

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

DDC TECHNOLOGY, LLC,
Patent Owner.

IPR2023-00708
Patent 9,811,184 B2

Before SHEILA F. McSHANE, MICHAEL T. CYGAN, and
JULIET MITCHELL DIRBA, *Administrative Patent Judges*.

CYGAN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
Dismissing Petitioner's Motion to Exclude
35 U.S.C. §318(a)

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I. INTRODUCTION

Google LLC (“Petitioner”) filed a Petition (Paper 2 (“Pet.”)), seeking *inter partes* review of claims 1–5, 7–10, 12, and 16–18 of U.S. Patent No. 9,811,184 B2 (Ex. 1001 (“the ’184 patent”)). *See* Pet. 1. The Petition was supported by a declaration from Kurtis Keller. Ex. 1001 (“Keller Decl.”). DDC Technology, LLC (“Patent Owner”) filed a Preliminary Response (“Prelim. Resp.”), accompanied by a declaration from Patrick Buckley (“Buckley Decl.”). Papers 12 (public), 14 (confidential); Ex. 2034 (public), 2033 (confidential). With our authorization (Ex. 3003), Petitioner filed a Reply (Papers 16 (confidential), 17 (public)), and Patent Owner filed a Sur-reply (Papers 21 (confidential), 22 (public)). Patent Owner also filed a statutory disclaimer under 35 U.S.C. § 253(a) to disclaim claims 1–5 and 7–10 of the ’184 patent. Ex. 2049; *see* 35 U.S.C. § 253(a); 37 C.F.R. § 1.321(a).

On October 25, 2023, we instituted *inter partes* review of claims 12 and 16–18 of the ’184 patent. Papers 29 (confidential), 41 (public) (“Inst. Dec.”). After institution, Patent Owner filed a Response to the Petition (“PO Resp.”), accompanied by a declaration of Bob Mackey (“Mackey Dep.”) and a transcript of a deposition of Kurtis Keller (“Keller Dep.”). Paper 51; Exs. 2050, 2053. In response, Petitioner filed a Reply (“Pet. Reply”) to Patent Owner’s Response, accompanied by a transcript of a deposition of Mr. Buckley (“Buckley Dep.”). Paper 56; Ex. 1023. Patent Owner filed a Sur-reply to Petitioner’s Reply to Patent Owner’s Response. Paper 58 (“PO Sur-reply”).

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The parties requested oral argument (Papers 60, 61), which we held by video on August 7, 2024. Paper 76 (“Tr.”).

The Board has jurisdiction under 35 U.S.C. § 6. In this Final Written Decision, after reviewing all relevant evidence and arguments, we determine Petitioner has met its burden of showing, by a preponderance of the evidence, that claims 12 and 16–18 of the ’184 patent are unpatentable.

A. Related Matters

The parties identify that the ’184 patent is involved in *DDC Tech. LLC v. Landsberg Orora, et al.*, 3-23-cv-01160 (N.D. Cal. 2022) and *DDC Tech., LLC v. Emerge Techs., Inc. d/b/a Utopia 360, et al.*, 3-22-cv-01263 (N.D. Tex. 2022). Pet. 4; Paper 3, 3–4.

The parties identify that the ’184 patent was involved in *MerchSource, LLC, et al. v. DODOcase VR, Inc., et al.*, PGR2018-0020 (PTAB 2018); *DDC Tech., LLC v. Mattel, Inc.*, 1-21-cv-01781 (D. Del. 2021); *DDC Tech., LLC v. Unofficial Cardboard, Inc.*, 1-21-cv-05596 (N.D. Ill. 2021); *DDC Tech., LLC v. Merge Labs, Inc.*, 6-21-cv-00850 (W.D. Tex. 2021); *DDC Tech., LLC v. DPI, Inc.*, 4-21-cv-00402 (E.D. Mo. 2021); *DDC Tech., LLC v. Sanho Corp.*, 1-21-cv-00152 (D. Del. 2021); *DODOCASE VR, Inc. f/k/a DODOcase, Inc. v. MerchSource, LLC*, 3-17-cv-07088 (N.D. Cal. 2017); and *DODOcase, Inc. v. DGL Grp., LLC, et al.*, 1-17-cv-01188 (D. Del. 2017). Pet. 3–6; Paper 3, 3–5.

The parties identify U.S. Patent Nos. 9,420,075, 9,723,117, 10,528,199, 11,093,000, 11,093,001, and 11,449,099 as patents related to the ’184 patent. Pet. 2–3; Paper 3, 2. In addition to identifying the judicial

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proceedings above as also variously involving, or having involved, these related patents, the parties identify that U.S. Patent Nos. 9,420,075 and 9,723,117 were variously involved in *MerchSource, LLC, et al. v.*

DODOcaseVR, Inc., et al., IPR2018-00494 (PTAB 2018); *MerchSource, LLC, et al. v. DODOcase VR, Inc., et al.*, PGR2018-00019 (PTAB 2018); *DODOcase, Inc. v. DGL Grp., LLC, et al.*, 1-17-cv-01188 (D. Del. 2017); *DDC Technology LLC v. Shenzhentaifeikejiyouxiangongsi et al.*, 2-24-cv-00006 (W.D. Pa. 2024). Pet. 3, 6; Paper 3, 3, 5; Paper 64, 2.

Additionally, the following proceedings before the Board involve(d) the same parties as the instant proceeding: IPR2023-00707 (U.S. Patent No. 9,420,075 B2), IPR2023-00709 (U.S. Patent No. 10,528,199 B2), IPR2023-00710 (U.S. Patent No. 11,093,000 B2), and IPR2023-00711 (U.S. Patent No. 11,093,001 B1).

B. The '184 Patent (Ex. 1001)

The '184 patent discloses an improved virtual reality viewer for use with a touchscreen-enabled mobile device. Ex. 1001, code (57). The viewer includes two lenses, an enclosure, and a touchscreen input. *Id.* at 13:46–14:16. The touchscreen input may be made of a conductive material. *Id.* at 5:40–45. The disclosed virtual reality viewer is shown in Figures 1 and 6A as follows:

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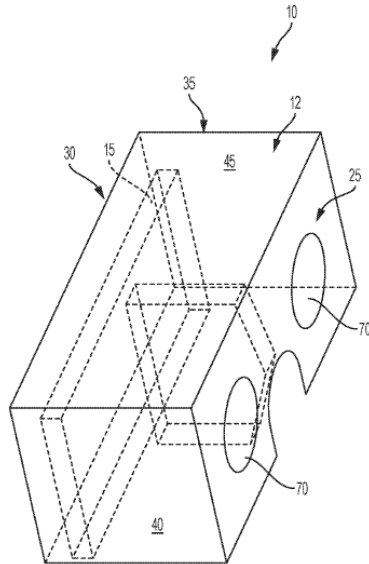


FIG. 1

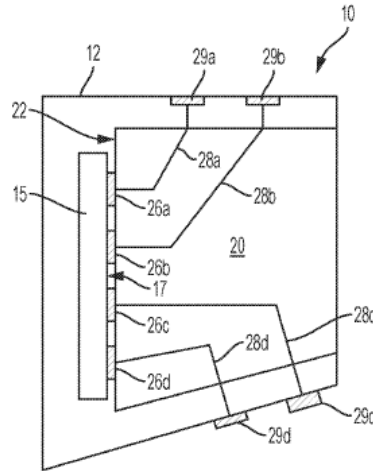


FIG. 6A

Figure 1 (left) illustrates virtual reality viewer 10 with enclosure 12 having first and second sides, 25 and 30. *Id.* at 3:49–4:35. The first side holds first and second lenses 70, and the second side is configured to receive mobile device 15. *Id.* Figure 6A (right) is a side-view cross-section of the viewer, illustrating touchscreen inputs 26a–d in physical contact with touchscreen 17 of the mobile device. *Id.* at 5:23–6:14. The touchscreen inputs are electrically coupled, via leads 28a–d, to user inputs 29a–d, thereby relaying user interaction to the touchscreen. *Id.* The '184 patent discloses a second embodiment in Figure 7, seen as follows:

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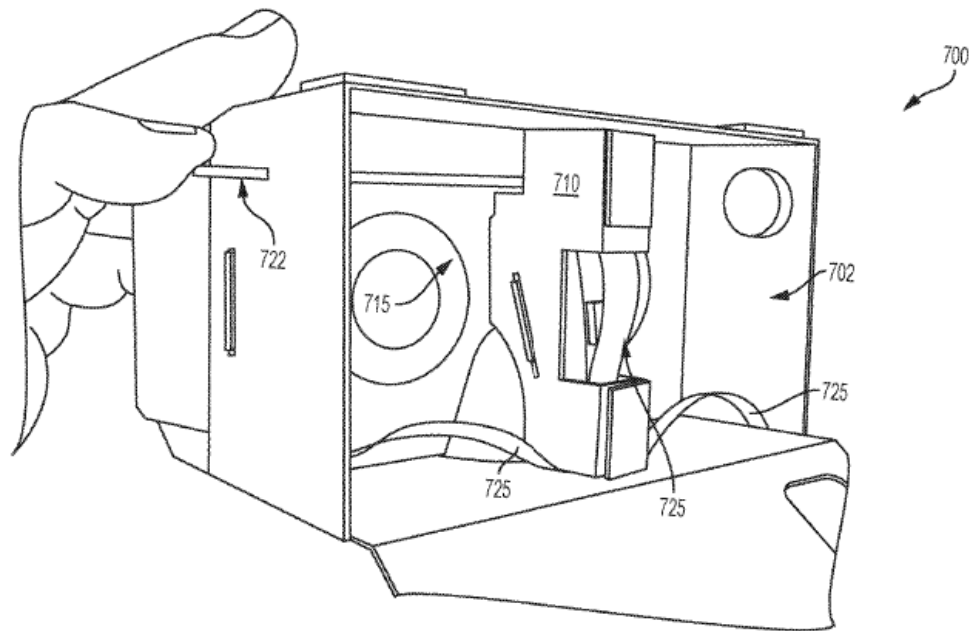


FIG. 7C

Figure 7 illustrates viewer 700 comprising a moveable user input in the form of lever 722. *Id.* at 10:1–11:42. When actuated from a first to a second position, the lever causes touchscreen input, metallic shield 725, to come into physical contact with the touchscreen of the mobile device. *Id.* The touchscreen input is located at a separator between the eyes, view divider 710. *Id.*

C. Challenged Claims

In the Petition, Petitioner challenged claims 1–5, 7–10, 12, and 16–18 of the '184 patent. Pet. 38–103.

Subsequent to the filing of the Petition, Patent Owner filed a statutory disclaimer under 35 U.S.C. § 253(a) to disclaim claims 1–5 and 7–10 of the '184 patent. Ex. 2049 (“Disclaimer in a Patent Under 37 C.F.R. 1.321(a)”; “Corrected Notice Regarding Disclaimed Claims”; “2nd Corrected Notice

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Regarding Disclaimed Claims”); *see* 35 U.S.C. § 253(a); 37 C.F.R. § 1.321(a); *Official Gazette*, 1515 OG 465 (October 24, 2023). Consequently, we did not institute trial on those claims, and we do not consider Petitioner’s challenges to them. *See* Ex. 2049; 37 C.F.R. § 1.321(a); *General Electric Co. v. United Techs. Corp.*, IPR2017-00491, Paper 9 (PTAB July 6, 2017) (precedential).

Claim 12, the only remaining independent claim, is illustrative of the challenged claims and is reproduced as follows (with bracketed indicia added for convenience of the reader):

12. [a] A virtual reality viewer for use with a mobile electronic device having a touchscreen, the viewer comprising:

[b] a first lens and a second lens, wherein the first lens is facing the same direction as the second lens, and wherein the first lens and the second lens are spaced apart in a horizontal direction;

[c] an enclosure having a first side and a second side opposite the first side, the first side configured to hold the first lens and the second lens, the second side configured to receive the mobile electronic device;

[d] a user input that is accessible from an exterior of the enclosure and has a first position and a second position;

[e] a touchscreen input conductively coupled to the user input and generally centered between the first lens and the second lens in the horizontal direction, wherein, upon receipt of the mobile electronic device, the touchscreen input is in physical contact with the touchscreen when the user input is in the [] second position.

Ex. 1001, 13:46–14:16.

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D. Instituted Grounds of Unpatentability and Evidence of Record

We instituted the instant trial based on the following ground of unpatentability. Inst. Dec. 21.

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
12, 16–18	103 ¹	Kondo, ² Chu ³

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Relying on the Declaration of Mr. Keller for support, Petitioner contends a person of ordinary skill in the art (“POSITA”) would have had a minimum of an undergraduate degree (or equivalent) in mechanical engineering or a related field, with knowledge of mechanical actuation systems, basic optical design with lenses, head-mounted displays, a basic understanding of touchscreen technology, and at least two years of professional experience in mechanical and basic optical design or engineering.

Pet. 26–27 (citing Ex. 1002 § V).

Patent Owner argues that Petitioner’s proposed definition of a POSITA “gives too much weight to certain skills/experience that are of

¹ Because the application that matured into the ’184 patent was filed after, and never claimed the effective filing date of any application filed before, March 16, 2013, we determine that AIA 35 U.S.C. §§ 102 and 103 apply to the ’184 patent. We acknowledge Petitioner’s statements may indicate reliance on the pre-AIA prior art statute. Pet. 7 (stating that both Kondo and Chu are prior art under 35 U.S.C. § 102(b)). However, our obviousness determination would not be altered even if considered under the pre-AIA prior art statute.

² Japanese Published Application No. Utility Model 3176588, issued June 28, 2012, and certified English translation thereof (Ex. 1003, “Kondo”).

³ U.S. Patent Application Publication No. 2013/0082963 A1, published April 4, 2013 (Ex. 1004, “Chu”).

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limited importance with respect to the '184 patent.” PO Resp. 1. According to Patent Owner, Petitioner puts “undue weight on technologies that are well-known or not claimed elements of the invention.” *Id.* at 1–2. Patent Owner contends that a POSITA would have

a minimum of two years experience in implementing touchscreen and optics technology, along with relevant education (e.g., a bachelor’s degree) in science or engineering. In addition to specific academic training, a POSA may draw upon appropriate industry experience.

Id. at 4 (citing Ex. 2050 ¶ 25).

Petitioner contends that its proposed definition is “grounded in the field of the invention of the '184 patent.” Pet. Reply 1. Detailed knowledge of how to implement a touchscreen, according to Petitioner, “is unnecessary because the '184 patent does not improve touchscreen technology or even claim to.” *Id.* Petitioner also argues that the named inventor of the '184 patent, Mr. Buckley, “is a mechanical engineer who has no experience implementing touchscreens.” *Id.* (citing Ex. 1023, 133:14–20, 140:22–25).

Our reviewing court has identified a non-exhaustive list of factors to determine the level of ordinary skill in the art. Relevant factors include the educational level of the inventor, the type of problems encountered in the art, and prior art solutions to those problems. *Env'tl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983).

We start with the first factor and consider the education and experiences of the sole named inventor, Mr. Buckley. Mr. Buckley testified that he majored in mechanical engineering and obtained a master’s degree with a focus in biomedical engineering. Ex. 1023, 133:14–20. Mr. Buckley also testified that he does not have experience in implementing touchscreens,

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and that an understanding of “how a touch screen works” would have been sufficient to understand the ’184 patent. *Id.* at 140:22–25.

Turning to the next factors, the relevant problems and solutions in the art, we look to the description of the prior art in the ’184 patent. The ’184 patent explains that it solves a need for “a VR viewer having integrated user input devices that is configured for use with a wide variety of conventionally available smartphone devices.” Ex. 1001, 2:34–36. The ’184 patent explains that VR viewers use such smartphone devices “instead of having dedicated displays and electronics.” *Id.* at 1:52–56. The ’184 patent further describes its invention as receiving user inputs through a touch sensitive user interface, including but not limited to a capacitive touch sensitive display, as an alternative to requiring other types of input devices, such as those requiring “specifically placed magnetic sensors, wireless or dedicated cable connection to the” device. *Id.* at 2:29–32, 3:43–48, 3:66–4:9. The ’184 patent further describes the optical lenses of the claimed invention as being understood by those in the art and typically used by VR viewers holding smartphones. Ex. 1001, 1:64–2:4; *see* PO Resp. 1–2.

Patent Owner argues that a greater understanding of touchscreen technology is required because such is pertinent to the inventive elements of the claimed inventions, and merely basic understanding would be insufficient to understand the differences between the challenged claims and the prior art, and also to understand the issues involved in determination whether a person having ordinary skill in the art would have been motivated to combine references in the proposed manner. PO Resp. 1–4. Patent Owner cites to Mr. Mackey’s testimony in support of this argument. *See* Ex.

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2050 ¶¶ 18–25. Although Mr. Mackey states that a “strong understanding of touchscreen technology is fundamental” to the claimed invention, he does not explain his reasoning as to why a higher understanding of such technology by a person of ordinary skill in the art is required to understand the claimed invention. *See* Ex. 2050 ¶¶ 19–23. Instead, Mr. Mackey disparages Petitioner’s (and its declarant’s) statements regarding unclaimed features; i.e., the type of touchscreen. *See* Ex. 2050 ¶¶ 21–23 (comparing properties of resistive and capacitive touchscreens).⁴ We have considered Mr. Mackey’s testimony; however, we assign little weight to his testimony on this point because he does not sufficiently explain or support his opinions regarding the level of skill in the art. 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”). Regarding Mr. Mackey’s statements assigning error to Mr. Keller’s testimony, we evaluate individual statements where pertinent for the matter asserted in our analysis on the merits below.

Considering all of the evidence regarding the level of touchscreen knowledge necessary, we find particularly apt Patent Owner’s ultimate characterization, that a person having ordinary skill in the art would need sufficient knowledge of “how to induce a touch event on” a mobile device touchscreen. Sur-reply 2. This characterization is consistent with Mr. Buckley’s experience and education, and the nature of problems and

⁴ Patent Owner’s assertion that Mr. Keller is not a person of ordinary skill in the art was late-raised in Sur-reply (Sur-reply 2), and we disregard it. 37 C.F.R. § 42.23(b).

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solutions in the prior art. We determine that Petitioner’s characterization of the level of ordinary skill in the art best represents all of the abovementioned evidence of the full trial record.

With respect to the optical components, Patent Owner assumes that the level of ordinary skill in the art cannot include knowledge that was “well known” or “readily understood” (*see* PO Resp. 1–2; Sur-reply 2). However, the Specification’s reference to the ordinary artisan’s knowledge indirectly describes the person of ordinary skill in the art. *See, e.g.*, Ex. 1001, 1:44–51, 4:4–7 (describing what is known to “those [skilled] in the art”)); *see also Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc) (explaining that patents are written for ordinarily skilled artisans); *Uber Techs., Inc. v. X One, Inc.*, 957 F.3d 1334, 1339, 2020 USPQ2d 10476 (Fed. Cir. 2020) (“The specification of the ‘593 patent is entirely silent on how to transmit user locations and maps from a server to a user’s mobile device, suggesting that a person of ordinary skill in the art was more than capable of selecting between the known methods of accomplishing this. The ‘593 patent confirms that its invention, including any necessary plotting, ‘utilizes existing platforms and infrastructure’ and does not ‘require development of new cell phone or PDA technology, nor do[es it] require development of new cellular communication infrastructure.’”). Moreover, Patent Owner contradicts this aspect of argument in its Sur-reply by stating that a person having ordinary skill in the art “would also know what the lay user knows in this case.” Sur-reply 11 (referring to a “typical phone user”).

After considering the parties’ contentions, we agree with and apply Petitioner’s asserted level of skill in the art because it is consistent with the

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problems and solutions in the art as discussed in the '184 patent and the prior art, and because it is consistent with the knowledge and experience of Mr. Buckley.

B. Claim Construction

We apply the claim construction standard used to construe the claims in a civil action under 35 U.S.C. § 282(b), as articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2019). Under the *Phillips* standard, claim terms must be given “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” 415 F.3d at 1313.

Petitioner presents a claim construction only for the term “virtual reality viewer.” Pet. 27–29. Patent Owner argues that each term be given its ordinary and customary meaning. PO Resp. 4. However, after reviewing the evidence and argument presented by the parties, we determine that no controversy exists as to the term “virtual reality viewer.” Petitioner provides persuasive arguments, uncontested by Patent Owner, that Kondo teaches a “virtual reality viewer.” See Pet. 46–47; PO Resp.; *infra* § II(C)(3)(a). Therefore, it is not necessary to construe any claim terms. See *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

C. Alleged Obviousness over Kondo and Chu

Petitioner contends that claims 12 and 16–18 of the '184 patent are unpatentable under 35 U.S.C. § 103 as obvious over Kondo and Chu.

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Pet. 38–45, 74–103. For the reasons discussed below, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 12 and 16–18 of the ’184 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Kondo and Chu.

1. Kondo (Ex. 1003)

Kondo is titled “Remote Touch Circuit and Attachment” and seeks “[t]o provide an attachment that achieves remote control input to a touch panel mounted on an electronic device.” Ex. 1003, codes (54), (57). Kondo discloses “a stereoscope product attachment . . . for enjoying three-dimensional stereoscopic images provided with a remote touch circuit for enabling remote operation input to a touch panel with fingers supporting the attachment by equipping a smartphone having a touch panel.” *Id.* ¶ 21.

Kondo discloses one embodiment including left and right eyepieces 7 on a rear end of the attachment and smartphone 1500 mounted inside a holding part 4 of the attachment and facing the eyepieces. Ex. 1003 ¶¶ 22, 27. A user interacts with the smartphone’s touchscreen by pressing button 77, which is conductively connected to electric wire 72 and conductive pads 76, using a deformable conductive part 79. *Id.* ¶¶ 41, 43, 47–49. The conductive pads are in physical contact with virtual button positions W31–W34 on the touchscreen. *Id.*

2. Chu (Ex. 1004)

Chu is titled “Waterproof Housing for Digital Devices Having Capacitive Touch Screen and its Actuator Mechanism.” Ex. 1004, code (54). Chu discloses waterproof housing 10 for holding therein a smartphone and having thereon actuator mechanism 12 including actuator

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shaft 14, press button 16, and probe head 18. *Id.* ¶¶ 38, 40, 41. The actuator mechanism is movable by a user’s finger from a rest position, in which the probe head does not touch the smartphone’s capacitive touch screen 20, to an actuation position, wherein the probe head physically contacts the touch screen. *Id.* ¶¶ 40, 41, 53–56, Figs. 3, 4.

3. *Claim 12*

a. *Limitations 12[a]–12[e]*

Petitioner contends that independent claim 12 would have been obvious over the combined teachings of Kondo and Chu. Pet. 38–45, 74–99. Patent Owner does not contest Petitioner’s assertions for limitations 12[b]–12[e], except in its arguments that a person of ordinary skill would not have combined Kondo and Chu in the proposed manner. PO Resp. 12–18. However, we draw no inferences therefrom, and the burden of persuasion for unpatentability remains with Petitioner.

Limitation 12[a] recites, “[a] virtual reality viewer for use with a mobile electronic device having a touchscreen, the viewer comprising.” Ex. 1001, 13:46–47. Petitioner argues Kondo discloses attachment 2, a virtual reality viewer, that encloses smartphone 1500 having touch-screen display 1506. Pet. 74–76 (citing Ex. 1003 ¶¶ 5, 9, 21, 23, 24, 27, Figs. 1–3; Ex. 1002 § X(A)(1)).

The complete trial record supports Petitioner’s assertion that Kondo’s “attachment” is a virtual reality viewer. *See* Pet. 74 (citing Ex. 1003, Figs. 1–2). Kondo describes a stereoscope having an attachment that encloses a smartphone with a touchscreen. Ex. 1003, code (57) (“The user mounts the touch panel of the smartphone 1500 to the inside of the holding part 4

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towards the eyepieces, then closes the holding part.”), Figs. 1–2. We further credit Mr. Keller’s testimony that a stereoscope is a type of virtual reality viewer. Ex. 1002 ¶ 28; *see also* Buckley Dep., 30:3–10 (referring to the “stereoscopic experience . . . in a VR viewer”).

Patent Owner argues that Kondo describes a “surface-capacitive” touchscreen and that a POSITA would “not have been motivated to utilize Kondo’s surface-capacitive touch panel 1506 as the mobile device recited in the challenged claims.” PO Resp. 13. Patent Owner’s expert, Mr. Mackey, testifies that Kondo teaches a “surface-capacitive” touchscreen based on Kondo’s description of how a capacitive touchscreen works, as well as Kondo’s emphasis on the need to protect against static electricity and description of a reference ground. Ex. 2050 ¶¶ 33–41. According to Patent Owner and Mr. Mackey, it was not possible to integrate a surface-capacitive touchscreen into a mobile consumer-electronics device, such as a smartphone. PO Resp. 4–12 (citing Ex. 2050 ¶¶ 33–43); PO Sur-reply 2–5, 7–9.

To the extent Patent Owner argues that Kondo fails to teach the claimed “touchscreen,”⁵ we find Patent Owner’s argument unavailing because limitation 12[a] does not require any particular type of touchscreen. Kondo expressly teaches that its touchpanel is part of a smartphone, and thereby meets the “mobile electronic device having a touchscreen” limitation of 12[a]. Ex. 1003 ¶¶ 21–23. During oral argument, it appeared that the

⁵ We address Patent Owner’s argument as it potentially pertains to limitation 12[a] here, and as it pertains to the reason to combine Kondo with Chu *infra* at §II.C.3.b.

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subtext of Patent Owner's argument is that Kondo does not teach a mobile device having a touchscreen because Kondo's disclosure is "flawed" due to potential errors in the drafting or translation of Kondo. Tr. 55:17–56:2, 56:16–23. These arguments were first argued at the oral hearing, were late-raised, and are attorney argument only so we disregard them. But even if we were to consider them, Petitioner provides a certificate for the translation of Kondo attesting to the accuracy of the translation, which was unchallenged. Ex. 1003, 1. Further, Kondo consistently describes and depicts the use of its touchscreen with a smartphone, which is at odds with Patent Owner's allegations of potential drafting or translation error. Consequently, Petitioner's assertion as to limitation 12[a] is persuasive and supported by the record.

Limitation 12[b] recites "a first lens and a second lens, wherein the first lens is facing the same direction as the second lens, and wherein the first lens and the second lens are spaced apart in a horizontal direction." Ex. 1001, 14:1–4. Petitioner asserts that a person having ordinary skill in the art would have understood Kondo's right eyepiece 7R and left eyepiece 7L to be lenses because they are illustrated as lenses and they perform the same function as those of the '184 patent. Pet. 77–79 (citing Ex. 1003 ¶ 22, Fig. 4(2), pg. 2; Ex. 1001, 2:1–4). Petitioner also argues Kondo's eyepieces are spaced apart horizontally by partition wall 12, and that Kondo additionally shows and describes the eyepieces as facing the same direction. *Id.* at 76–83 (citing Ex. 1003 ¶¶ 22, 27, 37, Figs. 1, 3, 4(2), 6; Ex. 1002 § X(A)(2)). Additionally, Petitioner alternatively contends this limitation would have been obvious and points to the '184 patent as

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admitting that viewers typically have lenses whose “configuration, construction, and placement . . . is well-known.” *Id.* at 79–80 (citing Ex. 1001, 2:1–4, 4:31–34). Consequently, Petitioner’s assertion as to limitation 12[b] is persuasive and supported by the record. In fact, Petitioner’s contention that lens configuration and placement was well known is supported by Patent Owner and its declarant Mr. Mackey, who testifies, “the ’184 patent specification makes clear that the lenses in the claimed apparatuses are well known.” Ex. 2050 ¶ 18; PO Resp. 1.

Limitation 12[c] recites “an enclosure having a first side and a second side opposite the first side, the first side configured to hold the first lens and the second lens, the second side configured to receive the mobile electronic device.” Ex. 1001, 14:5–8. Petitioner argues that the housing of Kondo’s viewer, i.e., the claimed “enclosure,” has a first side holding the eyepieces and a second side having holding part 4 that receives the smartphone such that the smartphone is directly in a user’s field of view when viewed through the first side. Pet. 83–92 (citing Ex. 1003 ¶¶ 22, 27, 28, 30–34, Figs. 2–8). Kondo’s first side is opposite the second side. Ex. 1003, Figs. 6, 7. Petitioner further asserts that Kondo’s viewer has hinge 10 on attachment main body 8 that supports the holding part in a manner that allows the holding part to be opened to mount and dismount the smartphone to the viewer, and to be closed to be used as a stereoscope. Pet. 91–92 (citing Ex. 1003 ¶¶ 22, 30, Figs. 4–7). Consequently, Petitioner’s assertion as to limitation 12[c] is persuasive and supported by the record.

Limitation 12[d] recites “a user input that is accessible from an exterior of the enclosure and has a first position and a second position.”

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Ex. 1001, 14:9–10. Petitioner asserts that Kondo discloses a user input in the form of button 77 that is on an exterior of the housing and movable between first and second positions via a cut out in the attachment. Pet. 93–95 (citing Ex. 1003 ¶¶ 42, 43, 47–49, 52, Figs. 7, 10, code (57)). Petitioner also asserts that Chu discloses three embodiments in which a user presses metal or metalized button 16, an exterior input mechanism, to move it from a first position to a second position. *Id.* at 95–97 (citing Ex. 1004 ¶¶ 11, 38, 53–56, 58–62, Figs. 3, 4; Ex. 1002 § X(A)(4)). Petitioner reproduces paragraphs 53–56 of Chu and emphasizes Chu’s description that initially, Chu’s probe head 18, connected to the button, does not contact touch screen 20; when a user presses the button downwards such that the probe head physically contacts the touch screen, the electric charge conductivity between the user and the button changes an electric charge on the touch screen. *Id.* at 96–97 (citing Ex. 1004 ¶¶ 53–56). Consequently, Petitioner’s assertions as to either Kondo or Chu teaching limitation 12[d] are persuasive and supported by the record.

Limitation 12[e] recites “a touchscreen input conductively coupled to the user input and generally centered between the first lens and the second lens in the horizontal direction, wherein, upon receipt of the mobile electronic device, the touchscreen input is in physical contact with the touchscreen when the user input is in the[]second position.” Ex. 1001, 14:11–16. Petitioner asserts that Kondo discloses conductive pads 76 embodying a touchscreen input having the claimed features. Pet. 38–45, 58–65, 76–98. Petitioner admits that Kondo describes its pads as being in contact with the smartphone touchscreen upon the smartphone being

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received in the viewer, not necessarily when the user input is in the second position. *Id.* at 98. However, Petitioner points to Chu as teaching this aspect of the limitation. Petitioner asserts that Chu describes that when its probe head is in the second, activated position, it is in physical contact with the touchscreen. *Id.* (citing Ex. 1004 ¶¶ 53–62, Figs. 3, 4; Ex. 1002 § X(A)(5)).

Petitioner proposes a combination of Kondo and Chu in which Kondo's Figure 5 embodiment is combined with one of Chu's first, second, or third embodiments. *Id.* at 41–45. In this combination, Kondo's inputs 77 and electrical wire 72 would be removed and replaced with Chu's input mechanism, with “minor adjustments” to the supportive structure and the relative dimensions of the features, which Petitioner asserts would be “well within the skill of a [person of ordinary skill in the art], requiring little ingenuity.” *Id.* (citing Ex. 1003, Fig. 5; Ex. 1004 ¶ 59, Figs. 3–10; Ex. 1002 ¶¶ 66–69, 77). Patent Owner does not argue against Chu's teaching of limitation 12[e], except as to the reason to combine Chu with Kondo, as discussed in the next section of this decision. Based upon such proposed combinations, subject to a determination of a satisfactory rationale to combine as discussed *infra*, Petitioner's assertions as to limitation 12[e] are persuasive and supported by the relied-upon descriptions in Kondo and Chu.

b. Rationale to Combine

Petitioner argues that a person with ordinary skill in the art would have been motivated to combine Kondo and Chu for numerous reasons; among them: (1) “Chu provides a wider range of input at a single location on the touchscreen rather than just binary input (i.e., on or off)” by allowing the

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use of different levels of pressure; and (2) “Chu’s ‘swipe’ embodiment provides additional input to Kondo’s device” that allows more functionality and increased desirability. Pet. 39–40.

Patent Owner argues that a POSITA would not have been motivated to modify Kondo to include moving parts like Chu because “[i]t would cost more and be less reliable” and add complexity to the system despite providing no technical or user benefit. *Id.* at 13–14; Ex. 2050 ¶ 47.

Patent Owner does not present arguments regarding the benefits of the use of Chu’s varying pressure or swipe inputs. PO Sur-reply 11–12. For example, Patent Owner also does not allege that Chu’s swipe functionality would not operate in the proposed combination of Chu’s input structure with Kondo’s device. Instead, Patent Owner argues that Kondo teaches a surface-capacitive touchpanel and therefore, would be unsuitable such that a person having ordinary skill in the art would not be motivated to use Kondo’s touchpanel as the claimed mobile device. PO Resp. 13. Patent Owner argues in its Sur-reply that none of Petitioner’s additional rationales for combining Kondo and Chu “address the unsuitability of Kondo’s surface-capacitive touchscreen.” PO Sur-reply 10.

Having considered the parties’ arguments and the full record at trial, we determine that Petitioner has proven that an ordinarily skilled artisan would have been motivated to combine Kondo and Chu with a reasonable expectation of success. Chu’s variable pressure input, as well as its swipe input, are features that allow a wider range of input types and therefore would provide greater functionality to Kondo. *See* Pet. 38; Ex. 1002 ¶¶ 61–62. In addition, both Kondo and Chu address the same problem (i.e., the

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external activation of the touchscreen of an enclosed smartphone), and Mr. Keller has attested that a person of ordinary skill in the art designing a VR viewer using Kondo would look to other available input mechanisms, such as the one in Chu. *See* Pet. 37–38; Ex. 1002 ¶ 59.

We have considered Patent Owner’s argument that such a combination would increase cost and be less reliable (PO Resp 13–14 (citing Ex. 2050 ¶ 47)). In determining whether Petitioner has shown a rationale to combine references, “the benefits, both lost and gained, should be weighed against one another.” *Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 (Fed. Cir. 2000). Patent Owner fails to provide any details, supporting evidence, or discussion of the alleged disadvantages, and it fails to address how an ordinarily skilled artisan would have weighed those disadvantages relative to the advantages of the proposed combination. Although Patent Owner cites to Mr. Mackey’s testimony, he provides the same conclusory assertions, which we do not credit. *See* Ex. 2050 ¶ 47; *see also* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

As to the alleged benefits, Mr. Keller attests that Chu’s swipe and variable pressure input embodiments are combinable with Kondo’s device to provide additional input or a wider range of input. Ex. 1002 ¶ 61. Mr. Keller further states that the swipe functionality “enables a whole new form of input” that “would allow the VR viewer to provide more functionality.” *Id.* We also credit Mr. Keller’s testimony that minor adjustments might need to be made to the combination, but that such modifications would have been routine and would have required little skill and that there would have a

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reasonable likelihood of success of the combination. *Id.* ¶¶ 66–68. Mr. Keller testifies that a “goal of device designers is always to increase the usability and consumer appeal for their product where possible.” Ex. 1002 ¶ 58. Mr. Keller further states that adding inputs such as differing pressures and swipes “would therefore allow the resulting VR viewer to be used for more applications, increasing the desirability of the device.” *Id.* ¶ 61. Further, Chu states that the reason for its swipe ability is because there are some situations in which the touch screen requires a swipe rather than just a touch at a designated location. Ex. 1004 ¶ 60. Thus, the evidence of record recognizes significant benefits of adding additional functionality, such as Chu’s swipe feature.

For the above-identified reasons, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that a person having ordinary skill in the art would recognize Chu’s wider range of input, including Chu’s swipe functionality, as providing sufficient benefit to the combination despite increase in cost, complexity, and reliability.

With respect to Patent Owner’s argument based on Mr. Mackey’s testimony that Kondo teaches a surface-capacitive touchpanel, we have noted above that claim 12 is not limited to any particular type of mobile electronic device touchscreen and is taught by Kondo’s smartphone touchpanel. *See supra* § II.C.3.a. Moreover, even if Kondo teaches a “surface-capacitive” touchscreen (despite its express description of its touchscreen as a “projected capacitive” touchscreen), Patent Owner’s evidence does not show any disadvantage to applying variable pressure input or swipe input in the device of Kondo. *See* Ex. 1003 ¶ 24 (“The touch panel

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1506 is a projected capacitive touch panel”).

We have also considered Patent Owner’s argument, based on its argument that Kondo teaches a surface-capacitive touchscreen, that an ordinarily skilled artisan would not have combined Kondo and Chu. PO Resp. 11–13; Sur-reply 10–11. Patent Owner alleges that a person of ordinary skill would know that Kondo’s touch panel 1506 is a surface-capacitive touchscreen, which would not be used in a personal mobile phones. PO Resp. 12 (citing Ex. 2050 ¶¶ 45); Sur-reply 11 (citing Ex. 2050 ¶¶ 44–46). In support, Mr. Mackey testifies that a person of ordinary skill at the time of the ’184 patent “would know with certainty that it was not possible to integrate a surface-capacitive touchscreen into a mobile consumer-electronics device such as a smartphone,” and “would know that a surface-capacitive touchscreen such as Kondo’s touch panel 1506 would not be used in personal mobile devices.” Ex. 2050 ¶¶ 43, 45. Mr. Mackey testifies that a person of ordinary skill in the art “who was considering combining Kondo’s and Chu’s patents would therefore be faced with combining designs created for two different and incompatible touchscreen technologies” and “[t]his would significantly increase the difficulty and decrease the likelihood of the combination being achieved.” *Id.* ¶ 43. Patent Owner also argues that because a user directly contacts the screen in applications that use surface-capacitive technology, “there was no demand for remote-touch capability for surface-capacitive screens.” PO Resp. 12–13 (citing Ex. 2050 ¶ 46).

Based on the complete trial record, we do not agree with Patent Owner’s premise that Kondo’s touch panel 1506 cannot be used in a

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personal mobile phones, such as a smartphone, so a person of skill would not seek to combine Kondo with Chu. Although Patent Owner argues that Kondo only has a surface-capacitive touchscreen that cannot be used in a personal mobile devices, this contention is contrary to Kondo's explicit disclosure that it is directed to the use of a smartphone. In multiple instances, Kondo identifies the use of its touch panel in its "smartphone 1500." *See, inter alia*, Ex. 1003, code (57), ¶¶ 20–23, 27–28, 33–37, 40–41, 47, 49–50, 53–58, Figs. 1, 2, 6, 7, 8, 10). Most of Patent Owner's arguments are based on the testimony of its expert, Mr. Mackey. *See* Ex. 2050 ¶¶ 33–46. Even if the testimony was considered, however, it could not be reconciled with the explicit multiple disclosures of the use of a touchscreen in a smartphone in Kondo, as noted, as well as Kondo's explicit disclosure of its use of a projected-capacitive screen. Ex. 1003 ¶ 24. And under Patent Owner's contention that Kondo only has a surface-capacitive touchscreen, Patent Owner argues that there would be no demand for remote-touch capability. *See* Ex. 2050 ¶ 46. But, again the premise that Kondo uses only surface capacitive touchscreen is belied by the stated objective of Kondo "to achieve remote operation input to a touch panel equipped on an electronic device like smartphones." *Id.* ¶ 4, *see also id.* at code (57), claims 1–10, ¶¶ 1, 4–5, 6–9, 12, 16, 21–22, 38, 47, 49, 52, Fig. 10. Accordingly, we do not find that Patent's Owner's arguments undermine Petitioner's showing of a rationale to combine Kondo and Chu.

Because we find Petitioner's rationale based upon Chu's variable pressure and swipe input features persuasively shows that a person having ordinary skill in the art would have reason to combine the relied-upon

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portions of Kondo and Chu, we need not consider further reasons to combine provided by Petitioner's remaining proffered rationales or Patent Owner's arguments against those remaining rationales. Pet. 38, 40 (asserting advantages of expanding Kondo's viewer to resistive smartphone screens, underwater use, and safety around cleaning fluid); PO Resp. 14–18; PO Sur-reply 10–11 (arguing that the differences between resistive and capacitive screens would discourage expanding Kondo's use to resistive touchscreens). We further determine that Patent Owner's arguments against those remaining rationales are specific to those rationales. For example, any potential disadvantage of combining Kondo and Chu to accommodate resistive touchscreens does not apply to the merits of combining these references for other purposes (e.g., Chu's broader input functionality) or for capacitive touchscreens. Pet. 33 (“capacitive touchscreen of a smartphone”), 93 (“capacitive touch screen 20”), 38 (“Chu's input mechanism works with both types [capacitive and resistive] screens”). Similarly, Patent Owner provides no specific argument against the asserted benefit of waterproofing beyond its arguments that Kondo's touchscreen is not suitable for use as a mobile device touchscreen in a VR viewer, “waterproof or not.” Sur-reply 10. Consequently, Patent Owner's arguments against the advantages of application of Kondo to resistive screens or fluid-resistant uses do not provide any further disadvantages to weigh against the advantages provided by Chu's broader input functionality.

As a result, we are persuaded that an ordinarily skilled artisan would have been motivated to replace Kondo's input mechanism with Chu's actuator mechanism used in some of its embodiments (12, 12', or 12'') in

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order to yield those predictable benefits. *See, e.g., 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.”).

Accordingly, we determine a person with ordinary skill in the art recognizing the additional functionality offered by Chu’s input mechanism would have been motivated to modify Kondo’s virtual reality viewer to incorporate Chu’s moveable input mechanism.

We also find that the ordinarily skilled artisan also would have had a reasonable expectation of success. *See* Pet. 39–42; Ex. 1002 ¶¶ 66–70. Petitioner asserts that Kondo and Chu are simple mechanical devices for which the proposed combination would be considered to be routine and require little skill. Pet. 38–39; Ex. 1002 ¶ 65. Mr. Keller provides an illustration and explanation of the modifications required, testifying that “minor adjustments might need to be made” and possibly include “providing supportive structure.” Ex. 1002 ¶ 65. Mr. Keller points to Chu as contemplating such supporting structure as “one or more posts or guides.” *Id.* (citing Ex. 1004 ¶ 59). Patent Owner does not explicitly contest Petitioner’s assertion. PO Resp. Based upon the trial record, we find that Petitioner has shown that the ordinarily skilled artisan would have had a reasonable expectation of success in the combination.

c. Conclusion

We are persuaded by Petitioner’s arguments and find they are supported by cited evidence. We find Patent Owner’s arguments unavailing

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for the reasons discussed above. As such, we determine that Petitioner has shown by a preponderance of the evidence that claim 12 is unpatentable as obvious over the combination of Kondo and Chu.

4. Claims 16–18

a. Petitioner’s Arguments

Claim 16 depends from claim 12 and recites “wherein a portion of the enclosure has a cut-out, and wherein at least a portion of the user input is accessible through the cut-out.” Ex. 1001, 14:33–36. Petitioner argues Kondo depicts the recited cut-out in Figure 7 and Chu also depicts the recited cut-out accessible to a user in Figure 2. Pet. 99–101 (citing Ex. 1003, Fig. 7; Ex. 1004, Fig. 2). Accordingly, Petitioner argues the combination of Kondo and Chu teaches this limitation.

Claim 17 depends from claim 12 and recites “wherein the touchscreen input is constructed of a conductive material.” Ex. 1001, 14:37–38. Petitioner argues Chu teaches a probe head made of a rubber material with an additive to conduct an electric charge. Pet. 102 (citing Ex. 1004 ¶¶ 11, 19, 49). Accordingly, Petitioner argues the combination of Kondo and Chu teaches this limitation.

Claim 18 depends from claim 17 and recites “wherein the conductive material is a conductive foam or polymer.” Ex. 1001, 14:39–40. Petitioner argues Chu teaches a probe head made of a rubber material, which a POSITA would understand to be a polymer. Pet. 102–103 (citing Ex. 1004 ¶ 49; Ex. 1007, 1). Accordingly, Petitioner argues the combination of Kondo and Chu teaches this limitation.

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b. Patent Owner's Arguments

Patent Owner presents the same arguments towards claims 16–18 that it made for claim 12. PO Resp. 18–19. We find Patent Owner's arguments unavailing for the same reasons discussed above. *See supra* § II.C.3.b. Patent Owner does not present any separate arguments in support of claims 16–18.

c. Analysis and Conclusion

We are persuaded by Petitioner's arguments and find they are supported by the cited evidence. Accordingly, we adopt Petitioner's analysis as our own. We determine that Petitioner has shown by a preponderance of the evidence that claims 16–18 are unpatentable as obvious over Kondo and Chu.

5. Conclusion

We are persuaded that Petitioner has shown, by a preponderance of the evidence, that independent claim 12 is obvious over the combined teachings of Kondo and Chu. Petitioner has provided arguments and evidence for dependent claims 16–18 (Pet. 99–103), and we are, likewise, persuaded that Petitioner has shown, by a preponderance of the evidence, that these claims are also obvious over the combined teachings of Kondo and Chu.

III. MOTION TO EXCLUDE

Petitioner filed a motion to exclude Exhibits 2017, 2020, 2037, 2047, and paragraphs 10, 12, 13, 15, 16 of Exhibit 2033 and certain associated portions of the Preliminary Response (Paper 14) and Patent Owner's Sur-reply in Support of Its Preliminary Response (Paper 20). Paper 67, 1. Patent

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Owner filed Patent Owner's Opposition to Petitioner's Motion to Exclude. Paper 69. Petitioner filed a Reply. Paper 71.

The exhibits and evidence that Petitioner seeks to exclude relate to Patent Owner's contention that Petitioner failed to name the all real parties-in-interest and privies. Paper 67, 2–5. In our institution decision we were persuaded that Petitioner correctly identified itself as the only real party-in-interest, and that Petitioner did not fail to identify any privies. Inst. Dec. 21–22.

Neither party asked us to revisit that determination at trial, and none of this evidence was cited or relied upon in the merits papers. We also have not considered this evidence in this Decision. As a result, Petitioner's motion to exclude this evidence is dismissed is moot. *See* Trial Practice Guide 79–80 (“In the Board's experience, consideration of the objected-to evidence is often unnecessary to resolve the patentability of the challenged claims, and the motion to exclude is moot.”).

IV. CONCLUSION⁶

Based on the information presented, we conclude that Petitioner has shown, by a preponderance of the evidence, that claims 12 and 16–18 of the

⁶ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*, 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

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'184 patent are unpatentable.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
12, 16–18	103	Kondo, Chu	12, 16–18	

V. ORDER

Accordingly, it is:

ORDERED that claims 12 and 16–18 of the '184 patent are held unpatentable;

FURTHER ORDERED that Petitioner's Motion to Exclude is *dismissed* as moot;

FURTHER ORDERED that because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2; and

FURTHER ORDERED that the parties shall jointly email a proposed redacted version of this paper no later than 14 days from the entry of this Decision to Trials@uspto.gov, and, if no redacted version is received within that time period, this Decision shall be made public.

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