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Paper 56
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ONE WORLD TECHNOLOGIES, INC.,
d/b/a TECHTRONIC INDUSTRIES POWER EQUIPMENT,
Petitioner,

v.

THE CHAMBERLAIN GROUP, INC.,
Patent Owner.

Case IPR2017-00126
Patent 7,161,319 B2

Before JONI Y. CHANG, JUSTIN T. ARBES, and JOHN F. HORVATH,
Administrative Patent Judges.

HORVATH, *Administrative Patent Judge.*

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

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I. INTRODUCTION

A. Background

One World Technologies, Inc. d/b/a Techtronic Industries Power Equipment (“Petitioner”) filed a Petition (Paper 1, “Pet.”) to institute an *inter partes* review of claims 1–4, 7–12, 15, and 16 (“the challenged claims”) of U.S. Patent No. 7,161,319 B2 (Ex. 1001, “the ’319 patent”). The Chamberlain Group, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 6, “Prelim. Resp.”). Upon consideration of the Petition and Preliminary Response, we instituted review to determine the patentability of all of the challenged claims but only a subset of the grounds raised in the Petition.¹ Paper 8 (“Dec. Inst.”).

Subsequent to institution, Patent Owner filed a Response (Paper 11, “PO Resp.”), and Petitioner filed a Reply (Paper 16, “Reply”). In its Response, Patent Owner did not present evidence or argument that the challenged claims were patentable due to secondary considerations of non-obviousness, despite having been cautioned that arguments not raised in the response will be deemed waived. *See* PO Resp.; *see also* Paper 9, 2–3.

Nearly four months after filing its Response, Patent Owner sought additional discovery of ten documents referenced in a discussion of copying as a secondary consideration of non-obviousness in a public version of an Initial Determination made in the International Trade Commission (“ITC”)

¹ We discuss in section II.D *infra*, Patent Owner’s argument that Petitioner raised only a single ground in the Petition.

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Investigation related to this proceeding.² Paper 18. We granted Patent Owner’s request, as well as Patent Owner’s requested method for apprising the Board of the significance of the discovered evidence. See Paper 20; Paper 27, 2–6. To that end, Patent Owner filed its ITC pre-hearing brief, suitably redacted so that only the discussion of copying was discernible, together with the documents cited in its ITC pre-hearing brief, suitably redacted so that only those portions actually cited in Patent Owner’s ITC pre-hearing brief were discernible. See Paper 29 (“PO ITC Brief”); Exs. 2017–2025. Petitioner similarly filed its ITC pre-hearing brief, and the evidence cited in that brief, subject to the same redaction requirements. See Ex. 1023, (“Pet. ITC Brief”); Exs. 1024–1031. An oral hearing was held on February 1, 2018, a portion of which was sealed, and confidential and public versions of the hearing transcript are included in the record.³ See Papers 32, 36 (“Tr.”).

Subsequent to the oral hearing, the Supreme Court issued its decision in *SAS Institute, Inc. v. Iancu*, 138 S.Ct. 1348 (2018). The Director interpreted the SAS decision to require *inter partes* reviews to be instituted on the basis of all claims challenged in a petition and all grounds raised in the petition. Accordingly, we conducted several conference calls with the parties, asking them to identify any previously non-instituted grounds, and whether they wished to include and brief any non-instituted grounds in this

² The ITC Investigation is identified in section I.B, *infra*.

³ We granted the parties’ joint motion to seal and entered a protective order that governs the treatment of confidential information in this proceeding. Paper 38; Ex. 3002.

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proceeding. See Paper 39, 3. In response to our inquiries, the parties identified the following as the only previously non-instituted ground they wished to add to the proceeding: “[w]hether claims 1–4, 7–12, 15 and 16 are rendered obvious by Doppelt, Applicant Admitted Prior Art, Jacobs, and Gilbert.” Ex. 3003. We, therefore, modified our Institution Decision to institute trial on this additional ground. See Paper 39, 5. Patent Owner filed a Supplemental Response limited to addressing this ground. Paper 45 (“PO Supp. Resp.”). Petitioner filed a Supplemental Reply to the Supplemental Response. Paper 47 (“Supp. Reply”). A supplemental oral hearing was held on August 7, 2018, and the hearing transcript is included in the record. See Paper 53 (“Supp. Tr.”).

We have jurisdiction under 35 U.S.C. § 6(b). This is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, we find Petitioner has shown by a preponderance of the evidence that claims 1–4, 7, 9–12, and 15 of the ’319 patent are unpatentable, but has failed to show by a preponderance of the evidence that claims 8 and 16 are unpatentable over the combination of Doppelt, AAPA, and Jacobs or over the combination of Doppelt, AAPA, Jacobs, and Gilbert.

B. Related Matters

Petitioner identifies the following as matters that could affect, or be affected by, a decision in this proceeding: *The Chamberlain Group, Inc. v. Techtronic Industries Co. Ltd. et al.*, Case No. 16-cv-06097 (N.D. Ill.); *The Chamberlain Group, Inc. v. Techtronic Industries Co. Ltd. et al.*, Case No. 16-cv-06094 (N.D. Ill.); and *In the Matter of Certain Access Control Systems and Components Thereof*, ITC Investigation No. 337-TA-1016 (the

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“ITC Investigation”). Pet. 1. Patent Owner identifies a subset of the same matters. Paper 4, 2.

In the related ITC Investigation, the Administrative Law Judge (“ALJ”) concluded in an Initial Determination that the challenged claims of the ’319 patent were not obvious over the combination of Doppelt and Jacobs or over the combination of Doppelt, Jacobs, and Gilbert. *See* Ex. 2014, 171, 175. The ITC affirmed the ALJ’s conclusions in a Commission Opinion. *See* Ex. 3004, 1, 13 n.11. Although we have considered the findings of fact and conclusions reached by the ITC in its Initial Determination, we are not bound by them. *See Nobel Biocare Servs. AG v. Intradent USA, Inc.*, 903 F.3d 1365, 1375 (Fed. Cir. 2018) (noting the Federal Circuit is not bound by its prior affirmance of an ITC decision when reviewing a final written decision of the Board because “[a]s the Board correctly observed, the evidentiary standard in its proceedings, preponderance of the evidence, is different from the higher standard applicable in ITC proceedings, clear and convincing evidence”). Here, in the instant Final Written Decision, we have made an independent determination of patentability of the challenged claims based on the parties’ contentions, the specific evidence presented in this proceeding, and the standards applicable to *inter partes* review proceedings.

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C. Evidence Relied Upon⁴

Reference		Date	Exhibit
The '319 Patent ("AAPA") ⁵	US 7,161,319 B2	Apr. 7, 2000	Ex. 1001
Doppelt	GB 2,312,540 A	Oct. 29, 1997	Ex. 1004
Jacobs	US 5,467,266	Nov. 14, 1995	Ex. 1005
Gilbert	US 5,530,896	June 25, 1996	Ex. 1006

D. The Instituted Grounds of Unpatentability

References	Basis	Claims Challenged
Doppelt, AAPA, and Jacobs	§ 103(a)	1–4, 7–12, 15, and 16
Doppelt, AAPA, Jacobs, and Gilbert	§ 103(a)	1–4, 7–12, 15, and 16

II. ANALYSIS

A. The '319 Patent

The '319 patent discloses a movable barrier operator, such as a garage door operator ("GDO") or gate operator. Ex. 1001, 1:14–16. The movable barrier operator includes a passive infrared detector that detects the presence of high temperature objects (e.g., people), and controls a function (e.g.,

⁴ Petitioner also relies upon the Declaration of Stuart Lipoff. Ex. 1003.

⁵ Petitioner relies on certain disclosures in the "Background of the Invention" section of the '319 patent as being applicant admitted prior art ("AAPA"). See Pet. 10 (citing Ex. 1001, 1:21–23, 1:41–43).

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illumination) of the movable barrier operator. *Id.* at 1:14–19. Figure 1 of the '319 patent is reproduced below.

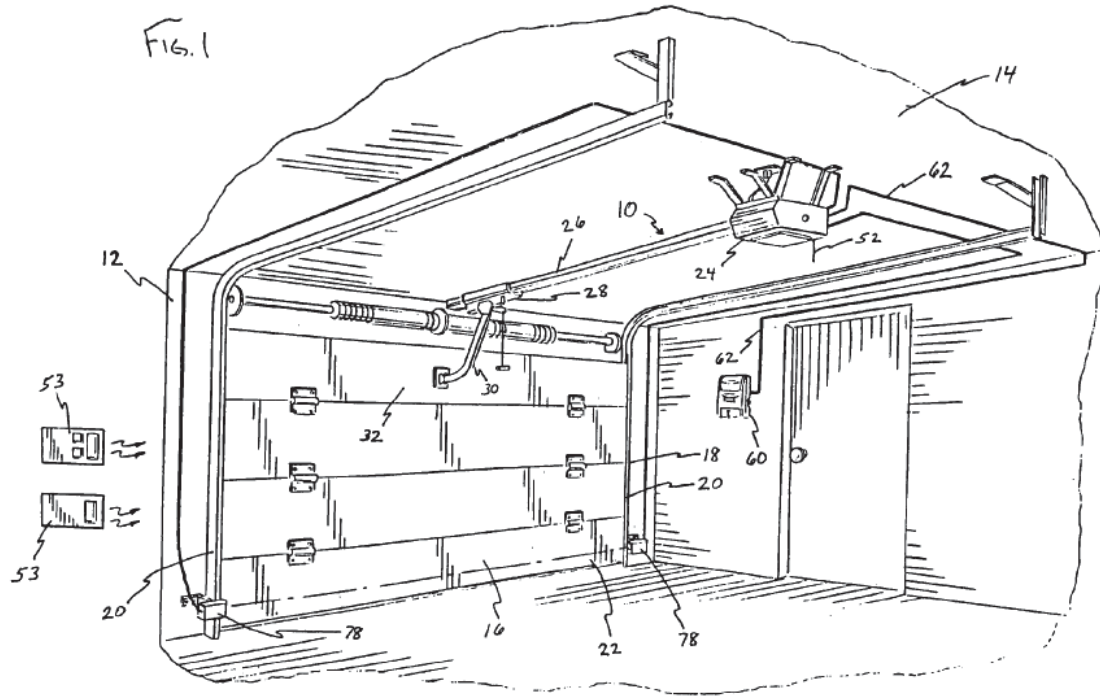


Figure 1 is a perspective view of a garage, including a movable barrier operator having a passive infrared detector in a wall control unit. *Id.* at 3:12–15.

In an embodiment depicted in Figure 1, GDO 10 includes head unit 24 connected to wall control unit 60 via line 62. Ex. 1001, 3:41–46, 3:53–54, 4:5–7, Fig. 1. Wall control unit 60 controls motor 70 and light 72 in head unit 24 via communications over line 62 between microcontroller 110 in wall control unit 60 and microcontroller 56 in head unit 24. *Id.* at 3:63–4:9, 4:22–32, Figs. 2, 3B, 4. Wall control unit 60 further includes light switch 120, door switch 122, vacation switch 124, and auto-manual selection switch

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126. *Id.* at 4:32–34, Fig. 4. GDO 10 further includes position indicator 80 to indicate the garage door position to microcontroller 56 of head unit 24. *Id.* at 4:16–20. As shown in Figure 1, the garage door is a “multipanel garage door 16.” *Id.* at 3:48–49.

Claims 1 and 9 of the ’319 patent are independent. Claim 1, reproduced below, is illustrative. Claim 9 differs from claim 1 by requiring the motor drive unit and wall console to have a controller rather than a microcontroller as recited in claim 1. Each of the other challenged claims of the ’319 patent depend directly or indirectly from claims 1 or 9.

1. An improved garage door opener comprising a motor drive unit for opening and closing a garage door, said motor drive unit having a microcontroller and a wall console, said wall console having a microcontroller, said microcontroller of said motor drive unit being connected to the microcontroller of the wall console by means of a digital data bus.

Ex. 1001, 7:34–39.

B. Claim Construction

The Board interprets the claims of an unexpired patent using the broadest reasonable interpretation in light of the specification of the patent. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142–46 (2016). Under this standard, we interpret claim terms using “the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant’s specification.” *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). “Under a broadest reasonable interpretation, words of the claim must be given their

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plain meaning, unless such meaning is inconsistent with the specification and prosecution history.” *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016). Only those terms which are in controversy need to be construed and only to the extent necessary to resolve the controversy. See *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Petitioner requests construction of various claim terms, including the term *wall console*, which Petitioner argues should be construed to mean “a wall-mounted control unit including a passive infrared detector” because the patentee disavowed wall consoles lacking a passive infrared detector. Pet. 21–31 (emphasis omitted). Patent Owner counters that no claim terms require express construction, the term *wall console* does not require a passive infrared detector, and construing *wall console* to require a passive infrared detector would improperly import limitations from the Specification into the claims. PO Resp. 3 n.1.

In our Institution Decision, we did not expressly construe any claim term because we were able to determine whether to institute *inter partes* review without doing so.⁶ Dec. Inst. 5–6. Neither party contests the decision not to expressly construe claims. See PO Resp. 3–4; Reply. On the

⁶ Regarding the term *wall console*, we found we did not need to decide whether the patentee had disavowed wall consoles lacking passive infrared detectors because Petitioner had shown a reasonable likelihood of prevailing with respect to the challenged claims regardless of whether the recited *wall console* is required to include an infrared detector. Dec. Inst. 5–6.

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full record before us, we find the patentability of the challenged claims can be determined without expressly construing any claim term.

C. Petitioner’s Motion to Exclude

As an initial matter, Petitioner filed a Motion to Exclude the Declaration of Nathaniel J. Davis IV, Ph.D. (Ex. 2007), the dictionary definition of microcontroller submitted by Patent Owner (Ex. 2008), and U.S. Patent No. 5,969,637 (“the ’637 patent”) issued to Doppelt (Ex. 2012). Paper 22 (“Mot.”). Patent Owner opposed the Motion (Paper 25, “Opp.”), and Petitioner replied (Paper 26, “Opp. Reply”). As the movant, Petitioner bears the burden of establishing it is entitled to the relief requested.

37 C.F.R. § 42.20.

1. Admissibility of the Davis Declaration (Ex. 2007)

Petitioner argues Dr. Davis’ Declaration should be excluded under Federal Rules of Evidence 701 and 702 because Patent Owner has failed to establish that Dr. Davis qualifies as a person of ordinary skill in the art, and has failed to establish that Dr. Davis’ testimony is that of an expert. Mot. 3, 6–7. Petitioner argues Dr. Davis has offered “wildly divergent and inconsistent positions” regarding the qualifications of a person of ordinary skill in the art, arguing that he himself qualifies as a person skilled in the art because of his embedded control systems experience, but that a person skilled in the art would not have combined two references disclosing embedded control systems because they are in different fields of endeavor. *Id.* at 5 n.1.

Patent Owner contends Dr. Davis’ background and qualifications establish his competence to provide expert testimony in this proceeding

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because he is a person of higher than ordinary skill in the art, which compensates for any perceived deficit in his work experience. Opp. 2, 4 (citing Ex. 2007 ¶¶ 5–17). Patent Owner further argues that Dr. Davis’ testimony regarding the ’319 patent is admissible because it was both considered and credited in the related ITC Investigation, and because Petitioner relies on it to support technical arguments made in Petitioner’s Reply. *Id.* at 5–6.

Evidentiary issues before the Board are decided based on the Federal Rules of Evidence. *See* 37 C.F.R. § 42.62(a). Federal Rule of Evidence 702 states:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- (a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.

Petitioner does not argue that Dr. Davis’ testimony should be excluded because it is based on insufficient facts or data, because it is the product of unreliable principles or methods, or because Dr. Davis has improperly applied otherwise reliable principles and methods to the facts of this proceeding. *See* Mot. 1–7. Rather, Petitioner argues that Dr. Davis’ testimony should be excluded because he lacks the scientific, technical, or

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specialized knowledge that would allow him to provide expert testimony in this proceeding. *Id.*

Admission of expert testimony is within the sound discretion of the trier of fact. *Acoustical Design, Inc. v. Control Elecs. Co.*, 932 F.2d 939, 942 (Fed. Cir. 1991). The fact finder “enjoy[s] ‘wide latitude’ to determine admissibility . . . of evidentiary presentations,” including expert presentations, because they are “in the best place to judge that [a witness has] the ‘knowledge, skill, experience, training, [and] education’ of a ‘specialized’ nature that [is] likely to ‘assist the trier of fact to understand the evidence.’” *SEB S.A. v. Montgomery Ward & Co.*, 594 F.3d 1360, 1373 (Fed. Cir. 2010) (second alteration in original) (quoting Fed. R. Evid. 702).

Although the admission of expert testimony is within our discretion, there are limits to that discretion. For example, in *Sundance*, it was an abuse of discretion to allow “a witness to testify as an expert on the issues of noninfringement or invalidity” when the witness was not “qualified as an expert in the pertinent art.” *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1363 (Fed. Cir. 2008). The improperly admitted *Sundance* witness was a patent attorney who was neither shown to have had work experience in the relevant technical field nor offered as an expert in that field. *Id.* at 1362. By contrast, in *Montgomery Ward*, it was not an abuse of discretion to allow a witness to testify as an expert once the witness had “established an adequate relationship between his experience and the claimed invention,” even though the witness lacked specific experience designing a consumer product embodying the invention. *Montgomery Ward*, 594 F.3d at 1373.

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Through his testimony, Dr. Davis has demonstrated that he possesses sufficient knowledge, skill, experience, training, or education in systems with embedded microprocessors to establish an adequate relationship between his experience and the invention claimed in the '319 patent. Accordingly, Dr. Davis is qualified to provide expert testimony in this proceeding. *See* Fed. R. Evid. 702; *Montgomery Ward*, 594 F.3d at 1373.

Through his uncontroverted testimony, Dr. Davis has established that he has earned a Ph.D. in electrical engineering, has more than 30 years of research experience in computer architecture, digital design, and embedded microprocessors, has authored numerous technical articles on these topics, and has previously provided “expert witness testimony in cases involving embedded computer systems that are similar to the ones envisioned in the '319 patent.” Ex. 2007 ¶¶ 6, 8, 16–17. Although Dr. Davis has no direct experience with garage door openers, he has experience with systems he considers to be related, such as “elevator controllers where you’ve got to worry about not just opening and closing the doors but the movement of the carriage or the cab that goes up and down . . . that you don’t account for in a garage door.” Ex. 1019, 34:23–35:6.

In short, Dr. Davis has demonstrated that he possesses sufficient experience, knowledge, and training to offer expert testimony in this proceeding. Accordingly, Petitioner’s request to exclude his declaration in its entirety is *denied*.

2. Admissibility of the Definition of Microcontroller (Ex. 2008)

Petitioner argues the definition of “microcontroller” in the *McGraw-Hill Electronics Dictionary* (Ex. 2008) should be excluded as irrelevant

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under Federal Rules of Evidence 401–402. Mot. 7–9. Petitioner contends the definition is irrelevant because Patent Owner argues the term *microcontroller* should be construed to have its plain and ordinary meaning and does not require express construction. *Id.* at 7–8. For the same reasons, Petitioner contends the definition should be excluded under Federal Rule of Evidence 403 because its probative value is substantially outweighed by a danger of unfair prejudice, confusing the issues, or wasting time. *Id.* at 9–10.

Patent Owner argues the definition of *microcontroller* is relevant because it reflects how a person of ordinary skill in the art would have understood the meaning of this term, and corroborates Dr. Davis’ testimony on that meaning. Opp. 9–10. For the same reasons, Patent Owner contends the definition would not be unfairly prejudicial, confuse the issues, or waste time. *Id.* at 10.

We are persuaded by Patent Owner’s argument. The term *microcontroller* is recited in independent claim 1. Ex. 1001, 7:33–39. In our Institution Decision, we determined there was no need to expressly construe this term because we were able to determine whether to institute trial regardless of how the term is expressly construed. We maintain that conclusion here. We note there is little difference between Petitioner’s proposed construction of *microcontroller* (see Pet. 34), which relies on the *Dictionary of Computer and Internet Terms*, and Dr. Davis’ testimony regarding how a person of skill in the art would interpret this term (Ex. 2007 ¶ 72), which relies on the *McGraw-Hill Electronics Dictionary*. Compare Ex. 1017, 317 (“a microprocessor designed specifically for controlling

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equipment . . . [that] usually contain[s] some memory and input-output circuitry on the same chip with the microprocessor”), with Ex. 2008, 288 (“[a] monolithic integrated circuit with a complete central processing unit (CPU) and enough semiconductor memory . . . and input-output (I/O) capability to be considered as equivalent to a ‘computer on a chip’ . . . [that] is usually used in control rather than data-processing applications”).

How a person of skill in the art would have understood the meaning of *microcontroller* is relevant not only to the proper understanding of claim 1, but to the proper understanding of the prior art used to challenge the patentability of claim 1. Moreover, because the *McGraw-Hill Electronics Dictionary* definition of this term comports with Petitioner’s own proposed definition set forth in the *Dictionary of Computer and Internet Terms*, we disagree with Petitioner that our consideration of the McGraw-Hill definition would result in unfair prejudice, confusion, or waste of time. Accordingly, Petitioner’s request to exclude Exhibit 2008 is *denied*.

3. Admissibility of the ’637 Patent (Ex. 2012)

Petitioner argues the ’637 patent (Ex. 2012) should be excluded as irrelevant under Federal Rules of Evidence 401 and 402. Mot. 10–11. Petitioner contends the patent is irrelevant because Patent Owner does not cite to it in any of its briefs, and it therefore has no tendency to make a fact of consequence in this proceeding more or less probable. *Id.* at 11. For the same reasons, Petitioner contends the ’637 patent should be excluded under Federal Rule of Evidence 403 because any probative value it has is substantially outweighed by a danger of unfair prejudice, confusing the issues, or wasting time. *Id.* at 11–12.

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Patent Owner argues the '637 patent is relevant because Dr. Davis cited to it in his declaration. Opp. 11 (citing Ex. 2007 ¶ 24). Dr. Davis testifies that the '637 patent is the priority document for Doppelt, and was cited in an Information Disclosure Statement filed during prosecution of the '319 patent that the examiner initialed to indicate it had been considered. Ex. 2007 ¶ 24. Patent Owner further argues there is no danger that the Board will confuse the '637 patent with the Doppelt reference that is relied on by Petitioner because they are different documents. Opp. 11.

Petitioner counters that although Dr. Davis cited to the '637 patent in his declaration, Patent Owner never cited to the '637 patent in its Preliminary Response, Response, or Supplemental Response, and never cited to the paragraph of Dr. Davis' declaration that cites to the '637 patent. Opp. Reply 4. Petitioner argues that because Patent Owner failed to make any arguments involving the '637 patent in this proceeding, the patent has no bearing on any fact that is of consequence in determining the outcome of the proceeding. *Id.* (citing 37 C.F.R. § 42.6; *Google Inc. v. Performance Pricing Holdings, LLC*, Case CBM2016-00050, slip op. at 50 (PTAB Sept. 13, 2017) (Paper 33)).

We agree with Petitioner. Patent Owner's only argument for the relevance of the '637 patent is its citation in one paragraph of Dr. Davis' declaration. Opp. 11. Patent Owner, however, provides no evidence that it cited the '637 patent in any of its papers, made any arguments that relied upon the '637 patent, or even cited the paragraph of Dr. Davis' declaration that cites to the '637 patent. *Id.* Moreover, Dr. Davis only states that the '637 patent was cited in an Information Disclosure Statement. *See* Ex. 2007

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¶ 24. He does not offer any opinion regarding patentability of the challenged claims based on that fact. *Id.*

Accordingly, Petitioner’s request to exclude Exhibit 2012 from evidence as irrelevant under Federal Rule of Evidence 402 is *granted*.

D. Identification of Grounds Raised in the Petition

Petitioner requests we “find claims 1–4, 7, 8, 9–12, 15, and 16 unpatentable under § 103 as obvious over *Doppelt* in view of the *Admitted Art* and *Jacobs* and/or *Gilbert*.” Pet. 3. In our Institution Decision, entered before the SAS decision, we determined that Petitioner established a reasonable likelihood of showing the unpatentability of all challenged claims over the combination of *Doppelt*, *AAPA*, and *Jacobs*, and instituted *inter partes* review as to this asserted ground only. Dec. Inst. 21.

In its initial Response, Patent Owner did not argue the Petition did not raise this instituted ground. See PO Resp. Subsequent to the SAS decision, and to bring our Institution Decision in compliance with the Director’s guidance regarding SAS, we asked the parties to “identify any non-instituted grounds raised in the Petition and the claims that pertain to such grounds.” Paper 39, 3. The parties *agreed*, via a joint email, that “the non-instituted ground in this proceeding is as follows: . . . Whether claims 1–4, 7–12, 15, and 16 are rendered obvious by *Doppelt*, Applicant Admitted Prior Art, *Jacobs*, and *Gilbert*.” Ex. 3003.⁷ We, therefore, modified our Institution

⁷ The email, sent by Mr. Bregman, includes a signature line identifying Mr. Bregman as counsel for Petitioner and Mr. Monaldo as counsel for Patent Owner. Mr. Monaldo, copied on the email, did not object to the inclusion of his name on the signature line in a subsequent call with the parties, and did not allege that the email misrepresented the parties’ agreement or was in any

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Decision to include this as the only *additional* ground raised in the Petition. Paper 39, 5.

During the conference calls with the parties regarding compliance with the SAS decision, and in the joint email from the parties identifying additional grounds raised in the Petition, Patent Owner did not argue the Petition did not raise the ground on which we originally instituted *inter partes* review—obviousness over Doppelt, AAPA, and Jacobs. See Paper 39; Ex. 3003. Nonetheless, in a footnote of its Supplemental Response—filed nearly ten months *after* its initial Response and *after* having conducted an entire trial on the patentability of the challenged claims over Doppelt, AAPA, and Jacobs—Patent Owner now argues that the Petition did not raise this originally instituted ground. PO Supp. Resp. 21 n.3. Instead, Patent Owner argues, the Petition raised only a single, different, ground, namely, the patentability of the challenged claims over Doppelt, AAPA, Jacobs, *and* Gilbert. *Id.*

We are not persuaded by Patent Owner’s argument for several reasons. First, Patent Owner waived the argument by not raising it in its initial Response. See PO Resp.; Paper 9, 2–3 (“The patent owner is cautioned that any arguments for patentability not raised in the response will be deemed waived.”). Second, even if Patent Owner did not waive the argument, Patent Owner has not properly presented it for consideration in its Supplemental Response, which purports to incorporate the argument by reference from Patent Owner’s Preliminary Response. See PO Supp. Resp.

way misleading. Paper 39, 4.

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21 (“[Patent Owner] previously explained, at pages 14–31 of its . . . Preliminary Response (Pap. 6 – *incorporated here*), that Petitioner’s mode of argument is impermissible”) (emphasis added); *id.* at 21 n.3 (“These failings are fatal to the Petition, which as discussed in the Preliminary Response, proposed ‘only a single ground—namely obviousness over Doppelt in view of Jacobs, ‘Admitted Art,’ And Gilbert.’ Pap. 6, 1, 21–31 (*incorporated here*).”) (emphasis added). Our rules expressly prohibit incorporating arguments by reference from one document into another. *See* 37 C.F.R. 42.6(a)(3). Lastly, even if Patent Owner did properly raise the argument in its Supplemental Response, we do not find it persuasive for the reasons that follow.

Our determination that the Petitioner challenged the patentability of the challenged claims as obvious over Doppelt, AAPA, and Jacobs is supported by the Petition in numerous places. First, the Petition provides separate rationales for combining (1) Doppelt, AAPA, and Jacobs; and (2) Doppelt, AAPA, Jacobs, and Gilbert. *Compare* Pet. 38–43 *with id.* at 43–44. Second, the Petition states the combination of Doppelt, AAPA, and Jacobs teaches all the limitations of claim 1. *Id.* at 18 (stating that because the use of wall controls and passive infrared detectors in garage door operators were well known in the *Admitted Art*, a skilled artisan “would immediately recognize that the wall control with occupancy detector, microcontroller, and digital data bus of *Jacobs* could be added to the wall control of a conventional garage door system, such as *Doppelt*”); *see also id.* at 42–43 (stating a skilled artisan “would have recognized that the combined system (of *Doppelt*, *Jacobs*, and *Admitted Art*) using these well-known

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components would benefit users with increased programmability and control over their garage door system”). And, finally, the Petition relies on Gilbert in a purely conditional manner that depends on the construction of the term “wall console.” *Id.* at 58 (“To the extent that the Board determines that the claimed ‘wall console’ does not require a passive infrared detector, *Gilbert* also discloses a ‘wall console having a microcontroller.’”).

As discussed above, the Petition itself provides ample evidence that Petitioner’s challenge to the claims included the originally instituted ground based on the combination of Doppelt, AAPA, and Jacobs. Finding otherwise would require us to ignore the substantive analysis provided for this ground in the Petition, as well as the “*and/or*” language in Petitioner’s challenge. It would effectively require us to rewrite Petitioner’s “*and/or*” challenge to recite only an “*and*” challenge. This we cannot do. *See SAS*, 138 S. Ct. at 1355 (“Congress chose to structure a process in which it’s the petitioner . . . who gets to define the contours of the proceeding.”).

Accordingly, for all of the reasons discussed above, we find the Petition challenges the patentability of the challenged claims as obvious over (1) Doppelt, AAPA, and Jacobs and (2) Doppelt, AAPA, Jacobs, and Gilbert.

E. Obviousness over Doppelt, AAPA, and Jacobs

Petitioner argues claims 1–4, 7–12, 15, and 16 of the ’319 patent would have been obvious under 35 U.S.C. § 103(a) in view of the combination of Doppelt, AAPA, and Jacobs. Pet. 38–81. In the sections that follow, we address the level of ordinary skill in the art for the ’319 patent, whether Jacobs is analogous art to the ’319 patent, whether

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AAPA can be used in *inter partes* reviews, whether the asserted prior art teaches all of the limitations of the challenged claims, whether a person of ordinary skill in the art would have had reason to combine the references' teachings in the manner asserted, and Patent Owner's evidence of secondary considerations of non-obviousness. We then discuss our conclusions regarding the obviousness of the challenged claims.

1. Level of Skill in the Art

Relying on the opinion of its declarant, Mr. Lipoff, Petitioner argues a person of ordinary skill in the art at the time of the invention would have had “at least an undergraduate degree in electrical engineering, or equivalent education; one to two years of work experience with moveable barrier operators, automated door systems, or equivalent work experience or training; and a general understanding of microcontrollers and communications between microcontrollers.” Pet. 21 (citing Ex. 1003 ¶¶ 27–30).

Patent Owner does not contest this description, and does not offer an alternative description. Based upon our review of the '319 patent and the cited prior art, we find Petitioner's description, which is supported by uncontroverted testimony, to be correct. Therefore, we adopt it as our own.

2. Summary of Prior Art Relied Upon

a. Doppelt (Ex. 1004)

Doppelt discloses a garage door opener (GDO) with remotely controlled lighting. Ex. 1004, 1:2–5. Figure 1 of Doppelt is reproduced below.

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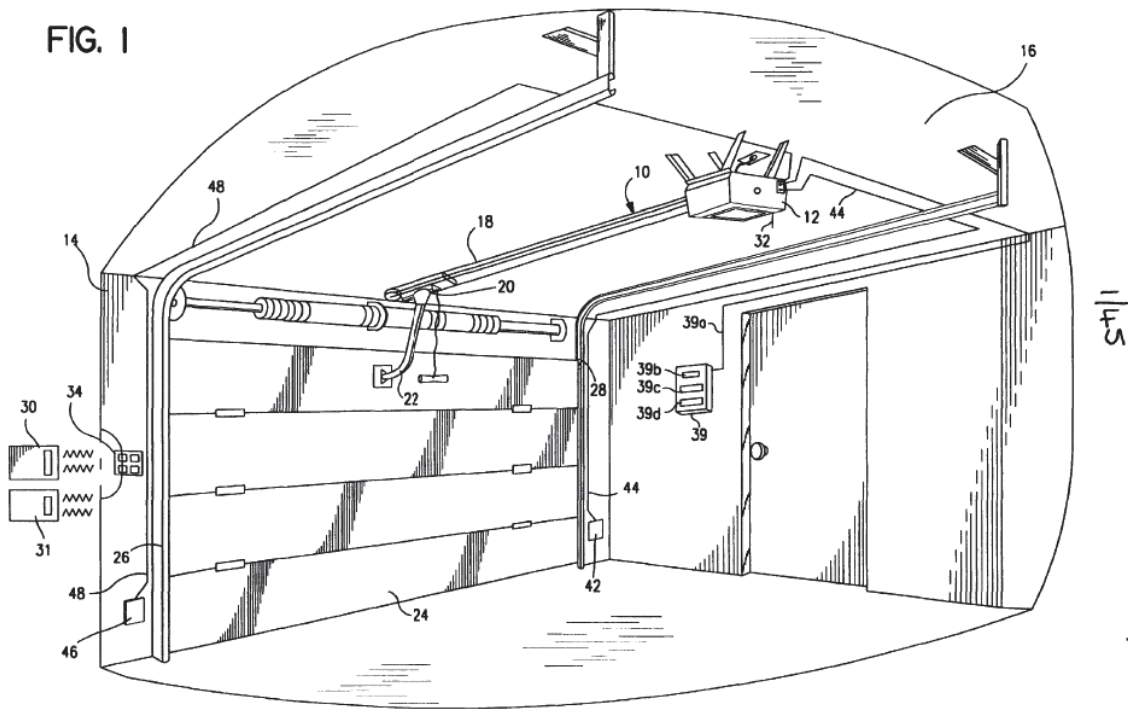


Figure 1 of Doppelt is a perspective view of a garage having a garage door operator. The GDO includes head unit 12 hard-wired to wall-mounted switch module 39 via wires 39a, and wirelessly connected to various transmitters 30, 31, and 34. *Id.* at 5:4–22, 7:1–5, Fig. 1.

Microcontroller 84 in head unit 12 receives various signals from switch module 39 and transmitters 30, 31, and 34, and in response to the received signals, sends current to motor 106 to raise or lower garage door 24, or sends current to a light in the garage to turn it on. *Id.* at 5:28–37, 6:9–14, 16:13–18, Figs. 1, 2. Transmitter 30 includes push-button switches 675–677 and microcontroller 678. *Id.* at 7:6–20, Fig. 7. Transmitter 31 includes push-button switches 113 and 115, and controller 155. *Id.* at 11:33–36. Transmitter 34 includes push-button switches 710–714, and microprocessor

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715. *Id.* at 10:23–29. Garage door 24 is a “multiple paneled garage door.”
Id. at 5:11–12.

b. Jacobs (Ex. 1005)

Jacobs discloses a motor-operated panel system that includes a panel assembly consisting of a plurality of panels for controlling the transmission of light, heat, or air through a window. Ex. 1005, Abstract, 1:5–9, Fig. 1. “The panel system is controlled remotely from a panel control which may be wall mounted, communicating with the panel system via a data bus.” *Id.*, Abstract. Jacobs’ motor-operated panel system includes lower roller assembly 35, upper roller assembly 36, elongated panel assembly 40, and two remotely located, wall-mounted controls 31/32. *Id.* at 1:5–9, 5:1–19; Fig. 1. Upper roller assembly 36 includes a drive motor for moving panel assembly 40 up or down under the control of motor controller 45 and wall mounted controls 31/32. *Id.* at 5:15–19, Fig. 1. Microprocessors 800 in wall mounted controls 31/32 communicate with microprocessor 540 in motor controller 45 over serial link bus 652 (e.g., using RS232 protocol) to control the drive motor in upper roller assembly 36. *Id.* at 13:37–39, 15:5–15, 15:22–31, 16:58–65, Fig. 1, 21, 24. Other types of controls can also be used to control motor controller 45 (e.g., remote controls, light or temperature sensors, and occupancy detectors) either in place of or in addition to wall mounted controls 31/32. *Id.* at 19:43–50.

c. AAPA (Ex. 1001)

In a section of the ’319 patent entitled “Background of the Invention,” the patentee admits that “[i]t has been known to use pyroelectric infrared detectors or passive infrared (PIR) detectors for the detection of a person.”

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Ex. 1001, 1:21–23. In the same section, the patentee further admits that “[i]t is also known that garage door operators or movable barrier operators can include a passive infrared detector associated with the head unit of the garage door operator.” *Id.* at 1:41–43.

3. *Whether Jacobs is Analogous Art to the ’319 Patent*

Petitioner and Patent Owner dispute whether Jacobs is analogous art to the ’319 patent, and whether it can properly be combined with Doppelt. *See* Pet. 38–43; Reply 3–7; PO Resp. 6–9; PO Supp. Resp. 3–10. A reference is analogous art if it is (a) “within the field of the inventor’s endeavor,” or (b) “reasonably pertinent to the particular problem with which the inventor was involved.” *In re Deminski*, 796 F.2d 436, 442 (Fed. Cir. 1986). The scope of analogous art is to be construed broadly. *See Wyers v. Master Lock Co.*, 616 F.3d 1231, 1238 (Fed. Cir. 2010) (“The Supreme Court’s decision in [*KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 402 (2007)], directs us to construe the scope of analogous art broadly . . .”).

The first prong of the analogous art test, the inventor’s field of endeavor, is determined “by reference to explanations of the invention’s subject matter in the patent [disclosure], including the embodiments, function, and structure of the claimed invention.” *In re Bigio*, 381 F.3d 1320, 1325–26 (Fed. Cir. 2004); *see also Deminski*, 796 F.2d at 442 (determining a reference to be within a patent’s field of endeavor when it had “essentially the same function and structure”). Determining the field of endeavor includes assessing “the nature of the [patent disclosure] and claimed invention in addition to the level of ordinary skill in the art.” *Bigio*, 381 F.3d at 1326.

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The parties do not dispute that Doppelt and the '319 patent are in the same field of endeavor. *See* Pet. 9 (“*Doppelt* depicts a garage door operator that is substantially identical to the '319 patent’s system.”); PO Supp. Resp. 5 (“*Doppelt*, like the '319 Patent, relates to garage door openers”). Rather, the parties dispute what that field of endeavor is, whether Jacobs is in the same field of endeavor, and whether Jacobs is reasonably pertinent to a particular problem with which the inventors of the '319 patent were concerned. For the reasons explained below, based on the evidence presented in this proceeding, we conclude that Jacobs qualifies as analogous art under both prongs of the analogous art test. Jacobs is within the '319 patent’s field of endeavor and, even if it is not, it is reasonably pertinent to a problem with which the inventors were involved.

a. Whether Jacobs is in the Field of Endeavor of the '319 Patent

Petitioner contends Jacobs and the '319 patent are in the same field of endeavor,⁸ which Petitioner identifies as “motor-driven systems for moving a barrier, such as a garage door or window panel.” Pet. 39 (citing Ex. 1004, 6:9–14; Ex. 1005, 1:5–10; 5:15–17; Ex. 1003 ¶ 107); Reply 3–4 (citing Ex. 1005, 1:5–10, 5:15–17, 4:48–54, 19:60–20:2; Ex. 1003 ¶¶ 58, 107).

Petitioner argues Jacobs’ window shade is a barrier because it “control[s] the transmission of light, heat or air through a window.” Pet. 39 (citing Ex. 1005, 5:15–17); Tr. 17:6–11. Petitioner also argues Jacobs is in the same field of endeavor as the '319 patent because it teaches a system having an

⁸ As noted above, the parties do not dispute that Doppelt and the '319 patent are in the same field of endeavor. *See* Pet. 9; PO Supp. Resp. 5.

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embedded microcontroller, and Dr. Davis (Patent Owner’s declarant) identified systems with embedded microcontrollers as a field of invention of the ’319 patent. Reply 4 (citing, *inter alia*, Ex. 1005, 13:37–56, 15:11–31; Ex. 1003 ¶¶ 38–40, 52–55, 58–61; Ex. 1019, 33:18–22, 34:7–16, 39:9–21, 41:18–20). Petitioner further argues Jacobs is in the same field of endeavor as the ’319 patent because the systems described in Jacobs and the ’319 patent have the same structure and function:

(1) a motor drive unit for opening and closing a panel system; (2) the motor drive unit with a microcontroller; (3) a microcontroller in a wall console; and (4) a digital data bus connecting the motor drive unit’s microcontroller and the wall console’s microcontroller.

Id. at 4–5 (citing, *inter alia*, Ex. 1005, 3:1–8, 4:58–5:8, 5:15–19, 13:37–19, 15:5–31, 16:58–65, Figs. 1, 18, 19, 21, 24).

Patent Owner contends the field of endeavor of the ’319 patent is “garage door openers,” and the field of endeavor of Jacobs is the different field of “window panel system[s].” PO Resp. 6–9; PO Supp. Resp. 5. According to Dr. Davis, “the invention disclosed in the ’319 patent [is] related to garage door openers. . . . In contrast, Jacobs relates to a window panel system made of multiple shades attached to a roller on either side of a window.” Ex. 2007 ¶ 47.

Upon consideration of the arguments and evidence presented by Patent Owner and Petitioner, we find Jacobs is in the same field of endeavor as the ’319 patent, namely, motor-driven systems for moving a barrier. We are mindful that the ITC found Jacobs and the ’319 patent were not in the same field of endeavor because “the ’319 patent’s claims limit its field of

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endeavor to systems that control movement of real barriers, like garage doors,” whereas Jacobs’ system focuses on “controlling movement of coverings for a barrier (*e.g.*, a window), for mainly decorative purposes.” Ex. 2014, 157. However, we find that Jacobs’ panel assembly is a real barrier that serves more than mainly decorative purposes. It is a real barrier to light, heat, and air. Ex. 1005, 1:5–10. It is also a real barrier, for example, to birds and insects that cannot fly through it when it is not in its “open” position. It is likewise a real barrier to people attempting to exit through a window covered by the panel assembly (*e.g.*, in case of emergency egress), who would be unable to do so without first moving the panel assembly to its “open” position, as they would with a garage door.

More importantly, the “test for analogous art requires the PTO to determine the appropriate field of endeavor by reference to explanations of the invention’s subject matter in the patent [disclosure], including the embodiments, function and structure of the claimed invention.” *Bigio*, 381 F.3d at 1325–1326; *see also In re Wood*, 599 F.2d 1032, 1036 (CCPA 1979) (confining the field of endeavor to the scope explicitly specified in the “Background of Invention” section of the patent at issue). “The field of endeavor of a patent is not limited to the specific point of novelty, the *narrowest possible conception* of the field, or the particular focus within a given field.” *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1000 (Fed. Cir. 2016) (emphasis added). In short, we must review the ’319 patent as a whole, including the Specification and claims, to determine the appropriate “field of endeavor.”

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The title of the '319 patent is “Movable Barrier Operator Having Serial Data Communication.” Ex. 1001, [54]. The '319 patent does not define the term “barrier,” nor does it limit the term to garage doors. Rather, it identifies garage doors and gates *as examples* of barriers. See Ex. 1001, 1:14–16 (“The invention relates *in general* to moveable barrier operators and in particular to moveable barrier operators *such as* garage door operators or gate operators” (emphases added)). Although Jacobs does not disclose a device for opening and closing garage doors, it does disclose a device for opening and closing a barrier as explained above, i.e., a barrier to heat, light, air, birds, insects, and even to people.

More importantly, Jacobs’ movable barrier operator has the same “structure and function of the invention” described and claimed in the '319 patent. *Bigio*, 381 F.3d at 1326. The systems described in both Jacobs and the '319 patent consist of a motor drive unit having a microcontroller that controls a motor to move a barrier up and down. Compare Ex. 1001, 3:45–49, 3:63–4:4, Figs. 1, 2 (microcontroller 56 in motor drive unit 24 controls motor 71 to move multi-panel garage door 16), with Ex. 1005, 5:15–17, 13:37–39, Figs. 1, 21 (microcontroller 540 in motor drive unit 45 controls motor 215 to move multi-panel window shade 40). The systems described in both Jacobs and the '319 patent include a wall console having a microcontroller that sends instructions over a digital data bus to the motor drive unit to control the motor. Compare Ex. 1001, 4:22–32, Figs. 2, 4 (microcontroller 110 in wall control 60 sends instructions to microcontroller 56 over data bus 62), with Ex. 1005, 15:5–13, 5:22–34, Figs. 21, 24 (microcontroller 800 in wall control 32/630 sends instructions to

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microcontroller 540 over serial data link 652). Significantly, on cross-examination, Dr. Davis acknowledged that the systems described in Jacobs and the '319 patent have the same structure and function. See Ex. 1019, 167:11–24 (confirming “the Jacobs patent describe[s] embedded control systems” with “wall consoles,” a “motor drive unit,” and “a digital data bus between the wall console and the motor drive unit”).

The only difference between the structure and function of the systems described in Jacobs and the '319 patent lies in the *type* of barrier that is moved up and down—Jacobs’ multi-paneled window shade versus the '319 patent’s multi-paneled garage door. Compare Ex. 1001, 3:49–52, Fig. 1, with Ex. 1005, 5:11–14, Fig. 1. However, on cross-examination, Dr. Davis testified that the invention described in the '319 patent lies in its embedded control system rather than in the particular type of barrier that is raised or lowered by that control system. See Ex. 1019, 34:12–16 (“[P]rimarily the focus of the claims in the patent [is] on the design and implementation and use of an embedded control system.”); *id.* at 39:15–21 (“[T]he field [of the '319 patent] is on control systems for barrier movement operators⁹ [and] the focus is not on designing the mechanical engineering aspects of the garage door but the control system. . . which is more the electronics of it than the mechanics of it.”); *id.* at 41:18–20 (“[T]he field of the '319 patent relates to embedded computer systems.”); *id.* at 43:13–20 (“[The '319 patent] put a controller in the wall console and replace[d] the very reliable,

⁹ Notably, Dr. Davis described the field in terms of “barrier movement operators” in general, rather than garage door operators in particular. Ex. 1019, 39:15–21.

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very cheap analog wiring with a digital data bus back to the head unit's controller, thereby providing enhanced features . . . in the overall system.”).

The only argument Patent Owner raises to distinguish garage door operators from window shade operators is its argument that garage door operators move garage doors between fully opened and fully closed positions, but window shade operators have “a variety of contemplated panel arrangements, including intermittent positions between the fully opened and fully closed positions.” PO Resp. 8–9 (citing Ex. 2007 ¶¶ 46–48); PO Supp. Resp. 7–8. This argument is not persuasive, however, in view of the evidence adduced by Petitioner that (1) garage doors (like the one described in Doppelt and the '319 patent) can be moved to a partially opened or closed position by pressing a “stop” button while they are moving, (2) Jacobs' window panel includes an open frame having no material between the edges of the frame, thus providing an “open” position, and (3) Dr. Davis' testimony acknowledging these facts on cross-examination. *See* Reply 6 (citing Ex. 1004, 26:16–27:5; Ex. 1005, 5:36–43, 6:50–52; Ex. 1019, 226:23–25, 231:1–21).

In view of the evidence presented in this proceeding, and for all of the reasons discussed above, we find that Jacobs is in the same field of endeavor as the '319 patent, which is motor-driven systems for moving a barrier. Indeed, during oral argument, Patent Owner conceded that the field of endeavor of the '319 patent is “control systems for barrier movement operators,” which is broader than control systems for “garage door” operators. Supp. Tr. 21:3–14.

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b. Whether Jacobs is Reasonably Pertinent to a Problem Confronting the Inventors of the '319 Patent

In its Supplemental Response, Patent Owner also argues that Jacobs is not analogous art because it does not describe a solution that is reasonably pertinent to the problem confronting the inventors of the '319 patent. PO Supp. Resp. 7–10. This is the second prong of the analogous art test. See *Deminski*, 796 F.2d at 442. A reference is reasonably pertinent if “it is one which, because of the matter with which it deals, logically would have commended itself to an inventor’s attention in considering his problem.” *In re Klein*, 647 F.3d 1343, 1348 (Fed. Cir. 2011) (quoting *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992)).

Patent Owner identifies the problem confronting the inventors of the '319 patent as the need for “a passive infrared detector for controlling illumination from a garage door operator which could be quickly and easily retrofitted to existing garage door operators with a minimum of trouble and without voiding the warranty.” PO Supp. Resp. 7 (quoting Ex. 1001, 2:4–9) (emphasis omitted). Relying on the testimony of Dr. Davis, Patent Owner argues a skilled artisan “considering the problem of controlling illumination from a garage door operator would not have directed their attention to Jacobs, and would not have considered Jacobs to be a source of potential solutions.” *Id.* at 8 (citing Ex. 2028 ¶ 73).

We are mindful that the ITC found that Jacobs’ disclosure was not reasonably pertinent to the particular problem with which the inventors of the '319 patent were involved. See Ex. 2014, 158. We note that the ITC’s findings were based on the particular problem described in the '319 patent

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described immediately above—controlling illumination of a garage via a passive infrared detector. However, in its claim construction brief to the ITC, Patent Owner explained that this was not the *only* problem confronting the inventors of the '319 patent.

In particular, Patent Owner stated that prior art wall control units for movable barrier operators were traditionally “analog wall control units” that had limited functionality because they conveyed analog control signals to the motor control unit and received feedback in the form of “blinking LED lights that had to be interpreted.” Ex. 2001, 13.¹⁰ Patent Owner argued the '319 patent solved this problem by “provid[ing] a barrier movement operator^[11] with enhanced functionality through the use of ‘smart’ controls having *embedded microcontrollers communicating over a digital data bus.*” *Id.* (emphasis added). According to Patent Owner, this solution “allows for more sophisticated information to be sen[t] to/from the head unit from the wall control and for that information to be displayed on, for example, LCD screens in the wall control units.” *Id.* at 13–14 (citing Ex. 1001, Figs. 2, 4). Patent Owner’s arguments are supported by Figures 2 and 4 of the '319 patent, which illustrate embodiments of the invention that include microcontrollers at both a motor head unit and a wall console communicating over a digital data bus.

¹⁰ We reference the page number centered at the bottom of Exhibit 2001, rather than the page number of the brief itself.

¹¹ We note Patent Owner identifies a problem solved for generic “barrier movement operators” rather than for narrower “garage door operators.”

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Significantly, in its claim construction briefing to the ITC, Patent Owner explained that including a passive infrared detector in a moveable barrier operator's wall control to solve the illumination control problem was "*a separate inventive feature that was the subject of the parent*" of the '319 patent, i.e., the subject of U.S. Patent No. 6,737,968 B1 ("the '968 patent"). Ex. 2001, 18 (emphasis added). Patent Owner also explained that it "deliberately chose to draft the claims in the different patents to reflect this distinction." *Id.* Indeed, the claims of the '968 patent recite a wall console that expressly includes "a passive infrared detector." Ex. 2001, 149 (claim 1).¹² In contrast, the claims of the '319 patent recite a wall console that includes a microcontroller or controller, but that does not expressly include a passive infrared detector. Ex. 1001, 7:34–8:43. As discussed in § II.B, *supra*, Patent Owner argues the wall console recited in the claims of the '319 patent does not require a passive infrared detector. See PO Resp. 3–4 n.1. If so, the particular problem confronting the inventors of the '319 patent was not how to embed infrared detectors in the wall console to control illumination, but how to embed microcontrollers in the wall console to communicate with the head unit.

We note that Dr. Davis' testimony in this proceeding is consistent with the representations Patent Owner made to the ITC that the problem

¹² As mentioned previously, we cite to the centered page number at the bottom of Exhibit 2001. The '968 patent is attached as Exhibit D to Patent Owner's claim construction brief, and claim 1 of the '968 patent expressly recites a wall control unit having a passive infrared detector at column 21, lines 2–5, 14–16.

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addressed by the inventors in the '319 patent was how to provide “smart controls” to barrier movement operators to enhance their functionality. See Ex. 1019, 43:13–20 (the '319 patent “put a controller in the wall console and replace[d] the very reliable, very cheap analog wiring with a digital data bus back to the head unit’s controller, thereby providing enhanced features”); *id.* at 34:12–16 (“primarily the focus of the claims in the patent [is] on the design and implementation and use of an embedded control system”); *id.* at 39:15–16 (“[T]he field itself is on control systems for barrier movement operators.”); *see also* Ex. 2007 ¶ 20 (a person of ordinary skill in the art would need to have experience with “embedded computer systems or related technologies involving microcontrollers”).

Accordingly, based on the evidence in this proceeding, including the Specification and claims of the '319 patent, the specification and claims of the '968 patent, the representations Patent Owner made to the ITC regarding the problem confronting the inventors of the '319 patent, and Dr. Davis’ cross-examination testimony, we find the problem addressed by the inventors of the '319 patent was how to include microcontrollers in the wall consoles of barrier movement operators that could communicate with the microcontrollers in the motor drive units over digital data buses. We further find that Jacobs teaches a solution to this very problem. In particular, Jacobs teaches a motor-driven system for moving a window shade barrier that includes a wall console (control 31/630) having a microcontroller (microprocessor 800) that sends instructions to a motor drive unit (control 45) having a microcontroller (microcontroller 540) over a digital data bus

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(serial link 652) to control a motor (motor 215) to move the barrier up and down. Ex. 1005, 5:15–19, 12:42–48, 13:37–39, 15:5–15, Figs. 20, 21, 24.

Accordingly, Jacobs is analogous art to the invention claimed in the '319 patent because it teaches a solution that is “reasonably pertinent to the particular problem with which the inventor was involved.” *Deminski*, 796 F.2d at 442. In particular, Jacobs would have logically commended itself to the attention of a person of ordinary skill in the art looking to solve the problem of including microcontrollers in the wall consoles of barrier movement operators that could communicate with the microcontrollers in the motor drive units over digital data buses. *See Clay*, 966 F.2d at 659.

For the foregoing reasons, we conclude that Jacobs qualifies as analogous art because it is in the same field of endeavor as the '319 patent, and, even if it is not, because it is reasonably pertinent to a particular problem with which the inventors of the '319 patent were concerned.

4. *Whether AAPA can be Used in Inter Partes Reviews*

As discussed in § II.B, *supra*, Petitioner argues the term *wall console* means “a wall-mounted control unit including a passive infrared detector.” Pet. 31 (emphasis omitted). Petitioner argues that to the extent the wall console requires an infrared detector, the challenged claims are unpatentable because the patentee admitted in the “Background of the Invention” section of the '319 patent that it was known to use infrared detectors in garage door operators to detect the presence of people. *See id.* at 52–55.

Patent Owner argues that this admission cannot be used to challenge claims in an *inter partes* review because *inter partes* reviews challenges can only “be raised under section 102 and 103 and only on the basis of prior art

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consisting of patents or printed publications.” PO Resp. 41 (quoting 35 U.S.C. § 311(b)) (emphases omitted). Patent Owner further argues an *inter partes* review challenge must specify “where each element of the claim is found in the prior art patents or printed publications relied upon.” *Id.* at 41–42 (quoting 37 C.F.R. § 42.104(b)(4)) (emphases omitted). Patent Owner further argues that although the AAPA relied on by Petitioner discloses the known “use” of infrared detectors, such “use” based prior art “is ineligible to serve as a basis for IPR.”¹³ *Id.* at 42–43.

Patent Owner contends that Congress intended to exclude “use” based AAPA from *inter partes* reviews because Congress explicitly allows “use” based prior art in other proceedings such as post-grant reviews where challenges can be based “on any ground” (including public use), and reexamination proceedings where challenges can be based on “any prior art cited,” including “statements of the patent owner.” PO Resp. 52–54 (citing 35 U.S.C. §§ 282(b), 301, 302, 321(a)) (emphasis omitted). Patent Owner further contends that allowing “public use” or admitted “use” statements in *inter partes* reviews would require expanding the scope of discovery, which would be inconsistent with Congress’ intent in creating *inter partes* reviews as a cost effective alternative to litigation. *Id.* at 51–52.

We are not persuaded by Patent Owner’s arguments. We first note that Patent Owner conflates “public use” with a patent owner’s admissions regarding prior art and its uses. Although discovery may be required to

¹³ We note that by admitting to the known “use” of infrared detectors, the inventors of the ’319 patent also admitted to the *existence* of infrared detectors and to their *ability to detect people*. See Ex. 1001, 1:21–26.

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prove a “public use,” it would not be required to prove a patent owner’s admission—made in the patent owner’s own patent—regarding prior art and how it was used. The reason is simple; the admission itself—made in the patent owner’s own patent—is the evidence that is needed to prove the prior art and its uses. A patentee’s admission has long been treated as prior art that can be used for any purpose:

We see no reason why [the patentee’s] representations in their [specification] should not be accepted at face value as admissions that . . . may be considered ‘prior art’ for any purpose, including *use as evidence of obviousness* under § 103.

In re Nomiya, 509 F.2d 566, 570–71 (CCPA 1975) (emphasis added); see also *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1570 (Fed. Cir. 1988). This is true, even though the admission may not qualify as prior art under 35 U.S.C. § 102:

[A] statement by an applicant, whether in the application or in other papers submitted during prosecution, that certain matter is ‘prior art’ to him, is an admission that that matter is prior art for all purposes, whether or not a basis in § 102 can be found for its use as prior art.

Nomiya, 509 F.2d at 571 n.5. Accordingly, a patentee’s admission, made in a challenged patent, is quite literally “*prior art consisting of patents*” because the admission itself is prior art, and the evidence proving the admission consists of a patent—the patentee’s own patent.

We note that prior to enactment of the Leahy-Smith America Invents Act (“AIA”), Congress used the phrase “prior art consisting of patents or printed publications” to exclusively identify the prior art that could be relied upon in reexamination proceedings. See 35 U.S.C. § 302 (1980) (“Any

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person . . . may file a request for reexamination . . . on the basis of any prior art cited under the provisions of section 301.”); *id.* at § 301 (1980) (identifying “prior art consisting of patents or printed publications” as the only prior art that could be cited in reexamination proceedings); *see also In re NTP, Inc.*, 654 F.3d 1268, 1275 (Fed. Cir. 2011) (finding reexamination “must be based *only* on ‘prior art consisting of patents or printed publications’” (emphasis added)). Significantly, despite this restriction on the prior art that could be cited in pre-AIA reexamination proceedings, the Federal Circuit nonetheless found that AAPA could be cited and relied upon to support the Board’s findings in such proceedings. *See In re NTP, Inc.*, 654 F.3d 1279, 1304 (Fed. Cir. 2011) (“We agree with the PTO that substantial evidence supports the Board’s finding. Specifically, the AAPA states that . . . ,” and this evidence supports “the Board’s conclusion that”). Thus, by finding that AAPA could be used in combination with another reference in a pre-AIA reexamination proceeding in which *only* “prior art consisting of patents or printed publications” could be cited, the Federal Circuit has found, as we do above, that “prior art consisting of patents or publications” includes AAPA. *See* 35 U.S.C. §§ 301–02 (1980); *NTP*, 654 F.3d at 1304.

We are not persuaded by Patent Owner’s argument that the amendments Congress made to § 301 in the AIA—which allow reexaminations to be based on both “prior art consisting of patents or printed publications” and “statements of the patent owner filed in a proceeding before . . . the Office in which the patent owner took a position on the scope of any claim”—changes the Federal Circuit’s *NTP* finding that AAPA

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constitutes prior art consisting of patents. *See* 35 U.S.C. § 301(a) (2011). To the contrary, rather than limiting the evidence that constitutes “prior art consisting of patents or printed publications,” the AIA amendment broadens the evidence that can be used in reexamination proceedings to include statements made by the patent owner regarding the “scope of any claim” in the patent, even when those statements are not made in “prior art consisting of patents or printed publications.” *Id.* For example, the amendment allows the use of a patent owner statement made in an office action response, even when the prosecution history is not open to the public, and the office action response cannot be considered a “printed publication.” In sum, we see no basis for excluding AAPA from “prior art consisting of patents or printed publications” in *inter partes* review proceedings when the Federal Circuit has found that AAPA is “prior art consisting of patents or printed publications” in reexamination proceedings. *Compare* 35 U.S.C. § 311(b) with *id.* at § 301(a); *see also* *NTP*, 654 F.3d at 1304.

Patent Owner also argues that Congress intended § 311(b) to be interpreted narrowly to exclude AAPA because our rules state that a petitioner must show where each claim element “is found ***in the prior art patents or printed publications relied upon.***” PO Resp. 41–42 (quoting 37 C.F.R. § 42.104(b)(4)). The quoted language, however, refers back to Rule 42.104(b)(2). *See* 37 C.F.R. § 42.104(b)(4) (requiring the petitioner to state “[h]ow the construed claim is unpatentable under the *statutory grounds* identified in paragraph (b)(2) of this section” (emphasis added)). According to Rule 42.104(b)(2), the petitioner must state the “*statutory grounds* under 35 U.S.C. 102 or 103 on which the challenge to the claim is based and *the*

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patents or printed publications relied upon for each ground.” 37 C.F.R. § 42.104(b)(2) (emphases added). Rule 42.104 must be read as a whole, in light of the controlling statute, which requires a challenge to be based “only on a ground that could be raised under section 102 or 103 and only on the basis of *prior art consisting of patents or printed publications.*” 35 U.S.C. § 311(b) (emphasis added). The language in Rule 42.104(b)(4) cannot be read in isolation, as Patent Owner has done, to contradict the related statutory and regulatory provisions. When read as a whole, 37 C.F.R. § 42.104 requires the petitioner to challenge the claims based on prior art evidence that is disclosed in a patent or printed publication. As discussed above, AAPA is prior art evidence that is disclosed in a patent—the patentee’s own patent.

Lastly, Patent Owner cites to several non-precedential Board decisions denying institution of trial on grounds that included AAPA in support of its argument that AAPA cannot be used in *inter partes* reviews.¹⁴ PO Resp. 43. We distinguished these cases in our Institution Decision, and noted Patent Owner’s failure to cite the many Board decisions that not only instituted trial in *inter partes* review proceedings having grounds based on AAPA, but subsequently found the challenged claims to be unpatentable on those grounds. See Dec. Inst. 8–9.

Patent Owner contends none of the cases we cited in our Institution Decision “actually considered an argument that use-based AAPA was

¹⁴ Although Patent Owner cites to five Board decisions, four of those decisions are from a single family of cases raising similar issues. See PO Resp. n.6.

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ineligible for consideration” because the parties simply “assumed that AAPA was eligible prior art.” PO Resp. 44. Regardless of whether the parties disputed or the Board *explicitly* addressed whether AAPA can be used in *inter partes* review proceedings in the cited cases, the Board *implicitly* considered the question by instituting trial, and found that it can. Moreover, the Board *has explicitly addressed* that very question in both decisions to institute and final written decisions, and found that AAPA can be used to challenge the patentability of claims in *inter partes* reviews. *See, e.g., Comcast Cable Comm’cns, LLC v. Rovi Guides, Inc.*, Case IPR2017-01147, slip op. at 40–42 (PTAB Nov. 7, 2017) (Paper 8); *see also Intri-Plex Techs., Inc. v. Saint-Gobain Performance Plastics Rencol Ltd.*, Case IPR2014-00309, slip op. at 20–22 (PTAB Mar. 23, 2015) (Paper 83).

For all of the reasons explained above, we conclude that AAPA can be used to challenge claims in an *inter partes* review, and Petitioner’s use of AAPA in its asserted ground in this proceeding was proper.

5. *Mapping of Doppelt, AAPA, and Jacobs to the Claims*

a. *Claims 1 and 9*

As noted in § II.A, *supra*, claims 1 and 9 recite substantially similar inventions. In particular, except for replacing the term “microcontroller” with the term “controller,” the inventions recited in claims 1 and 9 are identically worded. *Compare* Ex. 1001, 7:34–39, *with id.* at 8:16–21. Petitioner contends a “microcontroller” is a type of “controller.” *See* Pet. 34 (citing Ex. 1003 ¶ 90); *see also* Ex. 1018, 3:30–33 (disclosing a controller can be “a microprocessor, a microcontroller, a programmable logic or gate array, or the like”). Patent Owner does not dispute this contention, and we

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credit Mr. Lipoff's uncontroverted testimony on this point. See Ex. 1003

¶ 90. Petitioner contends that because the "microcontroller" recited in claim 1 is narrower than the "controller" recited in claim 9, its "analysis of narrower claim 1 applies equally to the broader claim 9." Pet. 45 n.8. Patent Owner does not dispute this contention, with which we agree as a matter of logic, and does not separately argue for the patentability of claims 1 and 9. See PO Resp. 15–30. Accordingly, the analysis that follows, while focused on claim 1, applies equally to claim 9.

Claim 1 recites an improved garage door opener ("GDO") comprising a motor drive unit for opening and closing a garage door. Ex. 1001, 7:34–35. Petitioner demonstrates that Doppelt discloses GDO 10 having head unit 12 that includes a motor drive unit for opening and closing a garage door. Pet. 45–47; Ex. 1004, 1:2–5, 5:4–13, 6:9–18, 16:13–25, Figs. 1, 2. Claim 1 further requires the motor drive unit to have a microcontroller. Ex. 1001, 7:35–36. Petitioner demonstrates that Doppelt's head unit 12 includes microcontroller 84. Pet. 48; Ex. 1004, 3:19–23, 5:28–37, Fig. 2. Patent Owner does not dispute that Doppelt discloses a GDO comprising a motor drive unit having a microcontroller for opening and closing a garage door. See PO Resp. We find Petitioner has demonstrated sufficiently that Doppelt discloses this limitation.

Claim 1 further requires the GDO to have a wall console having a microcontroller. Ex. 1001, 7:36–37. Petitioner argues Doppelt discloses a GDO having wall mounted switch module 39, but does not disclose that switch module 39 includes a microcontroller. Pet. 52, 55; Ex. 1004, 5:20–24, 12:31–14:2, Figs. 1, 2. Relying on the testimony of Mr. Lipoff,

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however, Petitioner argues a person of ordinary skill in the art would have found it obvious to modify switch module 39 to include a microcontroller because Doppelt discloses other types of controls having microcontrollers (e.g., remote transmitters 30/31, keypad controller 34), and a skilled artisan would have known that adding a microcontroller to switch module 39 would have “increase[d] the functionality that a wall console may offer.” *Id.* at 55–57; Ex. 1003 ¶¶ 139–140; Ex. 1004, 2:1–14, 7:1–27, 10:23–28, 11:33–38, 33:28–30, Figs. 7, 10, 12.

Petitioner further argues Jacobs’ movable barrier operator includes wall controls 31/32 having microprocessors 800. Pet. 54, 57; Ex. 1005, 5:1–2, 15:11–21, Figs. 1, 24. Petitioner argues a person skilled in the art would have found it obvious “to improve the utility of the wall control unit in *Doppelt* by adding a microcontroller, as in *Jacobs* . . . , because it was well-known that integrating a microcontroller in a wall unit adds advanced controls and capabilities.” *Id.* at 41. For example, relying on the testimony of Mr. Lipoff, Petitioner argues adding a microcontroller to Doppelt’s switch module 39 would have allowed advanced controls such as the programming of preset buttons, updating of status lights, and provisioning of multi-button controls. *Id.* at 41–42; Ex. 1003 ¶ 111.

Patent Owner disagrees that it would have been obvious to modify Doppelt’s switch module 39 to include a microcontroller. PO Resp. 16–27. Relying on the testimony of Dr. Davis, Patent Owner first argues that Doppelt teaches away from such a modification. *Id.* (citing Ex. 2007 ¶¶ 49–58, 61–72). Patent Owner next argues that even if Doppelt does not teach away, Jacobs does not teach modifying Doppelt’s switch module 39 because

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the “component that Petitioner argues would have been obvious to place in switch module 39 is not a microcontroller at all, but a microprocessor.” *Id.* at 21–22. Relying on the testimony of Dr. Davis, Patent Owner argues Jacobs’ wall controls 31/32 include microprocessors 800 rather than microcontrollers. *Id.* at 22–26 (citing Ex. 1005, 13:37–39, Figs. 21, 24; Ex. 2007 ¶¶ 69–72).

Upon consideration of Petitioner’s and Patent Owner’s arguments and evidence, we are persuaded that Petitioner has demonstrated the combination of Doppelt and Jacobs teaches a wall console having an embedded microcontroller. We do not find that Doppelt “teaches away” from the combination for the reasons discussed in § II.E.6, *infra*. In particular, although Doppelt may teach a different and even an “elegant” solution for a garage door operator wall console that does not include a microcontroller, such as switch module 39, Doppelt does not criticize, discredit, or discourage including a microcontroller in switch module 39. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). We agree with Mr. Lipoff that a person skilled in the art would have been motivated by the teachings of Jacobs to *improve* Doppelt’s switch module 39 to include a microcontroller because doing so would have permitted advanced controls and capabilities to be implemented, including the ability to program buttons on the wall console and update the configuration and use of status lights. See Ex. 1003 ¶¶ 111–113.

We are also persuaded by Petitioner’s argument that a person skilled in the art would have understood Jacobs to use the terms microprocessor and microcontroller interchangeably. See Pet. 58 (citing Ex. 1003 ¶ 142; Ex.

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1005, 13:37–39, Figs. 21, 24); *see also* Reply 11 n.10. For example, although Figure 21 of Jacobs labels element 540 a *microprocessor*, Jacobs discloses “a suitable *microprocessor* 540 . . . can, for example, be a type MC68HC705C8.” Ex. 1005, 13:37–39 (emphasis added). The technical data sheet for the MC68HC705C8 identifies it as a microcontroller, specifically, an “HCMOS MICROCONTROLLER UNIT.” Ex. 1009, 3, 15. Moreover, on cross-examination, Dr. Davis agreed that although Jacobs labels element 540 a microprocessor in Figure 21 and calls it a microprocessor in the specification, element 540 is, in fact, a microcontroller. *See* Ex. 1005, 15:5–10; Ex. 1019, 178:7–179:2. Given these disclosures and admissions, we agree with Mr. Lipoff that a person skilled in the art would have understood that Jacobs uses the terms microprocessor and microcontroller interchangeably, and would have understood microprocessor 800 in Figure 24 to be a microcontroller. *See* Ex. 1003 ¶ 142.

With respect to the “wall console” limitation of claim 1, Petitioner and Patent Owner dispute whether the patentee disavowed wall consoles that lack an infrared detector, and therefore, whether the wall console recited in claim 1 further requires an infrared detector. *See* § II.B, *supra*. We need not resolve this dispute because Petitioner demonstrates how the combination of Doppelt and Jacobs teaches a wall console having a microcontroller as discussed above, and further demonstrates how the combination of Doppelt, AAPA, and Jacobs teaches the wall console having an infrared detector as discussed below.

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In particular, Petitioner argues that “[a]lthough *Doppelt* does not expressly disclose locating a PIR [passive infrared] detector in the wall control unit, such a modification is an obvious extension of its teachings and the knowledge of [a person having ordinary skill in the art].” Pet. 53. Specifically, Petitioner argues Jacobs teaches using wall controls 31/32 in a movable barrier operator, and further teaches using occupancy detectors in place of or in addition to wall controls 31/32. *Id.* at 54; Ex. 1005, 5:1–2, 15:11–21, Fig. 1. Relying on the testimony of Mr. Lipoff, Petitioner argues a person of ordinary skill in the art would have known that infrared detectors were a well-known type of occupancy detector used in GDO systems (e.g., as taught by AAPA), and, therefore, would have “immediately recognize[d] that the wall control with occupancy detector of *Jacobs* could be added to the wall control of a conventional garage door system, such as *Doppelt*, with an expectation of predictable results.” Pet. 54–55 & n.10; Ex. 1003 ¶¶ 135–136.

Except for its argument that AAPA cannot be used to challenge claims in an *inter partes* review, which we find unpersuasive for the reasons discussed in section II.E.4, *supra*, Patent Owner does not dispute Petitioner’s contention that it would have been obvious to modify *Doppelt*’s switch module 39 to include an infrared detector as taught by Jacobs in view of AAPA. As discussed in section II.E.4, *supra*, we find AAPA can be relied upon to show obviousness under 35 U.S.C. § 103(a) in *inter partes* review proceedings. Accordingly, having considered Petitioner’s and Patent Owner’s arguments and evidence, we find Petitioner has demonstrated that the combination of *Doppelt*, AAPA, and Jacobs teaches a wall console

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having an embedded microcontroller and infrared detector for the reasons stated by Petitioner.

Finally, claim 1 requires the motor drive unit's microcontroller to be connected to the wall console's microcontroller by a digital data bus. Ex. 1001, 7:37–39. Petitioner argues Doppelt discloses switch module 39 is connected to head unit 12 by wires 39a. Pet. 60. Petitioner further argues Jacobs discloses microcontroller 540 in controller 45 is connected to microcontrollers 800 in wall mounted controls 31/32 over serial link bus 652, which can be an RS-232 link. *Id.* at 60–64; Ex. 1005, 5:15–25, 15:5–35, 16:58–65, Figs. 21, 24. Relying on the testimony of Mr. Lipoff, Petitioner argues a person of ordinary skill in the art would have known that an RS-232 link is a digital data link, and would have found it obvious to modify Doppelt in view of Jacobs because he or she “would have immediately recognized the benefits of providing additional controls and capabilities in the wall console (*e.g.*, by adding a microcontroller) and having the wall console communicate with the motor drive unit digitally, as taught by *Jacobs*.” Pet. 42, 63–64; Ex. 1003 ¶¶ 112, 150–152.

Patent Owner argues Petitioner has failed to demonstrate the combination of Doppelt and Jacobs discloses the required digital data bus. PO Resp. 27–30. First, relying on the testimony of Dr. Davis, Patent Owner argues Doppelt's wires 39a carry analog signals “and are not capable of carrying, digital data because the microcontroller in Doppelt's head unit merely uses these wires to measure various analog values from switch module 39.” *Id.* at 28–29 (citing Ex. 1004, 12:31–14:3; Ex. 2007 ¶ 74). Next, Patent Owner argues, “Petitioner does not even attempt to suggest that

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a [person of ordinary skill in the art] would have modified Doppelt’s system to include Jacobs’ serial link bus 652.” *Id.* at 29.

Upon consideration of Petitioner’s and Patent Owner’s evidence and arguments, we are persuaded that Petitioner has demonstrated that the combination of Doppelt, AAPA, and Jacobs teaches a digital data bus connecting microcontrollers in Doppelt’s head unit 12 and modified switch module 39. Doppelt teaches connecting switch module 39 to head unit 12 using one or more wires 39a. Ex. 1004, Fig. 1. When Doppelt’s switch module 39 is modified to include a microcontroller as discussed above, Jacobs teaches using a digital data bus such as an RS-232 link to connect the microcontrollers in the modified switch module 39 and head unit 12. Ex. 1005, 15:5–10, 5:22–27, Figs. 21, 24.

We are not persuaded by Patent Owner’s argument that Petitioner did not suggest such a modification. Petitioner expressly suggested modifying Doppelt’s switch module 39 “by adding a microcontroller, as in *Jacobs* . . . because it was well-known that integrating a microcontroller in a wall unit adds advanced controls and capabilities.” Pet. 41. Petitioner argued a person skilled in the art “would have immediately recognized the benefits of providing additional controls and capabilities in the wall console (*e.g.*, by adding a microcontroller) and having the wall console communicate with the motor drive unit *digitally*, as taught by *Jacobs*.” *Id.* at 42 (first emphasis added). Petitioner further argued:

[S]ince the components employed in the *Jacobs* system were well-known, *e.g.*, wall control units, occupancy detectors, microcontrollers, and digital communication over a data bus, it would have been within the capability of one of ordinary skill in

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the art to successfully combine those components with the *Doppelt* system with an expectation of predictable results.

Id.

For the reasons discussed above, we find Petitioner has demonstrated that the combined teachings of *Doppelt*, *AAPA*, and *Jacobs* account for each of the limitations required by claims 1 and 9.¹⁵ To the extent the “wall console” recited in claims 1 and 9 does not require an infrared detector, Petitioner has demonstrated how the combined teachings of *Doppelt* and *Jacobs* account for each limitation of claims 1 and 9. To the extent the “wall console” does require an infrared detector, Petitioner has demonstrated how the combined teachings of *Doppelt*, *AAPA*, and *Jacobs* account for each limitation of claims 1 and 9.

b. Claims 2 and 10

Claim 2 depends from claim 1, and further requires the digital data bus to be asynchronous. Ex. 1001, 7:40–41. Claim 10 depends from claim 9, and adds the same limitation to claim 9. Ex. 1001, 8:22–23. As discussed

¹⁵ We note the ALJ, in the ITC’s Initial Determination, also found the combination of *Doppelt* and *Jacobs* discloses every limitation recited in claims 1 and 9. See Ex. 2014, 188. Nonetheless, the ALJ ultimately found that Petitioner had not proven the claims to be unpatentable over *Doppelt* and *Jacobs* by clear and convincing evidence. *Id.* at 157 (finding that *Jacobs* is not analogous art to the ’319 patent); *id.* at 166 (finding that Petitioner had not “shown with clear and convincing evidence that it would have been obvious to combine *Doppelt* and *Jacobs*”). The ALJ’s conclusions were affirmed by the ITC in its Commission Decision. See Ex. 3004, 13 n.11 (adopting the ALJ’s finding “that a combination of *Doppelt* and *Jacobs* fails to render the asserted claims of the ’319 patent obvious”).

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above, Petitioner has demonstrated that the combination of Doppelt, AAPA, and Jacobs teaches the limitations of claims 1 and 9 from which claims 2 and 10 depend. In particular, for the reasons discussed in § II.E.6, *infra*, Petitioner has shown how and why a person skilled in the art would have modified Doppelt's switch module 39 based on the teachings in Jacobs to include a microcontroller that communicates with the microcontroller in Doppelt's head unit 12 over a digital data bus such as an RS-232 link.

Petitioner argues Jacobs teaches sending data over the RS-232 link (i.e., serial link bus 652) asynchronously because it sends data "as soon as the serial link bus is clear," which does not depend on timing provided by a clock. Pet. 66 (citing Ex. 1005, 15:56–60, 15:65–16:5). Relying on the testimony of Mr. Lipoff, Petitioner further argues a person skilled in the art would understand data transmissions over RS-232 data channels include asynchronous transmissions. *Id.* (citing Ex. 1003 ¶ 157). Petitioner also argues that Jacobs teaches sending data over the RS-232 serial data link asynchronously because the data is sent to microcontroller 540, which can be an MC68HC705C8 microcontroller unit ("MCU"). *Id.* at 67. Patent Owner does not dispute Petitioner's contentions.

We find Petitioner has demonstrated sufficiently that the combination of Doppelt, AAPA, and Jacobs teaches sending data over a digital data bus asynchronously as required by claims 2 and 10.¹⁶ Jacobs teaches sending data over serial link bus 652 from microcontroller 800 in wall consoles

¹⁶ We note the ALJ also found in the ITC's Initial Determination that the combination of Doppelt and Jacobs discloses every limitation recited in claims 2 and 10. See Ex. 2014, 196.

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31/32 to microcontroller 540 in controller 45, which can be an MC68HC705C8 MCU. Ex. 1005, 13:37–39, 15:5–10. The MC68HC705C8 MCU sends and receives data over an SCI (serial communications interface) that is a “full-duplex *asynchronous* SCI.” Ex. 1009, 59 (emphasis added).

c. Claims 3 and 11

Claim 3 depends from claim 1, and further requires at least one microcontroller to control the travel of the garage door, and to make calculations of the door’s location during its travel. Ex. 1001, 7:42–45. Claim 11 depends from claim 9, and adds the same limitation to claim 9. Ex. 1001, 8:24–27. As discussed above, Petitioner has demonstrated that the combination of Doppelt, AAPA, and Jacobs teaches the limitations of claims 1 and 9 from which claims 3 and 11 depend.

Petitioner advances two arguments for how the combination of Doppelt, AAPA, and Jacobs teaches the additional limitations of claims 3 and 11. First, Petitioner argues that Doppelt discloses up and down limit switches 93 that detect the position of a cog that moves in proportion to the movement of a garage door, and teaches microcontroller 84 in head unit 12 responds to signals received from limit switches 93 to control the motor that moves the garage door. Pet. 69–70 (citing Ex. 1004, 6:9–23, 15:38–16:6, 16:13–18, Fig. 2). According to Mr. Lipoff, a person skilled in the art would understand these disclosures to mean microcontroller 84 “makes calculations of the door’s location during its travel based on signals received from the up/down limit switches 93.” Ex. 1003 ¶ 161.

Second, Petitioner argues Jacobs teaches microcontroller 540 in control 45 calculates the position of a window shade during its motion by

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calculating (a) an error signal indicative of a difference between the desired position of a window shade panel and its actual position, and (b) a stall signal that is a time derivative of the window shade panel position signal to determine whether the motor moving the panel has stalled. Pet. 72 (citing Ex. 1005, 20:32–40, 20:51–21:8). Relying on the testimony of Mr. Lipoff, Petitioner argues a person skilled in the art would have been motivated by Jacobs to modify the microcontroller in Doppelt’s head unit 12 to make similar calculations of garage door position in order to

(1) identify any door stalls or motor faults, (2) avoid injury to a person or damage to the garage door system, or (3) determine when the door is approaching or at an upper or lower travel limit so that the door can be stopped at a particular position (*e.g.*, half-way open).

Id. at 72–73 (citing Ex. 1003 ¶ 163).

Regarding Petitioner’s first argument, Patent Owner contends that Doppelt’s microcontroller does not calculate the garage door’s location during travel because limit switches 93 “merely indicate whether the door has reached the fully opened or fully closed positions,” and “do not indicate where the door is along its path during travel.” PO Resp. 31 (citing Ex. 1004, 15:35–16:6, 16:10–12; Ex. 2007 ¶ 84). Relying on the testimony of Dr. Davis, Patent Owner argues that as a result, a person skilled in the art would have understood “the microcontroller cannot make calculations of the door’s location during its travel.” *Id.* (citing Ex. 2007 ¶ 84).

Regarding Petitioner’s second argument, Patent Owner contends Jacobs’ disclosure is inapposite because Jacobs is directed to moveable window panels and therefore “does not calculate the position of any door.”

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PO Resp. 31. Relying on the testimony of Dr. Davis, Patent Owner further contends that “any position information acquired in Jacobs is based on the resistance of a potentiometer, an analog value which is measured, and not ‘calculated,’” and that the only calculation Jacobs performs is “part of a determination as to whether a panel is moving at all—and not the location of a panel.” *Id.* at 31–32 (citing Ex. 1005, 2:51–64, 10:64–67, 11:14–15; Ex. 2007 ¶ 86). Petitioner responds that Jacobs’ microcontroller calculates position information by “expressly convert[ing] the potentiometer resistance information to position information,” and argues that on cross-examination “Dr. Davis conceded that Jacobs[’] . . . microcontroller makes calculations (*i.e.*, a ratio) of the door’s location during its travel.” Reply 17 (citing Ex. 1005, 10:64–11:27, 14:46–15:4, Fig. 21; Ex. 1019, 163:1–15, 164:4–165:13, 166:18–22) (emphasis omitted).

Upon consideration of the evidence and argument presented by Petitioner and Patent Owner, we find that although the microcontroller in Doppelt does not calculate the garage door’s location during travel, it would have been obvious to modify it to do so based on the teachings of Jacobs. The only information limit switches 93 provide to Doppelt’s microcontroller is whether the garage door has reached its fully open or closed positions. Although limit switches 93 detect the position of a cog that moves “in proportion to the actual door movement,” Doppelt discloses the following:

The limit switches are normally open. When the door is at the maximum upward travel, up limit switch 93a is closed, which closure is sensed at port P20 of microcontroller 85. When the door is at its maximum down position, down limit switch 93b

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will close, which closure is sensed at port P21 of the microcontroller.

Ex. 1004, 15:38–16:12. Thus, when the garage door is fully closed, the down limit switch closes to notify the microcontroller that the garage door is closed. When the garage door is fully open, the open limit switch closes to notify the microcontroller that the garage door is open. When the garage door is travelling, both the up and down limit switches are open to notify the microcontroller that the garage door is travelling, but they do not convey any other information that would allow the microcontroller to calculate the garage door's position—even though the limit switches themselves have determined that position by detecting the position of the cog.

Nonetheless, Jacobs teaches using a microcontroller to calculate the exact position of a travelling window shade. Jacobs teaches microcontroller 540 includes sensor signal processor 522a that outputs a signal (POSA) representing the *actual position* of a window shade while it is travelling. Ex. 1005, 14:6–9, 20:32–40, Fig. 21. Microcontroller 540 calculates the window shade position using information provided by sensor circuitry 522b, namely, using two discharge times t_1 and t_2 through two discharge circuits consisting of capacitor 609 and potentiometer 330 to calculate the ratio $t_1/(t_1 + t_2)$ that represents “the precise position of the wiper arm 618 [of potentiometer 330] and therefore the absolute rotational position of the upper roller assembly 80.” *Id.* at 14:5–58, Fig. 21. Jacobs discloses the position of the potentiometer's wiper arm “is proportionately related to the number of rotations of the upper tube, and thus to the *exact absolute position* of the panel.” *Id.* at 2:55–60 (emphasis added).

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Petitioner provides a reason that would have motivated a person skilled in the art to modify Doppelt’s microcontroller to calculate the position of a travelling garage door the same way Jacobs’ microcontroller calculates the position of a travelling window shade—to detect door stalls or motor faults, or to determine when the door is approaching a set position other than the fully open or closed position. Pet. 72–73. Patent Owner does not contest this reasoning. Rather, Patent Owner argues the combination is improper because Jacobs does not calculate the position of a *garage door*. PO Resp. 31. This argument is not persuasive because it does not address the combined teachings of Jacobs and Doppelt. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (“[n]on-obviousness cannot be established by attacking references individually where the [challenge] is based upon the teachings of a combination of references”); *see also In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is. . . what the combined teachings of the references would have suggested to those of ordinary skill in the art.”).

Accordingly, for the reasons discussed above and in § II.E.6, *infra*, we find Petitioner has shown that the combined teachings of Doppelt, AAPA, and Jacobs account for each of the limitations required by claims 3 and 11, and has provided a persuasive explanation with rational underpinnings for why a person of ordinary skill in the art would have combined the teachings of Doppelt, AAPA, and Jacobs in the manner proposed.¹⁷

¹⁷ We note the ALJ also found in the ITC’s Initial Determination that the combination of Doppelt and Jacobs discloses every limitation recited in claims 3 and 11. *See* Ex. 2014, 202.

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d. Claims 4 and 12

Claim 4 depends from claim 1, and further requires a keypad for operating the garage door operator that is provided with a switch to turn a light in the motor drive unit on or off. Ex. 1001, 8:1–4. Claim 12 depends from claim 9, and adds the same limitation to claim 9. Ex. 1001, 8:28–31. As discussed above, Petitioner has demonstrated that the combination of Doppelt, AAPA, and Jacobs teaches the limitations of claims 1 and 9 from which claims 4 and 12 depend.

Petitioner argues that during prosecution, in response to a written description rejection, Patent Owner admitted that the additional limitation recited in claims 4 and 12 is met by the '319 patent's disclosure that "wall control 60 . . . includes a plurality of switches 120, 122, 124 and 126 and 120 is a light control switch." Pet. 73 (citing Ex. 1002, 85) (emphasis omitted). We note that in the same response, Patent Owner maps wall control 60 to the wall console recited in claim 1. Ex. 1002, 85. Petitioner, therefore, argues that Doppelt's switch module 39 (i.e., wall console) having light switch 39b meets the additional limitation recited in claims 4 and 12. Pet. 74–75 (citing Ex. 1004, 5:20–24, 12:31–14:2, 16:13–19, Fig. 6). Petitioner further argues that Doppelt also teaches this limitation by disclosing keypad door frame mount transmitter 34 having keys 701–713 that control garage door motor 106 and light 81. *Id.* at 75 (citing Ex. 1004, 10:23–11:5, 16:13–19, 16:26–34, Figs. 2, 6, 10). Patent Owner does not dispute Petitioner's contentions.

We find Petitioner has demonstrated that the combination of Doppelt, AAPA, and Jacobs teaches a keypad for operating the garage door opener

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that is provided with a switch to turn a light in the motor drive unit on or off as required by claims 4 and 12.¹⁸ First, Doppelt teaches switch module 39 (i.e., wall console) has switches 39b–39d, including light switch 39b for operating the garage door opener and turning a light in the motor drive unit on or off. Ex. 1004, 5:20–24, 12:31–14:2, 16:13–19, Fig. 6. Doppelt also teaches keypad door frame mount transmitter 34 having keys 710–713 for operating the garage door opener and turning a light in the motor drive unit on or off. *Id.* at 10:23–29, 16:13–19, Figs. 1, 10.

e. Claims 7 and 15

Claim 7 depends from claim 1, and further requires power for the wall console to be provided from the motor drive unit via power conductors of the data bus. Ex. 1001, 8:11–13. Claim 15 depends from claim 9, and adds the same limitation to claim 9. Ex. 1001, 8:38–40. As discussed above, Petitioner has demonstrated that the combination of Doppelt, AAPA, and Jacobs teaches the limitations of claims 1 and 9 from which claims 7 and 15 depend. In particular, as discussed in section II.E.6, *infra*, Petitioner has shown how and why a person skilled in the art would have modified Doppelt, based on the teachings in Jacobs, to include a microcontroller in switch module 39 that communicates with the microcontroller in head unit 12 over a digital data bus such as an the RS-232 link.

Petitioner advances two arguments for how the combination of Doppelt, AAPA, and Jacobs teaches the additional limitations of claims 7

¹⁸ We note the ALJ also found in the ITC’s Initial Determination that the combination of Doppelt and Jacobs discloses every limitation recited in claims 4 and 12. See Ex. 2014, 205.

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and 15. First, Petitioner argues Doppelt teaches this limitation because Doppelt's head unit 12 provides a 28V power supply to switch console 39 over wires 39a. Pet. 77–78 (citing Ex. 1004, 5:21–22, 6:7–9, 13:4–14:2, Figs. 3A, 6). Next, relying on the testimony of Mr. Lipoff, Petitioner argues that Jacobs teaches this limitation because Jacobs' controller 45 supplies power to wall control 630 over serial link bus 652. *Id.* at 78–79 (citing Ex. 1003 ¶¶ 171–172; Ex. 1005, 3:1–4, 5:17–19, 15:24–28, Figs. 21, 24).

Patent Owner, relying on the testimony of Dr. Davis, argues Doppelt does not disclose head unit 12 supplies power to switch module 39 over a *digital* data bus because Doppelt's wires 39a convey analog rather than digital signals. PO Resp. 32–33 (citing Ex. 2007 ¶ 92). Patent Owner further argues that Jacobs does not describe controller 45 supplying power to wall control 630 because “control 630 is powered by power provided at control 630.” *Id.* at 33 (citing Ex. 1005, 15:28–33). According to Patent Owner, Jacobs' control 630 includes voltage regulator 802 that supplies 5V DC power to control 630 and microprocessor/microcontroller 800. *Id.* at 33–34 (citing Ex. 1005, 15:28–33). Patent Owner further argues that controller 45 does not provide power to control 630 over serial link bus 652 because the only components of controller 45 connected to serial link bus 652 are command processor 520 for receiving input signals, and transceiver 554 for providing communications between controller 45 and control 630. *Id.* at 34–36 (citing Ex. 1005, 12:61–64, 13:37–15:21, 16:6–15, Figs. 21, 24).

Upon consideration of the evidence and argument presented by Petitioner and Patent Owner, we find that Petitioner has demonstrated that

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the combination of Doppelt, AAPA, and Jacobs teaches Doppelt's modified switch module 39 receiving power from head unit 12 via power conductors of a digital data bus.¹⁹ As explained in section II.E.6, *infra*, Petitioner has shown that a person skilled in the art would have found it obvious to modify Doppelt's switch module 39 to include Jacobs' microcontroller 800, and to connect microcontroller 800 with microcontroller 84 in head unit 12 over a digital data bus such as an RS-232 serial link. Petitioner further demonstrates that when such a modification is made, Doppelt's head unit 12 would supply power to microcontroller 800 in switch module 39 over the digital data bus. First, Doppelt's head unit 12 supplies power to switch module 39 over a data bus. Second, Jacobs' digital data bus connects microcontrollers in a head unit and a wall control, and distributes power from the head unit to the wall control as shown in Figure 24, which is reproduced below.

¹⁹ We note the ALJ also found in the ITC's Initial Determination that the combination of Doppelt and Jacobs discloses every limitation recited in claims 7 and 15. See Ex. 2014, 206.

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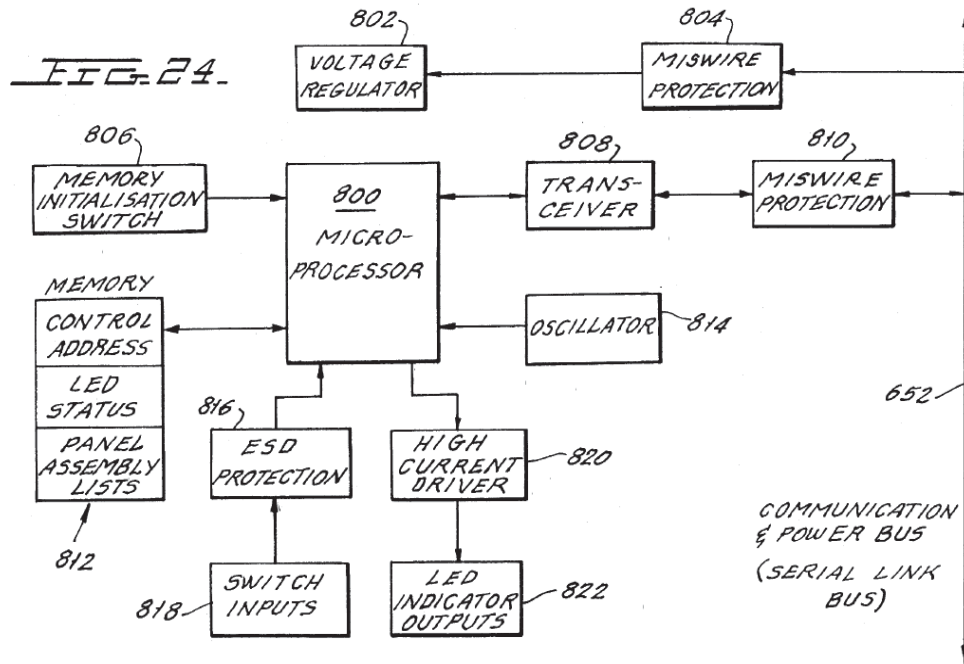


Figure 24 is a functional block diagram of Jacobs' wall controller 31/32 (630/631). Ex. 1005, 4:53–54, 15:5–10, 15:22–24, Fig. 24. Jacobs discloses “[c]ontrol 630 is connected to controller(s) 45 via serial link bus 652 which provides both communications and power.” Ex. 1005, 15:24–26 (emphasis added), Fig. 24.²⁰ Indeed, serial link bus 652 is expressly labelled a “COMMUNICATION & POWER BUS” in Figure 24. *Id.*, Fig. 24.

Jacobs further discloses “[t]he power distributed on serial link bus 652 is a preregulated DC voltage. Voltage regulator 802 provides a regulated 5 Vdc to power the control 630.” *Id.* at 15:27–29 (emphases added). The one way arrows from serial link bus 652 to voltage regulator 802 indicate the

²⁰ We note that Patent Owner's expert, Dr. Davis, does not dispute that Jacobs' serial link bus 652 distributes both communications and power. See Ex. 1019, 191:18–192:6.

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preregulated DC voltage distributed on serial link bus 652 is *provided to* voltage regulator 802, which converts it to a *regulated* 5V DC. *Id.* at 15:27–29, Fig. 24. That *regulated* 5V DC is then used to power control 630. *Id.* For this reason, we are not persuaded that because voltage regulator 802 ultimately provides a regulated 5V DC to control 630, control 630 does not receive power from serial link bus 652. *See* PO Resp. 33–36.²¹

We are similarly not persuaded by Patent Owner’s arguments that control 45 does not provide voltage to serial link bus 652 because Figure 21 only shows circuits that send/receive communications (i.e., command processor 520 and serial transceiver 554). PO Resp. 34–36. The fact that Figure 21 does not show a power source in control 45 does not mean that control 45 does not provide power to serial link bus 652. To the contrary, we are persuaded by Mr. Lipoff’s testimony, based on Jacob’s express disclosure as discussed above, that it does. *See* Ex. 1003 ¶ 171; *see also* Ex. 1005, 15:24–26 (“Control 630 is connected to controller(s) 45 via serial link bus 652 *which provides both communications and power.*”) (emphasis added). We note, for example, that Figure 21 also does not show that control 45 is connected to power supply 46. *See* Ex. 1005, Fig. 21. But that does not mean that control 45 does not receive power from power supply 46. Indeed, Jacobs expressly discloses that control 45 receives its power from power supply 46, which is connected to a 120 V AC power line (e.g., a wall outlet). Ex. 1005, 13:51–56, Fig. 21. Dr. Davis acknowledges this. *See* Ex.

²¹ We note that Patent Owner does not cite to Dr. Davis’ declaration to support its arguments regarding how Jacobs distributes power to control 630.

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1019, 192:14–193:10. Like Jacobs, Doppelt also discloses head unit 12 receives its power from a 110 V AC power line, converts it to DC voltage, and powers switch module 39 with that DC voltage. Ex. 1004, 5:28–34, Figs. 3A, 6.

f. Claims 8 and 16

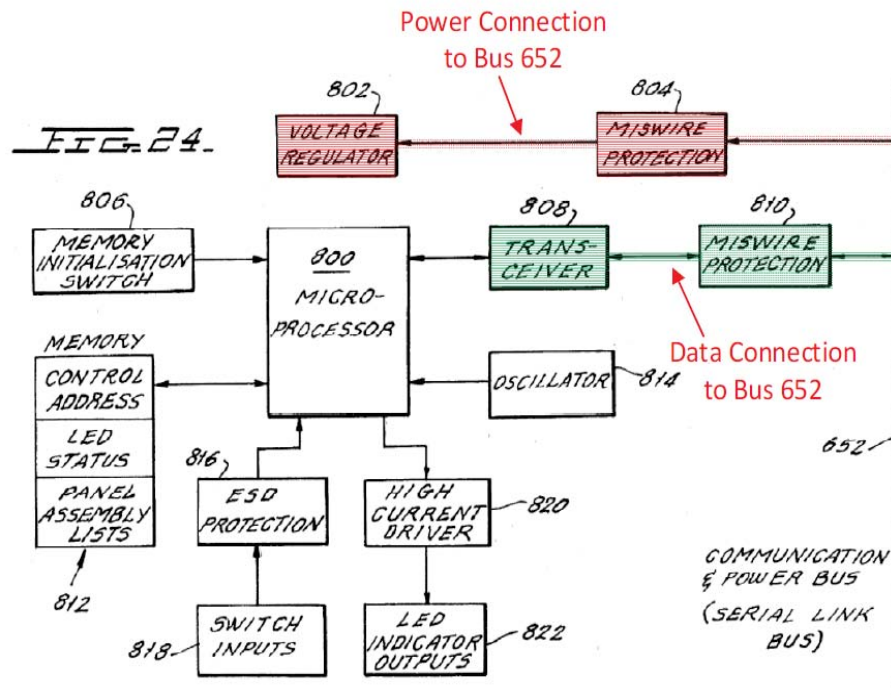
Claim 8 depends from claim 7, and further requires the power conductors of the digital data bus to convey both power and data. Ex. 1001, 8:14–15. Claim 16 depends from claim 15, and adds the same limitation to claim 15. Ex. 1001, 8:41–42. As discussed above, Petitioner has demonstrated that the combination of Doppelt, AAPA, and Jacobs teaches the limitations of claims 7 and 15 from which claims 8 and 16 depend, including the motor drive unit supplying power to the wall console via power conductors of the digital data bus.

Petitioner argues that Jacobs discloses the additional limitation recited in claims 8 and 16—that the power conductors convey both data and power—because serial link bus 652 is a communications and power bus. Pet. 80–81 (citing Ex. 1005, 16:22–25, 16:30–36, 16:58–65, Fig. 24). Patent Owner argues the cited portions of Jacobs only disclose the serial link bus conveys data, not power and data. PO Resp. 37. Patent Owner further argues Jacobs discloses microcontroller 800 in controller 630 receives only data from serial link bus 652 via transceiver 808, and receives its power from voltage regulator 802. *Id.* at 38–40 (citing Ex. 1005, 15:11–35, 15:56–60, 16:6–15, Fig. 24). Relying on the testimony of Dr. Davis, Patent Owner argues “there are no power conductors within Jacobs’ serial link bus that can convey both data and power.” *Id.* at 40 (citing Ex. 2007 ¶¶ 96–97).

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We are persuaded by Patent Owner's argument. Patent Owner provides an annotated version of Figure 24 in support of its argument (PO Resp. 40), which is reproduced below.



Jacobs at FIG. 24 (annotated)

Annotated Figure 24 is a functional block diagram of Jacobs' wall controller 31/32 (630/631), annotated by Patent Owner to show controller 630 includes voltage regulator 802 that receives power from serial link bus 652 over conductors highlighted in red, and also includes transceiver 808 that receives data from and transmits data to serial link bus 652 over conductors highlighted in green. See PO Resp. 40; see also Ex. 1005, 4:53–54, 15:5–10, 15:22–24, Fig. 24.

As discussed above, the conductors highlighted in red are power conductors because they receive unregulated DC voltage from serial link bus

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652 as indicated by the one-way arrows pointing from serial link bus 652 to voltage regulator 802. Petitioner has not shown that these same power conductors also conduct data as required by claims 8 and 16. Indeed, Figure 24 illustrates a different set of conductors on serial link bus 652 (highlighted in green) that conduct two-way data communications between controller 630 (wall console) and control 45 (motor drive unit), which is indicated by the two-way arrows between serial link bus 652, transceiver 808, and microcontroller 800. *See* Ex. 1005, 15:32–35, 15:53–16:28, 16:58–65.

Accordingly, for the reasons discussed above, Petitioner has failed to demonstrate that the combination of Doppelt, AAPA, and Jacobs teaches or suggests each of the limitations required by claims 8 and 16.²²

6. *Reasons to Combine the Prior Art*

As discussed in § II.E.5, *supra*, Petitioner relies on Doppelt for the majority of the limitations of independent claims 1 and 9. Specifically, Petitioner relies on Doppelt to teach a GDO having a motor drive unit and a wall console, and proposes (1) modifying Doppelt’s wall console to include a microcontroller that communicates with the motor drive unit’s microcontroller over a digital data bus per the teachings of Jacobs, and (2) modifying Doppelt’s wall console to include a passive infrared detector

²² We note the ALJ also found in the ITC’s Initial Determination that the combination of Doppelt and Jacobs fails to disclose every limitation recited in claims 8 and 16. *See* Ex. 2014, 210. We also note that Petitioner relies solely on Jacobs for the additional limitation of claims 8 and 16, and does not rely on the teachings of Doppelt, AAPA, or Gilbert. *See* Pet. 79–81.

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(to the extent the claims require such a detector) per the teachings of AAPA and Jacobs.

Relying on the testimony of Mr. Lipoff, Petitioner argues a person of ordinary skill in the art would have found it obvious to modify Doppelt as described above based on the AAPA because the references are in the same field of endeavor, Doppelt teaches the need to remotely control garage door lights when people are in or near the garage, and AAPA teaches using infrared detectors to remotely control garage door lights when people are in or near the garage. Pet. 38–39 (citing Ex. 1003 ¶ 106; Ex. 1004, 1:2–5, 2:10–13, 2:25–30).

Petitioner argues a person skilled in the art would have found it obvious to further modify Doppelt based on the teachings of Jacobs because the references are in the same field of endeavor (motor-driven movable barrier operators), AAPA teaches using infrared detectors to detect people in the vicinity of movable barrier operators, and Jacobs teaches using occupancy detectors in addition to wall consoles to control movable barrier operators. *Id.* at 39–40 (citing Ex. 1003 ¶ 107; Ex. 1004, 6:9–14; Ex. 1005, 1:5–10, 5:15–17). Petitioner contends that it would have been obvious to modify Doppelt’s wall control (switch module 39) to include an infrared detector, as taught by AAPA or Jacobs, because wall controls are mounted near the entrance/exit points of a garage, where a person is likely to be easily detected. *Id.* at 40 (citing Ex. 1001, 1:41–47, 1:56–61; Ex. 1005, 5:31–35, 19:43–64, Fig. 1; Ex. 1003 ¶ 109).

Relying on the testimony of Mr. Lipoff, Petitioner further argues that a person of ordinary skill in the art would have found it obvious to modify

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Doppelt's wall control to include a microcontroller because Jacobs teaches the benefits of doing so, including the ability to program the wall control's buttons and status lights to allow for more sophisticated controls and displays, such as multi-button controls and digital displays. Pet. 41–42 (citing Ex. 1005, 5:65–6:15, 15:61–65, 16:11–28, 17:11–19, 17:27–36, 19:51–57, Fig. 19; Ex. 1003 ¶¶ 111–112). Petitioner also argues a person of ordinary skill in the art would have had a reasonable expectation of success modifying Doppelt's wall control in the manner suggested because the modification employs well-known components using well-known techniques to achieve predictable results. *Id.* at 42–43 (citing Ex. 1003 ¶ 113).

We agree with Petitioner's articulated reasons for why a person of ordinary skill in the art would have been motivated to modify Doppelt's wall control in light of the teachings of Jacobs and the AAPA. Specifically, we credit Mr. Lipoff's testimony (Ex. 1003 ¶¶ 106–113), which includes sufficient detail on the basis for his opinions and is consistent with the prior art disclosures and the level of ordinary skill in the art set forth above.

With respect to the Doppelt-Jacobs combination in particular, Petitioner first establishes that a person of ordinary skill in the art could have modified Doppelt to include a microcontroller in the wall console, with a reasonable expectation of success in doing so. *See* Pet. 39, 42–43.

Mr. Lipoff explains that Doppelt and Jacobs are within the same field of motor-driven systems for moving a barrier. Ex. 1003 ¶ 107. Jacobs also used “well-known” components (e.g., “wall control units, occupancy detectors, microcontrollers, and digital communication over a data bus”), such that “it would have been within the capability of one of ordinary skill in

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the art to successfully combine those components with the *Doppelt* system with an expectation of predictable results.” *Id.* We agree that it would have been within the skill of an ordinarily skilled artisan to make the modification proposed by Petitioner.

Petitioner also explains why a person of ordinary skill in the art would have been motivated to make the combination. *See* Pet. 39–43. Relying on the testimony of Mr. Lipoff, Petitioner identifies specific advantages resulting from adding a microcontroller to Doppelt’s wall console that a person of ordinary skill in the art would have recognized, including the ability to provide more advanced controls and capabilities than would be possible with just a microcontroller in the motor drive unit. Ex. 1003

¶¶ 111–112. For example, Mr. Lipoff testifies that adding a microcontroller to Doppelt’s wall console would

allow[] for (1) programming preset buttons [Ex. 1005, 15:61–65, 16:17–21, 17:11–16, 17:18–19:42], (2) updating status lights [*Id.* at 16:11–16], (3) monitoring system interrupts [*Id.* at 16:22–28], (4) more sophisticated displays (*e.g.*, digital displays) [*Id.* at 6:4–15, 19:51–57, Fig. 19], (5) more sophisticated controls (*e.g.*, pressing multiple buttons at once provides unique control) [*Id.* at 17:27–36], and (6) more complex system controls (*e.g.*, single wall control to control multiple devices) [*Id.* at 5:65–6:15, 17:11–17, Fig. 19].

Id. ¶ 111. Thus, Mr. Lipoff testifies that a person of ordinary skill in the art “would have immediately recognized the benefits of providing additional controls and capabilities in the wall console by adding a microcontroller, as taught by *Jacobs*,” including providing “users with increased programmability and control over their garage door system.” *Id.* ¶¶ 111–113. We agree that an ordinarily skilled artisan would have viewed the

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addition of a microcontroller to Doppelt’s wall console as an improvement. *See KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.”).

We are mindful that the ITC found that Petitioner had not “shown with clear and convincing evidence that it would have been obvious to combine Doppelt and Jacobs,” primarily because Petitioner did not “sufficiently explain[] what benefit is conferred upon Doppelt by adding a *second* microcontroller to the system and within the wall console—which is the core premise of the ’319 patent’s claims.” Ex. 2014, 166–167. Based on the arguments and evidence presented in this proceeding, however, and for the reasons explained herein, we conclude that Petitioner has established that a person of ordinary skill in the art would have viewed adding a microcontroller to Doppelt’s wall console, based on the teachings of Jacobs, as an *improvement* to Doppelt’s system.

Patent Owner argues Jacobs and Doppelt cannot be combined because they are not in the same field of endeavor, and Jacobs is not “pertinent to moveable barrier[] operators or the problem solved by the ’319 patent.” PO Resp. 6–9; PO Supp. Resp. 3–10, 16. We are not persuaded by Patent Owner’s arguments for the reasons discussed in § II.E.3, *supra*. Doppelt, Jacobs, and the ’319 patent are all within the field of motor-driven systems for moving a barrier, and Jacobs is reasonably pertinent to the problem of adding a microcontroller to the wall console of a moveable barrier operator. Patent Owner further argues that AAPA cannot be used to challenge claims

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in an *inter partes* review proceeding. PO Resp. 41–54. We are not persuaded by Patent Owner’s arguments for the reasons discussed in § II.E.4, *supra*.

Finally, Patent Owner argues Petitioner has failed to establish that a person of ordinary skill in the art would have combined the teachings of Doppelt and Jacobs because Doppelt teaches away from modifying its wall control to include a microcontroller. *Id.* at 9–15; PO Supp. Resp. 10–15. In particular, relying on the testimony of Dr. Davis, Patent Owner argues “Doppelt’s disclosure would actually have discouraged . . . positioning a microcontroller in its switch module 39.” PO Resp. 10–11 (citing Ex. 2007 ¶¶ 49–58, 61–72). Patent Owner argues the switches in switch module 39 are connected to microcontroller 85 in head unit 12 rather than to a microcontroller in switch module 39. *Id.* at 11 (citing Ex. 1004, 5:20–25, 6:7–9, 12:31–34, Fig. 6; Ex. 2007 ¶¶ 28–29, 64–65). Patent Owner describes this as an “elegant design” that saves cost by providing a microcontroller only where it is needed, i.e., a “single microcontroller [in] the head unit.” *Id.* at 11–12 (citing Ex. 2007 ¶¶ 51, 65). Patent Owner argues a person skilled in the art, reading Doppelt, would have understood Doppelt to teach “an alternative to positioning a microcontroller in its switch module 39,” and would have found modifying switch module 39 to include a microcontroller to be “contrary to Doppelt’s teachings and . . . disrupt[ive] [of] Doppelt’s design.” *Id.* at 12–13 (citing Ex. 1004, 2:14–30, 7:11–20; Ex. 2007 ¶¶ 52–53, 67–68).

Petitioner counters that “nothing in Doppelt comes close to the ‘clear discouragement’ required for teaching away.” Reply 7; Supp. Reply 7–8.

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Petitioner argues that characterizing Doppelt’s design as “clever” and “elegant” is not “evidence of a discouragement to modify the reference.”

Reply 7. The question to be answered, Petitioner contends, is not whether Doppelt’s invention was clever, but whether a person skilled in the art would have found it obvious “to modify Doppelt with the teachings of Jacobs,” and would have recognized that “the teachings in the references could be used to improve the performance of the prior art.” *Id.* at 7–9.

Upon consideration of the arguments and evidence presented by Patent Owner and Petitioner, we conclude that Petitioner has articulated a sufficient reason to combine the teachings of Doppelt, AAPA, and Jacobs, and that Doppelt does not teach away from adding a microcontroller to its wall control unit. A prior art reference teaches away when it “criticize[s], discredit[s], or otherwise discourage[s] the solution claimed.” *Fulton*, 391 F.3d at 1201. Although Doppelt’s solution to the problem of sending control signals between the wall console and motor drive unit does not require a microprocessor in the wall console, Doppelt does not teach away from including a microprocessor in the wall console because it does not criticize, discredit, or otherwise discourage doing so. *Id.* Indeed, Patent Owner’s arguments to the contrary fail to identify any specific statement or teaching in Doppelt that criticizes, discredits, or discourages including a microcontroller in the wall console. The mere fact that Doppelt’s wall console does not have a microprocessor does not, by itself, constitute a teaching away from including a microprocessor in the wall console. See *Syntex (U.S.A.) LLC v. Apotex, Inc.*, 407 F.3d 1371, 1380 (Fed. Cir. 2005) (“[A] prior art reference that does not specifically refer to one element of a

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combination does not, per se, teach away. If it did, only references that anticipate could be used to support an obviousness analysis.”).

Finally, Patent Owner argues that a person of ordinary skill in the art would not have combined the teachings of Doppelt and Jacobs because there are “significant differences” between garage door openers like the one disclosed in Doppelt and window panel systems like the one described in Jacobs. PO Resp. 6–9 (citing Ex. 2007 ¶ 48); PO Supp. Resp. 16 (same). Patent Owner contends that (1) garage doors only move between “a fully opened position and a fully closed position,” whereas window panel systems have “a variety of panel arrangements, including intermittent positions,” and (2) a garage door is “a barrier that is intended to safely secure an entrance to a home against unauthorized entry,” whereas window panels “are merely decorative, and secure nothing.” PO Supp. Resp. 16. We disagree for reasons similar to those explained above regarding why Jacobs is within the same field of endeavor—motor-driven systems for moving a barrier—as the ’319 patent and Doppelt. *See supra* § II.E.3.a. Further, Petitioner provides evidence that the differences between Jacobs and Doppelt are not nearly as extreme as Patent Owner suggests. As Mr. Lipoff testifies, the references are similar in that they both disclose panels that are movable by a motor and that can be used in a building. *See* Ex. 1003 ¶ 107. Jacobs also utilizes “well-known” components, many of which are shared by Doppelt. *See id.* ¶ 113.

Accordingly, for all the reasons discussed above, we are persuaded that Petitioner has provided sufficient reasoning with rational underpinnings to combine the teachings of Doppelt, AAPA, and Jacobs in the manner

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proposed by Petitioner. Petitioner has identified familiar elements known in the art and has identified rational reasons that a person skilled in the art would have combined these elements in the manner proposed, and Mr. Lipoff testifies that a person skilled in the art would have expected the combination to achieve predictable results. *See* Pet. 38–42; Ex. 1003 ¶¶ 106–107, 109, 111, 113. We credit Mr. Lipoff’s testimony, which is both consistent with and supported by evidence cited in the record, as explained herein.

7. Secondary Considerations of Non-obviousness

Patent Owner argues that, notwithstanding Petitioner’s arguments and evidence to the contrary, the challenged claims of the ’319 patent are patentable due to secondary considerations of non-obviousness. PO Resp. 31–59. “[O]bjective indicia of non-obviousness play an important role as a guard against the statutorily proscribed hindsight reasoning in the obviousness analysis.” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016). Patent Owner bears the burden of producing evidence of secondary considerations of non-obviousness. *See Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1360 (Fed. Cir. 2007); *see also Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1350 (Fed. Cir. 2000). Nonetheless, the burden remains on Petitioner to prove the unpatentability of the challenged claims. *See* 35 U.S.C. § 316(e).

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Patent Owner argues the challenged claims are patentable because Petitioner copied the invention claimed in the '319 patent. PO ITC Brief 5–6, 115–117.²³

[C]opying requires evidence of efforts to replicate a *specific product*, which may be demonstrated through internal company documents, direct evidence such as disassembling a patented prototype, photographing its features, and using the photograph as a blueprint to build a replica; or access to the patented product combined with substantial similarity to the patented product.

Wyers v. Master Lock Co., 616 F.3d 1231, 1246 (Fed. Cir. 2010) (emphasis added).

a. Evidence Relied Upon to Establish Copying

As discussed in section I.A, *supra*, Patent Owner belatedly sought additional discovery of evidence of copying, and proposed a method by which that evidence would be presented in this proceeding. See Papers 18, 27. We granted Patent Owner's request for the discovery, as well as Patent Owner's proposed method for presenting that evidence by filing a redacted version of its ITC pre-hearing brief, limited to a discussion of copying, as well as the evidence of copying cited in that brief.²⁴ See Paper 27, 2–4.

²³ We cite to the original pagination of Patent Owner's pre-hearing ITC brief, rather than the pagination of the paper filed in this proceeding enclosing that brief.

²⁴ Although Patent Owner requested Petitioner *not be allowed* to present rebuttal evidence in the form of Petitioner's redacted ITC pre-hearing brief and the evidence cited in that brief, in fairness to both parties, we granted Petitioner the *opportunity to file* those papers. See Paper 27, 3–4.

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During the first oral hearing, Patent Owner argued it was unfairly prejudiced because it was unable to rely upon certain evidence, including evidence cited in the ITC Initial Determination, rebuttal evidence cited in Petitioner’s ITC pre-hearing brief, and evidence that Patent Owner identified for the first time at the oral hearing as “evidence that . . . corroborates Dr. Davis’ witness statement,” even though Patent Owner never proposed presenting any of that evidence as evidence of copying in this proceeding. *See* Paper 37, 7–10; Tr. 61:16–19.²⁵ For the reasons discussed in a previous order, we are not persuaded that Patent Owner has been prejudiced in its presentation of evidence of copying in this proceeding. *See* Paper 37, 7–10. In particular, Patent Owner was permitted to present its evidence and arguments of copying in the manner that Patent Owner proposed. *Id.* Moreover, Patent Owner never proposed relying on evidence cited in the ITC Initial Determination, evidence cited in Petitioner’s rebuttal ITC pre-hearing brief, or evidence corroborating Dr. Davis’ witness statement. *Id.*

b. Presumption of Nexus

To be given substantial weight, Patent Owner’s evidence of copying must have a nexus to the claimed invention. *See Wyers*, 616 F.3d at 1246. Patent Owner bears the burden of showing this nexus. *See WMS Gaming*

²⁵ Although Patent Owner stated in the cited portions of the transcript that it was unable to present evidence cited in Patent Owner’s ITC pre-hearing brief, that statement was a mistake that Patent Owner subsequently corrected. *Compare* Tr. 61:17–18, *with id.* at 62:20–23. As Patent Owner subsequently acknowledged, Patent Owner was permitted to present all of the evidence cited in its ITC pre-hearing brief in this proceeding. *Id.* at 75:5–6, 76:9–10.

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Inc. v. Int’l Game Tech., 184 F.3d 1339, 1359 (Fed. Cir. 1999). Patent Owner is entitled to a rebuttable presumption of nexus between its copying evidence and the invention claimed in the ’319 patent if the evidence “is tied to a *specific product* and that product ‘is *the invention disclosed and claimed* in the patent.’” *WBIP*, 829 F.3d at 1329 (emphases added). Because questions of nexus are highly fact-dependent, it is within the province of the fact finder to determine nexus and the relative weight or significance to bestow upon Patent Owner’s evidence. *Id.* at 1331.

Patent Owner’s evidence of copying largely pertains to features and components of Patent Owner’s GDO products in general, although some evidence pertains specifically to the HD930 model GDO. *See* PO ITC Brief 115–117. However, Patent Owner presents no evidence that its GDO products in general, or the HD930 model in particular, embody the claims of the ’319 patent. The closest Patent Owner comes to showing the HD930 model embodies the claims of the ’319 patent is its assertion, which relies on the testimony of Dr. Davis, that “[t]he HD930 embodies the claims of the ’319 patent and is one [of] the many products offered as proof of [Patent Owner]’s satisfaction of the domestic industry requirement.” *Id.* at 116 (citing CX-1317C (Ex. 2022, 7 (Q188))).²⁶ In the cited passage, Dr. Davis opines that “[t]here are three categories of products that practice one or more

²⁶ All citations in Patent Owner’s and Petitioner’s ITC pre-hearing briefs have been changed to parenthetically add a citation to the exhibits as filed in this proceeding. For example, Patent Owner’s citation to ITC exhibit CX-1317C has been changed to parenthetically cite Exhibit 2022. We further cite to the center pagination appearing at the bottom of the exhibit as filed in this proceeding.

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claims of the '319 patent,” and lists the HD930EV within one of those three categories. Ex. 2022, 7. However, neither Patent Owner nor Dr. Davis provide any evidence or analysis in this proceeding that the HD930 or any of Patent Owner’s other GDO products embody the claims of the '319 patent.²⁷ Moreover, Patent Owner did not request to introduce any such evidence in this proceeding. Accordingly, Patent Owner’s evidence of copying is not entitled to a presumption of nexus.

c. Evidence of Copying

Much of Patent Owner’s evidence and argument is not directed toward showing that Petitioner copied a specific one of Patent Owner’s products, but rather that Petitioner “investigated, and copied *aspects* of [Patent Owner’s] products that directly implicate claims of the '319 patent.” See, e.g., PO ITC Brief 116 (emphasis added). On this basis alone, we can conclude that Patent Owner has failed to present persuasive evidence of copying, because “copying requires evidence of efforts to replicate a *specific product*” that embodies the claims of the challenged patent, not *aspects* of various products. Wyers, 616 F.3d at 1246 (emphasis added). Nonetheless,

²⁷ We note the ITC identified the HD930 as a Domestic Industry Product that embodies the claims of the '319 patent. However, in making that finding, the ITC relied upon evidence introduced by Patent Owner in the ITC Investigation describing its products. See Ex. 2014, 7, 147 (“[B]ased on *CGI’s un rebutted claims and the evidence provided*, I find it more likely than not that the '319 Domestic Industry Products practice claims . . . of the '319 patent.” (emphasis added)). As noted above, Patent Owner has not introduced any evidence in this proceeding to prove the HD930 or any other GDO product embodies the claims of the '319 patent, despite having full control over such evidence describing its own products.

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we individually address Patent Owner's evidence of copying below.

(1) Wireless Keypad

Patent Owner argues that while Petitioner was developing its GD200 product, Petitioner [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] However, Patent Owner's own admission regarding the scope of the '319 patent contradicts its contention that the 940EV Garage Access *Wireless Keypad* is the "wall console" claimed in the '319 patent. In particular, Patent Owner admits that "[a]ll '319 patent claims relate to *wired* digital communications between a garage door opener's wall console and head unit." PO ITC Brief 5 (emphasis added).

A *wireless* keypad does not communicate with a motor drive unit over a *wired* communications link. Patent Owner's own declarant, Dr. Davis, acknowledges this. During his deposition, Dr. Davis was asked "within the confines of the '319 patent, would sending signals, digital signals using radio frequency or other wireless means, be conveying digital signals over a digital data bus?" Ex. 1019, 65:3–6. Dr. Davis responded: "In my opinion, no." *Id.* at 65:8. Therefore, even accepting as true Patent Owner's contention that Petitioner copied the design of the 940EV *Wireless Keypad*, that is insufficient proof that Petitioner copied the invention claimed in the '319 patent because a wireless keypad does not communicate with the motor drive unit over a digital data bus as required by all claims of the '319 patent.

Moreover, Petitioner provides uncontroverted rebuttal evidence that it

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did not copy the design of Patent Owner's 940EV Wireless Keypad. *See* Pet. ITC Brief 127 (citing RX-480C (Ex. 1024, 45–48)); *see also* Ex. 1024, 45–48 (uncontroverted testimony stating Petitioner did not copy Patent Owner's 940EV Wireless Keypad, and providing documentary evidence that Petitioner's wired wall console differs from Patent Owner's wired wall console, including differences in the number, type, and positioning of the buttons provided on the two wall consoles).

Accordingly, the evidence does not show that Petitioner copied the 940EV Wireless Keypad, or any of Patent Owner's wired wall consoles that communicate with a motor drive unit over a digital data bus as required by the claims of the '319 patent, and does not establish a nexus between any copying of the 940EV Wireless Keypad and any claim recited in the '319 patent.

(2) Design List and Communications Protocol

Patent Owner also contends that Petitioner's design list for the GD200 demonstrates that Petitioner copied the invention claimed in the '319 patent. *See* PO ITC Brief 116. In particular, Patent Owner [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

As noted above, Patent Owner has produced no evidence that

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Petitioner has copied a specific product having a *wired* wall console that communicates with a motor drive unit over a *wired* communications link using the investigated communications protocol. To the contrary, Petitioner has produced uncontroverted rebuttal evidence that it did not copy Patent Owner’s wired wall consoles. *See* Ex. 1024, 45–48.

Moreover, even if Patent Owner had produced evidence showing Petitioner copied Patent Owner’s protocol for communicating with the motor drive unit, that evidence would not be persuasive evidence of copying the invention claimed in the ’319 patent for at least two related reasons. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] The ’319

patent does not describe a protocol for communications between the wall console and motor drive unit, let alone [REDACTED]

[REDACTED] Indeed, the terms [REDACTED] and [REDACTED] do not even appear in the ’319 patent, and the term “communication” only appears in the title, indicating little more than that the GDO claimed in the ’319 patent uses

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serial data communications.²⁸

Second, even if the '319 patent did describe [REDACTED], the '319 patent does not have any claims that are directed to that or any other communications protocol. See Ex. 1001, claims 1–16. When asked at the hearing to identify any limitation in any claim of the '319 patent that is directed to a communications protocol, Patent Owner simply identified the digital data bus itself. Tr. 59:3–11. But the '319 patent neither describes nor claims the use of any particular communications protocol over the digital data bus. Any communications protocol can be used.

Moreover, *at best*, the evidence cited by Patent Owner proves that Petitioner *investigated* Patent Owner's communications protocol. See Exs. 2017, 2019. The evidence fails to show—and Patent Owner failed to produce any other evidence that shows—Petitioner actually *copied* the communications protocol it investigated in the GD200 or any other product. To the contrary, Petitioner contends it “did not copy the connection and

²⁸

[REDACTED] Doppelt describes *wireless* transmitter 30 having microcontroller 678, push buttons 675–677, and radio frequency oscillator 682. Ex. 1004, 7:6–15. When a push button is depressed, transmitter 30 transmits an amplitude modulated radio frequency signal. *Id.* at 16–20. This signal is generated as a binary rolling code, whose digit order is inverted to generate an inverted binary rolling code, which is then converted into a trinary code that modulates the transmitted radio frequency signal. *Id.* at 8:37–9:14. As noted above, a wireless transmitter cannot be the wall console of the '319 patent because a wireless radio frequency link is not a digital data bus.

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communication technology that [Patent Owner] uses for its wall unit,” and cites to uncontroverted testimony to that effect. Pet. ITC Brief 125 (citing RX-480C (Ex. 1024, 35–37) [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Accordingly, for the reasons discussed above, the evidence does not show that [REDACTED]

[REDACTED], and does not establish a nexus between any copying of the communications protocol Petitioner investigated and the claims of the ’319 patent.

(3) MyQ Application

Patent Owner next contends that Petitioner copied the invention claimed in the ’319 patent by hiring a contractor to develop a cell phone application to control Petitioner’s GD200 product under the mistaken belief that the same contractor had developed Patent Owner’s “MyQ app,” which “controls certain [Patent Owner] garage door openers.” PO ITC Brief 117 (citing CX-1653C (Ex. 2023, 110–111); CX-1391C (Ex. 2024, 245:1–248:25)). Patent Owner contends “[t]he MyQ app, in connection with particular [Patent Owner] garage door operators and wall consoles, relies on the patented digital connection and communications between the wall console and the head unit for control.” *Id.* (citing CX-1653C (Ex. 2023, 110–111)).

Patent Owner’s evidence does not show that Petitioner copied the invention claimed in the ’319 patent. First, Patent Owner does not identify

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any particular product the MyQ application controls, let alone a product that embodies the claims of the '319 patent. Second, by Patent Owner's own admission, the contractor Petitioner hired to develop Petitioner's application *did not develop* Patent Owner's MyQ application. See PO ITC Brief 117

[REDACTED]

[REDACTED]

[REDACTED] Third, even if Petitioner had copied the MyQ application, a cell phone using such an application would communicate with the motor drive unit *wirelessly*, and Patent Owner admits the claims of the '319 patent require a wall console that communicates with the motor drive unit over a *wired* communications link. See PO ITC Brief 5; *see also* Ex. 1019, 65:3–8. Lastly, as explained above, the '319 patent does not require any particular communications protocol between the wall console and motor drive unit, let alone whatever communications protocol is used by the MyQ application to communicate with the motor drive unit.

Accordingly, for the reasons explained above, the evidence does not show that Petitioner copied the MyQ application, and does not establish a nexus between any copying of the MyQ application and the invention claimed in the '319 patent.

(4) [REDACTED]

Lastly, Patent Owner argues Petitioner copied the invention claimed in the '319 patent because [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

As discussed above, Patent Owner has introduced no evidence in this proceeding showing the HD930 product embodies the claims of the '319 patent. Moreover, Patent Owner admits that “[a]ll '319 patent claims relate to *wired* digital communications between a garage door opener’s wall console and head unit.” PO ITC Brief 5 (emphasis added). Further, Dr. Davis acknowledges that wireless communications between a wall console and head unit over a radio frequency communications link are not communications over a digital data bus. See Ex. 1019, 65:3–8. Therefore, even assuming as true that Petitioner [REDACTED]

[REDACTED]

[REDACTED] that evidence fails to show that Petitioner copied the invention claimed in the '319 patent, which requires the wall console to communicate

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with the motor drive unit over a digital data bus.²⁹

8. Conclusions Regarding Obviousness

We have reviewed the Petition, Patent Owner's Response and Supplemental Response, Petitioner's Reply and Supplemental Reply, and Petitioner's and Patent Owner's respective ITC pre-hearing briefs. We have considered all of the arguments made by Petitioner and Patent Owner, as well as all of the evidence for and against obviousness, including evidence of secondary considerations of non-obviousness in the form of copying. We have weighed and assessed the entirety of this evidence as a whole.

For the reasons discussed in §§ II.E.1–II.E.7 *supra*, we are persuaded that Petitioner has demonstrated, by a preponderance of evidence, that claims 1–4, 7, 9–12, and 15 of the '319 patent are unpatentable over the combination of Doppelt, AAPA, and Jacobs. In particular, Petitioner has shown that Doppelt and Jacobs are from the same field of endeavor as the '319 patent (*i.e.*, motor-driven systems for moving a barrier), that Jacobs' system has the same structure and function as the system claimed in the '319 patent (*i.e.*, a motor control system having a drive unit with an embedded microcontroller that controls a motor based on instructions received over a digital data bus from a wall console having a microcontroller), and that Jacobs describes a solution to one of the problems confronting the inventor

²⁹ We note the ITC found

 We have considered the ITC's analysis and all of the evidence submitted to us by the parties, and reach a different conclusion for the reasons described herein.

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of the '319 patent (*i.e.*, including a microcontroller in the wall console that communicates with the microcontroller in the motor drive unit over a digital data bus). *See* § II.E.3, *supra*.

Further, Petitioner has persuasively explained why a person skilled in the art would have modified Doppelt's switch module 39 based on the teachings of Jacobs to include a microcontroller that communicates with the microcontroller in head unit 12 over a digital data bus. *See* § II.E.6, *supra*. In particular, Petitioner states a person skilled in the art would have known such a modification would have improved the utility of Doppelt's switch module 39 by providing it with advanced controls and capabilities, such as the ability to program preset buttons, update status lights, and provide multi-button controls and advanced displays. *Id.* Petitioner has further shown that the combination of Doppelt, AAPA, and Jacobs teaches all the limitations of claims 1–4, 7, 9–12, and 15 of the '319 patent. *See* §§ II.E.5.a–II.E.5.e, *supra*. In short, Petitioner has made a strong showing that claims 1–4, 7, 9–12, and 15 would have been obvious over Doppelt, AAPA, and Jacobs.

The only contravening evidence that claims 1–4, 7, 9–12, and 15 would not have been obvious is the weak evidence of copying presented by Patent Owner. *See* § II.E.7, *supra*. Initially, we note that Patent Owner has introduced no evidence in this proceeding showing the HD930EV GDO actually embodies the claims of the '319 patent. Therefore, Patent Owner is not entitled to a presumption of nexus with respect to Petitioner's alleged copying of this product. *See WBIP*, 829 F.3d at 1329.

Moreover, the evidence Patent Owner relies upon to show copying fails to demonstrate sufficient nexus to the claims recited in the '319 patent.

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In particular, Patent Owner admits that “[a]ll ’319 patent claims relate to wired digital communications between a garage door opener’s wall console and head unit,” and Dr. Davis, Patent Owner’s declarant, opined that wireless communications between the wall console and head unit are *not* communications over a digital data bus as required by the claims of the ’319 patent. See PO ITC Brief 5; Ex. 1019, 65:3–6. Nonetheless, much of Patent Owner’s copying evidence consists of little more than Petitioner’s alleged use of a wireless device, such as a cellular phone or wireless keypad, to communicate with a motor drive unit over a *wireless* communications link. For example, Patent Owner contends Petitioner [REDACTED]

[REDACTED] Moreover, Patent Owner’s evidence that Petitioner allegedly copied Patent Owner’s MyQ cellular phone control application is belied by Patent Owner’s admission that the contractor hired to design Petitioner’s cellular phone control application *did not in fact design* the MyQ application. See PO ITC Brief 117 [REDACTED]

Patent Owner’s allegations that Petitioner investigated and copied Patent Owner’s communications protocol for use in Petitioner’s GD200 product also fail to demonstrate sufficient nexus to the claims of the ’319 patent. Patent Owner’s only argument that such a nexus exists is the ’319 patent’s recitation of a digital data bus for communications between the wall console and the motor drive unit. See Tr. 59:3–11. But the ’319 patent does

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not describe or claim a protocol for communications over the digital data bus. Thus, even if Petitioner had copied Patent Owner's communications protocol, the evidence does not show Petitioner thereby copied the invention claimed in the '319 patent. Moreover, Petitioner has introduced uncontroverted testimony that its GD200 product was built from scratch and did not copy either Patent Owner's communications protocol, the HD930EV GDO, or the 940EV Wireless Keypad. *See* Ex. 1024, 35–37, 45–48.

In short, for the reasons discussed above, the evidence presented by Patent Owner does not show that Petitioner copied the invention claimed in the '319 patent, or that any copying of Patent Owner's products or aspects of Patent Owner's products that Petitioner has done has a nexus to the invention claimed in the '319 patent. Patent Owner's weak evidence of copying and failure to show a nexus between that copying and the invention recited in the '319 patent is insufficient to overcome Petitioner's "strong . . . case of obviousness." *Wyers*, 616 F.3d at 1246. Here, as in *Wyers*, "where the inventions represented no more than the 'predictable use of prior art elements according to their established functions,' the secondary considerations are inadequate to establish nonobviousness as a matter of law." *Id.* (internal citation omitted).

F. Obviousness over Doppelt, AAPA, Jacobs, and Gilbert

As discussed in §§ I.A, I.D, and II.D, *supra*, Petitioner alleges claims 1–4, 7–12, 15 and 16 of the '319 patent are obvious over (1) Doppelt, AAPA, and Jacobs, and (2) Doppelt, AAPA, Jacobs, and Gilbert. We have analyzed Petitioner's challenges based on the combination of Doppelt, AAPA, and Jacobs above. In the sections that follow, we analyze

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Petitioner's challenge of claims 1–4, 7–12, 15 and 16 as obvious over Doppelt, AAPA, Jacobs, and Gilbert.

1. Claims 1–4, 7, 9–12, and 15

As discussed in § II.E.8, *supra*, we find Petitioner has shown by a preponderance of evidence that claims 1–4, 7, 9–12, and 15 of the '319 patent are unpatentable as obvious over the combination of Doppelt, AAPA, and Jacobs. This finding is dispositive of Petitioner's challenge to the patentability of these claims. Accordingly, we need not address whether Petitioner has further shown, by a preponderance of evidence, that these claims are also unpatentable as obvious over the combination of Doppelt, AAPA, Jacobs, and Gilbert. *See Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (finding an administrative agency is at liberty to reach a decision based on a single dispositive issue because doing so “can not only save the parties, the [agency], and [the reviewing] court unnecessary cost and effort,” but can “greatly ease the burden on [an agency] faced with a . . . proceeding involving numerous complex issues and required by statute to reach its conclusion within rigid time limits”).

2. Claims 8 and 16

As discussed in § II.E.5.f, *supra*, Petitioner has failed to show by a preponderance of evidence that claims 8 and 16 of the '319 patent are unpatentable as obvious over the combination of Doppelt, AAPA, and Jacobs. Thus, we must take up Petitioner's challenge that claims 8 and 16 are unpatentable over the combination of Doppelt, AAPA, Jacobs, and Gilbert.

Patent Owner makes numerous arguments that all of the challenged

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claims, including claims 8 and 16, are patentable over the combination of Doppelt, AAPA, Jacobs, and Gilbert. *See* PO Supp. Resp. We need not address the merits of Patent Owner's various arguments, however, because there is a more fundamental reason for finding Petitioner has failed to demonstrate by a preponderance of evidence that claims 8 and 16 are unpatentable as obvious over Doppelt, AAPA, Jacobs, and Gilbert.

In analyzing claims 8 and 16, Petitioner relies solely on Jacobs' disclosure of serial link 652, discussed in §§ II.E.5.e and II.E.5.f, *supra*, to meet the limitation commonly recited in claims 8 and 16 that power conductors in the digital data bus connecting the wall console to the motor drive unit convey both data and power. *See* Pet. 79–81; *see also* Ex. 1001, 8:11–15, 8:39–43. Petitioner does not rely on Gilbert to teach this limitation, a fact that Petitioner confirmed during the Supplemental Oral Hearing. *See* Supp. Tr. 38:18–39:8. Therefore, because Petitioner has failed to show by a preponderance of evidence that claims 8 and 16 are unpatentable over the combination of Doppelt, AAPA, and Jacobs, Petitioner has failed to show by a preponderance of evidence that claims 8 and 16 are unpatentable over the combination of Doppelt, AAPA, Jacobs, and Gilbert for the same reasons.

III.CONCLUSION

For the reasons discussed above, and notwithstanding Patent Owner's evidence and arguments to the contrary, we find Petitioner has demonstrated by a preponderance of evidence that claims 1–4, 7, 9–12, and 15 of the '319 patent are unpatentable as obvious over Doppelt, AAPA, and Jacobs. Petitioner has not demonstrated by a preponderance of evidence that claims

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8 and 16 of the '319 patent are unpatentable over Doppelt, AAPA, and Jacobs, and has not demonstrated by a preponderance of evidence that claims 8 and 16 of the '319 patent are unpatentable over Doppelt, AAPA, Jacobs, and Gilbert. Given this disposition, we need not determine whether claims 1–4, 7, 9–12, and 15 of the '319 patent also would be unpatentable as obvious over Doppelt, AAPA, Jacobs, and Gilbert.

IV. ORDER

It is hereby:

ORDERED that claims 1–4, 7, 9–12, and 15 of the '319 patent are unpatentable;

FURTHER ORDERED that claims 8 and 16 have not been shown to be unpatentable over Doppelt, AAPA, and Jacobs;

FURTHER ORDERED that claims 8 and 16 have not been shown to be unpatentable over Doppelt, AAPA, Jacobs, and Gilbert;

FURTHER ORDERED that Petitioner's Motion to Exclude (Paper 22) is *denied* as to Exhibits 2007 and 2008, and *granted* as to Exhibit 2012;

FURTHER ORDERED that Exhibit 2012 is expunged from the record of this proceeding;

FURTHER ORDERED that, within 5 business days from the entry of this Decision, Patent Owner and Petitioner jointly file a proposed redacted version of this Decision; and

FURTHER ORDERED that, because this Decision is final, a party to this 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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