “The illustrative embodiments,” and the emphasized portions do not use the claim term “identifying.” Patent Owner does not explain adequately, for example, how a disclosure of *presenting* conditions to parties during a pre-charge phase precludes *identifying* operational parameters at another time. *See* Pet. Reply 14 (“The relied-upon portions do not connect those conditions to the operational parameter of claim 7, let alone require identifying the operational parameter before each new charging transaction.”). More importantly, Patent Owner does not explain adequately why concepts purportedly discussed in the Specification should be read into the claim as limitations. *See* PO Resp. 33–34; PO Sur-reply 13–14; *see also, e.g.*, Tr. 58:3–11 (Patent Owner’s counsel apparently arguing that the statements in the Specification are limiting because they are “without reference to any particular embodiment.”); *see Hill-Rom Servs., Inc.*, 755 F.3d at 1381 (“[T]he scope of the claims is not generally limited to the embodiments disclosed in the patent.”). Dr. Cameron’s testimony is not persuasive as it merely repeats—verbatim or nearly so—Patent Owner’s unpersuasive arguments. *See* Ex. 2005 ¶¶ 101–105; *see also Vitronics Corp.*, 90 F.3d at 1583 (“In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence.”); *id.* at 1584 (“[E]xtrinsic evidence in general, and expert testimony in particular, may be used only to help the [tribunal] come

to the proper understanding of the claims; it may not be used to vary or contradict the claim language.”).

We decline to limit the claim scope by importing the limitations proposed by Patent Owner.

Additionally, Patent Owner’s arguments appear to be premised on its assertion that Kimura only discloses a factory pre-set and non-changeable parameter stored in an EEPROM. *See, e.g.*, PO Resp. 30. Patent Owner fails to address Kimura’s DIP switches as a means to set the target voltage. *See supra* Section II.D.3 (discussing Patent Owner’s arguments regarding a factory pre-set parameter and Petitioner’s contentions regarding DIP switches).

We determine that Kimura’s battery voltage is an operational parameter that is identified from a set of operational parameters from a set of predefined interrupt conditions, including the voltage threshold. Having considered the parties’ arguments and evidence, we determine that Petitioner has demonstrated that Kimura renders obvious claim 7.

6. Independent Claims 8, 15, and 20 and Dependent Claims 4, 11–14, 18, and 19

For the remaining claims challenged in Ground 1, Petitioner, with the support of Dr. MacCarley’s testimony, identifies teachings in Kimura that teach or suggest the limitations of those claims. Pet. 36–38, 44–51. For these claims, Patent Owner does not present arguments beyond those regarding independent claim 1 and the analogous dependent claims and as discussed above. *See* PO Resp. 28, 35–38.

Having considered the parties’ arguments and evidence, we determine that Petitioner has shown by a preponderance of the evidence that the subject

matter of independent claims 8, 15, and 20 and dependent Claims 4, 11–14, 18, and 19 would have been obvious over Kimura.

*E. The Asserted Obviousness of Claims 2, 5, 9, 12, and 16
Over Kimura and Hotta (Ground 2)*

Petitioner alleges that dependent claims 2, 5, 9, 12, and 16 of the '391 patent would have been obvious over Kimura and Hotta. *See* Pet. 52–59. Claims 2 and 5 depend directly from independent claim 1; claim 9 and 12 depend directly from independent claim 8; and claim 16 depends directly from independent claim 15.

1. Hotta (Ex. 1003)

Hotta discloses “an apparatus for controlling the charging of a storage battery for use on an electric vehicle.” Ex. 1003, 1:64–66. The apparatus aims to improve charging “so as to prevent the storage battery from being self-discharged when left to stand for a long period of time . . . and so as to minimize a reduction in the temperature of the battery.” *Id.* at 1:66–2:3. Hotta aims to achieve this by calculating the necessary charging period by taking into the account the current charge level, the charging start time, and the eventual boarding time. *Id.* at 2:21–30. Hotta utilizes a charging start command key switch 51 and a charging stop command key switch 52 in order to enter and exit the charge holding mode. *Id.* at 6:21–27, 15:42–47.

2. Dependent Claim 2

Claim 2 depends directly from independent claim 1 and recites that “the one or more interruptions is a manual override interruption, and wherein the computer implemented method further comprises: responsive to receiving, from a user, the manual override interruption, terminating the charging process.” Ex. 1001, 16:60–65.

As discussed above, Petitioner contends Kimura teaches or suggests the limitations of the underlying independent claim 1. Petitioner asserts that Kimura discloses a main switch of charger 20, but “without complete implementation details.” Pet. 52 (citing Ex. 1002, 6:13–15). Petitioner turns to Hotta for teachings related to a manual override interruption. *See, e.g., id.* at 52–53. Specifically, Petitioner contends that Hotta’s electric vehicle charger 2 includes a controller 21 with a charging stop command switch 52. *Id.* at 54 (citing Ex. 1003, 3:30–31, Fig. 1). According to Petitioner, “[i]f the charging stop command key switch 52 is turned on,” Hotta explains, “then the constant-current operation is stopped in a step S105.” *Id.* (citing Ex. 1003, 15:42–47). Petitioner contends that “[t]urning on charging-stop-command key switch 52 is a manual override interruption as it causes termination.” *Id.* at 55 (citing Ex-1001, 12:26–28).

Petitioner reasons, *inter alia*, that “[a]llowing for manual control for a user to stop Kimura’s charging would have been a desirable feature to ensure consistency with teachings from relevant standards,” [and] “[t]his would have further motivated a POSA to implement it to assure a safe and commercially-desirable system.” Pet. 53 (citing Ex. 1009 ¶ 146). Petitioner also reasons that making use of Hotta’s command keys in Kimura’s system would have been a simple substitution of one known element for another, yielding predictable results. *Id.* at 53 (citing Ex. 1009 ¶ 147).

Patent Owner argues that the patentees acted as their own lexicographers in redefining a “manual override interruption.” PO Resp. 22–25 (citing Ex. 1001, 12:24–45, Figs. 4–7; Ex. 2005 ¶¶ 74–78). Patent Owner further argues that the claim term “manual override interruption” should be construed as:

an instruction that causes energy transaction execution engine to terminate the charging process, which a user may generate during the flow of electricity by interacting with a user interface,” where “instruction” means “an encoding of a series of operational steps specifying the details to be executed according to those operational steps.

Id. at 24.

Patent Owner additionally argues that Hotta “teaches manually pressing the charging stop command key” (*id.* at 39), but the patentees, in redefining the claim phrase, “disavowed claims covering mere opening and closing of a switch” (*id.* at 24). According to Patent Owner, “[u]sing a discrete switch or command keys is not enough.” PO Sur-reply 7.

As with Patent Owner’s other lexicography and disavowal arguments, we do not find those here to be persuasive because the patentees did not express a clear intent to deviate from the plain and ordinary meaning of the claim language, *Thorner*, 669 F.3d at 1365, and did not “includ[e] in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope,” *Teleflex, Inc.*, 299 F.3d at 1325. Patent Owner (PO Resp. 22), for example, relies on a quote of the Specification’s description of an “illustrative embodiment.” See Ex. 1001, 10:51–53 (“FIG. 4 is a system for managing a charging process of an electric vehicle in accordance with an illustrative embodiment.”); *see also id.* at 14:17–18 (the Specification describing Patent Owner’s relied-on Figure 7 as “a flowchart of a process for identifying an interruption in accordance with an illustrative embodiment.”). We decline to import into the claim the limitations proposed by Patent Owner.

To the extent that Patent Owner argues that Petitioner’s proposed combination lacks “instructions” between the pressing of a manual

button/switch and the termination of the charging, we do not agree. *See, e.g.,* PO Resp. 24 (Patent Owner arguing that, in its proposed construction, “an instruction is a digital operation capable of sending a complex series of signals and goes beyond the simple mechanical operation of pressing a button on a keyboard to complete a circuit.”). Petitioner’s proposed combination does not involve the “mere opening and closing of a switch,” as Patent Owner implies. PO Resp. 24. Petitioner, with the supporting testimony of Dr. MacCarley’s testimony, points to Hotta’s Figure 1, which depicts charging stop command key switch 52 as an input to controller 21, which comprises a microcomputer. *See* Pet. 55 (reproducing an annotated version of Hotta’s Figure 1); Ex. 1009 ¶¶ 150–152; Ex. 1003, 5:13–29. Petitioner also points to various steps shown in the flowcharts of Hotta’s figures, which suggest decision making rather than merely manually opening a switch. *See* Pet. 55–57 (providing, *inter alia*, annotated versions of Figures 11, 12, 15, 16).

We have considered all of Patent Owner’s arguments regarding a reason to combine the references’ teachings, and do not find those arguments to be persuasive. Patent Owner first argues that Petitioner has failed to show a reason to combine the reference because Kimura and Hotta disclose different charging subroutines. PO Resp. 40; PO Sur-reply 15. Patent Owner offers no persuasive explanation as to why this difference would negate the motivation of a person of ordinary skill in the art (i.e., one skilled in the art of charging) to apply Hotta’s command key teachings in Kimura’s charging system.

Patent Owner argues that Dr. Cameron testified on cross-examination that there are “disincentives to make systems more complex.” PO

Sur-reply 15 (citing Ex. 1021, 161:5–21). Patent Owner overstates that testimony, which is that “[t]here’s actually disincentive for using messages all together.” Ex. 1021, 161:17–18. Regardless, even if correct, the existence of some disincentives does not necessarily negate a motivation to make the proposed combination. *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) (“[A] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine.”). We find that Petitioner’s assertion—that a person of ordinary skill in the art would be motivated by a desire to assure a safe and commercially-desirable system (Pet. 53)—to have rational underpinning. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

Patent Owner argues that Dr. Cameron “explained [that] . . . it would not be simple because Hotta uses two-stage charging subroutines.” PO Sur-reply 16 (citing Ex. 2005 ¶ 118). We disagree with Patent Owner’s characterization of Dr. Cameron’s testimony. The cited paragraph 118 states that Hotta’s figures depict “two-stage charging subroutines different from both the ’391 patent and Kimura,” and that there are “fundamental differences.” Ex. 2005 ¶ 118. Dr. Cameron does not go so far as to opine that combining the teachings as Petitioner’s proposes would not be considered simple by a person of ordinary skill in the art. *See id.*; *see also Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (“Leapfrog presents no evidence that the inclusion of a reader in this type of device was uniquely challenging or difficult for one of ordinary skill in the art.”). Dr. MacCarley, on the other hand, credibly testifies that “making use of Hotta’s command keys in Kimura’s system . . . would have been a simple substitution of one known element (Kimura’s lightly-

described main switch) for another known element (Hotta's command keys) to achieve predictable results (a charging process that can be stopped by pressing Hotta's charging stop command key . . .)." Ex. 1009 ¶ 147. We credit Dr. MacCarley's testimony over that of Dr. Cameron's because it is consistent with a sufficiently reasoned rationale of a simple substitution and is supported by the references.

Patent Owner additionally argues that Petitioner's contention regarding the motivation that flows from the desire to ensure consistency with industry standards is faulty because "Dr. MacCarley's opinions on SAE J1772 . . . should be disregarded because they were excluded from the Petition, and because arguments incorporated by reference into the Petition are not allowed." PO Resp. 41 (citing Ex. 1009 ¶ 154); *see also* PO Sur-reply 16–17. We disagree with Patent Owner's arguments. The SAE standard was utilized as evidence to support Dr. MacCarley's opinion testimony that it was common knowledge in the art at the time that the use of a manual on/off override was dictated. Ex. 1009 ¶ 154. Patent Owner does not appear to dispute that opinion. The Petition relies on that opinion, and the Petition's lack of a discussion of the SAE J1772 standard does not amount to an improper incorporation of any purported argument from the declaration. Further, we need not rely on the substance of the J1772 standard because, even without it, we find to be credible the unrebutted testimony of Dr. MacCarley that a person of ordinary skill in the art would have known that a manual stop was required. *See* Ex. 1009 ¶¶ 6–13 Dr. MacCarley detailing his qualifications regarding electric vehicles, including charging); *cf.* Ex. 1021, 36:19–37:19 (Dr. Cameron admitting that he lacks experience with electric vehicle charging).

We determine that Petitioner has demonstrated by a preponderance of the evidence that Kimura in combination with Hotta discloses or suggests a manual override interruption and a computer implemented method where, responsive to receiving that interruption from a user, terminates the charging process. We also determine that Petitioner has shown that a person of ordinary skill in the art would have been motivated to make the combination proposed by Petitioner and would have had a reasonable expectation of success in doing so. Having considered the parties' arguments and evidence, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of dependent claim 2 would have been obvious over Kimura and Hotta.

3. Dependent Claim 5

Claim 5 depends directly from independent claim 1 and recites that “the one or more interruptions is the preference interruption, and the preference interruption is detected from a violation of a preference selected by a participant to the charging process.” Ex. 1001, 17:8–11.

Petitioner offers this ground in the alternative to the ground based on Kimura alone and discussed above. Petitioner contends that Hotta's charger 2 is configured to complete electric vehicle charging by an “indicated scheduled boarding time,” and that the boarding time is “set by the user of the electric vehicle via a key switch 53.” Pet. 57 (citing Ex. 1003, code (57), 2:4–21, cl. 12). According to Petitioner, “Hotta therefore teaches user selection of a preference for a charging process.” *Id.* at 58. Petitioner reasons that “[a]pplying this to Kimura, it would have been obvious for a [person of ordinary skill in the art] to allow for user selection of preferences, including the voltage, current, and other battery-specific preferences that could be read from Kimura's DIP switch or just as easily

indicated from user inputs.” *Id.* Petitioner further contends that “[i]t also would have been obvious to combine Kimura with the boarding-time-selection functionality of Hotta, thereby allowing the user of the charging process to indicate preferences with respect thereto.” *Id.* Petitioner additionally reasons that “allowing for use of a key switch like Hotta’s boarding time setting key switch would have enhanced the prospects of creating a commercially successful device, thus motivating the inclusion of such a feature.” *Id.* at 53.

Patent Owner asserts that independent claim 1, from which claim 5 depends, requires that the interruption be detected during the flow of electricity, but Hotta discloses that the scheduled time for boarding is input before charging begins. PO Resp. 41–42 (citing Ex. 1003, 2:10–21). Patent Owner also argues that Hotta teaches meeting a preference instead of failure to do so, asserting that, “[e]ven if the battery cannot be fully charged to meet the boarding time, the controller starts charging the battery.” *Id.* at 42 (citing Ex. 1003, 8:23–38); *see id.* (“In other words, failure to meet the boarding time does not result in the termination of the charging process.”). Patent Owner also argues that a teaching of meeting a preference “is the opposite of terminating the charging process under the ’391 patent,” and “Petitioner never explained in the Petition or Reply how or why a POSITA would combine Hotta with Kimura, given these contrasting teachings.” PO Sur-reply 18 (citing Ex. 1001, 16:57–59).

Even if Patent Owner’s characterizations of Hotta’s boarding time preference are correct, that does not detract from the general teaching upon which Petitioner relies, namely that it was known to allow a user to select preferences. *See* Pet. 52–53, 57–58; *see MCM Portfolio LLC v. Hewlett-*

Packard Co., 812 F.3d 1284, 1294 (Fed. Cir. 2015) (“[T]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.” (quoting *In re Keller*, 642 F.2d 413, 425 (CCPA 1981))). Petitioner's articulated case is based on the application of Hotta's general teaching of “user selection of a preference for a charging process” to Kimura's system. Pet. 58; Pet. Reply 18 (“Kimura supplies the interruptions during the flow of electricity, and Hotta teaches user selection of a preference in a charging process.”). Petitioner contends that the combination would allow the user to select preferences (“including the voltage, current, and other battery-specific preferences”) via Kimura's DIP switch or other user inputs. Pet. 58; *see also id.* at 59 (Petitioner mapping “preference interruption” to “caused by voltage or current reaching a corresponding threshold.”).

Having considered the parties' arguments and evidence, we determine that Petitioner has shown by a preponderance of the evidence that the subject matter of dependent claim 5 would have been obvious over Kimura and Hotta.

4. Dependent Claims 9, 12, and 16

Claims 9 and 12 depend from independent claim 8, and claim 16 depends from independent claim 15. Petitioner asserts claims 9 and 12 are analogous to the previously discussed claims 2 and 5, respectively, and that claim 16 is analogous to the previously discussed claim 2. Pet. 59. For these claims, Patent Owner does not present arguments beyond those regarding dependent claims 2 and 5 and discussed above. *See* PO Resp. 42–44; PO Sur-reply 18.

Having considered the parties' arguments and evidence, we determine that Petitioner has demonstrated that claims 9, 12, and 16 would have been obvious over Kimura and Hotta.

F. The Asserted Obviousness of Claims 3, 10, and 17 Over Kimura and King (Ground 3)

Petitioner alleges that dependent claims 3, 10, and 17 of the '391 patent would have been obvious over Kimura and King. *See* Pet. 59–63 (citing, *inter alia*, Ex. 1009 ¶¶ 161–169).

1. King (Ex. 1004)

King discloses an “intelligent battery charger” for electric vehicles which is implemented with a “control system or ‘controller’ for the battery charger [which] is coupled for monitoring battery current, battery voltage and battery temperature, and periodically stores such data in a non-volatile memory.” Ex. 1004, 1:49–52. The battery charger controller 36 is disposed on the battery charger 24. *Id.* at 2:51–58, Fig. 1.

While charging is ongoing, the system stores data such as “battery temperature profile, ampere-hours of charge, battery charge profile and charger status.” *Id.* at 4:66–5:3. “Charger status can include an AC power failure, termination of charging, and battery charger faults.” *Id.* at 5:1–3. This data can be used by battery charger controller 36. *Id.* at 5:3–6.

2. Discussion

Claim 3 depends directly from independent claim 1 and recites, “storing the set of operational parameters in a storage device.” Ex. 1001, 16:66–17:2. Dependent claims 10 and 17 recite similar limitations. *See id.* at 17:52–55, 18:32–34.

Petitioner contends that “King describes a charger 24 (purple) that operates according to various operational parameters, including ‘battery

temperature profile, ampere-hours of charge, battery charge profile, charger status.” Pet. 61 (citing Ex. 1004, 5:49–51, 4:66–5:1). Petitioner additionally states that King teaches storing these operational parameters in memory during battery charging. *Id.* at 61–62 (citing Ex. 1004, 4:66–5:1). Petitioner reasons that King’s teaching of use of non-volatile memory to store battery and charging data is a teaching to do this during battery charging, and therefore it would have been obvious to store, in Kimura’s system, all operating parameters in a non-volatile memory and “the modification would have been achieved with a reasonable expectation of success.” *Id.* at 60–61.

Patent Owner argues that Petitioner’s proposed combination would not meet the limitations of the challenged claims because King’s “parameters have nothing to do with monitoring for and detecting interruptions.” PO Resp. 44–45; see also PO Sur-reply 18. Patent Owner asserts that King’s parameters “are used to calculate the amount of recharge the battery requires,” and “the purpose of King is to prevent overcharging of old batteries.” PO Resp. 44–45 (citing Ex. 1004 at 5:42–54). Patent Owner additionally argues that “Kimura and King have different purposes and . . . King aims to prevent overcharging of old batteries, . . . [t]hus, there was no motivation to combine.” PO Sur-reply 19 (citing Ex. 2005 ¶ 128).

These arguments are not persuasive because the proposed combination utilizes Kimura’s operational parameters, not King’s. *See* Pet. 62 (“[T]he Kimura-King system would have included a non-volatile memory and would have stored all of Kimura’s operational parameters.”). And, even if Kimura’s and King’s chargers use the parameters for different purposes, we determine that, based on King’s teaching of storing charger

parameters in non-volatile memory, a person of ordinary skill in the art would, find it obvious to store Kimura's charger parameters in non-volatile memory. Ex. 1004, 4:66–5:1; Ex. 1009 ¶¶ 163–164.

Having considered the parties' arguments and evidence, we determine that Petitioner has demonstrated that Kimura in view of King renders obvious claims 3, 10, and 17.

G. The Remaining Grounds (Grounds 4–6)

Petitioner contends that claims 1, 2, 4–9, 11–16, and 18–20 are anticipated by Keith (Ground 4); claims 3 and 8–19 would have been obvious in view of Keith (Ground 5); and claims 6 and 13 would have been obvious in view of Keith and Nor (Ground 6). Pet. 63–103.

For the reasons discussed above, Petitioner has shown persuasively that each challenged claim is unpatentable under Petitioner's challenges of Grounds 1 through 3. As a result, we need not determine whether the claims also would have been unpatentable under Petitioner's challenges of Grounds 4 through 6. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding that a petitioner "is entitled to a final written decision addressing all of the claims it has challenged"); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 Fed. App'x. 984, 990 (Fed. Cir. Apr. 30, 2020) (non-precedential) (recognizing that the "Board need not address issues that are not necessary to the resolution of the proceeding" and, thus, agreeing that the Board has "discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims").

III. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner filed a motion to exclude. Paper 32. Patent Owner moves to exclude:

Ex-1011 and Ex-1020, as well as corresponding portions of the Declaration of Petitioner's expert Dr. C. Arthur MacCarley (Ex-1009), Petitioner's briefing (Papers 2 and 26) and Petitioner's line of questioning eliciting testimony of PO's expert Dr. Kirk Cameron regarding inadmissible evidence (Ex-1021 and Ex-1026).

Id. at 1.

A. Exhibits 1011 and 1020

Exhibit 1011 is identified as the SAE Standard J1772, and Exhibit 1020 is U.S. Patent No. 8,918,657 B2 to Cameron. Because we do not rely on these exhibits in our analysis, we dismiss the motion as to these exhibits as moot. We next discuss Dr. MacCarley's opinion testimony that cites SAE J1772.

B. Exhibit 1009

As to Exhibit 1009, Patent Owner moves to exclude paragraphs 19, 56, 68, 146, 154, 269, 270 of Dr. MacCarley's declaration referencing the J1772 standard because it "is not properly part of the record." Paper 32, 4. Patent Owner also moves to exclude paragraphs 44–95 because those "portions that were impermissibly incorporated by reference into the Petition." *Id.* Patent Owner asserts that:

PO . . . timely objected to Ex-1009 as containing arguments that are incorporated by reference into the Petition in violation of at least 37 C.F.R. § 42.6(a)(3); irrelevant under Fed. R. Evid. 401 and inadmissible under Fed. R. Evid. 402, or as being confusing or a waste of time under Fed. R. Evid. 403. (Paper 17 at 2; Paper 24 at 41, Paper 27 at 16-17.) Such arguments in Ex-1009 should be excluded from the record.

Id. at 4–5.

Patent Owner does not adequately explain the bases for its motion to exclude portions of Exhibit 1009. In this case, simply restating its

objections is inadequate. We decline Patent Owner's invitation to review all of the listed paragraphs to attempt to discern a basis for Patent Owner's arguments for inadmissibility. Additionally, in this decision, we have analyzed only the arguments made in the parties' briefs, and have not relied on any "argument" allegedly incorporated from the declaration into the Petition. Further, regarding the J1772 standard, an exhibit need not be admissible for an expert's opinion to be admitted. Federal Rules of Evidence (FRE) 703.

We deny the motion to exclude as to Exhibit 1009.

C. Exhibits 1021 and 1026

Exhibit 1021 is the deposition transcript of the cross-examination of Patent Owner's witness, Dr. Cameron. Paper 32, 5. Exhibit 1026 is the errata for that transcript. *Id.* at 6.

Patent Owner seeks to exclude the portions of the transcript at 51:11–53:6 and 53:22–55:6, arguing that “[t]hese portions are inadmissible because they reflect the line of Petitioner's questions seeking to elicit Dr. Cameron's testimony regarding J1772, which is not properly part of the record.” *Id.* As to the errata, Exhibit 1026, Patent Owner asserts that it was compelled to reference the J1772 standard in the errata in order to correct a typographical error, and argues that, “because J1772 was never properly part of the record,” portions of the errata should also be excluded. Paper 32, 6.

The line of question that Patent Owner first asks to be excluded starts with confirming that Dr. Cameron testified regarding the J1772 standard in his declaration. *See* Ex. 1021, 51:11–18 (“Q. Okay. So you've discussed this standard J1772 in your declaration; is that right? . . . A. So if you look at paragraph 41, it does mention 1772.”). Patent Owner does not explain

adequately why it is inappropriate for a witness proffered as an expert to be cross-examined on a document upon which the witness offered testimony.

Patent Owner also seeks to exclude portions of the deposition transcript, Exhibit 1021, at 83:5–86:11, 132:10–11, and 128:3–132:13, arguing that “[t]hese portions of Ex-1021 are inadmissible because they reflect the line of Petitioner’s questions seeking to elicit Dr. Cameron’s testimony regarding Ex-1020 (U.S. Patent No. 8,918,657 to Cameron et al.), which is not properly part of the record.” Paper 32, 5–6.

Patent Owner argues:

PO timely and repeatedly objected to the line of Petitioner’s questioning seeking to elicit testimony regarding Ex-1020 during the deposition of Dr. Cameron in this IPR “as being belatedly presented without proper authorization by the [B]oard, not authenticated, irrelevant, potentially hearsay depending on what you’re relying on it for, confusing, and a waste of time.”

Id. at 6 (citing Ex. 1021, 83:21–84:4, 128:11–17) (alteration in original).

We note that the first portion sought to be excluded begins with the introduction into the record of and a discussion of Dr. Cameron’s curriculum vitae (CV). *See* Ex. 1021, 83:5–11. Establishing the authenticity of the witness’s CV does not directly implicate the Cameron patent (Ex. 1020), as Patent Owner’s arguments imply. We also note that the witness is a named-inventor on the Cameron patent. *See* Ex. 1021, 129:5–8.

Patent Owner does not adequately explain the bases for its motion to exclude portions of Exhibit 1021. Again, in this case, simply restating its objections is inadequate. For example, Patent Owner does not explain why questions about a proffered expert witness’s CV or the witness’s own patent are inappropriate.

We deny the motion to exclude as to Exhibits 1021 and 1026.

D. Portions of the Petition and Petitioner's Reply

Patent Owner seeks to exclude certain portions of the Petition and Petitioner's Reply. Paper 32, 6–8. Patent Owner argues that portions of the briefs mentioning the J1772 standard are inadmissible.

A motion to exclude should be directed to evidence. *See, e.g.*, Consolidated Trial Practice Guide⁹ at 79 (“A motion to exclude must explain why the *evidence* is not admissible.” (emphasis added)). Briefs are not evidence. We deny the motion to exclude as to the Petition and Petitioner's Reply.

IV. PATENT OWNER'S MOTION TO STRIKE

Patent Owner moves to strike: Ex. 1020 (U.S. Patent No. 8,918,657 B2 to Cameron), Ex. 1022 (Excerpt from Wiley Electrical and Electronics Engineering Dictionary), Ex. 1023 (Excerpt from The Authoritative Dictionary of IEEE), Ex. 1024 (Exhibit 14 as cited in Patent Owner's Complaint in District Court Case No. DCA-3-24-cv-02717), and Ex. 1025 (U.S. Published Patent Application No. 2009/017780 to Lowenthal). Because we do not rely in our analysis on these exhibits in a manner adverse to Patent Owner, we dismiss Patent Owner's Motion to Strike as moot as to these exhibits.

Patent Owner also moves to strike portions of pages 11 and 13 of Petitioner's Reply. Paper 35, 6. Page 11 pertains to Petitioner's reply to Patent Owner's proposed claim construction for “preference interruption.” *See* Pet. Reply 11. In the subject portion, Petitioner references Exhibit 1024, which Patent Owner indicates is an exhibit to its District Court complaint

⁹ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

(Paper 35, 4). In the subject portion of the Reply, Petitioner argues that Patent Owner is taking inconsistent claim construction positions. *See* Pet. Reply 11.

Page 13 pertains to Petitioner’s reply to Patent Owner’s proposed construction for “request” and “response.” Pet. Reply 13. In the subject portion, Petitioner argues that Patent Owner’s proposed construction is contrary to definitions in dictionaries. *See id.* (citing Exs. 1022, 1023).

We understand Patent Owner to argue that the subject portions of the Reply include untimely new arguments. *See, e.g.*, Paper 35, 6 (arguing that the Reply contains arguments that “are based on Petitioner’s belated construction”). We disagree. At least under the circumstances of this case, it was not inappropriate for Petitioner, in its Reply, to address Patent Owner’s claim construction positions first raised in the Response. *See* 37 C.F.R. § 42.23(b) (the Reply may respond to arguments raised in Patent Owner’s Response); *see also* Consolidated Trial Practice Guide 73 (“A party also may submit rebuttal evidence in support of its reply.” (citing *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1077–78 (Fed. Cir. 2015)); *cf.* Paper 6, 9 (Patent Owner, in prior briefing, taking the position that, “[f]or purposes of this Preliminary Response, . . . no express construction is necessary at this stage.”). We also note that we have considered Patent Owner’s arguments in the Sur-reply addressing the subject portions of the Reply. *See, e.g.*, PO Sur-reply 12 (Patent Owner arguing that “Petitioner’s dictionaries likewise support[] PO’s definition of ‘request’”).

We deny Patent Owner’s Motion to Strike as to the Petition and Petitioner’s Reply.

V. CONCLUSION¹⁰

Petitioner has shown by a preponderance of the evidence that claims 1, 4–8, 11–15, and 18–20 are unpatentable over Kimura; claims 2, 5, 9, 12, and 16 are unpatentable over Kimura and Hotta; and claims 3, 10, and 17 are unpatentable over Kimura and King.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1, 4–8, 11–15, 18–20	103(a)	Kimura	1, 4–8, 11–15, 18–20	
2, 5, 9, 12, 16	103(a)	Kimura, Hotta	2, 5, 9, 12, 16	
3, 10, 17	103(a)	Kimura, King	3, 10, 17	
1, 2, 4–9, 11–16, 18–20	102(b) ¹¹	Keith		
3, 8–19	103(a) ¹²	Keith		
6, 13	103(a) ¹³	Keith, Nor		
Overall Outcome			1–20	

¹⁰ 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. 16,654 (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).

¹¹ As explained above, we do not reach this alternative ground.

¹² As explained above, we do not reach this alternative ground.

¹³ As explained above, we do not reach this alternative ground.

VI. ORDER

For the foregoing reasons, it is

ORDERED that claims 1–20 of the '391 patent have been proven to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *denied in part and dismissed in part*;

FURTHER ORDERED that Patent Owner's Motion to Strike is *denied in part and dismissed in part*; 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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