

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD. AND SAMSUNG
ELECTRONICS AMERICA, INC.,
Petitioner,

v.

GUI GLOBAL PRODUCTS, LTD., D/B/A GWEE,
Patent Owner.

IPR2021-00338
Patent 10,589,320 B1

Before SALLY C. MEDLEY, JON M. JURGOVAN, and
SHEILA F. McSHANE, *Administrative Patent Judges*.

McSHANE, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons discussed herein, we determine that Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively “Petitioner”) has shown, by a preponderance of the evidence, that claims 1–13 of U.S. Patent No. 10,589,320 B1 (Ex. 1001, “the ’320 patent”) are unpatentable.

A. Procedural Background

Petitioner filed a Petition requesting *inter partes* review of claims 1–13 (“the challenged claims”) of the ’320 patent, along with the supporting Declaration of Dr. Sayfe Kiaei. Paper 3 (“Pet.”); Ex. 1002. GUI Global Products, Ltd., d/b/a Gwee (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 10.

Pursuant to 35 U.S.C. § 314(a), on July 2, 2021, we instituted *inter partes* review on the grounds of:

Claim(s) Challenged	35 U.S.C §	Reference(s)/Basis
1–8	103(a) ¹	Kim ²
11	103(a)	Kim, Koh ³ ,
9, 10, 12, 13	103(a)	Kim, Lee ⁴

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. Because the ’320 patent has an effective filing date before the effective date of the applicable AIA amendments, we refer to the pre-AIA versions of 35 U.S.C. § 103.

² U.S. Pat. Appl. Pub. No. US 2010/0227642 A1, published September 9, 2010 (Ex. 1010, “Kim”).

³ Korean Pat. Pub. No. 10-2008-0093178, published October 21, 2008 (Ex. 1012, “Koh”).

⁴ U.S. Pat. Appl. Pub. No. US 2010/0298032 A1, published Nov. 25, 2010 (Ex. 1013, “Lee”).

See Pet. 1–2; Paper 11 (“Inst. Dec.” or “Dec.”), 7–8, 42.

Patent Owner filed a Patent Owner Response (“PO Resp.”). Paper 15. Patent Owner filed the Declaration of Dr. Mark N. Horenstein to support its positions. Ex. 2004. Petitioner filed a Reply (“Pet. Reply”) to the Patent Owner Response. Paper 18. Patent Owner filed a Sur-Reply to Petitioner’s Reply (“PO Sur-Reply”). Paper 19.

An oral hearing was held on April 12, 2022. A transcript of the hearing is included in the record. Paper 26 (“Tr.”).

B. Related Matters

The parties indicate this Petition is related to *GUI Global Prods, Ltd. d/b/a Gwee v. Samsung Elecs. Co.*, No. 4:20-cv-02624 (E.D. Tex.) and *GUI Global Prods, Ltd. d/b/a Gwee v. Apple, Inc.*, No. 4:20-cv-02652 (S.D. Tex.). Pet. 76–77; Paper 5, 2.

C. The ’320 Patent

The ’320 patent is titled “System Comprising A Portable Switching Device For Use With A Portable Electronic Device” and issued on March 17, 2020, from an application filed on November 27, 2019. Ex. 1001, codes (22), (45), (54). The application for the ’320 patent is a continuation of several applications as well as several provisional applications. *Id.*, codes (60), (63).

The Specification of the ’320 patent describes how an apparatus may be used for cleaning view screens of electrical devices. See Ex. 1001, 2:19–24. The ’320 patent aims to provide appropriate cleaning materials where the cleaning component can be carried on an electronic device case. *Id.* at 1:56–2:15.

In one embodiment, a cleaning component for cleaning a view screen of an electronic device is coupled to a first case of the electronic device

using magnetic attractive force. *Id.* at 5:64–6:2, Fig. 1B. Figure 1B is illustrative and is reproduced below.

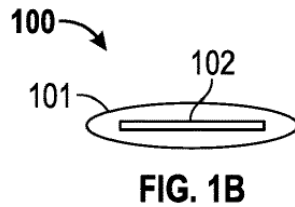


Figure 1B, above, shows a side view of a cleaning component. Ex. 1001, 6:29–30. Cleaning component 100 includes ferromagnetic or ferrimagnetic substrate 102 covered by cleaning material 101, such as a fabric or a cloth. *Id.* at 6:20–49.

In another embodiment, a second case receives the cleaning component and also “functions to protect the primary case.” Ex. 1001, 6:2–7. Figure 3 is illustrative and is reproduced below.

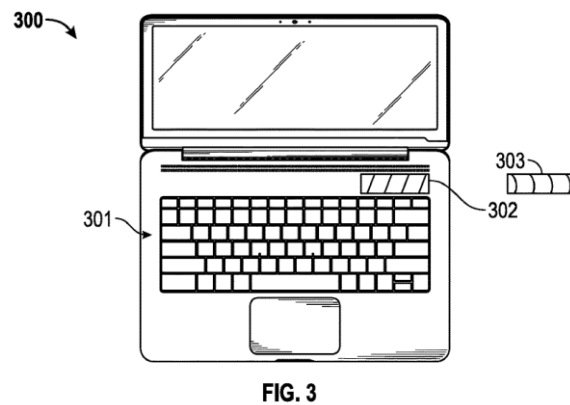


Figure 3, above, shows a computer case configured to receive a cleaning component. Ex. 1001, 4:45–46. Laptop 300 has rectangular indentation 302 dimensioned for receiving cleaning component 303 which has a magnet. *Id.* at 8:62–9:2.

Figure 5A is also illustrative and is reproduced below.

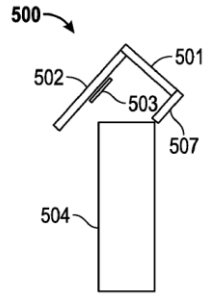


FIG. 5A

Figure 5A, above, shows “a lateral type phone case configured to receive a cleaning component.” Ex. 1001, 4:49–50. Case 500 includes body 504 “which functions to hold a smart phone” and a lid having tip 501, side 502, hinge 507, and cleaning component 503. *Id.* at 10:13–18.

A cleaning component may be secured and adhered to a case utilizing “dimensional stability to increase the security with which the clean components are adhered to the case.” Ex. 1001, 11:44–49; Fig. 9. Figure 9 is illustrative and is reproduced below.

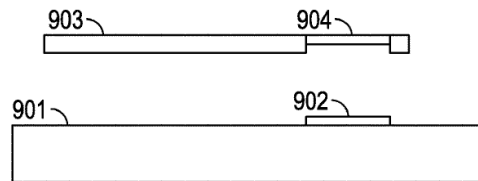


FIG. 9

Figure 9, above, shows a cleaning component “employing a structural feature to enhance adhesion.” Ex. 1001, 4:60–61. Device 901 has raised section 902 which is configured to fit within recess 904 of cleaning component 903. *Id.* at 11:49–51.

In another embodiment, the cleaning component has a magnetic element that activates or deactivates a magnetic switch. Ex. 1001, 3:6–8. The ’320 patent describes “activating or deactivating a device having a magnetic switch” as a “secondary application[]” and that “cleaning devices”

“may also be manufactured without a cleaning component for use with the secondary application.” *Id.*, code (57). Thus, a device “may or may not include cleaning capabilities but will include a rare earth magnet or magnets” for “additional functionality.” *Id.* at 16:41–45. Figure 24 is illustrative and is reproduced below.

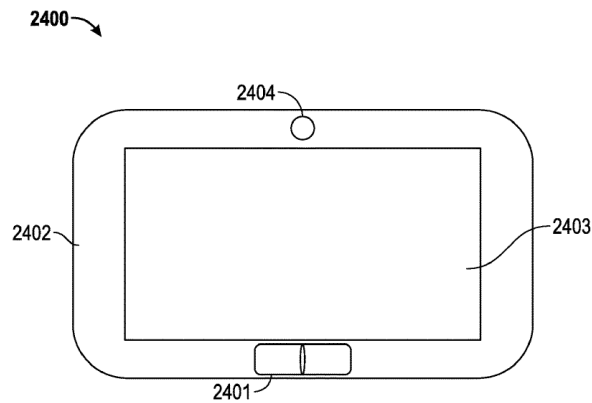


FIG. 24

Figure 24, above, shows a tablet computer having a switching device. Ex. 1001, 5:53–54. Tablet computer 2400 has switching device 2401 that “is selectively coupled to the front of the portable electronic device 2402 outside of the view screen 2403.” *Id.* at 18:6–10. A “magnetic switch is normally disposed with the portable electronic device but is shown [in Figure 24] for illustration purposes (2404).” *Id.* at 18:10–12. The ’320 patent describes that the switching component “may be picked up” and switching device “is either applied directly to the magnetic switch or applied to either side of the switch and then slid past it to activate or deactivate the portable electronic device.” *Id.* at 18:13–18.

Figure 25, reproduced below, shows a side view of the switching device in Figure 24. Ex. 1001, 5:55–56, 18:19–20.

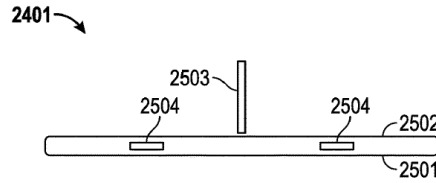


FIG. 25

Figure 25, above, shows switching device 2401 having bottom surface 2501, top surface 2502, and ferromagnetic or ferrimagnetic substrate 2504 disposed therebetween. Ex. 1001, 18:19–21, 23–25. Tab 2503 “on the top surface” facilitates manipulation of switching device 2401. *Id.* at 18:22–23.

Challenged claim 1 is the only independent challenged claim.

Claim 1 is reproduced below, with bracketed letters added to the limitations for reference purposes.

1. A system comprising:

[a] a portable switching device coupled to a portable electronic device;

wherein:

[b] the switching device and the electronic device are configured to selectively couple to each other employing magnetic force;

[c] the switching device comprises a first case;

[d] the electronic device comprises a second case and an electronic circuit that is responsive to the switching device;

[e] a first magnet is fully disposed within the electronic device;

[f] the electronic device comprises at least one element selected from the group consisting of beveled edges, ridges, recessed areas, grooves, slots, indented shapes, bumps, raised shapes, and combinations thereof;

configured to correspond to complementary⁵ surface elements on the switching device;

[g] wherein the second case is decoupled from the first case by overcoming magnetic force the portable switching device is configured to activate, deactivate, or send into hibernation the portable electronic device;

[h] the electronic device plays or pauses a remote device;

[i] the switching device includes a lid and hinge attaching the lid to the switching device;

[j] the lid is recessed to configure to the electronic device; and

[k] when coupled, the first case functions to protect the second case.

Ex. 1001, 21:38–22:18.

II. ANALYSIS

A. *The Parties' Arguments*

In our Decision on Institution, we concluded that the arguments and evidence advanced by Petitioner demonstrated a reasonable likelihood that at least one claim of the '320 patent would have been obvious. Dec. 8–43. Here, we must consider whether Petitioner has established by a preponderance of the evidence that the challenged claims 1–13 are obvious. 35 U.S.C. § 316(e). We previously instructed Patent Owner that “any arguments not raised in the response may be deemed waived.” Paper 12, 8; *In re Nuvasive, Inc.*, 842 F.3d 1376, 1379–82 (Fed. Cir. 2016) (holding Patent Owner waived an argument addressed in the Preliminary Response by not raising the same argument in the Patent Owner Response). Additionally,

⁵ Per a Certificate of Correction, “complimentary” was changed to “complementary.” See IPR2021-00473, Ex. 1001, 27.

the Board’s Trial Practice Guide states that the Patent Owner Response “should identify all the involved claims that are believed to be patentable and state the basis for that belief.” Consolidated Trial Practice Guide⁶, 66 (November, 2019).

Patent Owner has chosen not to address certain arguments and evidence advanced by Petitioner to support its unpatentability contentions. In this regard, the record contains persuasive arguments and evidence presented by Petitioner regarding the manner in which the prior art teaches the limitations of claims 1–13 of the ’320 patent as well as the rationale to combine the references with reasonable expectation of success.

B. Level of Ordinary Skill in the Art

Relying on the testimony of Dr. Kiaei, Petitioner proposes that a person of ordinary skill in the art at the time of the ’320 patent “would have had a bachelor’s degree in electrical engineering, computer science, or a similar field and one year of experience in consumer electronics product design,” and a person of skill could have obtained similar knowledge and experience through other means. Pet. 17 (citing Ex. 1002 ¶¶ 21–22).

Supported by the testimony of Dr. Horenstein, Patent Owner proposes that a person of ordinary skill in the art would have had “either a bachelor’s degree in electrical engineering, computer science, or mechanical engineering with some level of post-baccalaureate electronic device or system design experience, or someone with an equivalent level of experience and training through other means.” PO Resp. 5, n.2 (citing Ex. 2004 ¶ 25). Dr. Horenstein testifies that Dr. Kiaei’s definition of a skilled artisan “is

⁶ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

somewhat different than mine, nevertheless my opinions in This Declaration would be the same regardless of whether or not my description or Dr. Kiaei's description of a POSITA [person of ordinary skill in the art] is used." Ex. 2004 ¶ 25.

In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). The level of ordinary skill in the art is also reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

In the Institution Decision, we considered the subject matter of the '320 patent, the background technical field, and the prior art, and we agreed with Petitioner's proposed qualifications. Dec. 8–9. Accordingly, we determined that one of ordinary skill in the art would have had a bachelor's degree in electrical engineering, computer science, or a similar field and one year of experience in consumer electronics product design, and could have obtained similar knowledge and experience through other means.

In view of the relevant technology and claims of the '320 patent, as well as the technology of the asserted prior art, we adopt the same qualifications as those identified in the Institution Decision. We note that even if we adopted Patent Owner's proposed level, the outcome would remain the same.

C. Claim Construction

For petitions filed after November 13, 2018, the Board interprets claim terms in accordance with the standard used in federal district court in a

civil action involving the validity or infringement of a patent. 37 C.F.R. § 42.100(b) (2019). Under the principles set forth by our reviewing court, the “words of a claim ‘are generally given their ordinary and customary meaning,’” as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner asserts that no express claim construction is required in order to assess the grounds presented and the ordinary and customary meanings of the terms should be used. Pet. 17; *see generally* Pet. Reply. Patent Owner similarly states that no express construction is required, and the ordinary meaning of the terms may be used. PO Resp. 4; *see generally* PO Sur-Reply.

In the Institution Decision, we determined that it was not necessary to provide express interpretations of any claim terms. Dec. 9–10. On the full record, we likewise determine that it is not necessary to provide an express interpretation of any claim terms. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

D. Alleged Obviousness of Claim 1–8 Over Kim

Petitioner contends that claims 1–8 would have been obvious over Kim. Pet. 18–57; Pet. Reply 1–21. To support its contentions, Petitioner provides explanations as to how Kim teaches each claim limitation. *Id.* Petitioner also relies upon the Dr. Kiaei’s Declaration (Ex. 1002) to support its positions. Patent Owner argues that the prior art does not teach all the claim limitations. PO Resp. 4–53; PO Sur-Reply 3–24.

We begin our discussion with a brief summary of Kim, and then address the evidence and arguments presented.

1. Kim (Ex. 1010)

Kim describes a mobile terminal that allows a sub-device to be attached or detached from it. Ex. 1010 ¶ 3. Coupling and separation of a main device and a sub-device of the mobile terminal allow controlling an operation and a state of the mobile terminal. *Id.* ¶ 9. The mobile terminal includes a sub-device having an input/output unit and is attached to or detached from the mobile terminal, a controller configured to receive a user input via a certain communication path from the sub-device when the sub-device is separated, and control elements and applications of the mobile terminal according to the user input. *Id.* ¶ 10. Figure 1 is illustrative and is reproduced below.

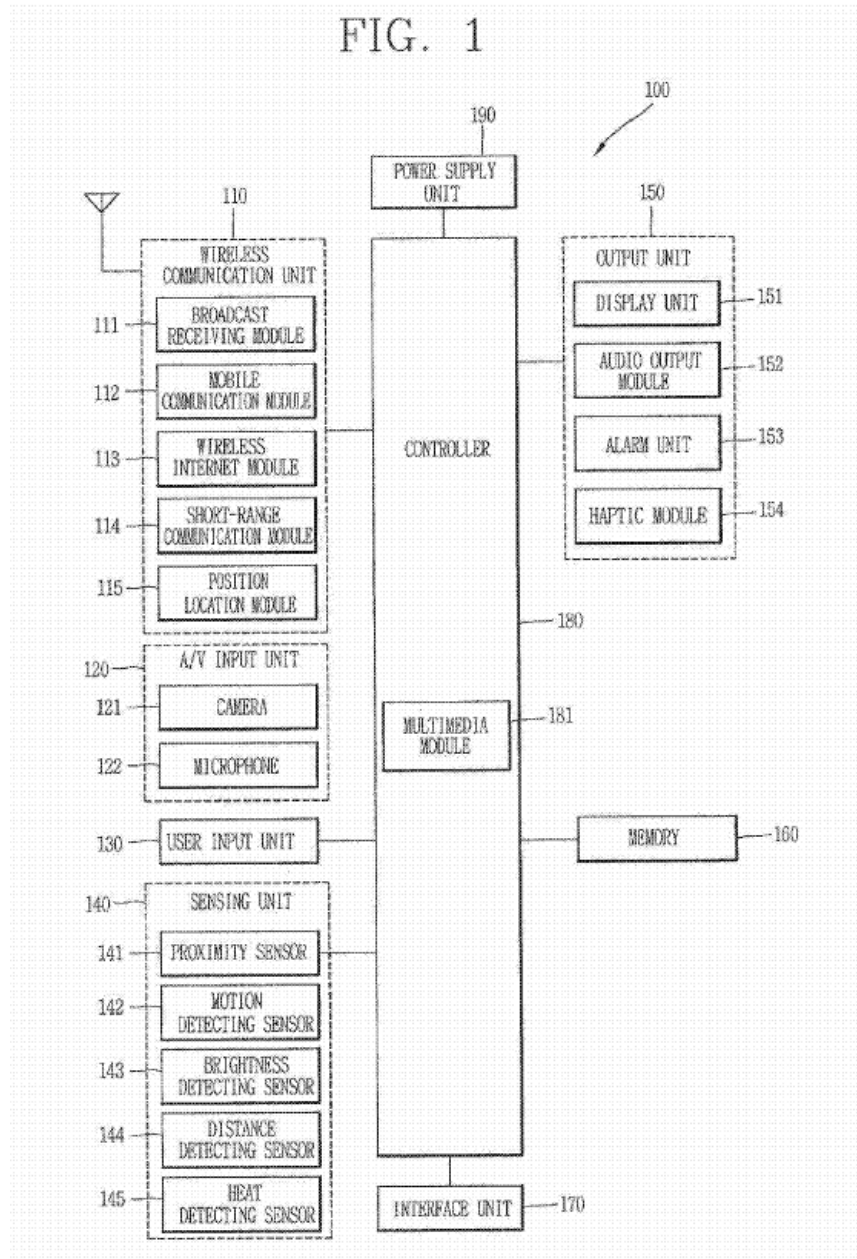


Figure 1, above, shows a schematic diagram of a mobile terminal. Ex. 1010 ¶ 14. Mobile terminal 100 includes wireless communication unit 110, audio/video (A/V) input unit 120, user input unit 130, sensing unit 140, output unit 150, memory 160, interface unit 170, controller 180, and power supply 190. *Id.* ¶ 72. “More or less components may alternatively be implemented.” *Id.* ¶ 71. A/V input unit 120 may provide audio or video signal input via camera 121 to mobile terminal 100. *Id.* ¶ 84. Sensing unit

140 may detect an open/close status or the state of mobile terminal 100. *Id.* ¶ 88. Output 150 may include display 151. *Id.* ¶ 95. Display 151 may have a transparent organic light-emitting diode (TOLED) display. *Id.* ¶¶ 97–98. “Embodiments may be used singly and/or by being combined together.” *Id.* ¶ 179.

Figure 7 is illustrative and is reproduced below.

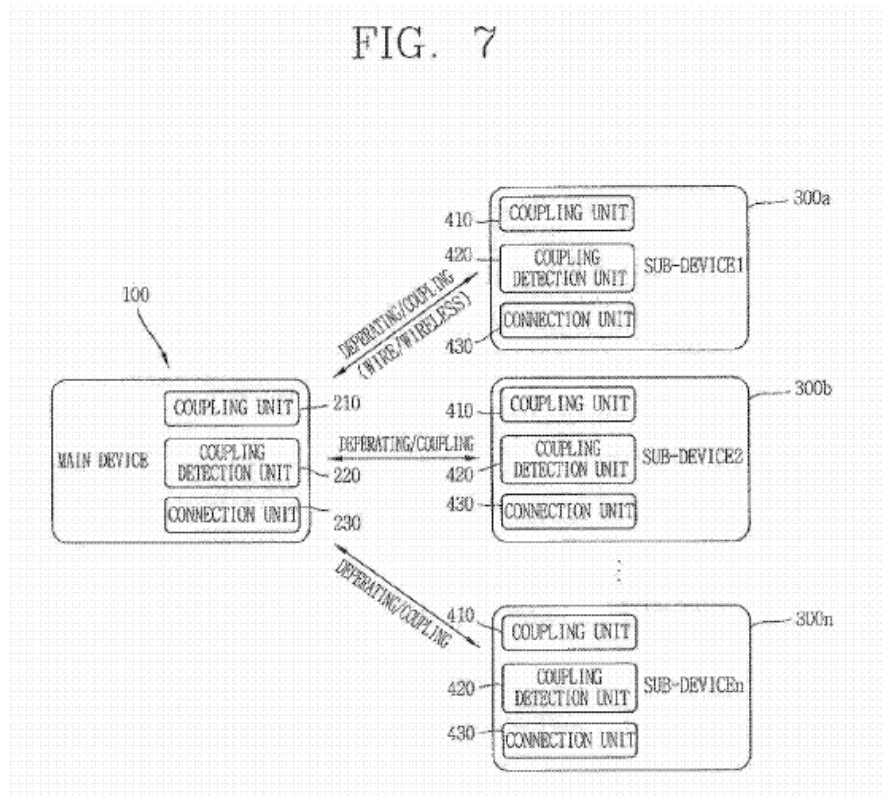


Figure 7, above, shows a mobile terminal including a main device and a sub-device. Ex. 1010 ¶ 21. Main device 100 can be detachably attached to one or more sub-devices 300a–300n. *Id.* ¶ 181. Main device 100 may include coupling unit 210 for mechanically coupling sub-devices 300a–300n, coupling detection unit 220 that detects whether or not sub-devices 300a–300n are coupled, and connection unit 230 that allows signals or data to be transmitted or received between main device 100 and sub-devices 300a–300n. *Id.* ¶ 182. “Each of the sub-devices 300 may be configured to

include all the same elements as those of the main device.” *Id.* ¶ 187.

“[W]hen the sub-device 300 is coupled to the main device 100, the main device 100 may automatically change its operation mode or an operation mode of the sub-device.” *Id.* ¶ 195. Sub-device 300 may include frame 303 (shown in Figure 9b). *Id.* ¶ 199. The structures for coupling sub-device 300 are in accordance to the types of main device 100, which include “bar type, slide type, folder type, swing type, swivel type, watch time, and the like.”

Id. ¶ 210. A “magnet may be respectively attached to one side of the main device 100 and one side of the sub-device 300, to easily couple or separate (i.e., couple or de-couple) the main device 100 and the sub-device.” *Id.*

¶ 203. Main device 100 may have a recess corresponding to the shape and size of sub-device 300, in which a magnet may be installed. *Id.*

Figure 11B is illustrative and is reproduced below.

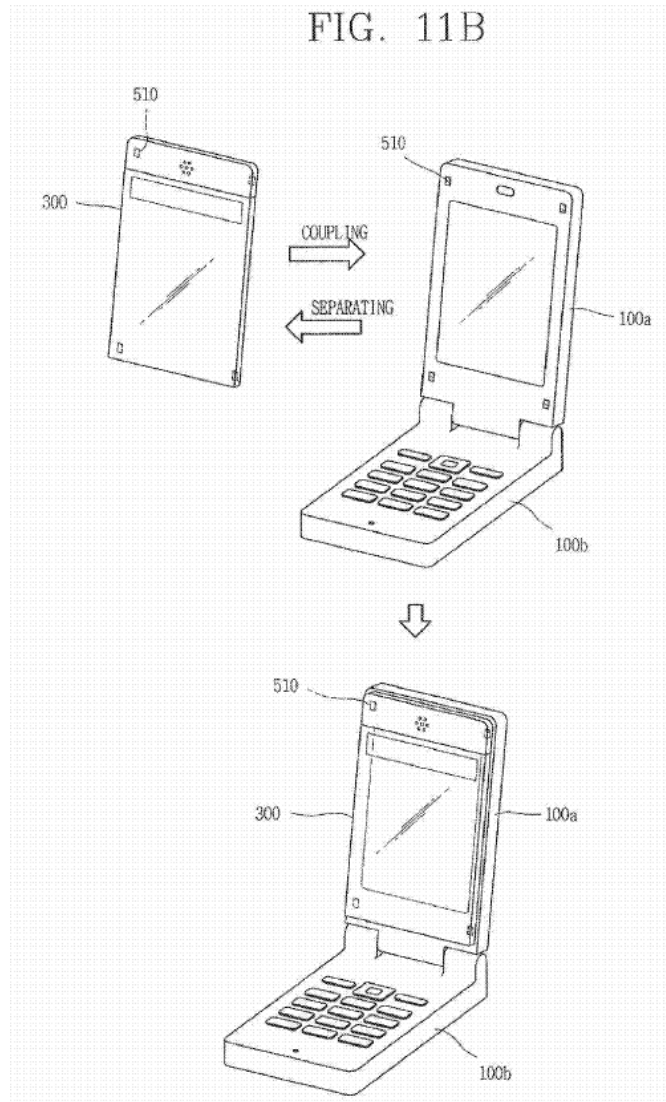


Figure 11B, above, shows a structure for coupling or separating a sub-device to a folder type main device. Ex. 1010 ¶ 25. A sub-device may be coupled to a main device via press-fitting coupling member 510 to position within a recess or hook formed in the main device. *Id.* ¶ 218. Alternatively, a magnet may be provided in the main device such that third body 300 has a member that can be attached to the magnet, may be coupled while allowing “the first body 100a and the second body 100b may be folded or unfolded regardless of the coupling or separating of the sub-device.” *Id.* “Here, the third body may be overlapped to be coupled to one of the first and second

bodies in a state that the first and second bodies are coupled,” but “the method of coupling the third body to the first body in an overlapping manner” are only “described for the brevity.” *Id.* ¶ 217.

Figure 15A is illustrative and is reproduced below.

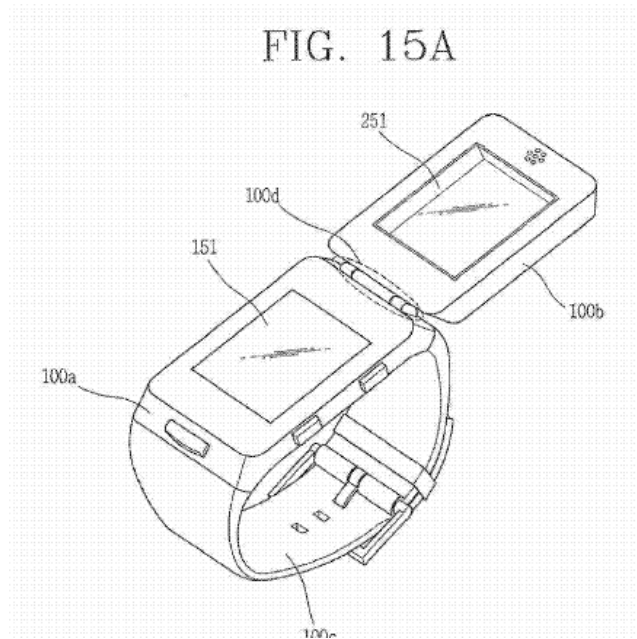


Figure 15A, above, shows a structure for coupling or separating a sub-device to a watch-type main device. Ex. 1010 ¶ 29. Here, first body 100a is connected to second body 100b by hinge 100d. *Id.* ¶ 256.

Figure 15B is illustrative and is reproduced below.

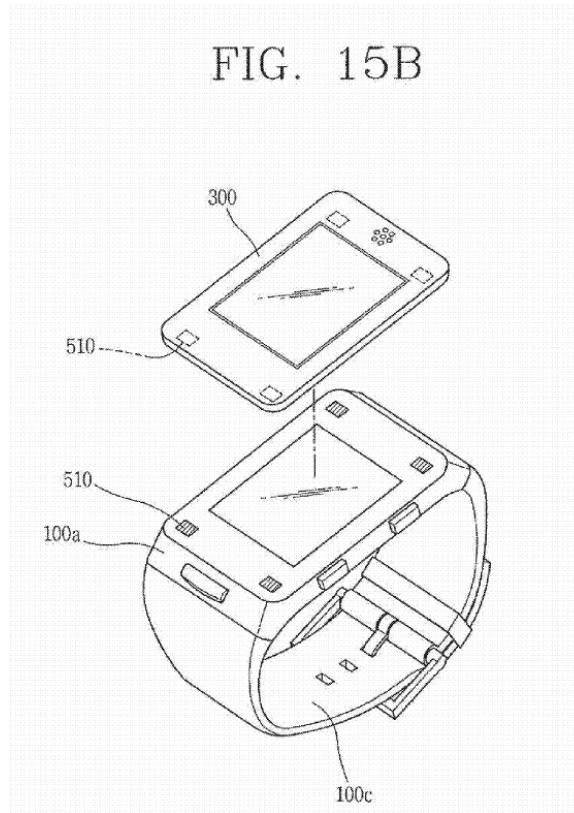


Figure 15B, above, also shows a structure for coupling or separating a sub-device to a watch-type main device. Ex. 1010 ¶ 29. Here, coupling member 510 also fixes a sub-device to a main device. *Id.* ¶ 261.

2. Analysis

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art;

(3) the level of ordinary skill in the art; and (4) objective indicia of nonobviousness.⁷ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

a) *Embodiment Described as “Figure A”*

The Petition asserts that Kim teaches all the limitations of claim 1. *See* Pet. 12–44. For many of its assertions, Petitioner relies on a configuration of a Kim embodiment, referred to as “Figure A.” *See id.* We first address issues related to this embodiment and then address Petitioner’s showing and Patent Owner’s arguments related to the specific limitations of the claims.

Petitioner asserts that Kim teaches mobile terminals, such as mobile phones, smart phones, or portable multimedia players, as well as the sub-device, are portable. Pet. 26–27. Petitioner relies on a representation of a configuration of Kim’s embodiment, that is referred to as “Figure A,” reproduced below. Pet. 22–23.

⁷ No evidence of objective indicia of nonobviousness has been presented by Patent Owner. *See generally* PO Resp.

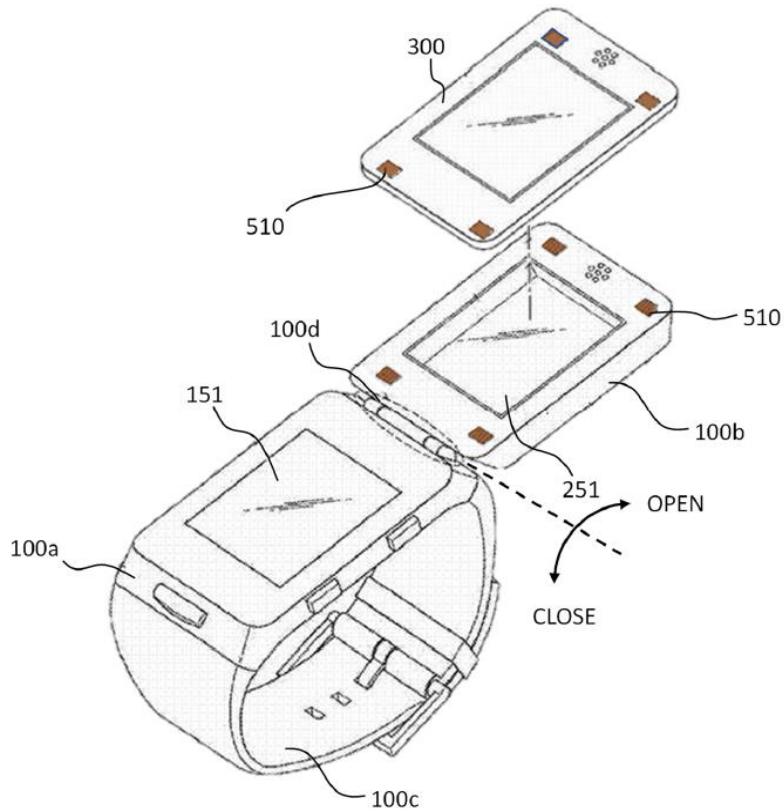


Figure A (based on *Kim*'s disclosure)

Petitioner asserts, and we agree, that a person of ordinary skill in the art would have understood that Kim discloses the embodiment of the mobile terminal shown in Figure A, above, with a watch-type main device comprising “first body 100a connected to a second body 100b by a hinge 100d so that the first and second bodies can be opened or closed in a folding manner,” and with a sub-device 300 detachably coupled to the second body 100b. Pet. 22 (citing Ex. 1002 ¶¶ 82–85). Relying on the embodiment shown in Figure A, Petitioner asserts that main device 100 corresponds to the “portable switching device” of claim 1, and sub-device 300 corresponds to the “portable electronic device” of the claim. *Id.* at 27.

More specifically, Petitioner argues, and we agree, that Kim's disclosures support the Figure A embodiment. Pet. 20–22. Petitioner points

to Kim's disclosures of an embodiment of the watch-type main device with a first and second body attached to a band part, with the two bodies connected by a hinge. *Id.* at 20 (citing Ex. 1010 ¶ 256, Fig. 15A). Petitioner also refers to Kim's disclosures of a sub-device detachably coupling to such a watch-type main device, with reference to Figure 15B's "coupling the sub-device in an overlapping manner to the second body." *Id.* at 20–21 (citing Ex. 1010 ¶¶ 260–261; Fig. 15B). In support, Dr. Kiaei testifies that Kim discloses that sub-device 300 overlaps and is detachably coupled to the first or second bodies of a watch-type device. Ex. 1002 ¶ 81 (citing Ex. 1010 ¶ 260). Dr. Kiaei further testifies that a person of ordinary skill would have understood that, based on the Kim's disclosures, the sub-device could be fixed on one side of the second body and the mobile terminal would have sub-device 300 detachably coupled to second body 100b, as shown in Figure A. *Id.* ¶¶ 83–85 (citing Ex. 1010 ¶ 261).

Patent Owner argues that Petitioner's Figure A "does not actually appear in Kim nor is it described therein," nor is it obvious. PO Resp. 4–33. These contentions form the basis for many of Patent Owner's arguments as to why Kim does not teach certain claim limitations. *Id.* at 34–54.

Although Patent Owner does not dispute that Kim describes a watch-type device with sub-device 300 coupled in an overlapping manner to the second body, and where the first and second bodies are coupled to one another, Patent Owner argues that "that embodiment is not Petitioner's Figure A." PO Resp. 6 (citing Ex. 2004 ¶ 47). Patent Owner contends that, instead of the sub-device being positioned as shown in Figure A, Kim only describes placing sub-device 300 on top of the second body when the first and second bodies are in a closed position. *Id.* at 6–8, 19–24. Patent Owner also argues that because Kim discloses that, with respect to Figure 15A, the

hinge part for coupling the sub-device *must* have a structure allowing coupling and separating, a person having ordinary skill in the art “would understand that for the sub-device 300 to be attached underneath the ‘lid’ second body 100b, 100b would be unhinged and decoupled, otherwise, the lid would not close.” *Id.* at 4–5 (citing Ex. 1010 ¶¶ 255–261; Ex. 2004 ¶¶ 36–37).

On these issues, we agree with Petitioner that “Kim teaches that the sub-device can be coupled to the top of the second body *or* to the bottom of the second body” and that Kim does not require “that the hinge be separable in embodiments, such as Figure 15A, where the two bodies comprise the main device and a *separate* sub-device is selectively coupled to the main device.” Pet. Reply 4 (citing Pet. 21; Ex. 1002 ¶¶ 82–84; Ex. 1010 ¶¶ 255–258, 261).

Kim describes a watch-type mobile terminal with a first body, a second body, and the sub-device as follows:

A method of coupling the third body (i.e., the sub-device) is coupled to one of the first and second bodies in a state that the first and second bodies are coupled will now be described. The method of coupling the sub-device in an overlapping manner to the second body will now be described for the sake of brevity. As shown in FIG. 15b, a coupling member 510 for fixing the sub-device is provided on at least one side of the second body of the main device, and the sub-device may be adjusted to the position where the coupling member is formed, and pressed to be coupled. Ex. 1010 ¶¶ 260–261. Based on this disclosure, we find that Kim teaches a watch-type configuration where the first and second bodies are coupled, and where a sub-device is coupled to one of the first and second bodies. Referencing Figure 15B, Kim further describes that the coupling member for fixing the sub-device “is provided on at least one side of the second body”

which we find to mean that the coupling member may be on *either* the top or bottom of the second body for fixing the sub-device to the second body.

Thus, we agree with Petitioner that how a sub-device is coupled to the watch-type device of Figure 15A is not limited to what is shown in Figure 15B, and that Kim teaches that the sub-device can be coupled to the top of the second body or to the bottom of the second body. *See* Pet. Reply 3–4.

Additionally, Patent Owner asserts that Petitioner “conflates Kim’s disclosure of coupling member 510 on ‘*at least one side*’ of the second body with Petitioner’s unsupported suggestion of coupling the sub-device to *either* side of the second body.” PO Sur-Reply 5. We do not agree with this assertion. Kim’s description that the coupling member for fixing the sub-device “is provided on at least one side of the second body” discloses what Petitioner contends it does, that is, that the sub-device may be coupled to either side of the second body. Although Dr. Horenstein testifies that the sub-device can only be coupled to the top of the second body in a closed position, his explanation is not sufficient as to why that is so, particularly in view of Kim’s disclosures. *See* Ex. 2004 ¶¶ 42–44. For instance, Dr. Horenstein testifies that certain portions of Kim, such as those describing Figure 15B, show the coupling of sub-device on top of the second body, but this testimony is overly limited and inconsistent with other of Kim’s disclosures because it fails to account for other disclosures, as discussed above. *Id.* ¶ 44. Thus, we do not afford his testimony substantial weight. Instead, we credit Dr. Kiaei’s testimony on the issue because his testimony is consistent with what Kim describes. Ex. 1002 ¶¶ 83–87.

Additionally, in the embodiment Petitioner relies upon, the first and second bodies are connected by a hinge. Ex. 1010 ¶¶ 255–257. The portion of Kim that Patent Owner relies on in support of the contention that the

hinge must have a structure allowing coupling and separating is when one of the first and second bodies operates as a sub-device. *Id.* ¶ 258. But, Kim’s disclosures provide for a coupling member on the bottom of the second body for fixing the sub-device to the second body, with the first and second bodies connected by a hinge, and this is accurately represented in Petitioner’s Figure A. *See* Pet. 20–23; Ex. 1002 ¶¶ 83–86.

Patent Owner further argues that the configuration of Figure A of Kim would not allow the cover of the device to properly close due to sandwiching of sub-device 300, and that it would be unattractive, large, and ill-suited for its purpose. PO Resp. 7–8 (citing Ex. 2004 ¶ 48). Patent Owner’s arguments are premised on an overly limited view of the Figure A embodiment as it would be interpreted in the view of one of ordinary skill in the art. Kim broadly states that its embodiments “may be used singly and/or by being combined together.” Ex. 1010 ¶ 179. Consideration of the combination depicted in representative Figure A would reasonably have to “account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; *see ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1219 (Fed. Cir. 2016).

For the reasons discussed above, Kim specifically describes that first and second bodies are coupled and that the sub-device may be on either side of the second body, which supports Petitioner’s depiction of Figure A.

Petitioner additionally asserts, and we agree, that even if Kim did not specifically disclose the embodiment depicted in Figure A, such an embodiment would have been obvious to a person of ordinary skill in the art. Pet. 23. More specifically, Petitioner contends that this embodiment would have been obvious to a person of skill in view of Kim’s folder-type embodiments (Figure 11B), which are similar and closely related to the

watch-type embodiment (Figure 15A). *Id.* at 23–24 (citing Ex. 1010, Figs. 11B, 15A; Ex. 1002 ¶¶ 89–95). Petitioner provides explanations of how in both embodiments (folder-type and watch-type) the main device are configured with a first body and a second body connected to each other by a hinge so that the two bodies can open or close in a folding manner, and that in both embodiments, Kim also describes using coupling members 510 (such as magnets) to detachably couple the sub-device to the main device. *Id.* at 23–25 (citing Ex. 1002 ¶¶ 88–89; Ex. 1010 ¶¶ 212, 218, 220, 261).

Petitioner contends that a person of ordinary skill in the art “would have recognized that because of the similarities between Kim’s folder-type and watch-type embodiments, Kim’s disclosure with respect to Figure 11B could have been adapted and applied to detachably couple sub-device 300 to the second body 100b of the watch-type embodiment in the manner shown in Figure A.” Pet. 25 (citing Ex. 1002 ¶ 90). Petitioner further contends that doing so is suggested by Kim itself, because Kim states that the embodiments “may be used singly and/or by being combined together.” *Id.* (citing Ex. 1010 ¶ 179). Petitioner argues that a person of skill having reviewed Kim’s Figure 11B embodiment would have recognized the feasibility and desirability of modifying the embodiment of Kim’s Figure 15A to detachably couple sub-device 300 to the second body 100b using coupling members 510. *Id.* (citing Ex. 1002 ¶¶ 90–95). Petitioner further provides reasons for making the modification. *Id.* at 25–26 (citing Ex. 1002 ¶¶ 90–95).

Patent Owner makes several arguments why Petitioner’s Figure A is not obvious based on alleged hinge, screen, and operational issues, as well as alleged limitations on combining embodiments. PO Resp. 9–33. For the

reasons that follow, we determine that such arguments do not undermine Petitioner's persuasive showing.

Patent Owner argues that sub-device 300 within the folder-type device of Figure 11B, which has multiple hinge members that are raised above a face of the second body, is not suitable for use with the watch-type embodiment because the single member hinge 100d of the watch-type device would not accommodate sub-device 300 between first and second bodies 100a, 100b while still allowing cover 100b to close properly over the first body. PO Resp. 9–11 (citing Ex. 2004 ¶¶ 50–51). Patent Owner and Dr. Horenstein, however, narrowly focus on the hinge seen in Figure A, reproduced from Kim Figure 15A, as the exact hinge Petitioner allegedly proposes when combining embodiments. *Id.* at 14 (“Petitioner’s Figure A proposes an *unmodified* version of Kim’s Fig. 15A”); PO Sur-Reply 12. Petitioner, however, characterizes “Figure A” as a schematic representation based on what is described in Kim. Pet. 22; Ex. 1002 ¶ 85. The Petition does not discuss the hinge specifics. Although claim 1 recites “the switching device includes a lid and hinge attaching the lid to the switching device,” no particulars of the claimed hinge are recited. Rather, Petitioner’s obviousness showing of combining Kim embodiments is with respect to Kim’s teaching of detachably coupling sub-device 300 to second body 100b using coupling members 510 such as magnets in the watch-type device. Pet. 23–25; Pet. Reply 5. These features are recited in claim 1 (“the switching device and the electronic device are configured to selectively couple to each other employing magnetic force”).

Moreover, Kim itself does not describe the specifics of the hinge for the watch-type device, or limitations on the type of hinge. Rather, Kim states that “[t]he second body may be configured to be connected by a hinge

100d to one side of the first body so as to be open or closed.” Ex. 1010 ¶ 256. Kim further describes a watch-type embodiment where a sub-device “is coupled to one of the first and second bodies in a state that the first and second bodies are coupled.” *Id.* ¶ 260. Accordingly, Patent Owner’s view of what is described by the representation Figure A is unduly limited and is not representative of the broader description in Kim of the watch-type embodiment.

Patent Owner’s expert, Dr. Horenstein, further testifies that when choosing a hinge for a design project an individual would apply “common sense as to what type of hinge would work and which would not.” Ex. 1031, 61:10–62:1.⁸ We agree with Petitioner that “[t]here is nothing in Kim that would suggest to a POSITA, much less require, that the folding watch-type embodiment of Figure A must have a hinge exactly as depicted in Figure 15A” and that “a POSITA would have been able to use routine design skills to select the appropriate hinge, as Dr. Horenstein admits.” Pet. Reply 6 (citing *Intercontinental Great Brands LLC v. Kellogg N. A. Co.*, 869 F.3d 1336, 1341 (Fed. Cir. 2017)); *see also Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d 1321, 1343 (Fed. Cir. 2020). Accordingly, Patent Owner’s arguments that the exact hinge of Figure 15A (or Figure A) would not accommodate a sub-device are unavailing.

Patent Owner argues that Petitioner’s Reply arguments discussed immediately above are new and too late. PO Sur-Reply 8–9. We disagree.

⁸ Dr. Horenstein also testifies that, like the hinge of the folder-type device, the watch-type device hinge has more than one member. *See* Pet. Reply 6 (citing Ex. 1031, 81:16–82:7). Thus, to the extent relevant, the record before us supports finding that the hinges (in Kim’s Figures 11B and 15A) are similar in that they both have more than one hinge member.

A petitioner may rely on new evidence and arguments in a reply, if the evidence and arguments are responsive to arguments made in a patent owner response. *See* 37 C.F.R. 42.23(b); Consolidated Trial Practice Guide 73. Here, we determine that Petitioner’s arguments and accompanying evidence (*e.g.*, Ex. 1031) in connection with this issue in the Petitioner Reply are responsive to Patent Owner’s arguments.

In particular, Petitioner could not have anticipated that Patent Owner would argue for such a narrow view of Petitioner’s Figure A representation. As explained above, the Petition does not limit the hinge in the Figure A representation in any way. Pet. 23–25. Rather, the Figure A representation is based on what is described in Kim, which also does not limit the hinge in any way. *Id.*; Ex. 1010 ¶ 256 (broadly describing that “[t]he second body may be configured to be connected by a hinge 100d to one side of the first body to be open or closed”), ¶ 260 (describing coupling a third body to one of the first and second bodies *in a state that the first and second bodies are coupled*). Thus, we determine that Petitioner’s argument that “[t]here is nothing in Kim that would suggest to a POSITA, much less require, that the folding watch-type embodiment of Figure A must have a hinge exactly as depicted in Figure 15A” and that “a POSITA would have been able to use routine design skills to select the appropriate hinge, as Dr. Horenstein admits” is responsive to Patent Owner’s arguments, which are based on an overly limited view of the Petition and Kim.⁹ For the above reasons, we

⁹ We note that Patent Owner did not request to submit new testimony in support of its Sur-Reply to rebut Dr. Horenstein’s testimony.

determine that we may consider the reply arguments and Dr. Horenstein's testimony in support of the arguments, which we find persuasive.

Patent Owner acknowledges that Kim's folder-type embodiment describes a hinge that would allow a sub-device to be placed between a first and second main body. PO Resp. 12 (citing Ex. 1010, Fig. 11B). Patent Owner nevertheless argues that a hinge such as the one used in the folder-type embodiments could not be used in the watch-type device because it "would not permit such full opening, because Kim only shows the folder-type device with a partially open cover." *Id.* at 14 (citing Ex. 1010, Figs. 11A–E). Patent Owner asserts that full opening of the cover is desired and appropriate for the watch-type embodiment. *Id.* (citing Ex. 2004 ¶ 57).

We agree with Petitioner, however, that the argument is a red herring because Kim "does not require that bodies 100a and 100b in Figure 15A be 'fully open,'" but only that the hinge 100d allow the first and second bodies "to be open or closed." Pet. Reply 7 (citing Ex. 1010 ¶ 256). Accordingly, Patent Owner's "fully open" arguments do not undermine Petitioner's showing. Moreover, Dr. Horenstein testified that the hinge arrangement of Figure 11B could be opened to 180 degrees. Ex. 1031, 79:8–81:5.

Patent Owner then argues that the Figure 11B hinge is not compatible with the watch-type embodiment of Figure 15A because Kim requires the hinge in Figure 15A to be located so that the second body can be connected to one side of the first body, whereas in Figure 11B second body 100b is connected on top of first body 100a. PO Resp. 14. We agree with Petitioner that Kim itself does not disclose that the second body is connected on top of the first body with respect to the Figure 11B embodiment. Pet. Reply 8–9. We further agree with Petitioner that in Figure 11B, the first and second

bodies are connected to each other on one side, in accordance with the arrangement with respect to Kim Figure 15A. *Id.* at 8–9.

Patent Owner also argues that “if hinge 100d were modified with a gap to allow for sub-device 300 to fit between cover 100b and main body 100a with the cover closed, then when sub-device 300 were not present, display 251 of cover 100b would be situated at an angle to the underlying display 151 of the first body 100a” resulting in a misalignment of displays of the first and second bodies. PO Resp. 28–29, 15. But Patent Owner acknowledges that Figure 11B shows an arrangement that would accommodate an optional sub-device. *Id.* at 11 (“the folder-type device of Fig. 11B can accommodate the placement of sub-device 300 between the first and second bodies”). Kim itself discloses that for the folder-type device “the first body 100a and the second body 100b may be folded or unfolded regardless of the coupling or separating of the sub-device.” Ex. 1010 ¶ 218. Thus, Patent Owner’s argument is contradicted by its own statements made in the Patent Owner Response and the disclosures found in Kim.

We also have considered Patent Owner’s argument that the sub-device in Kim’s Figure 11B embodiment has a “thin, one-or-two line display” and that making such a display small to accommodate Kim’s Figure 15A embodiment would result in the display being “so small as to be virtually unusable.” PO Resp. 12–13 (citing Ex. 2004 ¶ 53; Ex. 2002, 15:18–16:13, 20:3–5, 43:4–7). This argument is not persuasive because, as Petitioner points out, Kim “directly refutes this argument as it shows in Figures 15C and 15D watch-type embodiments that include a sub-device with a similar one- or two-line display.” Pet. Reply 9.

Further, Patent Owner argues that Figure A would not have been obvious because the sub-device would have interfered with the proper

operation and viewing of the TOLED screen in the second body 100b. PO Resp. 13 (explaining that 100b allows a wearer to “look through the TOLED cover 100b” to see the underlying display on 100a), 25–27. We agree with Petitioner that such arguments are premised on an overly narrow view of Kim. Pet. Reply 9–10. Kim does not require the second body 100b of the watch-type device to be a TOLED screen. Ex. 1010 ¶ 257 (“[a]t least one of the displays of the first body 100a and the second body 100b *may be configured as a transparent display (TOLED)*”). Dr. Horenstein’s testimony assumes that Kim requires the second body 100b of the watch-type device to be a TOLED. Ex. 2004 ¶¶ 54, 61. During cross-examination, however, Dr. Horenstein acknowledged that for the watch-type embodiment, Kim does not require second body 100b to be a TOLED. Ex. 1031, 65:3–16.

In its Sur-Reply, Patent Owner argues that Dr. Horenstein’s testimony that Kim does not require “use of TOLED screens is irrelevant because the device and ground relied upon in Petitioner’s Petition, e.g., pp. 20–21, *has* a TOLED display 251 in main device 100b.” PO Sur-Reply 11. Patent Owner contends that “Petitioner’s revisionism in its Reply is improper and should be rejected and disregarded.” *Id.* We disagree with this. The Petition does not use the term “TOLED” or describe that 100b is a look through display when it explains why it would have been obvious to modify Kim’s watch-type device in light of the teachings of Kim’s folder-type embodiment. Pet. 23–26. That said, the Petition presents Figure A and it is clear that the Figure A is based on what Kim describes. *Id.* As discussed above, Kim describes that the second body 100b may be a TOLED, but there is no requirement that it has to be a TOLED. Ex. 1010 ¶ 257. For these reasons, Patent Owner’s TOLED type arguments are not persuasive.

As discussed in detail above, Petitioner contends that a person of ordinary skill in the art would have been motivated to adapt and apply the folder-type embodiment teachings to the watch-type embodiment. Pet. 25. One reason this is so, Petitioner argues, is because Kim states that the embodiments it describes “may be used singly and/or by being combined together.” *Id.* (citing Ex. 1010 ¶ 179). Patent Owner argues that the different embodiments of Kim are not interrelated and that “a POSITA would recognize that the different device types have inherent distinctions, and that the manner in which sub-devices may be coupled in the context of each device-type is likewise distinct.” PO Resp. 17. The parties’ arguments focus on the following paragraph of Kim.

Embodiments for a control method in the mobile terminal 100 may now be described with reference to the accompanying drawings. Embodiments may be used singly and/or by being combined together. Embodiments may be implemented more easily when the display 151 includes the touchscreen.

Ex. 1010 ¶ 179. Patent Owner argues that the “comment in Kim is limited to ‘control methods’” such that “various ‘control methods’ for the different mobile terminals ‘may be used singly, or by being combined together.’” PO Resp. 17 (citing Ex. 2004 ¶ 39). Dr. Horenstein’s testimony is similar.

Ex. 2004 ¶ 39. Neither Patent Owner nor Dr. Horenstein identifies a reason that there necessarily is a connection between the first and second sentence such that the second sentence could only be interpreted to mean that the second sentence is limited to control methods. Instead, we find that the second sentence of the paragraph does not limit the combination of embodiments to just the aspect of “a control method” as Patent Owner and Dr. Horenstein assert. Thus, we do not afford substantial weight to Dr. Horenstein’s testimony because it is conclusory and not based on a

reasonable reading of the passage. Based on the record before us, we afford substantial weight to Dr. Kiaei’s testimony that Kim “expressly notes that its embodiments can be combined together,” because his testimony is consistent with what Kim describes. Ex. 1002 ¶ 41 (citing Ex. 1010 ¶ 179), ¶¶ 47–48, 94; Ex. 1010 ¶ 69 (describing that “[e]mbodiments of the present invention may be applicable to various types of terminals”), ¶ 70 (describing that descriptions may be provided with regard to a mobile terminal, but that “such teachings may apply equally to other types of terminals”).

We additionally agree with Petitioner that even if Kim “did not include an express statement that its various embodiments may be combined together, *Kim* can still be used for everything it reasonably teaches to a POSITA.” Pet. Reply 11. We afford substantial weight to Dr. Kiaei’s thorough assessment that Kim’s folder-type and watch-type embodiments are similar and closely related, such that “a person of ordinary skill in the art would have recognized that Kim’s disclosure with respect to Figure 11B could have been adapted and applied to detachably couple sub-device 300 to the second body 100b of the watch-type embodiment in the manner shown in Figure A.” Ex. 1002 ¶¶ 47–48, 90–92.

Finally, Patent Owner argues that “Petitioner’s Figure A embodiment would be exceedingly difficult for a wearer to use or operate” and that “[i]t would be so difficult that a POSITA would not have been motivated to so modify Kim.” PO Resp. 30–33 (citing Ex. 2004 ¶ 66).¹⁰ In support of these

¹⁰ Patent Owner’s arguments regarding operability assume that a person is wearing the watch and has only one free hand to place or remove, for example, a sub-device to the main body of the watch. PO Resp. 30–33. There is no explanation why the sub-device may not be placed or removed while the watch is not being worn.

assertions, Dr. Horenstein testifies that when wearing the watch, “pressing the sub-device onto the cover so as to effect such a coupling, as instructed by Kim, would invite damage to the watch-type device, because added force might cause the unsupported hinge 100d to break.” Ex. 2004 ¶ 67.

Dr. Horenstein further testifies that decoupling the sub-device from cover 100b “would be even more difficult, because only one free hand could [sic] used” and that when “the wearer tried to pull the sub-device away from the cover 100b” the sub-device would not come off due to the strength of the magnets or would cause the cover to shut. *Id.* We afford little weight to Dr. Horenstein’s testimony because it is conclusory. For instance, Dr. Horenstein fails to explain why the watch-type hinge would be so weak as to break when magnetically attaching sub-device 300 onto the second body 100b or why a person of ordinary skill in the art would have used such strong magnets that would not afford dislodging the sub-device from the second body.

For all of the above reasons, we determine that Petitioner has shown sufficiently that representative Figure A embodiment would have been obvious in view of Kim.

b) Claim 1

We now turn to Petitioner’s showings and Patent Owner’s arguments related to Kim’s teaching of the claim 1 limitations.

(1) Preamble

Petitioner asserts that, to the extent that the preamble is limiting, Kim discloses a system, which includes a main device and sub-devices detachably coupled to the main device. Pet. 19–26 (citing e.g., Ex. 1002 ¶¶ 79–95; Ex. 1010 ¶ 181). As discussed above, Petitioner bases its assertions on the embodiment of Kim depicted as Figure A. *Id.* at 20–26.

Patent Owner presents no arguments that specifically relate to the preamble. *See generally* PO Resp. We have reviewed the evidence and argument and determine that Petitioner has presented sufficient evidence that Kim teaches a “system.”¹¹

(2) *Limitation 1[a]*

Petitioner asserts, and we agree, that Kim teaches mobile terminals, such as mobile phones, smart phones, or portable multimedia players, as well as sub-devices, are portable. Pet. 26–27. Petitioner contends that main device 100 of Figure A is the “portable switching device” of claim 1, and sub-device 300 is the “portable switching device” of the claim. *Id.* at 23, 27. Petitioner contends, and we agree, that Kim discloses that when sub-device 300 is coupled to the main device 100, main device 100 detects that and automatically changes its operation mode or an operation mode of the sub-device. *Id.* at 27 (citing Ex. 1010 ¶¶ 195, 270; Ex. 1002 ¶¶ 100–101).

Patent Owner argues that Petitioner has not shown that Kim discloses a switching device because “Petitioner merely assumes that effecting an unspecified ‘change’ to the state and/or operation mode of sub-device 300 must equate with the main device being a switching device.” PO Resp. 42. Patent Owner additionally asserts that “Petitioner makes no attempt to actually show or explain, with details, how main device 100a/100b of its fictional watch embodiment is actually a ‘switching device.’” *Id.*

Petitioner relies upon Kim’s description that “when the sub-device 300 is coupled to the main device 100, the main device 100 may

¹¹ We need not determine whether the preamble of claim 1 is limiting because Petitioner has shown that Kim teaches the preamble. *See Nidec*, 868 F.3d at 1017.

automatically change its operation mode ***or an operation mode of the sub-device.***” Pet. 27 (citing Ex. 1010 ¶ 195). In view of this explicit disclosure, we afford substantial weight to Dr. Kiaei’s testimony that a person of ordinary skill in the art “would have understood *Kim* to disclose that the main device changes (‘switches’) the state and/or operation of the sub-device based on whether the two are coupled.” Ex. 1002 ¶ 103. Patent Owner presents only attorney arguments that do not undermine Petitioner’s showing.¹²

We have reviewed the evidence and argument, as discussed, and determine that Petitioner has presented sufficient evidence that Kim teaches limitation 1[a].

(3) *Limitation 1[b]*

Petitioner also asserts, and we agree, that Kim teaches that the main device (“switching device”) and sub-device (“electronic device”) detachably couple by way of coupling members 510, which can be magnets. Pet. 27–28 (citing Ex. 1002 ¶¶ 102–109; Ex. 1010 ¶ 203). We also agree with Petitioner that a person of ordinary skill in the art would have recognized that Kim discloses that coupling members 510 can be magnets or complementary recesses/hooks. *Id.* at 28 (citing Ex. 1010 ¶¶ 203, 218, 220, 261; Ex. 1002 ¶ 104).

¹² Limitation 1[g] further recites that “. . . the portable switching device is configured to activate, deactivate, or send into hibernation the portable electronic device.” For the reasons discussed further below, we are persuaded by Petitioner’s showing that Kim teaches the main device (switching device) turns off the sub-device (electronic device). During oral argument, counsel for Patent Owner stated that “a change from on to off I think would be a switching device” and that “[c]ausing another device to go from on to off . . . that would be a switching.” Tr. 53:18–19, 54:6–7.

Patent Owner presents no arguments specifically related to limitation 1[b]. *See generally* PO Resp. We have reviewed the evidence and argument, as discussed, and determine that Petitioner has presented sufficient evidence that Kim teaches limitation 1[b].

(4) *Limitation 1[c]*

Petitioner asserts, and we agree, that Kim discloses the watch-type main device with first body 100a and second body 100b is the claimed “switching device.” Pet. 30. Petitioner contends that the body of this device is a case. *Id.* (citing Ex. 1010 ¶¶ 124–125). Patent Owner does not provide any arguments specific to this limitation. *See generally* PO Resp. We have reviewed the evidence and argument and determine that Petitioner has presented sufficient evidence that Kim teaches limitation 1[c].

(5) *Limitation 1[d]*

Petitioner contends, and we agree, that Kim discloses that sub-device 300 includes a frame that surrounds the outer edges of the body and display unit, and a person of ordinary skill in the art would have understood the frame to be the claimed case. Pet. 30–31 (citing Ex. 1002 ¶ 111; Ex. 1010 ¶ 199). Petitioner further asserts, and we agree, that the sub-device has an electronic circuit that is responsive to the main device, is the claimed “switching device.” *Id.* at 31–32. More specifically, Petitioner asserts that Kim discloses that the main device changes the state or operation of the sub-device when the sub-device is coupled. *Id.* at 32 (citing Ex. 1002 ¶ 116; Ex. 1010 ¶¶ 195, 270, 273–275).

Patent Owner presents no arguments specifically related to this limitation. *See generally* PO Resp. We have reviewed the evidence and argument, as discussed, and determine that Petitioner has presented sufficient evidence that Kim teaches limitation 1[d].

(6) *Limitation 1[e]*

Petitioner asserts, and we agree, that Kim discloses using magnets as coupling members 510 to detachably couple the sub-device, and a person of ordinary skill in the art would have recognized that the magnets are fully disposed because they are shown to be in the sub-device and flush with the surface of the sub-device. Pet. 32–33 (citing Ex. 1002 ¶¶ 117–119). Petitioner also argues, and we agree, that to the extent that Patent Owner contends that Kim does not explicitly state that the magnets are “fully” disposed in the sub-device, one of ordinary skill in the art would have found it obvious to fully dispose the magnets within the sub-device and second body as shown in Figure A. *Id.* at 33. Petitioner asserts that this would have been one of the limited options to employ and would have been a matter of engineering choice. *Id.* at 33–35.

Patent Owner argues that “Kim does not disclose or render obvious ‘a first magnet is fully disposed within the electronic device.’” PO Resp. 38–42. Patent Owner asserts that a person of ordinary skill in the art would not have considered a magnet that is flush with the surface would be considered to be “fully disposed” because one face of the magnet would be exposed. Pet. 38 (citing Ex. 2004 ¶ 75). Patent Owner further argues that a person having ordinary skill in the art examining Kim’s figures could not have determined whether coupling members 510 are shown flush with the surface, and that the only detailed figure is Figure 10A, which shows coupling members being surface mounted, not flush with the surface. *Id.* (citing Ex. 2004 ¶¶ 75, 119).

We do not agree with Patent Owner’s arguments. Petitioner contends, and we agree, that the watch-type embodiment figures “are perspective views ‘which would also serve to illustrate three dimensional depths.’” Pet.

Reply 14. Figure 15B reasonably shows a three-dimensional view of sub-device 300 with magnets flush to the surface. Although Dr. Horenstein testifies that the illustrations in Kim are not sufficiently detailed for a person of ordinary skill in the art to arrive at the conclusion that the members are flush with the surface of the sub-device, he fails to provide a detailed explanation why that is so. Ex. 2004 ¶ 75. We afford greater weight to Dr. Kiaei's testimony that the coupling members are shown fully disposed within the sub-device "because they are shown to be in the sub-device and flush with the surface of the sub-device." Ex. 1002 ¶ 119. As to the issue of whether a magnet that is flush with the surface is fully disposed, Petitioner asserts, and we agree, that Patent Owner "does not provide any evidence or reasoned explanation in support of" the argument, "nor does PO seek a construction consistent with this supposed understanding." Pet. Reply 14. On this point, Dr. Horenstein fails to explain why one of ordinary skill in the art would not consider a magnet flush with the surface to be "fully disposed." Ex. 2004 ¶ 75. Further, no analysis is provided by Patent Owner on this issue. For example, there is no direction to where in the '320 patent specification there is support for Patent Owner's narrow construction of "fully disposed."

Additionally, Petitioner sufficiently shows with supporting evidence that it was known at the time of the invention to fully dispose magnets and that fully disposing magnets in the sub-device would have been obvious. See Pet. 33–35 (citing Ex. 1002 ¶¶ 120–125; Ex. 1015 ¶ 307). Patent Owner fails to direct us to contrary evidence. Rather, Patent Owner argues that "Petitioner does not adequately explain why the 'fully disposed' option would be the one preferred by a POSITA, especially in light of Kim's teaching to the contrary." PO Resp. 40 (citing Ex. 2004 ¶ 78). We agree

with Petitioner, however, that the obviousness determination does not turn on whether the proposed combination is the preferred or most desirable combination. Pet. Reply 14 (citing *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004)); *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197–98 (Fed. Cir. 2014).

Patent Owner also argues embedding magnets, as Petitioner proposes, would have caused problems, such as scratching the displays, displays adhering to one another, and forces of magnetic attraction diminishing with distance apart. PO Resp. 40–42 (citing Ex. 2004 ¶¶ 78–80). Dr. Horenstein testifies that embedding magnets would result in placing them further away from “their complementary coupling members” such that “the chosen magnets would need to be stronger and/or larger than would be the case if magnets were surface mounted.” Ex. 2004 ¶ 79. Dr. Horenstein further testifies that “a POSITA would have recognized that, given the limited space and weight constraints of a watch-type device, and the desire to achieve adequate coupling, adopting a solution that demanded larger, embedded magnets would not have been a sensible choice.” *Id.* We afford little weight to Dr. Horenstein’s testimony because it is conclusory and lacks a factual basis. See 37 C.F.R. § 42.65(a). For instance, Dr. Horenstein fails to explain why a person having ordinary skill in the art, for the watch-type sub-device, would have needed to select magnets that would have been so strong as to require large magnets or how large the magnets would need to be to operate sufficiently. His testimony does not outweigh Dr. Kiaei’s testimony, which is supported by record evidence. Ex. 1002 ¶¶ 120–125; Ex. 1015 ¶ 307. For the reasons provided, we are persuaded by Petitioner’s showing with respect to the above limitation and determine that Petitioner has presented sufficient evidence that Kim teaches limitation 1[e].

(7) *Limitation 1[f]*

Petitioner asserts, and we agree, that Kim teaches limitation 1[f] because it discloses that magnets can be coupling members 510, but these coupling members can also be complementary recesses/hooks on the sub-device and the main device. Pet. 36 (citing Ex. 1010 ¶ 218). Petitioner contends, and we agree, that a person of ordinary skill in the art would have been motivated to incorporate both magnetic and recesses/hooks techniques because “it would have provided more secure coupling between the two components with less propensity for accidental or unintentional detachment of the sub-device from the main device.” *Id.* at 37 (citing Ex. 1002 ¶ 130). Petitioner asserts that the hooks on the sub-device in Kim would be “raised shapes” and are used with corresponding features (recesses), which teach the claim limitation. *Id.* at 36–37.

Patent Owner argues that Kim teaches the use of magnets or hooks, but “nowhere does Kim itself advocate the use of *both* magnets and hooks.” PO Resp. 44 (citing Ex. 2004 ¶ 83). Patent Owner further argues that “a POSITA would not have adopted the use of both hooks+recesses *and* magnets” because doing so would be unnecessary, costly, and cause several problems. *Id.* at 44–47 (citing Ex. 2004 ¶¶ 83–89). Dr. Horenstein’s testimony regarding the disputed limitation and the problems the proposed combination would create is similar to portions of his declaration discussed above. For example, Dr. Horenstein testifies that “when pressing the sub-device of Figure A against the cover while attempting to release the hook out of the recess, the cover would rotate on the hinge” and that “the torque exerted on the hinge would be significant in such circumstances and could cause the hinge to break.” Ex. 2004 ¶ 86. We afford little weight to Dr. Horenstein’s testimony because it is conclusory and not founded on a

factual basis. For instance, Dr. Horenstein fails to explain why the watch-type hinge would be so weak as to break when attempting to release the hook out of the recess or why a person of ordinary skill in the art would have designed the watch-type device without considering issues associated with dislodging the sub-device from the second body. We have considered Patent Owner’s arguments and Dr. Horenstein’s testimony on the matter, but they do not undermine Petitioner’s showing, which we determine is persuasive.

More specifically, Petitioner contends that it was known to use both magnetic and mechanical attachments to achieve a more secure connection. Pet. 37 (citing Ex. 1002 ¶¶ 130–137). Kim itself describes using both magnetic and mechanical attachments to achieve a more secure connection in the folder type embodiment shown in Figure 11E. Kim describes that “the third body 300 may be coupled by using the hinge part 550 and 551. The position of the hinge parts may be changed, and the coupling member 510 [magnet] may be additionally provided to prevent the third body from being moved after it is folded.” Ex. 1010 ¶ 220; *see also* Ex. 1002 ¶¶ 138–140. Kim also teaches that hooks and recesses may be used. Ex. 1010 ¶ 218.

We determine that it would have been obvious to use both hooks and recesses along with magnets to securely attach Kim’s sub-device to the second body of the watch-type main body for the reasons provided by Petitioner. In particular, we afford weight to Dr. Kiaei’s testimony that a person of ordinary skill in the art would have been motivated “to incorporate both magnetic and mechanical (*e.g.*, recesses/hooks) techniques for detachably coupling the sub-device and the main device of the embodiment shown in Figure A because *it would have provided a more secure coupling between the two components* with less propensity for accidental or

unintentional detachment of the sub-device from the main device.” Ex. 1002 ¶ 130. Dr. Kiaei’s testimony is supported by record evidence. *Id.* ¶¶ 131–137 (explaining how both Birger (Ex. 1018) and Koh (Ex. 1012) teach that it was known at the time of the invention to use both magnetic and mechanical attachment techniques to achieve a more secure, yet detachable, coupling between two devices in an electronic system).

For the reasons provided, we are persuaded by Petitioner’s showing with respect to the above limitation and determine that Petitioner has presented sufficient evidence that Kim teaches limitation 1[f].

(8) *Limitation 1[g]*

Petitioner contends, and we agree, that Kim teaches this claim limitation by its disclosure that the sub-device is selectively coupled, and decoupled, from the main device employing magnetic force. Pet. 39 (citing Ex. 1002 ¶ 142). Petitioner asserts, and we agree, that based on the detected coupling state of the sub-device/main device there is a change of state or operation. *Id.* at 40 (citing Ex. 1010 ¶¶ 195, 259, 270). Dr. Kiaei refers to Kim’s disclosure that:

Like the other types of mobile terminals as described above, the main device and the sub-device may interwork, and as the two devices are coupled or separated, types of information displayed on each device or display formats may be changed.

Ex. 1010 ¶ 259 (quoted in Ex. 1002 ¶ 143). Petitioner refers to Kim’s disclosure that after coupling to a main device a menu is displayed, which would have required activating the sub-device. Pet. 41–42 (citing Ex. 1002 ¶¶ 144, 146–148; Ex. 1010, Figs. 17A, 17B). Petitioner also relies upon Kim’s disclosure that the sub-device changes the state or operation of the

main device to save power, and it would have been obvious to a person of ordinary skill in the art to implement the same functionality so that the main menu can turn the sub-device on or off. *Id.* at 42–43 (citing Ex. 1010 ¶¶ 299–302, 316–319, 417, 418, Figs. 24, 27, 42; Ex. 1002 ¶¶ 151–154). Petitioner argues that a person of ordinary skill in the art would have been motivated to make the modification for additional flexibility to control the sub-device, the modification would be no more than combining prior art elements according to known methods to produce predictable results, and it would be the application of known techniques. *Id.* at 43–44 (citing Ex. 1002 ¶¶ 155–157).

Patent Owner argues that “Petitioner fails to explain any disclosure or suggestion in Kim of the watch shaped main device 100a/100b in Fig. 15A (relied upon by Petitioner’s fictional Fig. A to be the ‘switching device’ of claim 1) being configured to activate, deactivate or hibernate a sub-device 300.” PO Resp. 47. Patent Owner’s argument fails to consider Kim’s disclosure relating to how main devices and sub-devices operate in combination (Ex. 1010 ¶¶ 195, 259, 270), and instead takes a limited view of what is described with respect to the watch-type embodiment. Pet. 39–44.

Patent Owner further argues that “Petitioner’s contention that Kim’s disclosure for ‘automatic controlling of a terminal operation (menu display)’ by a ‘bar-type mobile terminal,’ is ‘equally applicable’ to watch-type devices . . . is unwarranted” and not applicable. PO Resp. 48. Patent Owner also argues that Petitioner has not shown why it would have been obvious to import the functionality from the bar-type mobile terminal to a watch-type device. *Id.* at 47–48. Patent Owner’s arguments do not undermine Petitioner’s showing. Kim describes that “FIGS 17a and 17b illustrate an example of *automatic controlling of a terminal operation (menu display)*. A

bar type mobile terminal will be described as an example for the sake of brevity.” Ex. 1010 ¶ 273 (emphasis added). We afford substantial weight to Dr. Kiaei’s un rebutted testimony that based on this disclosure in Kim, “[a] person of ordinary skill in the art would have understood that the functionality described with respect to Figures 17A-17B are equally applicable to the other embodiments disclosed in Kim (*e.g.*, the watch-type embodiment).” Ex. 1002 ¶ 145; *see also* Pet. 40, n.13.

Patent Owner also argues that under the heading “Automatic Controlling of Terminal Operation,” Kim discloses in Figures 17A-17B the view is only of a main device menu seen through a transparent sub-device. PO Resp. 48. Patent Owner, however, fails to direct us to sufficient evidence to support this assertion, such as where in the paragraphs following the heading “Automatic Controlling of Terminal Operation,” there is a description that the sub-device is limited to a transparent display, or a TOLED, as Patent Owner asserts. We also are not persuaded by Patent Owner’s arguments that Kim only describes changing the orientation of what is displayed (and not also turning on a display), and that it would not have been obvious to incorporate the orientation teaching into the watch-type device, because they are misplaced. *Id.* at 51–52. Petitioner does not rely on Kim’s teachings disclosed and described with respect to Figures 17A–17B to propose changing orientation of the sub-device display, but rather to show that the sub-device becomes activated (turns on) once connected to the main device, which we find to be sufficient. *See* Pet. 40–44. Patent Owner’s arguments are premised on bodily incorporating Kim’s Figures 17A–17B embodiments into Kim’s watch-type embodiment absent consideration of what the combined teachings of the Kim embodiments

would have suggested to a person having ordinary skill in the art. *See In re Keller*, 642 F.2d 413, 425 (Fed. Cir. 1981).

We afford substantial weight to Dr. Kiaei’s testimony, with respect to the Figure 17A–17B bar-type embodiment, that a person having ordinary skill in the art would have understood Kim “to disclose that the sub-device is inactive before the sub-device and the main device are coupled (*e.g.*, the display of the sub-device is shown to be off), and that after the coupling [causing the sub-device to turn on] a menu is displayed.” Ex. 1002

¶¶ 144–146. Dr. Kiaei’s testimony is supported by what is described in Kim. *Id.* ¶¶ 143–146 (citing Ex. 1010 ¶¶ 195, 259, 270 (“controlling *an operation and state* of the main device 100 *and sub-device* 300 when the sub-device 300 is coupled to the main device 100 of the mobile terminal or separated from the main device”), 274–276).

Dr. Kiaei further explains, contrary to Patent Owner’s unsupported assertions (PO Resp. 48), why a person having ordinary skill in the art would have understood Figures 17A–17B to be applicable to “implementations in which the sub-device’s display is non-transparent” such that “the controller 180 would necessarily display the menu shown on the right [of Fig. 17A] on the sub-device’s display.” Ex. 1002 ¶ 147. Dr. Kiaei further testifies that because the main device’s display is “covered by the sub-device when the devices are coupled, and because the left side of Figure 17A depicts the display of the sub-device as inactive before coupling, displaying the menu shown on the right side of Figure 17A would have required turning on the sub-device’s display.” *Id.* ¶ 148. Dr. Kiaei’s testimony is supported by what is described in Kim. *Id.* ¶¶ 147–148 (citing Ex. 1010 ¶¶ 97–98, 161, 198, 226). Dr. Kiaei also testifies, and we agree, that even if Kim does not disclose the main device activating the sub-device (the display), it would

have been obvious to have the main controller 180 activate the sub-device (the display) to show the menu when the sub-device and the main device are coupled. *Id.* ¶¶ 149–157 (citing Ex. 1010 ¶¶ 274–276).

For the above reasons, we determine that Petitioner has sufficiently shown that a person having ordinary skill in the art would have understood Kim to teach or suggest that the main device’s controller turns on the sub-device’s display and that such teaching would have applied as well to the watch-type embodiment. Thus, Petitioner has shown sufficiently that Kim teaches or suggests “the portable switching device is configured to activate, deactivate or send into hibernation the portable electronic device.”

For completeness, we address Petitioner’s alternative showing that Kim discloses the sub-device remotely changing the state and/or operation of the main device and that it would have been obvious to implement this same functionality in the main device. Pet. 42–44 (citing Ex. 1002 ¶¶ 149–157; Ex. 1010 ¶¶ 186, 198, 299–302, 316–319, 417–418, Figs. 24, 27, 42). For the reasons provided in the Petition, we agree with Petitioner’s showing.

We have considered Patent Owner’s related arguments, but determine that they are misplaced and do not undermine Petitioner’s showing. PO Resp. 49–50. For example, Patent Owner argues that Kim’s sub-device remains on even when disconnected such that “a POSITA would have no rational[e] for turning off a sub-device upon being de-coupled, or for redundantly turning on an already activated sub-device when coupled with a main device.” *Id.* at 50. Patent Owner overlooks Dr. Kiaei’s well supported testimony, explaining why a person of ordinary skill in the art would have sought to turn off, for example, sub-device 300 remotely from the main device. Ex. 1002 ¶¶ 149–155 (explaining that a person of ordinary skill in

the art would have been motivated to modify the main device to remotely turn off the power of the sub-device in order to conserve its power in instances when it is decoupled and not being used). We afford substantial weight to this unrebutted testimony.

For the reasons provided, we are persuaded by Petitioner's showing with respect to the above limitation and determine that Petitioner has presented sufficient evidence that Kim teaches limitation 1[g].

(9) *Limitation 1[h]*

Petitioner asserts, and we agree, that in Kim the sub-device controls various applications of a personal computer through touch input. Pet. 44 (citing Ex. 1010 ¶¶ 342–343, Fig. 31; Ex. 1002 ¶ 158). Petitioner contends, and we agree, that Kim discloses that the sub-device executes music or video files and one of ordinary skill in the art would have understood that this execution includes starting or stopping playback of those files. *Id.* (citing Ex. 1010 ¶ 344; Ex. 1002 ¶ 159).

Patent Owner argues that Petitioner does not assert that this limitation would have been obvious, but only that the limitation is disclosed. PO Resp. 50. Patent Owner contends that Petitioner does not rely on a watch-type embodiment for this teaching, but rather only Kim's bar-type devices that have this functionality. *Id.* at 50–51 (citing Pet. 44–45; Ex. 1010 ¶¶ 342–344).

We are not persuaded by Patent Owner's arguments, which are unsupported by expert testimony. It is undisputed that Kim discloses that a sub-device can be used to control various applications of a personal computer and this control can include playing music or video files. Ex. 1010 ¶¶ 342–343, Fig. 31. Petitioner argues, with support, that in Kim at least its control methods are applicable across embodiments. Pet. Reply 19.

Although Patent Owner argues that Petitioner's assertion is untimely (PO Sur-Reply 21), we do not agree. Petitioner's argument is responsive to arguments made in the Patent Owner response. Further, as discussed *supra*, Petitioner has demonstrated that under Kim's disclosure its embodiments can be combined (Ex. 1010 ¶ 179), and we credit Dr. Kiaei's supporting testimony in that regard (Ex. 1002 ¶ 41). *See* Section II.D.2.a. More particularly, as discussed above, we find that Kim discloses that all aspects of its embodiments may be combined together, and not just that its control methods can be combined as Patent Owner advocates. *See id.* But even if we were to assume that just the control methods of the embodiments may be combined, this supports Petitioner's position that Kim teaches limitation 1[h], that is, the sub-device (electronic device) controls the claimed functions.

For the reasons provided, we are persuaded by Petitioner's showing with respect to the above limitation and determine that Petitioner has presented sufficient evidence that Kim teaches limitation 1[h].

(10) *Limitation 1[i]*

Petitioner asserts, and we agree, that in the watch-type embodiment shown in Figure A there is a hinge with second body 100b that is commonly referred to as a lid. Pet. 46–47 (citing Ex. 1002 ¶¶ 160–165). Dr. Kiaei explains that “a person of ordinary skill in the art commonly refer[s] to the cover of a folding-type or flip-type electronic device as a ‘lid,’” as depicted in Figure A. Ex. 1002 ¶ 160.

Patent Owner presents no arguments specifically related to limitation 1[i]. *See generally* PO Resp. We have reviewed the evidence and argument, as discussed, and determine that Petitioner has presented sufficient evidence that Kim teaches limitation 1[h].

(11) *Limitation 1[j]*

Petitioner asserts, and we agree, that Kim discloses a system where sub-device 300 is detachably connected to second body 100b of the watch-type device using coupling members 510, which are recesses/hooks. Pet. 47 (citing Ex. 1002 ¶ 168). More specifically, Dr. Kiaei refers to his testimony regarding limitation 1[f], which states that one of skill would recognize that in Kim a recess is provided in the main device (the switching device), with hooks on the sub-device. Ex. 1002 ¶¶ 128 (citing Ex. 1010 ¶ 218), 129, 168. In the alternative, Petitioner contends, and we agree, that it would have been obvious to a person of ordinary skill in the art to incorporate a recess in the second body 100b of the main device shown in Figure A to conform to the shape of and receive the sub-device 300 in a manner similar to that shown in Kim’s Figure 10A. Pet. 47–48 (citing Ex. 1010 ¶ 203; Ex. 1002 ¶¶ 169–171).

Patent Owner argues that, as discussed for limitation 1[f], Kim does not teach or suggest the use of both magnets and hooks. PO Resp. 51. For the reasons discussed above for limitation 1[f], we do not find this argument persuasive. Patent Owner also argues that a person of ordinary skill would not have found it obvious to incorporate a recess into the second body of 100b shown in Figure A because Figure 10A of Kim shows the use of magnets that are surface mounted, which are not “fully disposed.” *Id.* at 52 (citing Ex. 2004 ¶ 92). Thus, Patent Owner argues, a person of ordinary skill in the art would not have adopted the teachings of a recess while ignoring the teaching of surface mounted magnets. *Id.* For the reasons discussed for limitation 1[e], we have determined that the evidence supports that the magnets in Kim would be fully disposed, so this argument is inapplicable. Finally, Patent Owner argues that with a recess, “it would be

very difficult to decouple the sub-device from the main device using the user's one free hand.” *Id.* at 52–54 (citing Ex. 2004 ¶¶ 93–95). We do not find this argument persuasive for the reasons discussed in limitation 1[f].

For the reasons provided, we are persuaded by Petitioner's showing with respect to the above limitation and determine that Petitioner has presented sufficient evidence that Kim teaches limitation 1[j].

(12) *Limitation 1[k]*

Petitioner argues, and we agree, that Kim discloses sub-device 300, which is a “second case,” detachably couples to second body 100b, a “first case,” as shown in Figure A. Pet. 48–49. Petitioner also asserts, and we agree, that when the sub-device is coupled and the second body is folded to cover the first body, the sub-device is enclosed and protected. *Id.* at 49 (citing Ex. 1002 ¶¶ 174–175; Ex. 1010 ¶¶ 185, 193).

Patent Owner argues that Kim only teaches positioning the sub-device on the outside of the second body and does not teach or render obvious Figure A. PO Resp. 35. For reasons already provided above, we are not persuaded by Patent Owner's arguments regarding Figure A. Patent Owner also argues that even if “Kim is found to teach or suggest Petitioner's Figure A embodiment, claim 1 would still not have been obvious in view of Kim.” *Id.* at 36 (citing Ex. 2004 ¶ 72). This is so, Patent Owner argues, because Petitioner does not propose any modifications to the hinge assembly of Kim's watch-type device, and, therefore, the cover 100b would not be able to close fully providing no protection to the case of sub-device 300. *Id.* at 36–38. We have already addressed Patent Owner's hinge arguments above, which do not undermine Petitioner's showing, and the analysis equally applies here.

(13) *Conclusion*

Accordingly, on the full record, Petitioner has established by a preponderance of the evidence that claim 1 would have been obvious over Kim.

c) *Claims 2–4, 6–8*

Claim 2 recites “[t]he system of claim 1 wherein the switching device has a first lens.” Claim 3 recites “[t]he system of claim 1 wherein the electronic device has a second lens.” Petitioner asserts, and we agree, that Kim discloses the limitation of claim 2 by its disclosure that the main device has “an audio/video (A/V) input unit 120” that includes camera 121. Pet. 50 (citing Ex. 1010 ¶¶ 72, 84). Dr. Kiaei presents supporting testimony that a person of ordinary skill in the art would have understood that cameras are suitable for incorporating into portable consumer electronic devices, such as the type disclosed in Kim. Ex. 1002 ¶¶ 176–180. Petitioner further asserts, and we agree, that Kim discloses the sub-device (electronic device) includes a camera, and Dr. Kiaei testifies that “a person of ordinary skill in the art would have understood that *Kim* discloses the sub-device (‘electronic device’) including a camera as an input unit.” Pet. 50 (citing Ex. 1010 ¶¶ 84, 200); Ex. 1002 ¶ 182.

Patent Owner presents no arguments specifically related to claims 2 and 3. *See generally* PO Resp. We are persuaded by Petitioner’s showing on these claims, as discussed.

Claim 4 recites “[t]he system of claim 1 wherein the lid has a second magnet disposed within it.” Petitioner refers to Figure A and contends, and we agree, that second body 100b, which is a lid, includes magnets for coupling the sub-device 300 to the second body. Dr. Kiaei provides

supporting testimony on Kim’s teaching of this claim’s limitation. Ex. 1002 ¶ 184; see Fig. A, elements 510.

Claim 6 recites “[t]he system of claim 1 wherein the electronic device has a tab or knob configured to be manipulated by an external force.” Petitioner asserts, and we agree, that Kim discloses that “the sub-device may include function keys . . . on its front side or its side portion.” Pet. 54 (citing Ex. 1010 ¶ 200). Petitioner argues, and we also agree, that Kim discloses that a “user manipulates the function keys to perform certain functions on the sub-device.” *Id.* at 54–55 (citing Ex. 1010 ¶ 87, Fig 9C; Ex. 1002 ¶¶ 196–197).

Claim 7 recites “[t]he system of claim 3 wherein the first case is configured to be nonabrasive to the second lens,” and claim 8 recites “[t]he system of claim 2 wherein the second case is configured to be nonabrasive to the first lens.” Petitioner asserts, and we agree, that Kim discloses main device and the sub-device comprise a case to enclose and/or protect the respective electronic components, and that the cases may be formed of synthetic resin. Pet. 56 (citing Ex. 1010 ¶ 126). Dr. Kiaei testifies, and we agree, “that a person of ordinary skill in the art would [] have understood that plastic and metal substances are material that can be used to form surfaces that are non-abrasive to the lens.” Ex. 1002 ¶ 201.

Patent Owner presents no arguments specifically related to claims 4 and 6–8. *See generally* PO Resp. We are persuaded by Petitioner’s showing on these claims, as discussed.

Accordingly, on the full record, Petitioner has established by a preponderance of the evidence that claims 2–4 and 6–8 would have been obvious over Kim.

d) *Claim 5*

Claim 5 recites “[t]he system of claim 4 wherein the lid is configured to employ the second magnet to secure the lid in a closed position by magnetically coupling to the first case.” Petitioner asserts, and we agree, that Kim discloses that the watch-type main device with second body 100b (lid) includes magnets and the first and second bodies of the main device can be in an open or closed position with respect to each other. Pet. 51 (citing Ex. 1010 ¶ 256; Ex. 1002 ¶ 186–187). Petitioner contends, and we agree, that it would have been obvious to a person of ordinary skill in the art to use one or more of the magnets in the second body 100b (lid) to secure it in a closed position with respect to the first body 100a by coupling. *Id.* Petitioner further argues, and we agree, that using one or more magnets in folder-type electronic device to secure a lid was a technique known in the art, and Kim discloses this by stating “coupling members 510 may be additionally provided to prevent the [sub-device] from being moved after it is folded.” *Id.* at 52 (citing Ex. 1002 ¶¶ 187–189; Ex. 1010 ¶ 220; Ex. 1021 ¶¶ 82, 88).

Patent Owner argues that, to the extent that the allegations of unpatentability rely on the Figure A embodiment, it has explained why Kim does not teach this embodiment. PO Resp. 55. For reasons already provided above, we are not persuaded by Patent Owner’s arguments regarding Figure A. Patent Owner also asserts that Kim does not teach or suggest magnetically coupling first body 100a to second body 100b (*id.*), but Patent Owner does not address Dr. Kiaei’s testimony that a person of ordinary skill in the art would have recognized that the use of magnets would have prevented the lid from unintentionally opening and that the use of one or more magnets in folder-type portable electronic devices was well known.

Ex. 1002 ¶¶ 187–188. We find Dr. Kiaei’s un rebutted testimony to be persuasive.

Patent Owner additionally contends that sandwiching a sub-device between the hinged first and second bodies 100a and 100b of Kim’s watch-type device would prevent the cover from being closed at all, even with a magnet in place. PO Resp. 55; Ex. 2004 ¶ 97. Patent Owner goes on to argue that, even if Kim taught a second body 100b with a magnet to close with first body 100a, “the claim as a whole would still require that the portable switching device be coupled to the portable electronic device and that when so coupled, the first case would function to protect the second case.” PO Resp. 55. These arguments are premised on claim interpretation that requires the electronic device and switching device to be coupled to the main device at all times. However, as Petitioner contends, and we agree, claim 1 indicates that the electronic device and switching device can be coupled or separated from each other. Pet. Reply 21 (quoting claim 1 language: “the switching device and the electronic device are configured to selectively couple to each other;” “the second case is decoupled from the first case by overcoming magnetic force;” and “when coupled, the first case functions to protect the second case”). The claim language contemplates that the electronic device and switching device may be separated from each other and, accordingly, Patent Owner’s arguments do not undermine Petitioner’s showing.

Accordingly, on the full record, Petitioner has established by a preponderance of the evidence that claim 5 would have been obvious over Kim.

E. Asserted Obviousness of Claim 11 over Kim and Koh

Petitioner contends claim 11 is unpatentable under 35 U.S.C. § 103(a) as obvious over Kim and Koh. Pet. 57–66. In support, Petitioner also relies upon the Kiaei Declaration. Ex. 1002. Patent Owner asserts that Petitioner has presented insufficient rationale as to why a person of ordinary skill in the art would have sought to combine Kim and Koh and that some of the limitations of the claim are not taught. PO Resp. 57–70. In support, Petitioner also relies upon the Horenstein Declaration. Ex. 2004.

We begin our discussion with a brief summary of Koh, and then address the evidence and arguments presented by both parties.

1. Koh

Koh describes a portable electronic device module that is easy to couple and convenient to store by sliding and coupling a portable electronic device to an electronic device storage unit. Ex. 1012 ¶ 12. In one embodiment, the portable electronic device includes a portable terminal capable of communicating with a wireless headset. *Id.* ¶ 27; Fig. 4A.

Figure 4A is illustrative and is reproduced below.

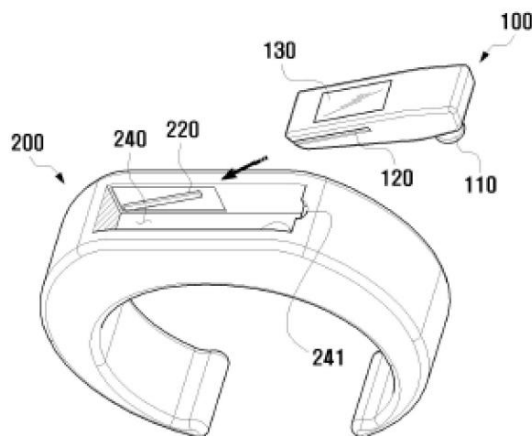


Figure 4A, above, shows wireless headset 100 coupling to electronic device storage unit 200. Ex. 1012 ¶ 46. Coupling can be in a sliding manner by

inserting coupling protrusion 220 of electronic device storage unit 200 into guide groove 120 of wireless headset 100. *Id.* Wireless headset 100 may mount a magnet on the insertion surface (a surface indicated by an arrow in Fig. 4A) and electronic device storage unit 200 may mount a magnet on the inner surface (a hatched surface in Fig. 4A) of storage unit 240. *Id.* ¶ 48. Each of the magnets has a different polarity and thus attracts the other magnet when wireless headset 100 is coupled to electronic device storage unit 200. *Id.*

2. Discussion

Claim 11 recites “[t]he system of claim 1 wherein the electronic device is wireless earplugs.” Ex. 1001, 22:43–44. Petitioner argues, and we agree, that Kim describes configuring sub-device 300 (electronic device) in forms such as an ear phone and that “in this case, the coupling unit 210 of the main device may be configured to have a structure (or shape) that can attach the sub-device 300 to the interior of [sic] the exterior of the main device.” Pet. 58 (citing Ex. 1010 ¶¶ 194, 266, 445 (describing that the second body 300 may be used as a Bluetooth headset); Ex. 1002 ¶¶ 209–211). Petitioner explains that Kim discloses detachably coupling one or more sub-devices to the main device. *Id.* (citing Ex. 1010 ¶ 181). Petitioner argues claim 11 would have been obvious over Kim in view of Koh. Pet. 57–66. Petitioner asserts, and we agree, that Kim discloses that a sub-device may take a form such as an ear phone that may be detachably coupled. Pet. 58 (citing Ex. 1010 ¶¶ 181, 194, 445 (“[T]he second body 300 may be used as a Bluetooth headset.”), 266; Ex. 1002 ¶¶ 209–211). Petitioner further explains that Kim discloses detachably coupling one or more sub-devices to the main device. *Id.* (citing Ex. 1010 ¶ 181). Petitioner asserts, and we agree, that based on Kim’s disclosures, a person having

ordinary skill in the art would have understood that Kim discloses a watch-type embodiment with a first body 100a and second body 100b connected by hinge 100d and “wherein the mobile terminal further comprises one or more wireless earphones or headsets (*i.e.*, sub-devices) detachably coupled to the first body 100a or the second body 100b.” *Id.* at 59 (citing Ex. 1002 ¶¶ 212–213).

Petitioner acknowledges that Kim does not include a discussion of the technique for coupling earphones, and refers to Koh’s disclosure of a “portable electronic device module” as a wireless headset using Bluetooth. Pet. 59 (citing Ex. 1012 ¶¶ 27, 29). Petitioner argues that because Kim discloses that the sub-device can be a Bluetooth headset, but Kim does not provide details on implementation, a person of ordinary skill in the art would have been motivated to identify a compatible device and locate additional details regarding techniques for detachable coupling earphone and would have looked to Koh. *Id.* at 63–64 (citing Ex. 1002 ¶¶ 229–232). Petitioner argues that a “POSITA would have understood that the coupling techniques disclosed by Koh were compatible with and could be adapted and applied to the second body 100b of Kim’s watch-type main device in place of the coupling members 510 when sub-device 300 is a wireless earphone and/or Bluetooth headset.” *Id.* at 61 (citing Ex. 1002 ¶ 219).

Petitioner presents a representation of the combination of Kim and Koh, but Petitioner explains that the manner in which Kim’s main device controls the state and/or operation of the sub-device is not dependent on the specific form factor of the main device of the sub-device. Pet. 62 (citing Ex. 1002 ¶ 221). Further, Petitioner asserts, and we agree, that in the Kim-Koh system the watch-type main device would continue to control the state and/or operation of the wireless headset sub-device in the same way as

discussed with respect to claim 1. *Id.* at 62–63 (referencing Sections VIII.A.1.b and VIII.A.1 for discussion of main device controlling the operation of the sub-device).

Petitioner contends that a person having ordinary skill in the art would have looked to Koh for the details of implementation and would have been motivated to combine Koh’s and Kim’s disclosures. Pet. 63–65 (citing Ex. 1002 ¶¶ 222–232). Petitioner further contends that the combination of Kim and Koh would have amounted to no more than combining known prior art elements according to known methods to yield predictable results. *Id.* at 64 (citing Ex. 1002 ¶ 231). Petitioner explains that even though Koh discloses detachably coupling one wireless headset to the watch-type device, it would have been obvious to detachably couple two wireless headsets to Kim’s watch-type main device because Kim discloses coupling more than one sub-device to the main device. *Id.* at 65–66 (citing Ex. 1002 ¶ 233; Ex. 1010 ¶ 181, Fig. 7). Petitioner asserts that because Kim describes that the mobile terminal may be a portable multimedia player that it would have been obvious to detachably couple two wireless earphones/headsets to Kim’s watch-type device because doing so would permit a user to listen to stereo audio as opposed to mono audio. *Id.* (citing Ex. 1002 ¶ 233).

Patent Owner argues that a person having ordinary skill in the art would not have been motivated to combine Kim and Koh. PO Resp. 57–59. Patent Owner asserts that Kim’s ear phone embodiment “has no reasonable analogy or applicability to the simple ear phones of Koh.” *Id.* at 58 (citing Ex. 2004 ¶ 102 (stating the same)). Patent Owner’s argument is conclusory and does not undermine Petitioner’s showing as Patent Owner does not provide any explanation of why Kim’s ear phone has no analogy to the ear phones of Koh.

Patent Owner additionally argues that the proposed combination requires a specialized lid designed to hold two earpieces and that that arrangement would sacrifice modularity, defeat the look through functionality, and eliminate the desired dual-display capability of the watch-type device advocated by Kim. PO Resp. 58 (citing Ex. 2004 ¶ 103 (stating the same)). As discussed above, Kim describes that the transparent or TOLED display is optional, thus we are not persuaded by Patent Owner's argument that the combination would defeat the look through functionality. Further, Patent Owner does not explain the assertion that there will be a sacrifice of modularity and we, therefore, are not persuaded by the argument. As to the "desired dual-display" issue, Kim describes that the sub-device can take on many form factors and it is not limited to a dual-display. Pet. 58 (citing Ex. 1010 ¶¶ 194, 266, 445).

Patent Owner argues that there is "no suggestion in Kim and/or Koh that using both magnets and hooks as coupling members would be workable or beneficial." PO Resp. 59. Petitioner, however, does not propose using hooks in the Kim-Koh combination. As Petitioner points out, and we agree, the Kim-Koh combination meets claim 1 because the headset sub-devices comprise grooves configured to engage with coupling protrusions on the main device's second body. Pet. Reply 22 (citing Pet. 61–62; Ex. 1002 ¶ 220).

Additionally, Patent Owner argues that the combination of Kim and Koh does not teach "when coupled, the first case functions to protect the second case." PO Resp. 59–66. Patent Owner's arguments are premised on Patent Owner's view that Kim only describes placing sub-device 300 on top of the second body when the first and second bodies are in a closed position. *Id.* at 59–60. For reasons discussed above, such arguments are unavailing.

We further agree with Petitioner that to the extent Patent Owner proposes another way to combine Kim and Koh (PO Resp. 60, “Horenstein Figure 25”) is of no moment to show that the combination proposed by Petitioner is not sufficient. Pet. Reply 22–23. Patent Owner’s arguments that the first case does not protect the second case are based on Patent Owner’s proposed combination, not on Petitioner’s proposed combination. PO Resp. 59–60. With respect to Petitioner’s proposed combination, Patent Owner argues that such combination “would be exceedingly difficult to use” because the wearer would likely damage the watch when removing the “wireless headset(s).” *Id.* at 62–63. These arguments do not undermine Petitioner’s showing for similar reasons provided above. Additionally, we agree with Petitioner that Koh “teaches using one hand to remove the headset from the housing using either a lifting action (using a groove) or a pressing action (using the elasticity of the spring connected to the coupling protrusion).” Pet. Reply 23 (citing Ex. 1012 ¶ 47; Pet. 61–62; Ex. 1002 ¶¶ 219–220).

Patent Owner additionally argues that the Petition fails to explain how the combined Koh portable “switching device” is configured to activate, deactivate, or send into hibernation the portable electronic device. PO Resp. 66–68. We disagree because, as discussed above, the Petition clearly states that Kim discloses the watch-type main device (“switching device”) activating, deactivating or sending into hibernation a sub-device, which in the proposed combination would be an earphone sub-device (“electronic device”). Pet. 62–63 (“A POSITA would have understood that in the Kim-Koh system, the watch-type main device would continue to control the state and/or operation of the wireless earphone/headset sub-device in the same manner as discussed above”); Ex. 1002 ¶ 221.

Patent Owner also argues that the combination of Kim and Koh does not teach “the electronic device pauses or plays a remote device” limitation. PO Resp. 68–70. This is a re-argument that Kim’s control methods are not applicable to the watch-type embodiment. *Id.* at 68–69. We previously addressed that issue, *supra* Section II.D.9., finding that the Petition sufficiently explains that Kim discloses that embodiments, and their control methods, may be combined. *See also* Pet. 62–63. Patent Owner additionally argues that Kim does not disclose that an earphone provides control of a multi-media player. PO Resp. 69 (citing Ex. 1010 ¶ 329). Patent Owner’s argument overlooks Petitioner’s assertions, which we agree with, that a person of ordinary skill in the art would have known that Bluetooth headsets are capable of controlling media on a remote device, and would have found it obvious to incorporate that functionality into the Kim-Koh head set. Pet. 63 (citing Ex. 1002 ¶¶ 222–227 (citing Ex. 1029, 9); Ex. 1018, 8:1–7; Ex. 1010 ¶ 344). Accordingly, Patent Owner’s arguments do not undermine Petitioner’s showing.

For the above reasons, having considered Petitioner’s and Patent Owner’s arguments and evidence, we determine that Petitioner has shown by a preponderance of the evidence that claim 11 of the ’320 patent would have been obvious over Kim and Koh.

F. Asserted Obviousness of Claims 9, 10, 12, and 13 over Kim and Lee

Petitioner contends claims 9, 10, 12, and 13 are unpatentable under 35 U.S.C. § 103(a) as obvious over Kim and Lee. Pet. 66–71. In support, Petitioner also relies upon the Kiaei Declaration. Ex. 1002. Patent Owner asserts that Petitioner has presented insufficient rationale as to why a person of ordinary skill in the art would have sought to combine Kim and Lee and

that some of the limitations of the claim are not taught. PO Resp. 70–72. In support, Petitioner also relies upon the Horenstein Declaration. Ex. 2004.

We begin our discussion with a brief summary of Lee, and then address the evidence and arguments presented.

1. *Lee*

Lee describes a mobile terminal that can include a cellular phone or a smart phone. Ex. 1013 ¶ 27. A sensing unit senses the current state of the mobile terminal, such as an open/close state of the mobile terminal, senses whether a power supply supplies power, and senses whether an interface is connected to an external device. *Id.* ¶ 44. The sensor unit can include a hall sensor as a sensing element and a magnet for the sensed element, in which the hall sensor outputs a voltage varying the magnetic field using a hall effect. *Id.* ¶ 119.

2. *Discussion*

Petitioner argues claims 9, 10, 12, and 13 would have been obvious over Kim in view of Lee. Pet. 66–71. Claims 9, 10, 12, and 14 recite, respectively:

9. The system of claim 1 wherein the first magnet is employed in actuating the electronic circuit.

10. The system of claim 4 wherein the second or a third magnet is employed in the lid to actuate the electronic device.

12. The system of claim 1 wherein the system further comprises a sensor that can be activated using a magnet.

13. The system of claim 5 wherein the system further comprises a sensor that can be actuated using a magnet.

Ex. 1001, 22:38–42, 46–48.

Petitioner asserts, and we agree, that Kim in combination with Lee discloses the features of claims 9, 10, 12, and 13. Pet. 66–71. For claim 9,

Petitioner contends, and we agree, that Lee discloses a mobile terminal that includes a sensing unit to sense whether the mobile terminal is open or closed by employing a hall sensor to detect changes to a magnetic field based on proximity. *Id.* at 67 (citing Ex. 1013 ¶¶ 27, 28, 44, 71, 79; Ex. 1002 ¶¶ 238–240). For claim 10, Petitioner asserts, and we agree, that a person of ordinary skill in the art would “arrange the Kim-Lee system so that the Hall sensor is deployed in the sub-device and the magnet that is detected by the Hall sensor is deployed in the second body 100b.” *Id.* at 69 (citing Ex. 1002 ¶ 247). For claims 12 and 13, Petitioner relies on similar evidence to that presented for claims 9 and 10. *Id.* at 70–71. Petitioner argues, and we agree, that a person of ordinary skill in the art would have understood that “Lee is directed to a system that is comparable to and compatible with the systems disclosed in Kim” and Lee provides additional detail regarding how to use a Hall sensor and a magnet to detect the coupling status of two bodies. *Id.* at 68 (citing Ex. 1002 ¶¶ 242–243; Ex. 103 ¶¶ 119–121). Petitioner also asserts that Lee’s hall sensor was suitable for use in Kim’s mobile terminal, and the combination would have amounted to no more than a combination of known prior art elements to yield predictable results. *Id.* at 68 (citing Ex. 1002 ¶ 244).

Patent Owner argues that a person having ordinary skill in the art would not have been motivated to combine Kim and Lee, “specifically to use a Hall effect sensor (as taught by Lee) in a watch-type device (as taught by Kim).” PO Resp. 70–71. Patent Owner contends that Kim already has a coupling detection unit 220 that detects whether a main device is connected to a sub-device and, therefore, there would be no need for a hall effect sensor. *Id.* at 70 (citing Ex. 1010 ¶¶ 182–184; Ex. 2004 ¶ 115). This argument is misplaced because it is based on a misunderstanding of the

Petitioner's showing. We afford substantial weight to Dr. Kiaei's testimony that although Kim teaches detecting the coupling status of the sub-device to the main device, it does so "without providing significant detail how to do this" and that a person of skill in the art "would have been motivated to identify a system that is comparable to *Kim*'s and to locate additional detail regarding components that can be used to detect the coupling status of the sub-device to the main device." Ex. 1002 ¶ 242. Patent Owner fails to sufficiently rebut Dr. Kiaei's testimony. For example, Patent Owner does not demonstrate that Kim's broad teaching of detecting the coupling status of the sub-device to the main device provides sufficient detail such as to preclude a person of ordinary skill in the art from looking to other systems to provide details of the components that could be used to detect the coupling status of two devices.

Patent Owner additionally argues that the bodies in Lee are always coupled in a bi-fold configuration such that Lee does not provide details as to how to use a hall sensor and a magnet to detect the coupling status of two bodies. PO Resp. 71. We agree with Petitioner that Lee's use of a hall sensor in a bi-fold configuration does not detract from Lee's teaching of using a hall sensor to determine relative position of two bodies. Pet. Reply 25 (citing Pet. 68; Ex. 1002 ¶¶ 241–244). Patent Owner additionally argues that Lee does not teach using a hall effect sensor and/or magnet to detect the coupling status or to actuate an electronic circuit. PO Resp. 71–72. We agree with Petitioner that those arguments misunderstand the Petition, which relies on Kim to change a state and/or operation of the sub-device based on detecting its coupling status with the main device. Pet. Reply 25–26. Accordingly, these arguments do not undermine Petitioner's showing.

For the above reasons, having considered Petitioner's and Patent Owner's arguments and evidence, we determine that Petitioner has shown by a preponderance of the evidence that claims 9, 10, 12, and 13 of the '320 patent would have been obvious over Kim and Lee.

IV. CONCLUSION¹³

In summary:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–8	103(a)	Kim	1–8	
11	103(a)	Kim, Koh	11	
9, 10, 12, 13	103(a)	Kim, Lee	9, 10, 12, 13	
Overall Outcome			1–13	

¹³ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

V. ORDER

For the reasons given, it is:

ORDERED that Petitioner has established based on a preponderance of evidence that claims 1–13 of U.S. Patent 10,589,320 B1 are unpatentable as obvious under 35 U.S.C. § 103; and

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

IPR2021-00338
Patent 10,589,320 B1

FOR PETITIONER:

Ali Sharifahmadian
Jin-Suk Park
John Moulder
Mark Patrick
ARNOLD & PORTER KAYE SCHOLER LLP
ali.sharifahmadian@arnoldporter.com
jin.park@arnoldporter.com
chris.moulder@arnoldporter.com
mark.patrick@arnoldporter.com

FOR PATENT OWNER:

John Edmonds
Stephen Schlather
EDMONDS & SCHLATHER, PLLC
jedmonds@ip-lit.com
sschlather@ip-lit.com

Tarek Fahmi
ASCENDA LAW GROUP, PC
tarek.fahmi@ascendalaw.com