

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Walter G. Mayfield, et al.
U.S. Patent No.: 10,259,020 Attorney Docket No.: 50095-0028IP2
Issue Date: April 16, 2019
Appl. Serial No.: 15/851,952
Filing Date: December 22, 2017
Title: APPARATUS FOR CLEANING VIEW SCREENS AND
LENSES AND METHOD FOR THE USE THEREOF

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**PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT
NO. 10,259,020 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42**

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Exhibit No.	DESCRIPTION
1001	U.S. Patent No. 10,259,020
1002	Declaration of Sayfe Kiaei, Ph.D.
1003	Curriculum Vitae of Sayfe Kiaei, Ph.D.
1004	File History of U.S. Patent No. 10,259,020
1005	File History of U.S. Provisional Application No. 61/515,752
1006	Summary of all applications in the '020 patent's priority chain
1007	Excerpt of <i>GUI Global Products, Ltd., D/B/A Gwee v. Samsung Elecs. Co., Ltd., et al.</i> , Case No. 4:20-cv-2624 (S.D. Tex.), Gwee's P.R. 3-1 and 3-2 Disclosures (Nov. 6, 2020)
1008	[RESERVED]
1009	[RESERVED]
1010	U.S. Patent Application Publication 2010/0227642 to Kim <i>et al.</i>
1011	[RESERVED]
1012	Korean Patent Publication 10-2008-0093178 to Koh <i>et al.</i>
1013	U.S. Patent Application Publication 2010/0298032 to Lee <i>et al.</i>
1014	U.S. Patent No. 5,946,121 to Jiang <i>et al.</i>
1015	U.S. Patent Application Publication 2008/0166005 to Terlizzi
1016	U.S. Patent Application Publication 2006/0152576 to Kiessling
1017	U.S. Patent Application Publication 2003/0164895 to Viinikanoja
1018	International Publication WO 2010/142290 to Birger
1019	U.S. Patent No. 6,809,774 to Yamazaki
1020	U.S. Patent No. 7,251,197 to Yoshida <i>et al.</i>
1021	U.S. Patent Application Publication 2011/0211297 to Griffin <i>et al.</i>
1022	U.S. Patent Application Publication 2006/0071746 to Lylyharju
1023	A Dictionary of Chemistry, 5th ed. (2004)
1024-1099	[RESERVED]
1100	Complaint for Patent Infringement, <i>GUI Global Products, Ltd. D/B/A Gwee v. Apple Inc.</i> , Case No. 4:20-cv-02652 (SDTX)
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1102	Joint Motion to Consolidate, <i>GUI Global Products, Ltd. D/B/A</i>

	<i>Gwee v. Samsung Electronics Co. Ltd, et al.</i> , Case No. 4:20-cv-02624 (SDTX)
1103	Response to Joint Motion to Consolidate, <i>GUI Global Products, Ltd. D/B/A Gwee v. Samsung Electronics Co. Ltd, et al.</i> , Case No. 4:20-cv-02624 (SDTX)
1104	Order re Joint Motion to Consolidate, <i>GUI Global Products, Ltd. D/B/A Gwee v. Samsung Electronics Co. Ltd, et al.</i> , Case No. 4:20-cv-02624 (SDTX)
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1109	[RESERVED]
1110	[RESERVED]
1111	<i>SDTX 2011 Onward – Time to Milestones Search</i> , Docket Navigator
1112	First Amended Scheduling Order, <i>GUI Global Products, Ltd. D/B/A Gwee v. Samsung Electronics Co. Ltd, et al.</i> , Case No. 4:20-cv-02624 (SDTX)
1113	Second Amended Scheduling Order, <i>GUI Global Products, Ltd. D/B/A Gwee v. Samsung Electronics Co. Ltd, et al.</i> , Case No. 4:20-cv-02624 (SDTX)
1114	Third Amended Scheduling Order, <i>GUI Global Products, Ltd. D/B/A Gwee v. Samsung Electronics Co. Ltd, et al.</i> , Case No. 4:20-cv-02624 (SDTX)
1115	Fourth Amended Scheduling Order, <i>GUI Global Products, Ltd. D/B/A Gwee v. Samsung Electronics Co. Ltd, et al.</i> , Case No. 4:20-cv-02624 (SDTX)
1116	Joint Motion to Amend the Scheduling Order, <i>GUI Global Products, Ltd. D/B/A Gwee v. Samsung Electronics Co. Ltd, et al.</i> , Case No. 4:20-cv-02624 (SDTX)

1117	Stipulation by Apple Inc.
1118	Return of Service of Summons, <i>GUI Global Products, Ltd. D/B/A Gwee v. Samsung Electronics Co. Ltd, et al.</i> , Case No. 4:20-cv-02624 (SDTX)

I. INTRODUCTION

Apple Inc. (“Petitioner”) requests *inter partes* review of claims 1-19 of U.S. Patent No. 10,259,020 (“the ’020 patent”). The patentability analysis of this Petition is substantively equivalent to the petition instituted in IPR2021-00335, and Petitioner conditionally requests joinder to that proceeding. Section IX, *infra*, addresses various discretionary considerations unique to this Petition.

II. GROUNDS FOR STANDING (37 C.F.R. § 42.104(A))

Petitioner certifies that the ’020 patent is available for IPR and Petitioner is not barred or estopped from requesting IPR via the joinder mechanism. Joinder is an exception to the one-year time bar. *See* 35 U.S.C. §§ 315(b)-(c); *Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d 1321, 1333 (Fed. Cir. 2020).

III. STATEMENT OF PRECISE RELIEF REQUESTED FOR EACH CLAIM CHALLENGED

A. Claims for Which Review is Requested

Petitioner respectfully requests review of claims 1-19 (“challenged claims”) of the ’020 patent and cancellation of these claims under 35 U.S.C. § 311 as unpatentable.

B. Statutory Grounds of Challenge

Claims 1-19 should be cancelled as unpatentable on the following grounds:

Ground 1: Claims 1-9, 11-15 and 19 are unpatentable under AIA 35 U.S.C.

§ 103 as being obvious over U.S. Patent Application Publication 2010/0227642 (“*Kim*”) (EX1010);

Ground 2: Claim 10 is unpatentable under AIA 35 U.S.C. § 103 as being obvious over *Kim* in view of Korean Patent Publication 10-2008-0093178 (“*Koh*”) (EX1012)¹;

Ground 3: Claims 16 and 17 are unpatentable under AIA 35 U.S.C. § 103 as being obvious over *Kim* in view of U.S. Patent Application Publication 2010/0298032 (“*Lee*”) (EX1013); and

Ground 4: Claim 18 is unpatentable under AIA 35 U.S.C. § 103 as being obvious over *Kim* in view of U.S. Patent 5,946,121 (“*Jiang*”) (EX1014).

As further explained below in Section IV.C, the challenged claims are not entitled to an effective filing date earlier than November 3, 2011.² *Kim* published

¹ EX1012 is a compilation comprising the English-language translation of *Koh* (EX1012, 1-15), and its Korean language version (*id.*, 16-30), and an affidavit required by 37 C.F.R. § 42.63(b) (in the form of a declaration as permitted by 37 C.F.R. § 42.2) (*id.*, 31).

² While for purposes of this proceeding Petitioner asserts that the challenged claims are not entitled to a priority date earlier than November 3, 2011, Petitioner reserves

on September 9, 2010. *Koh* published on October 21, 2008. *Lee* published on November 25, 2010. *Jiang* issued on August 31, 1999. Thus, each of *Kim*, *Koh*, *Lee*, and *Jiang* qualify as prior art at least under AIA 35 U.S.C. § 102(a)(1).³

The '020 patent appears to have been examined under the provisions of the America Invents Act (“AIA”). EX1004, 86. All of the references relied on in this petition would remain prior art under § 102, and the challenged claims would still be unpatentable under § 103, even if the Board determines that the '020 patent is subject to pre-AIA law.

IV. OVERVIEW OF THE '020 PATENT

A. Disclosure of the '020 Patent

The '020 patent is generally directed to a cleaning component for cleaning a lens or view screen of an electronic device that “is configured to selectively couple to the at least one case or some other substrate using a magnetic attractive force.” EX1001, Abstract.

the right to challenge any priority claims(s) made by PO with respect to the '020 patent in this proceeding or in the district court litigation.

³ The exceptions in AIA 35 U.S.C. § 102(b) are inapplicable to *Koh* and *Jiang*. The exceptions are also inapplicable to *Kim* when the challenged claims are properly accorded a priority date no earlier than November 3, 2011.

According to the '020 patent, “[c]leaning lenses has long been an issue for the users of devices employing them” (*id.*, 1:36-37), and “[c]leaning the view screen of a portable electronic device can be problematic” because “[c]arrying appropriate cleaning materials is sometimes a problem” (*id.*, 1:57-64). Thus, the '020 patent states “it would be desirable ... to incorporate into [the portable electronic device] the cleaning apparatus” and that “it would also be desirable ... to provide a cleaning component that can be carried on an electronic device case.” *Id.*, 2:1-6.

To remedy the perceived problems in the art, the '020 patent purports to disclose several embodiments such as, for example, “a method of cleaning a view screen of an electronic device” (*id.*, 2:10-15), “a cleaning component for use on an electronic device view” (*id.*, 2:16-20), and “a switching device for use with a portable electronic device having a view screen” (*id.*, 3:61-4:6).

While the bulk of the '020 patent describes methods of cleaning and aspects of a cleaning device, it mentions that “[i]n addition to their cleaning functionality, the cleaning components of the application have a functionality of being able to activ[ate] magnetic switches on devices having such switches.” *Id.*, 11:53-56. In one embodiment, the cleaning device may also have “additional functionality such as a remote control, laser pointer or the like” and, paradoxically, the cleaning device “may or may not include cleaning capabilities but will include a rare earth magnet or magnets.” *Id.*, 16:21-38. Functionality may also include, “pointing devices,”

“remote functionality,” “flash drive,” “earplugs,” “credit card reader, microphone, and the like.” *Id.*, 16:39-49.

The '020 patent further discloses a switching device for use in a portable electronic device having a view screen. *Id.*, 17:45-46. This embodiment is shown below:

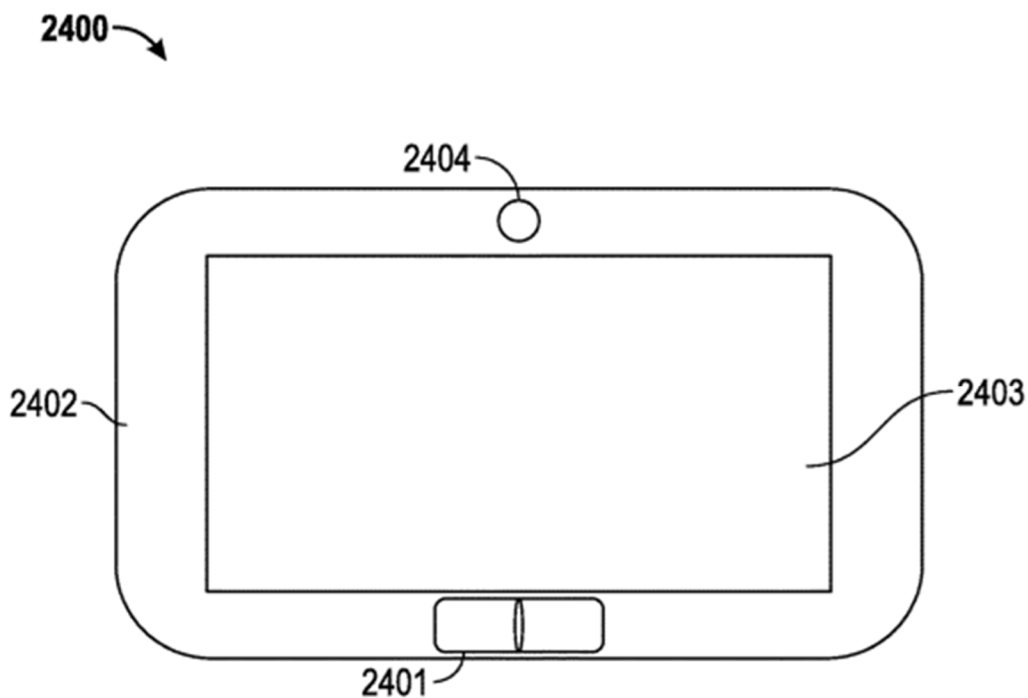


FIG. 24

EX1001, FIG. 24.

The “switching device (2401) is selectively coupled to the front of the portable electronic device 2402 outside of the view screen 2403.” *Id.*, 17:63-18:2. A side view of the switching device 2401 is shown below:

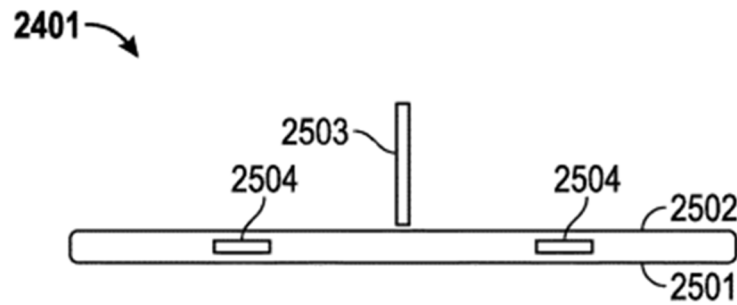


FIG. 25

EX1001, FIG. 25.

The '020 patent further discloses that the switching devices have a functionality of being able to “active[ate] magnetic switches on devices having such switches.” *Id.*, 20:4-6.

B. Prosecution History of the '020 Patent

The '020 patent issued on April 16, 2019, from U.S. Application No. 15/852,952 (“the '952 application”) filed December 22, 2017. The '952 application claims priority to International Application No. PCT/US2012/049562 (“the '562 PCT application”) filed on August 3, 2012, through two intervening continuation applications. The '562 PCT application in turn claims priority to nine U.S. provisional patent applications filed between August 5, 2011 and June 18, 2012. Exhibit 1006 summarizes the relationship of all the applications in the '020 patent’s priority chain.

During prosecution of the '020 patent, the Office rejected all of the originally filed claims. Claim 1—the only independent claim—was rejected under AIA 35

U.S.C. § 102(a)(1) as anticipated by U.S. Patent Application Publication 2011/0192857A1 to Rothbaum *et al.* EX1004, 86. After an Applicant-initiated telephonic interview, the Office issued a Notice of Allowance with an Examiner's Amendment to add "the portable switching device is configured to activate, deactivate or send into hibernation the portable electronic device" to independent claim 1. *Id.*, 156.

C. The Challenged Claims Are Not Entitled To An Effective Filing Date Before November 3, 2011

For purposes of this proceeding, Petitioner asserts that the challenged claims are not entitled to a priority date earlier than November 3, 2011.⁴

The Board can consider the challenged claims' priority date. *See SAP Am., Inc. v. Lakshmi Arunachalam*, IPR2014-00414, Paper 24 at 22 (Aug. 17, 2015). The '020 patent can claim priority to an earlier application only if the earlier application, *inter alia*, provides an adequate written description for the claims. 35 U.S.C. §120; *Anascape, Ltd. v. Nintendo of Am., Inc.*, 601 F.3d 1333, 1334-35 (Fed. Cir. 2010). "[T]he hallmark of written description is disclosure." *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). "Entitlement to a filing date does not extend to subject matter which is not disclosed, but would be obvious over

⁴ See footnote 2.

what is expressly disclosed. It extends only to that which is disclosed.... a prior application itself must describe an invention, and do so in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1571-72 (Fed. Cir. 1997).

U.S. Provisional Application No. 61/515,752 (“the ’752 provisional application”)—which was filed on August 5, 2011—fails to provide adequate written description of at least the following limitations of claim 1: “***a portable switching device***”⁵; “***the switching device*** and the electronic device are configured to selectively couple to each other employing magnetic force from a first magnet disposed within the switching device”; and “***the portable switching device*** is configured to activate, deactivate or send into hibernation the portable electronic device.” EX1001, claim 1; *see generally* EX1005. In fact, the ’752 provisional application is completely silent about “switching devices” in any form. EX1002, ¶38.

Because the ’752 provisional application does not provide adequate written description of at least the above claim limitations, the challenged claims are entitled to a priority date no earlier than November 3, 2011—the filing date of U.S.

⁵ All bold/italics/color emphases are added unless noted otherwise.

Provisional Application No. 61/555,310.⁶ Indeed, PO appears to concede this point. EX1007, 7-8. Notably, in identifying the '020 patent's priority chain in the district court litigation, PO made no mention of the '752 provisional application. *Id.*

V. OVERVIEW OF THE PRIMARY PRIOR ART REFERENCE

A. Overview of *Kim*

Kim discloses devices to enable a user to activate and deactivate an electronic device with a separate switching device—and does so using the same features claimed in the '020 patent. EX1002, ¶39. More particularly, *Kim*'s disclosure is directed to *mobile terminals*, such as mobile phones, smart phones, personal digital assistants, portable multimedia players (PMP) and/or navigators. EX1010, ¶¶69-70.

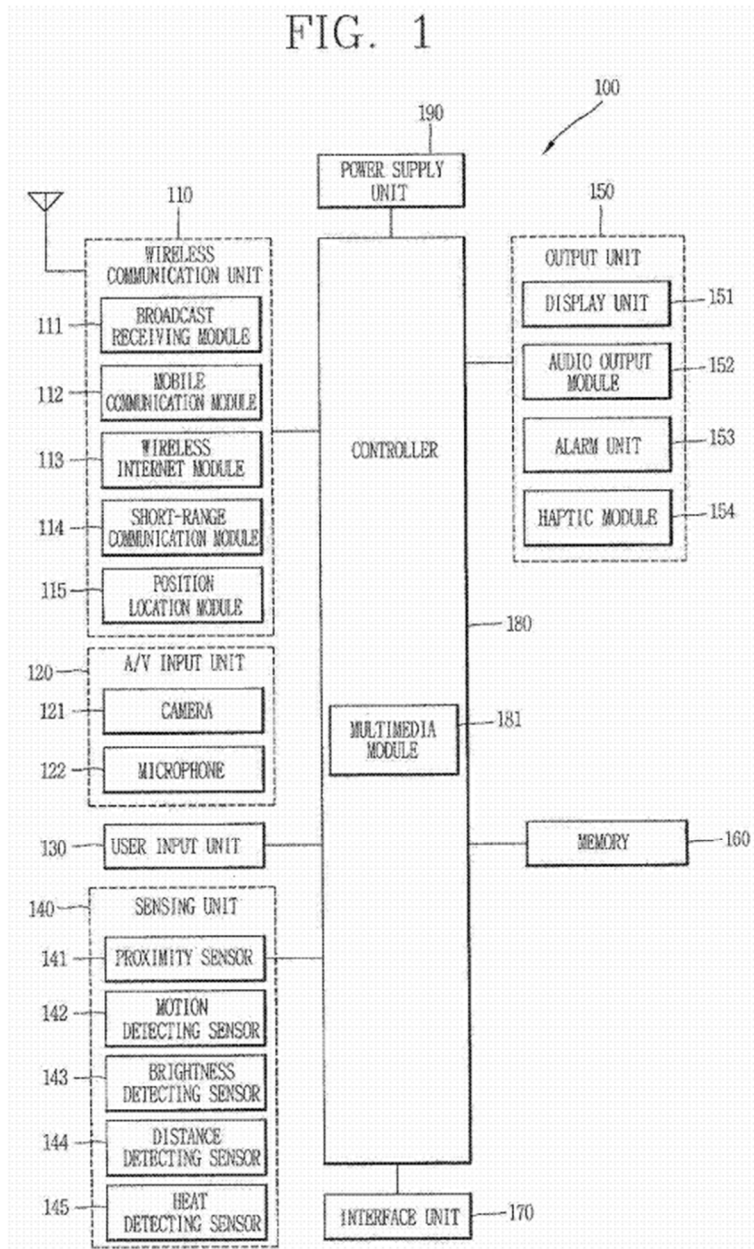
Kim describes the structure and functionality of the mobile terminal with respect to a number of interrelated embodiments. *Kim* teaches that the disclosed embodiments “may be used singly and/or by being combined together.” EX1010, ¶179; EX1002, ¶¶41, 48. *Kim* initially discusses various features that are common to the mobile terminals. For example, *Kim* states that “FIG. 1 is a block diagram of a mobile terminal” including “a wireless communication unit 110, an audio/video (A/V) input unit 120, a user input unit 130, a sensing unit 140, an output unit 150, a

⁶ See footnote 2. Petitioner also reserves all rights to raise arguments under 35 U.S.C. §112 in the district court litigation.

memory 160, an interface unit 170, a controller 180 and a power supply 190.”

EX1010, ¶72. *Kim* discloses the mobile terminal including “more or less”

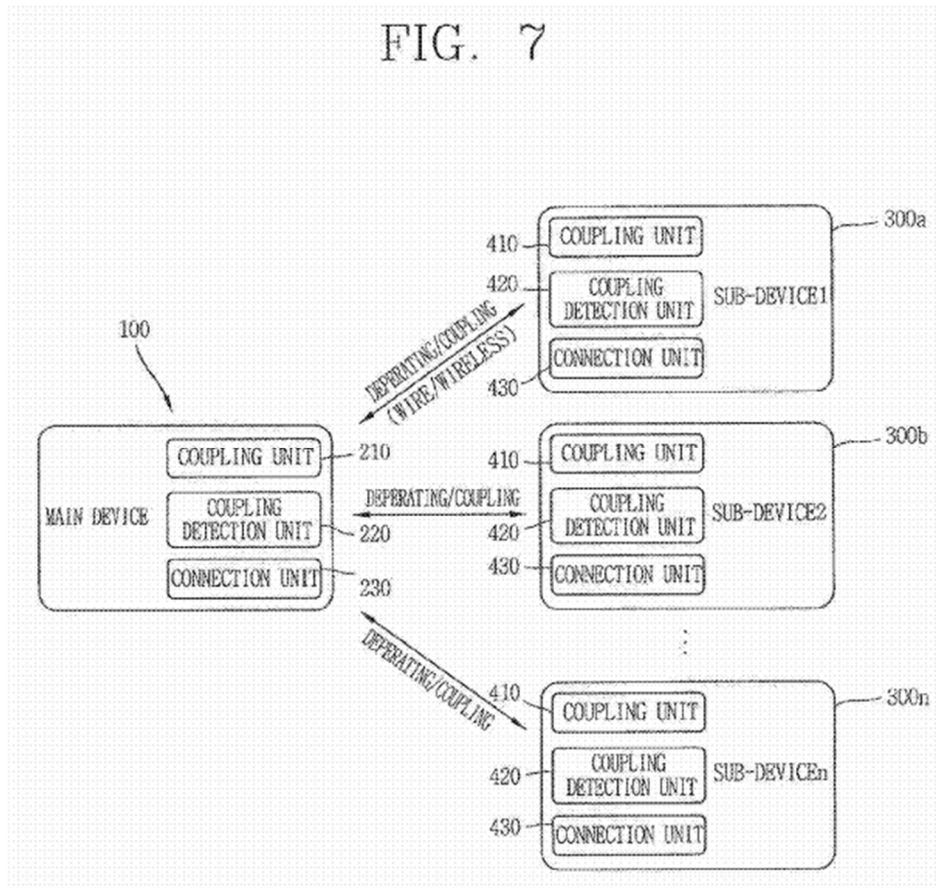
components than shown in Figure 1. *Id.*, ¶71. Figure 1 is reproduced below:



EX1010, FIG. 1.

Kim provides detailed descriptions of each of these “units,” for example, describing the A/V unit 120 as including a camera and the sensing unit 140 as detecting an open/close status of the mobile terminal 100. *See id.*, ¶¶73-119 (describing the various units and modules in the mobile terminal).

Kim teaches the mobile terminal including “a main device (first device) 100 and one or more sub-devices (second devices) 300a to 300n that can be detachably attached to the main device.” EX1010, ¶181. Figure 7 illustrates this concept:



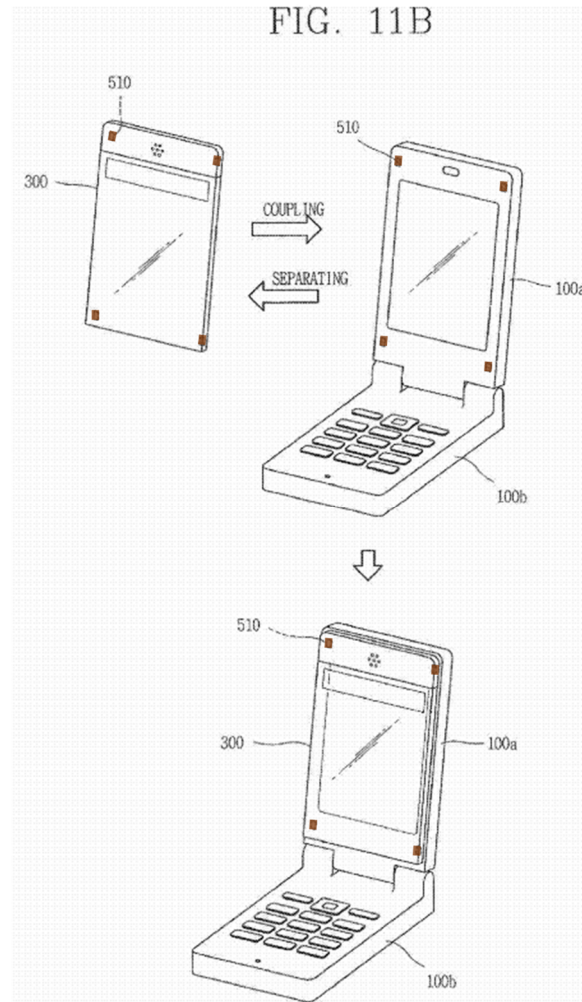
EX1010, FIG. 7.

Kim discloses the main device 100 including all the elements of the mobile terminal as described with respect to Figure 1, and additionally including a coupling unit, coupling detection unit, and a connection unit. *Id.*, ¶182. *Kim* also discloses configuring the sub-devices 300 “to include all the same elements as those of the main device.” *Id.*, ¶187. Thus, *Kim* discloses the main device and the sub-devices each including suitable combinations of components, hardware and/or functionality as disclosed, for example, in *Kim*’s various embodiments (including Figure 1). EX1002, ¶42-48.

Kim describes at least five types of main devices that structurally combine with at least one sub-device. For example, the main device can be a folder-type (*e.g.*, Figures 11A-11E), slide-type (*e.g.*, Figures 12A-12E), swivel-type (*e.g.*, Figures 13A-13D), a bar-type (*e.g.*, Figures 14A-14D), and/or a watch-type (*e.g.*, Figures 15A-15D). *Id.*, ¶210. In one embodiment, the folder-type main device is comprised of a first body 100a connected to a second body 100b such that they “may be folded or unfolded” and the sub-device 300 overlaps and couples to the first body 100a of the main device using coupling member 510.⁷ *Id.*, ¶¶217-218, FIG. 11B. *Kim*

⁷ Although Figure 11B and the accompanying discussion describe the sub-device 300 coupling to the first body 100a of the main device, *Kim* states that this is merely

further explains that the main device “may be folded or unfolded regardless of the coupling or separating of the sub-device.” *Id.*, ¶218.

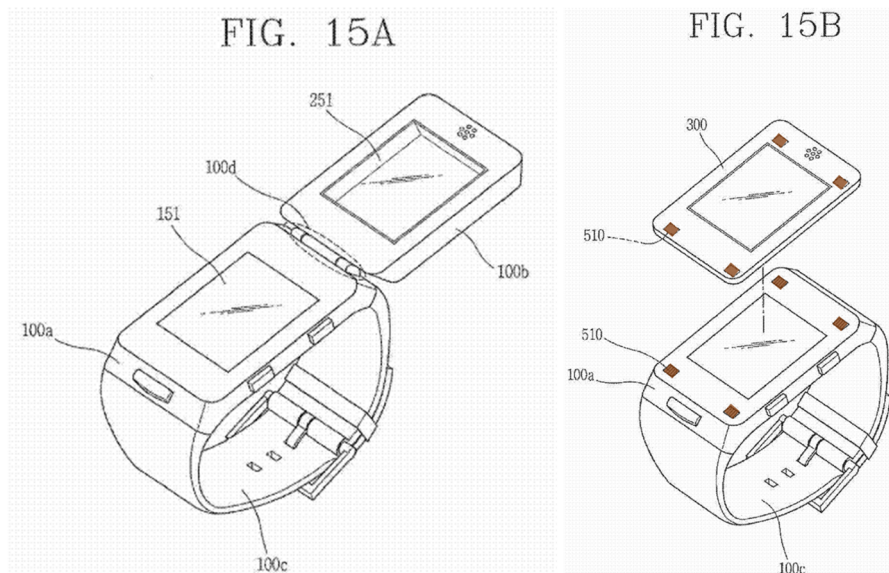


EX1010, FIG. 11B.

Kim explains that the coupling members 510 (brown), can be complementary recesses and hooks, or magnets. *Id.*, ¶¶218, 220.

“for ... brevity” and that the sub-device “may be overlapped to be coupled to [either] one of the first and second bodies” of the main device. *Id.*, ¶217.

Kim includes similar disclosures with respect to the watch-type embodiment of the main device. For example, *Kim*'s Figure 15A discloses a watch-type main device having a first body 100a and second body 100b that are connected and can be opened or closed in a manner similar to the embodiment shown in Figure 11B (EX1010, ¶256), and further discloses a sub-device 300 overlapping and coupling to either the first body or the second body as shown, for example, in Figure 15B (*id.*, ¶260).⁸

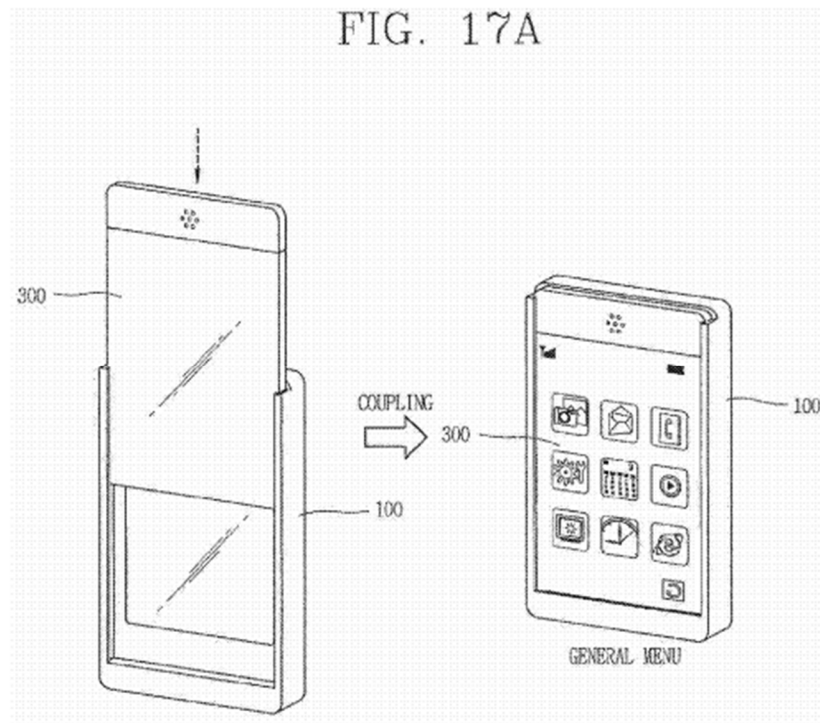


EX1010, FIGS. 15A, 15B.

⁸ Although Figure 15B shows the sub-device coupled to the body 100a and does not show the body 100b, *Kim* explains this is merely for the sake of brevity. See EX1010, ¶260 (“The method of coupling the sub-device in an overlapping manner to the second body will now be described for the sake of brevity.”).

Kim also discloses various functionality of the main device and the sub-device dependent on their coupling state. *Id.*, ¶¶267-268. In particular, *Kim* discloses that the main device and sub-device operate differently when coupled and uncoupled from each other. *Id.*, ¶¶270, 274 (“The controller 180 differently controls the operations (e.g., display) of the main device 100 and the sub-device 300 according to an engaged state.”). For example, *Kim* explains that “when the main device 100 and the sub-device 300 are engaged ..., the controller 180 displays a menu display method or menu items that can be conveniently manipulated ... upon detection of it.” *Id.*, ¶275. As illustrated in Figure 17A, for example,⁹ a screen is activated to display a specific menu when the sub-device is inserted and interacts with the main device:

⁹ Here *Kim* also explains that a “bar type mobile terminal [is] described as an example for the sake of brevity.” EX1010, ¶273.



EX1010, FIG. 17A.

Kim also explains that coupling and decoupling the sub-device from the main device turns the power to the display of the main device on and off. EX1010, ¶¶299-302, FIG. 24. *Kim* additionally discloses the sub-device turning the main device on or off through user interaction with the sub-device. *Id.*, ¶¶316-319, 417-418, FIGs. 27, 42.

VI. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art at the time of the alleged invention of the '020 patent ("POSITA"), which for purposes of this proceeding is no earlier than November 3, 2011, 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. The POSITA could have also obtained similar knowledge and experience through other means. EX1002, ¶¶21-22.

VII. CLAIM CONSTRUCTION

The claims should be construed “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b); *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Petitioner is unaware of any “prior claim construction determination” related to the ’020 patent. *See* 37 C.F.R. § 42.100(b).

The Board only construes the claims when necessary to resolve the underlying controversy in the IPR.¹⁰ *Toyota Motor Corp. v. Cellport Systems, Inc.*, IPR2015-

¹⁰ Petitioner understands that Samsung intends to argue in district court that “portable electronic device” means “portable electronic device having a view screen” or a substantially similar construction. While Petitioner does not intend to pursue this argument, the challenged claims are unpatentable in view of the grounds presented here regardless of whether the Board adopts such a construction. Petitioner reserves all rights to raise claim construction arguments in other proceedings. For example, comparing the claims to the accused products may raise controversies that require construction.

00633, Paper No. 11 at 16 (Aug. 14, 2015) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). Here, given the close correlation and substantial identity between the prior art references and the challenged claims, Petitioner believes that no express constructions of the claims are necessary to assess whether the prior art reads on the challenged claims.

VIII. DETAILED EXPLANATION OF GROUNDS

A. Ground 1: *Kim* Renders Obvious Claims 1-9, 11-15, and 19

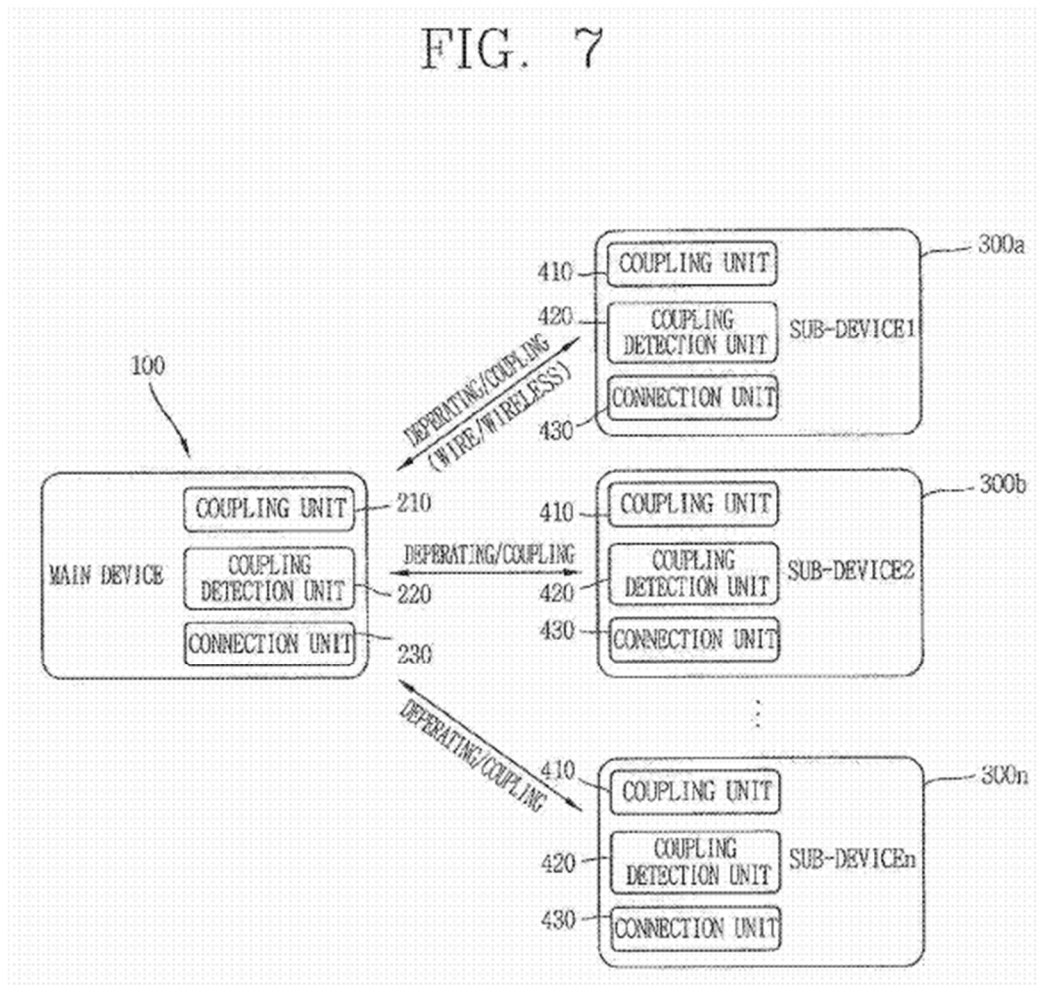
Ground 1 sets forth an obviousness ground based on the combination of *Kim*'s watch-type main device incorporating features described with respect to other embodiments.

1. Claim 1

a. "A system comprising:"

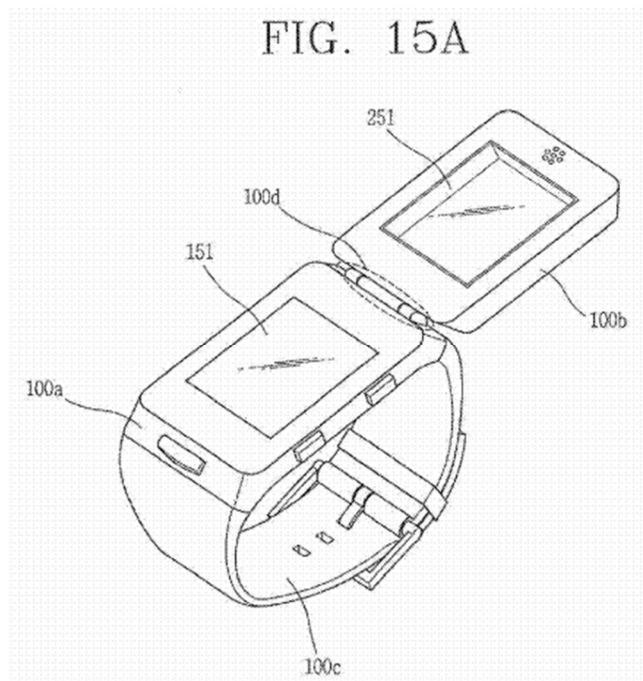
To the extent the preamble is limiting, *Kim* discloses this feature. EX1002, ¶¶81-97. For example, *Kim* discloses a mobile terminal comprising a main device and sub-device(s) detachably coupled to the main device. EX1010, ¶181, Claim 1; EX1002, ¶81. *Kim*'s Figure 7, reproduced below, illustrates this point by reference to main device 100 and sub-devices 300a to 300n:

FIG. 7



EX1010, FIG. 7.

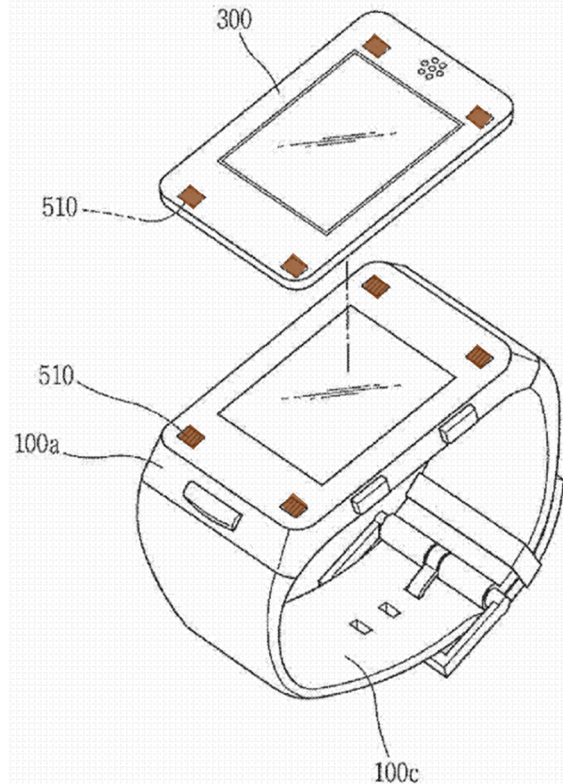
As discussed above in Section V.A, *Kim* teaches the main device having different form factors, including a folder-type main device or a watch-type main device. EX1010, ¶¶210-222, 255-262, FIGs. 11A-11E, 15A-15D; EX1002, ¶¶82-85. *Kim* discloses an embodiment of the watch-type main device having a first body 100a attached to a band part 100c, and a second body 100b attached to the first body 100a. The two bodies 100a and 100b are connected by hinge 100d so that the second body 100b can be opened or closed in a folding manner. EX1010, ¶256, FIG. 15A.



EX1010, FIG. 15A.

Kim additionally discloses a sub-device detachably coupling to such a watch-type main device. *Id.*, ¶¶260-261. Specifically, *Kim* discloses that “[a] method of ***coupling the third body (i.e., the sub-device)*** ... to one of the first and second bodies ***in a state that the first and second bodies are coupled*** will now be described.” *Id.*, ¶260, *see also id.* ¶217 (disclosing with respect to the similar folder-type embodiment of Figure 11B that a “third body may be ... coupled to one of the first and second bodies in a state that the first and second bodies are coupled.”). However, “for the sake of brevity,” the discussion that immediately follows with respect to Figure 15B relates to “coupling the sub-device in an overlapping manner to the second body.” *Id.*, ¶260.

FIG. 15B



EX1010, FIG. 15B

Kim teaches that “a coupling member 510 [annotated brown] for fixing the sub-device is provided on at least one side of the second body, and the sub-device may be adjusted to the position where the coupling member is formed, and pressed to be coupled.” *Id.*, ¶261.

Accordingly, a POSITA would have understood *Kim* to disclose an embodiment of the mobile terminal in which a watch-type main device comprises a 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 wherein the mobile terminal further comprises *a sub-device 300 detachably coupled to the second body 100b*. EX1002, ¶¶82-85. Below is a schematic representation of such a mobile terminal. *Id.*, ¶87. For ease of reference, Petitioner refers to the embodiment below as “Figure A” throughout this Petition.

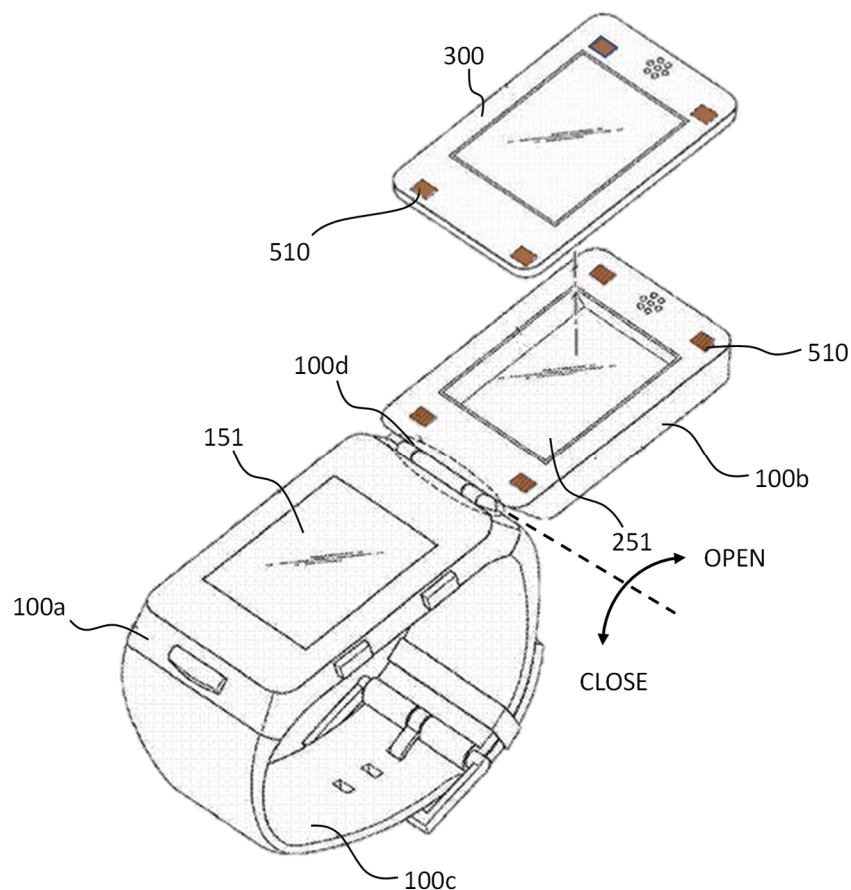
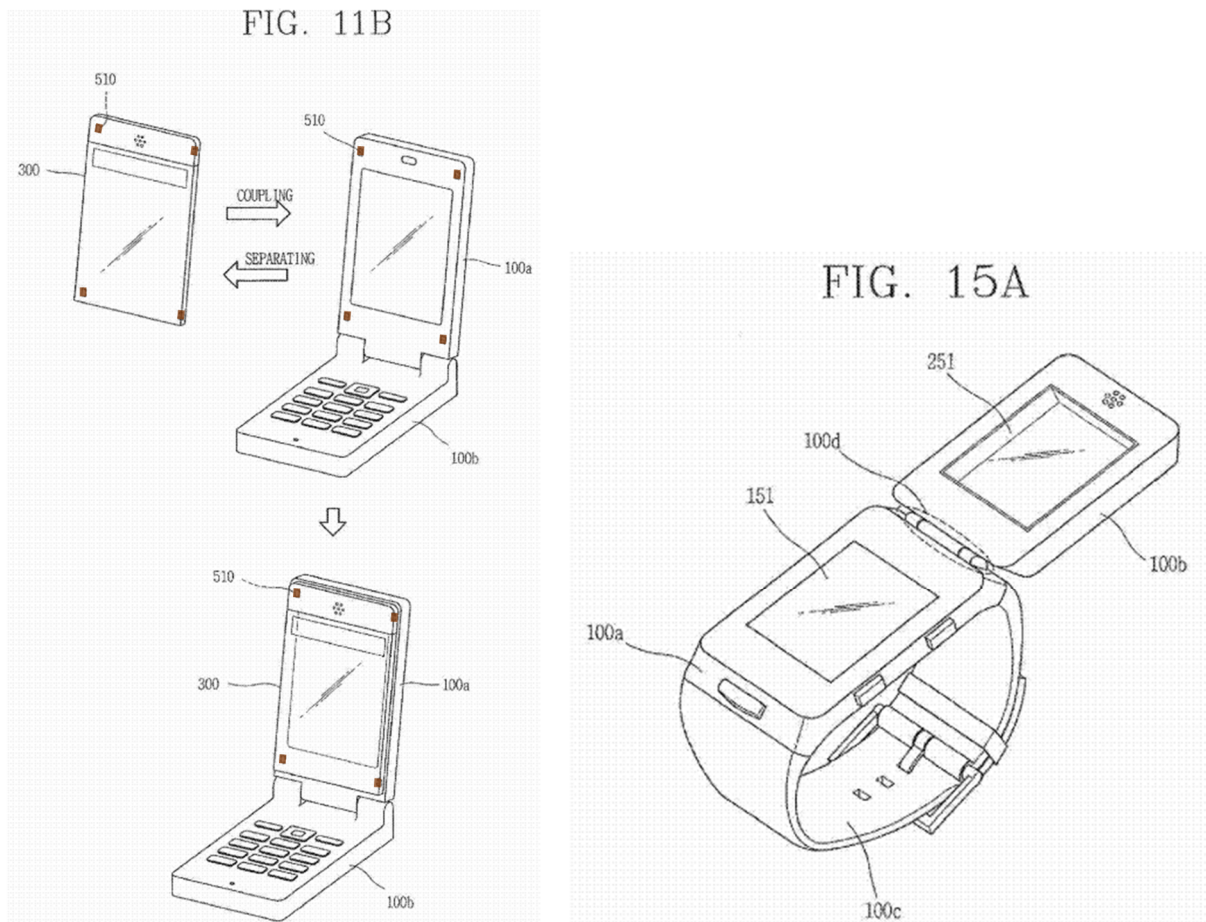


Figure A (based on *Kim*'s disclosure)

A POSITA would have understood that in the embodiment shown above, a sub-device 300 detachably couples to the main device's second body 100b through coupling members 510 (brown). *Kim* further discloses that coupling members 510

can be recesses/hooks or magnets. EX1010, ¶¶185, 218; EX1002, ¶¶86-88.

To the extent that PO argues that *Kim* does not disclose the embodiment shown in Figure A, such an embodiment would have been obvious to a POSITA in view of *Kim*'s disclosure. EX1002, ¶¶89-97. A POSITA would have recognized that the watch-type embodiment shown in Figures 15A is similar and closely related to the folder-type embodiments shown in Figures 11B. EX1002, ¶¶90-92.



EX1010, FIGS. 11B, 15A.

For example, in both embodiments the main device comprises 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. EX1002, ¶¶90-91. With respect to both embodiments, *Kim* discloses using coupling members 510 (which can be magnets) to detachably couple the sub-device to the main device. EX1010, ¶¶212, 218, 220, 261; EX1002, ¶¶90-91. *Kim* also provides similar disclosures regarding the structure and functionality the folder-type and watch-type embodiments. EX1002, ¶¶90-91.

A POSITA 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. EX1002, ¶92. Doing so would have been obvious to a POSITA because *Kim* itself suggests the modification. More particularly, *Kim* states that the embodiments it describes “may be used singly and/or by being combined together.” EX1010, ¶179. Having reviewed the embodiment disclosed in *Kim*'s Figure 11B, a POSITA 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. EX1002, ¶¶92-97.

The modification would have further been obvious to a POSITA. EX1002, ¶¶94-97. For example, they would have amounted to use of a known technique (coupling a sub-device to a folder-type main device having first and second bodies using coupling members) to improve a similar device (a watch-type main device

having two bodies that connect to each other in a folding manner) to obtain predictable results (detachably couple the sub-device to the main device's second body using coupling members). EX1002, ¶¶94-96.

Thus, at least because *Kim*'s mobile terminal is made up of a main device and a sub-device, a POSITA would have understood that the mobile terminal is a "system." EX1002, ¶¶81, 97. A POSITA would have further understood that one particular embodiment of such a system disclosed or suggested by *Kim* is a system in which a watch-type main device has first and second bodies connected by a hinge so that the first and second bodies can be opened or closed in a folding manner, with a sub-device detachably coupled to one of the two bodies of the main device using coupling members such as magnets or complementary recesses/hooks. EX1002, ¶¶87-88, 97.

b. "a portable switching device coupled to a portable electronic device; wherein:"

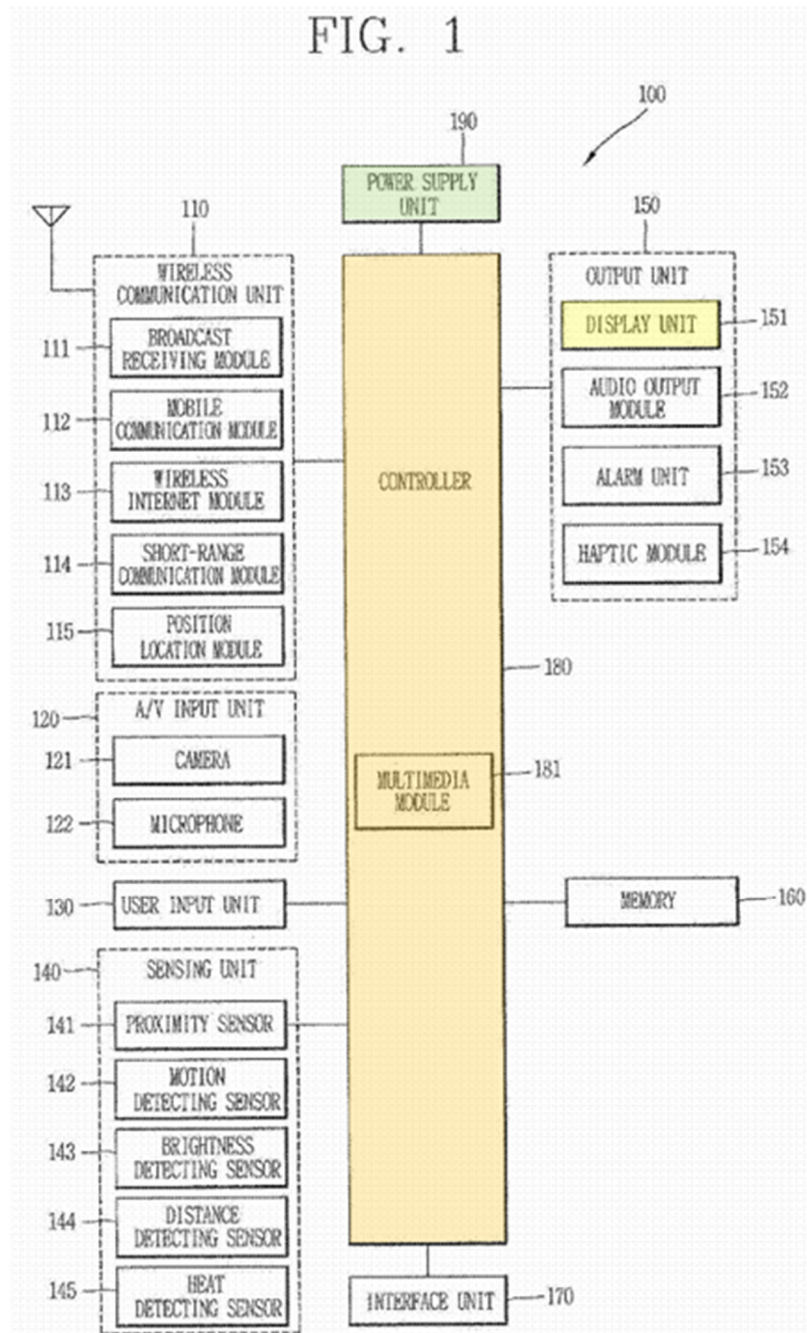
Kim discloses or suggests this feature. EX1002, ¶¶98-105. For example, *Kim* discloses detachably coupling a sub-device 300 to a main device 100. EX1010, ¶181; EX1002, ¶98.

As explained above in Section V.A, *Kim*'s disclosure focuses on *mobile* terminals such as mobile phones, smart phones, or portable multimedia players. EX1010, ¶¶69-70. *Kim* expressly discloses that a mobile terminal is a "portable

terminal.” *Id.*, ¶5. Additionally, a POSITA would have recognized that the watch-type main device and associated sub-device shown in Figure A was portable because it was designed to be worn on a user’s wrist. Thus, the mobile terminal and all of its components—the main device and sub-device—are “portable.” EX1002, ¶99.

Kim explains that the main device (“portable electronic device”) includes the same components as the mobile terminal described with reference to FIG. 1. EX1010, ¶182; *see* Section V.A (describing Figure 1). A POSITA would have understood that the components in Figure 1 (reproduced below), including at a minimum the display unit (yellow), controller (orange), and power supply unit (green), comprise electronic components and, thus, the main device is an “electronic device.” EX1002, ¶¶100-103; EX1010, ¶121 (explaining that the units can be implemented in hardware).

FIG. 1



EX1010, FIG. 1.

Kim discloses that the main device (“electronic device”) “may detect whether or not the sub-device 300 is coupled or separated Accordingly, when 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.”

EX1010, ¶¶195, 270 (describing controlling the sub-device’s state and operation based on its coupling status). Thus, a POSITA would have understood that the sub-device changes (“switches”) the state and/or operation of the main device based on whether the two are coupled. Accordingly, a POSITA would have recognized that the sub-device is a “portable switching device.” EX1002, ¶¶104-105.

- c. **“the switching device and the electronic device are configured to selectively couple to each other employing magnetic force from a first magnet disposed within the switching device;”**

Kim discloses or suggests this feature. EX1002, ¶¶106-120. For example, as noted above in Section V.A, *Kim* discloses that the sub-device (“switching device”) and the main device (“electronic device”) detachably couple (“are configured to selectively couple to each other”) by way of coupling members 510 which can be magnets (“employing magnetic force from a first magnet”). EX1010, ¶203; EX1002, ¶106.

PO may argue that the embodiment shown in Figure A above would not have used magnets to detachably couple the sub-device 300 to the second body 100b of the watch-type main device because *Kim* states, with respect to Figure 15B, that “coupling member 510 for fixing the sub-device” to the second body is “pressed to be coupled.” EX1010, ¶261. Such an argument is misplaced and should be rejected.

EX1002, ¶¶107-108

A POSITA would have recognized that *Kim* discloses that the coupling members 510 can be magnets or complementary recesses/hooks. EX1010, ¶¶203, 218, 220, 261; EX1002, ¶108. *Kim*'s reference to "pressing" to couple the sub-device to the main device is not inconsistent with the concept of using magnets. EX1010, ¶233. A POSITA would have understood that when two magnets (*e.g.*, one in the sub-device and another in the second body of the main device) having opposite polarities are pressed together, they will couple to each other through the application of magnetic force. *Id.*

Even if the Board were to conclude that the concept of "pressing" only encompasses mechanical coupling (*e.g.*, complementary recesses/hooks) and not magnetic coupling, it would have been obvious to a POSITA to use magnets as coupling members 510 in the embodiment shown in Figure A instead of or in addition to recesses/hooks. Making the modification would have been obvious because it would have amounted to substituting one known element (magnets) for another (recesses/hooks) to obtain predictable results (detachably coupling the sub-device to the main device.). EX1002, ¶109.

Additionally, *Kim* discloses with respect to the folder-type embodiment of Figures 11B and 11E using magnets or hooks/recesses as the coupling members 510. EX1010, ¶¶218, 220; EX1002, ¶¶110-111. As discussed above in Section

VIII.A.1.a, a POSITA would have recognized the similarity and applicability of the disclosures with respect to the folder-type embodiment of Figure 11B to the watch-type embodiments of Figures 15A-15B. EX1002, ¶110. Thus, the modification would also have been obvious as merely the use of a known technique (using magnets to couple the sub-device to the main device in the folder-type embodiment of Figure 11B) to improve similar devices (the watch-type main device shown in Figure A having a detachable sub-device) in the same way (to detachably couple the sub-device to the main device using magnets). EX1002, ¶112.

A POSITA would have had a reasonable expectation of success because *Kim* discloses that magnets were a known and effective technique for coupling a sub-device to a main device. EX1010, ¶203 (“[C]oupling members 510 such as 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.”); EX1002, ¶113.

A POSITA would have further recognized that in the watch-type embodiment shown in Figure A, the magnets (coupling members 510 annotated brown) would have been disposed “within” the sub-device (“switching device”) because they are shown to be in the sub-device and flush with the surface of the sub-device. EX1002, ¶114.

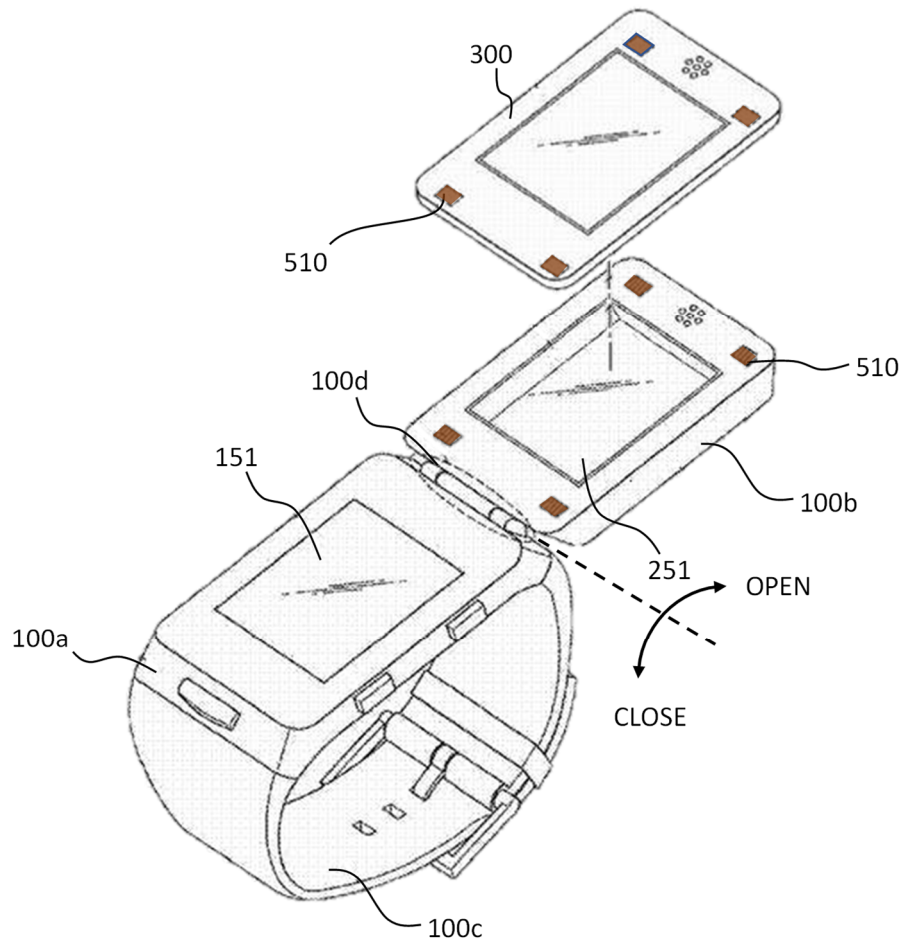


Figure A (based on *Kim*'s disclosure)

To the extent that PO argues that *Kim* does not explicitly state that the magnets are “within” the sub-device, a POSITA would have found it obvious to dispose the magnets “within” the sub-device 300 (“switching device”) and the second body 100b to conveniently attach the sub-device to the main device. EX1002, ¶¶115-120.

Disposing the magnets “within” the sub-device was one of two choices available to a POSITA—*i.e.*, disposed within or not within. EX1002, ¶116; *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“When there is a design need or

market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”); *Uber Techs., Inc. v. X One, Inc.*, 957 F.3d 1334, 1339-40 (Fed. Cir. 2020) (finding it obvious to substitute server-side plotting for terminal-side plotting because they were both well known in the art and were the only two identified, predictable solutions for transmitting a map and plotting locations). Moreover, the ’020 patent does not disclose any critical or unexpected results associated with having the magnets disposed within the switching device. EX1002, ¶116.

It would also have been a matter of obvious engineering choice for a POSITA to dispose the magnets within the sub-device and/or the main device’s second body, for example, to reduce the profile of the joined components and allow a flush interface between the sub-device and the main device, thereby reducing the space that the combined devices occupy and reducing the risk of the sub-device detaching from the main device. EX1002, ¶117. Indeed, it was known to a POSITA to use this known technique (*i.e.*, disposing magnets within an electronic device) to create a flush interface between magnetically coupled components. EX1002, ¶¶118-119

(citing EX1015, ¶307).¹¹ Thus, disposing the magnets within the sub-device would have been the application of a known technique (disposing magnets within a device) to a known device (the sub-device) to yield a predictable result (incorporating a magnet within a sub-device). EX1002, ¶120.

d. “the switching device comprises a first case;”

Kim discloses or suggests this feature. EX1002, ¶¶121-124. For example, *Kim* discloses the sub-device 300 including a frame 303 surrounding the outer edges of the body 302 and the display unit 251 to improve firmness. EX1010, ¶199. A

¹¹ To the extent that EX1015 (*Terlizzi*), EX1016 (*Kiessling*), EX1017 (*Viinikanoja*), EX1018 (*Birger*), EX1019 (*Yamazaki*), EX1020 (*Yoshida*), EX1021 (*Griffin*), EX2022 (*Lylyharju*), EX1023 (Dictionary of Chemistry), EX1028 (Bluetooth Hands-Free Profile) or EX1029 (Bluetooth Audio/Video Remote Control Profile) are cited in this Petition, it is merely to demonstrate a POSITA’s knowledge and/or as evidence that a POSITA would have been motivated to make the combinations in the manner discussed in this Petition. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007) (“[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.”). These exhibits are not part of the unpatentability grounds.

POSITA would have understood the “frame” to be a case because, just like a case, a frame also protects the components of the device. EX1002, ¶¶121-122; *see also* EX1001, 5:65-6:3 (describing “case” broadly).

To the extent that PO argues that *Kim* does not sufficiently disclose or suggest the sub-device (“switching device”) having a case, it would have been obvious as well as common sense to a POSITA to include a case to protect the components of the sub-device. EX1002, ¶¶123-124; *see also B/E Aerospace, Inc. v. C&D Zodiac, Inc.*, 962 F.3d 1373, 1380-81 (Fed. Cir. 2020) (finding “no error in the Board’s conclusion that a skilled artisan would have used common sense to incorporate a second recess” because the technology was “simple” and it merely repeated an existing element). *Kim* discloses the main device having a case (*see infra* Section VIII.A.1.e), and the sub-device comprising the same components as the main device (EX1010, ¶187). It would have been a matter of common sense to use a case, as does the main device, to enclose such components so as to hold the components in a discrete mobile form factor as well as to protect them against physical damage. EX1002, ¶124.

- e. **“the electronic device comprises a second case and an electronic circuit that is responsive to the switching device;”**

Kim discloses this feature. EX1002, ¶¶125-127. For example, in the watch-type embodiment shown in Figure A (*see* Section VIII.A.1.a), the mobile terminal

comprises a watch-type main device (“electronic device”) having first body 100a and second body 100b. *Kim* further discloses “the body” of the mobile terminal (*e.g.*, first body 100a and second body 100b of the watch-type embodiment shown in Figure A) having “a case (casing, housing, cover, etc.) that forms an exterior of the terminal. The case may be divided into a front case 101 and a rear case 102. Various electric/electronic parts may be provided in a space between the front case 101 and the rear case 102.” EX1010, ¶¶124-125. Accordingly, a POSITA would have understood *Kim* to disclose that the first body 100a and second body 100b of the watch-type embodiment shown in Figure A comprise a case. EX1002, ¶125.

Kim also discloses that the main device (“electronic device”) comprises an electronic circuit that is “responsive” to the sub-device (“switching device”). EX1002, ¶126. As explained in Section VIII.A.1.b, *Kim* discloses the main device including the same components as in Figure 1, including a display, a controller, and power supply, and that they can be implemented in hardware. A POSITA would have understood that these components comprise electronic circuits. *Id.*

Kim further discloses that, in operation the sub-device controls the electronic circuits of the main device. EX1002, ¶127. For example, *Kim* discloses the main device changing its state and/or operation based on whether the sub-device is coupled to the main device (*e.g.*, turning the main device’s display on or off). EX1010, ¶¶299-302, FIG. 24. *Kim* also discloses the sub-device turning the main

device on or off through user interaction with the sub-device. EX1010, ¶¶316-319, 417-418, FIGs. 27, 42. Accordingly, *Kim* discloses a main device (“electronic device”) having electronic circuit components such as a display, controller, power supply, etc. (“comprises ... an electronic circuit”) whose state and/or operation are changed by (“responsive to”) the sub-device (“switching device”). EX1002, ¶127.

- 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 complementary surface elements on the switching device;”**

Kim discloses or suggests this feature. EX1002, ¶¶128-143. For example, *Kim* discloses the main device (“electronic device”) having coupling unit 210 “configured to mechanically couple the main device and the sub-devices.” EX1010, ¶183. The coupling unit “may be changed in various structures (or configurations) according to types ... of mobile terminals.” *Id.*, ¶185. Likewise, *Kim* teaches the sub-device (“switching device”) including a coupling unit 410 “configured in a structure (or configuration) corresponding to the coupling unit 210 of the main device.” *Id.*, ¶186.

As discussed above in Sections VIII.A.1.a and VIII.A.1.c, with respect to the embodiment shown in Figure A, *Kim* discloses or suggests detachably coupling the sub-device (“switching device”) to the main device (“electronic device”) using

magnets as the coupling members 510. However, *Kim* also discloses that the coupling members 510 can be complementary recesses/hooks on the main device and the sub-device. EX1010, ¶218 (“[F]or example, a recess or a hook is formed at one side of the first body of the main device, and the third body [*i.e.*, sub-device] 300 may be coupled by using the recess or the hook.”). Although this discussion is with respect to the embodiment of Figure 11B, as discussed above in Section VIII.A.1.a, a POSITA would have recognized that the disclosures with respect to Figure 11B could be adapted and applied to the watch-type embodiment shown in Figure A. EX1002, ¶130.

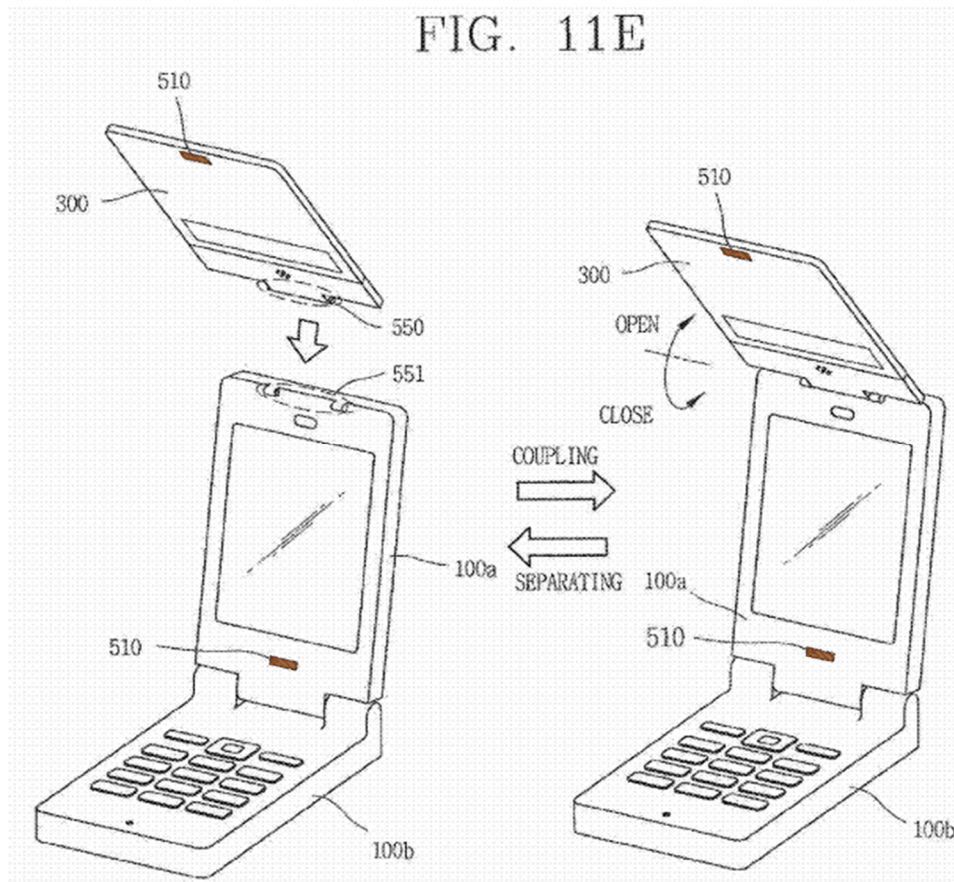
Kim discloses that when recesses/hooks are used, one feature (*e.g.*, hooks) is on the sub-device and the corresponding feature (*e.g.*, recesses) is on the main device. EX1010, ¶218. A POSITA would have understood that to engage with the hooks on the sub-device, the recesses in the main device would have to be configured to correspond to the hooks on the sub-device (“configured to correspond to complementary surface elements on the switching device”). EX1002, ¶131.

A POSITA 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 more secure coupling between the two components with less propensity for accidental or unintentional detachment of the sub-device from the main device.

EX1002, ¶132. Indeed, it was known to use both magnetic and mechanical attachment techniques to achieve a more secure (yet still detachable) coupling between two devices in an electronic system. EX1002, ¶¶132-139 (citing EX1018, 10:26-11:2; EX1012, ¶¶19, 46-48).¹²

Indeed, *Kim* itself suggests incorporating multiple coupling techniques to connect a sub-device to a main device. For example, *Kim* discloses an embodiment with respect to Figure 11E (folder-type main device reproduced below) in which the sub-device is detachably coupled to the main device using both hinge parts 550/551, as well as coupling members 510 (brown), which *Kim* teaches can be magnets. EX1010, ¶220; EX1002, ¶140-142.

¹² With respect to *Birger*, see footnote 11. While Ground 2 argues that claim 10 is obvious over *Kim* in view of *Koh*, *Koh* is being used here as evidence to demonstrate a POSITA's general knowledge. *Koh* is not part of Ground 1.



EX1010, FIG. 11E.

Thus, *Kim* confirms what a POSITA knew—using multiple techniques (mechanical and magnetic) to couple a sub-device to a main device to achieve a more secure coupling. EX1002, ¶142. And as already noted, a POSITA would have recognized that the disclosures with respect to the folder-type embodiment (*e.g.*, Figure 11E) could be adapted and applied to the watch-type embodiment shown in Figure A. *Id.*; see Section VIII.A.1.a.

Accordingly, it would have been obvious to modify the watch-type embodiment shown in Figure A to incorporate recesses into the main device

(“electronic device comprises at least one element selected from the group consisting of ... recessed areas”) that engage hooks on the sub-device (“configured to correspond to complementary surface elements on the switching device”). EX1002, ¶143. Doing so would have amounted to no more than combining prior art elements (magnetic coupling and mechanical coupling) according to known methods (as was known to a POSITA) to yield predictable results (a more secure, but still detachable coupling between the sub-device and the main device). *Id.*

g. “the portable switching device is configured to activate, deactivate or send into hibernation the portable electronic device; and”

Kim discloses this feature. EX1002, ¶¶144-151. As discussed in Sections VIII.A.1.b and VIII.A.1.e, *Kim* discloses the sub-device (“portable switching device”) changing the state and/or operation of the main device (“portable electronic device”).

For example, *Kim* discloses the main device “detect[ing] the coupling and separating (i.e. coupling or de-coupling) of the two devices 100 and 300 and control[ing] the power supply to the display of the main device 100 to turn it on or

off.”¹³ *Id.*, ¶300. *Kim* discloses that when the two devices are separated, power to the main device display is turned off, and when they are coupled, power is turned on. *Id.*, ¶¶301-302, FIG. 24; EX1002, ¶¶145-147. *Kim* also discloses the sub-device controlling the main device’s power (*e.g.*, turning the main device on or off) through user interaction with the sub-device. EX1010, ¶¶316-319, 416-418, FIGs. 27, 42; EX1002, ¶¶148-149. Accordingly, a POSITA would have understood *Kim* to disclose or suggest the sub-device (“the portable switching device”) powering or turning off (*e.g.*, its display or power supply) (“is configured to activate, deactivate . . .”) the main device (“the portable electronic device”). EX1002, ¶¶150-151.

h. “when coupled, the second case functions to protect the first case.”

Kim discloses or suggests this feature. EX1002, ¶¶152-155. As discussed above in Section VIII.A.1.a, *Kim* discloses or suggests the embodiment shown in Figure A (reproduced again below) in which a sub-device 300 detachably couples to the watch-type main device’s second body 100b.

¹³ Although this disclosure is with regard to a bar-type mobile terminal, a POSITA would have understood that the functionality described with respect to Figure 24 is equally applicable to watch-type mobile terminals. EX1002, ¶147.

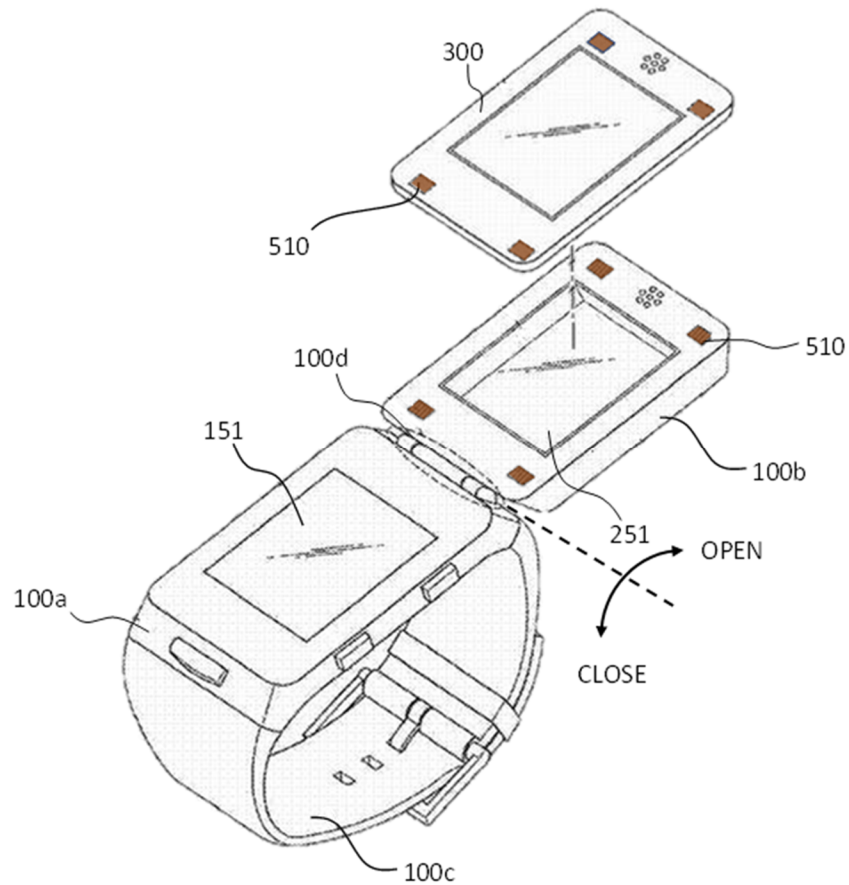


Figure A (based on *Kim*'s disclosure)

In such an embodiment, the second body 100b and first body 100a are connected by a hinge 100d so that the first and second bodies can be opened or closed in a folding manner. EX1010, ¶256; EX1002, ¶153. *Kim* discloses that the main device's first and second bodies can close even when the sub-device 300 is coupled to the second body 100b. EX1010, ¶218 (“[T]he first body 100a and the second body 100b may be folded or unfolded regardless of the coupling or separating of the sub device.”).

In the embodiment shown in Figure A, the main device's first body 100a and second body 100b comprise a case (“second case”) (*see* Section VIII.A.1.e), and the

sub-device 300 also comprises a case (“first case”) (*see* Section VIII.A.1.d). A POSITA would have recognized that when the sub-device 300 is coupled to the second body 100b and the second body is folded to cover the first body 100a (“when coupled”), the first body 100a’s and the second body 100b’s case (“second case”) encloses and protects (“functions to protect”) the sub-device’s case (“first case”). EX1002, ¶¶154-155; *see also* EX1010, ¶185 (disclosing that when the sub-device is attached to the main device, the sub-device is fixed “such that the sub-devices are *not* moved, *shattered* or released after being coupled at accurate positions”), ¶193 (“In addition, a cover may be provided to prevent the sub-device from being separated undesirably after it is coupled.”).

2. Claim 2

a. “The system of claim 1 wherein the electronic device has a lens.”

Kim discloses or suggests this feature. EX1002, ¶¶156-160. For example, *Kim* discloses the main device having “an audio/video (A/V) input unit 120” (*id.*, ¶72), including a camera 121, (*id.*, ¶84). A POSITA would have understood cameras suitable for incorporating into portable consumer electronic devices of the type disclosed in *Kim* to include a lens. EX1002, ¶¶156-160 (citing, *e.g.*, EX1016, ¶34;

EX1017, Abstract; EX1019, 1:7-11).¹⁴ Accordingly, *Kim* discloses or suggests the main device (“electronic device”) including a lens. EX1002, ¶160.

3. Claim 3

a. “The system of claim 1 wherein the electronic device has a view screen.”

Kim discloses or suggests this feature. EX1002, ¶¶161-162. For example, *Kim* discloses the main device (“electronic device”) having one or more display units. EX1010, ¶¶96, 127-128, 182, 256-257. A POSITA would also have understood that the display unit is a “view screen” because a display unit displays information that can be viewed by a user. EX1010, ¶257 (“Each display may operate as a main display or a sub-display, and different information may be displayed on each display unit as the second body is open or closed.”); EX1002, ¶162.

4. Claim 4

a. The system of claim 1 wherein the switching device has a lens.”

Kim discloses or suggests this feature. EX1002, ¶¶163-165. For example, *Kim* discloses the sub-device (“switching device”) including a camera. EX1010, ¶¶84200. A POSITA would have understood cameras suitable for incorporating into portable consumer electronic devices of the type disclosed in *Kim* to include a lens.

¹⁴ See footnote 11.

EX1002, ¶164 (citing, *e.g.*, EX1016, ¶34; EX1017, Abstract; EX1019, 1:7-11).¹⁵

Accordingly, *Kim* discloses or suggests the sub-device (“switching device”) including a lens. EX1002, ¶165.

5. Claim 5

- a. “The system of claim 1 wherein the switching device has a view screen.”**

Kim discloses or suggests this feature. EX1002, ¶¶166-168. For example, *Kim* discloses the sub-device having the same components as the main device, such as display unit 251. EX1010, ¶198. *Kim*’s figures also include multiple embodiments of the sub-device having a display 251. *See, e.g., id.*, FIGs. 9A-9C; EX1002, ¶167. For the reasons discussed above in Section VIII.A.3.a, a POSITA would have understood that the sub-device’s display unit is a “view screen.” EX1002, ¶168.

6. Claim 6

- a. “The system of claim 1 wherein the electronic device includes a lid and hinge attaching the lid to the electronic device.”**

Kim discloses or suggests this feature. EX1002, ¶¶169-177. As discussed above in Section VIII.A.1.a, *Kim* discloses or suggests the watch-type embodiment as shown below:

¹⁵ *See* footnote 11.

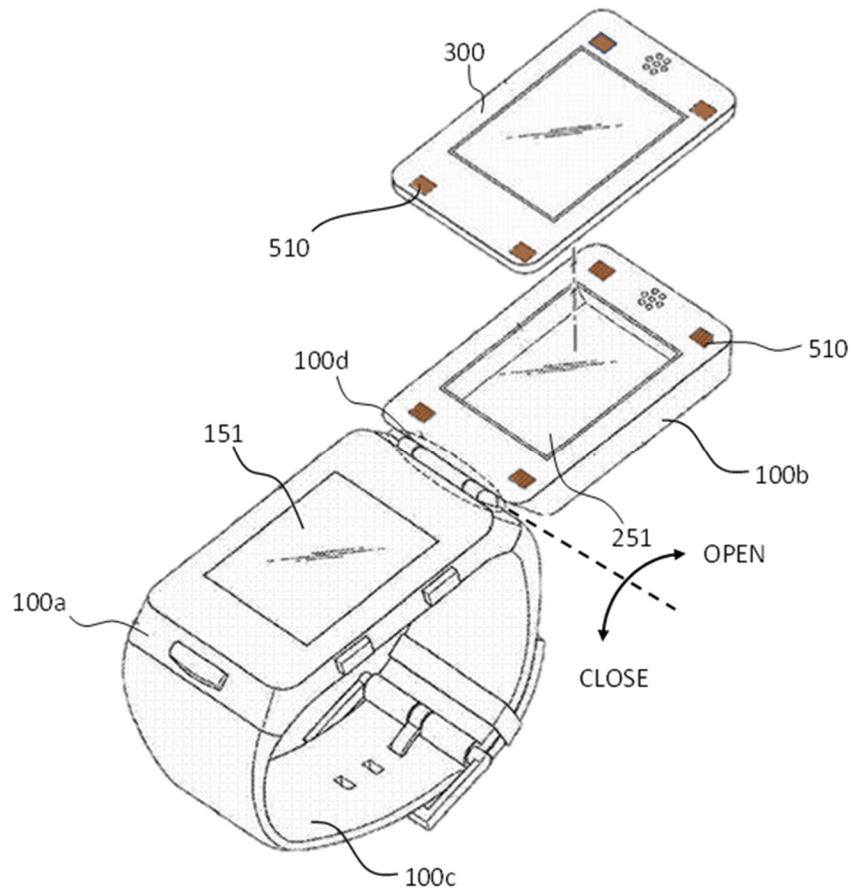


Figure A (based on *Kim*'s disclosure)

A POSITA would have understood the second body 100b is commonly referred to as a “lid.” EX1002, ¶¶169-174 (explaining that POSITA commonly referred to the cover of a folding-type or flip-type electronic device as a “lid”) (citing, *e.g.*, EX1020, 12:58-65, FIG. 13; EX1021, ¶¶2-3, 37; EX1022, Abstract, ¶24, FIG. 1).¹⁶

Accordingly, *Kim* discloses a watch-type main device (“electronic device”) including a second body 100b that acts as a cover for the first body 100a (“lid”), and

¹⁶ See footnote 11.

that the second body 100b is connected to the watch-type main device by hinge 100d (“hinge attaching the lid to the electronic device.”). EX1002, ¶175.

7. Claim 7

- a. “The system of claim 6 wherein the lid is recessed to configure to the switching device.”**

Kim discloses or suggests this feature. EX1002, ¶¶176-180.

As explained above in Section VIII.A.1.a, *Kim* discloses or suggests a system comprising a sub-device 300 detachably coupled to the second body 100b of a watch-type main device using coupling members 510 (*e.g.*, recesses/hooks). As also explained above in Section VIII.A.1.f, *Kim* discloses incorporating recesses into the second body 100b and hooks into the sub-device 300 to detachably couple the two. And for the reasons explained above in Section VIII.A.6, a POSITA would have understood the second body 100b in the embodiment shown in Figure A to be the “lid.” Accordingly, *Kim* discloses or suggests the second body 100b (“lid”) having recesses (“is recessed”) configured to engage with the hooks on the sub-device 300 (“to configure to the switching device”). EX1002, ¶177.

Additionally, it would have been obvious to a POSITA to incorporate a recess in the second body 100b of the main device shown in Figure A that generally conforms to the shape of and receives the sub-device 300 in a manner similar to that disclosed in *Kim*’s Figure 10A. EX1010, ¶203 (disclosing that the main device

having a “recess 520 corresponding to the shape and size of the sub-device”), FIG. 10A; EX1002, ¶178-180.

8. Claim 8

- a. “The system of claim 6 wherein the lid has a second magnet disposed within it.”**

Kim discloses or suggests this feature. EX1002, ¶181. As explained in Sections VIII.A.1.a and VIII.A.1.c, *Kim* discloses or suggests the watch-type embodiment shown in Figure A having a second body 100b that includes magnets for coupling the sub-device 300 to the second body. A POSITA would have understood the second body 100b to be a lid. *See* Section VIII.A.6.a. Accordingly, *Kim* discloses or suggests a watch-type main device having a second body 100b (“lid”) having magnets (“a second magnet disposed within it”). EX1002, ¶181.

9. Claim 9

- a. “The system of claim 8 wherein the lid is configured to employ the second magnet to secure the lid in a closed position.”**

Kim discloses or suggests this feature. EX1002, ¶¶182-192.

As explained above in Sections VIII.A.1.a, VIII.A.6.a and VIII.A.8.a, *Kim* discloses or suggests a watch-type main device having a second body 100b (“lid”) including magnets (“magnets disposed within it”). *Kim* further describes that the first and second bodies of the watch-type main device can be in an open or closed

position with respect to each other. EX1010, ¶256; *see also id.*, ¶218; EX1002, ¶183.

In the watch-type embodiment shown in Figure A, it would have been obvious to a POSITA to use one or more of the magnets in the second body 100b to secure the second body 100b (“lid”) in a closed position with respect to the first body 100a. Doing so would have prevented the lid from unintentionally opening, for example, from movement of a user’s arm. EX1002, ¶184. Using one or more magnets in the lid of a folder-type portable electronic device to secure the lid in a closed position was a technique that was well-known to a POSITA. EX1002, ¶¶184-185 (citing, e.g., EX1021, ¶¶82, 88).¹⁷

Kim itself also discloses this technique for securing a first body that is in a folding-type relationship to a second body. More particularly, *Kim* discloses (and illustrates in connection with Figure 11E) that when the sub-device is connected to the main device by hinges, “coupling members 510 may be additionally provided to prevent the [sub-device] from being moved after it is folded.” EX1010, ¶220; EX1002, ¶186.

¹⁷ *See* footnote 11.

technique (using a magnet to secure a lid in a closed position) to improve similar devices (the watch-type embodiment shown in Figure A in which the first and second bodies can be folded into a closed position) in the same way (securing the second body to the first body in a closed position using a magnet). EX1002, ¶190.

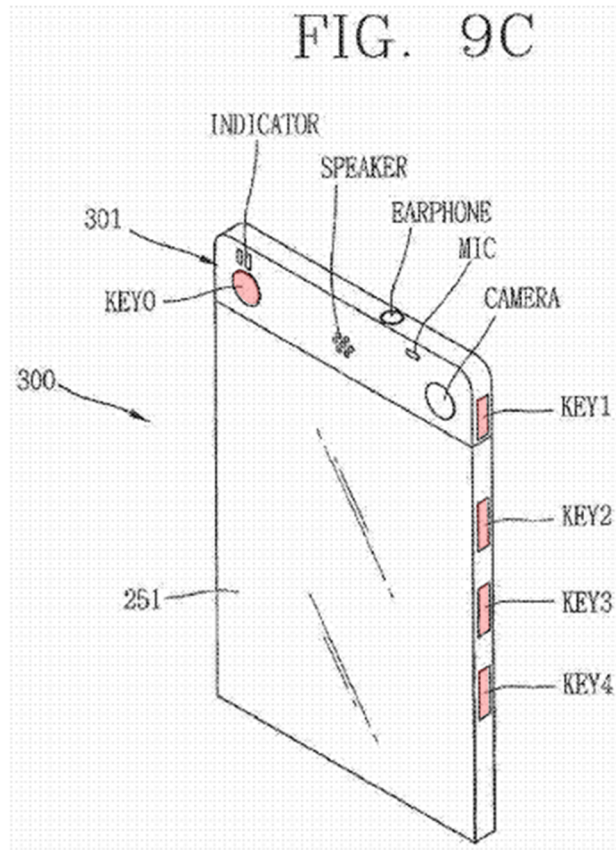
Notably claim 9 does not require that the sub-device (“switching device”) is coupled to the main device when the “lid” is secured in the closed position. A POSITA would have understood that the main device of the watch-type embodiment shown in Figure A can close or open regardless of whether the sub-device 300 is coupled to the main device. EX1002, ¶191. Thus, a POSITA would have understood that at least when the sub-device 300 is not coupled to the main device, a magnet in the second body 100b (“lid”) interacts with the first body 100a (e.g., an opposite polarity magnet or a magnetically attractable surface in the first body 100a) to secure the second body 100b in a closed position. EX1002, ¶192.

10. Claim 11

- a. “The system of claim 1 wherein the switching device has a tab or knob configured to be manipulated by an external force.”**

Kim discloses or suggests this feature. EX1002, ¶¶193-195. For example, *Kim* discloses that “the sub-device may include function keys ... on its front side or its side portion.” EX1010, ¶200. A user manipulates the function keys to perform certain functions on the sub-device. *Id.*; EX1002, ¶193. Annotated Figure 9C shows

these function keys (red) labeled as KEY0 through KEY4:



EX1010, FIG. 9C.

Kim further discloses that a user input unit (e.g., function keys KEY0 through KEY4) “may adopt any mechanism of a tactile manner that enables a user to perform a manipulation action by experiencing a tactile feeling.” EX1010, ¶129; EX1002, ¶194. For example, *Kim* discloses the mobile terminal including “a jog wheel and/or jog switch.” EX1010, ¶87.

Accordingly, Kim discloses or suggests the sub-device (“switching device”) having keys (“tab or knob”) that can be manipulated by a user (“configured to be manipulated by an external force”). EX1002, ¶195.

11. Claims 12, 13, 14, and 15

- a. Claim 12: “The system of claim 2 wherein a surface of the first case is composed of a material nonabrasive to the lens.”**
- b. Claim 13: “The system of claim 3 wherein a surface of the first case is composed of a material nonabrasive to the view screen.”**
- c. Claim 14: “The system of claim 4 wherein a surface of the first case is composed of a material nonabrasive to the lens.”**
- d. Claim 15: “The system of claim 5 wherein a surface of the first case is composed of a material nonabrasive to the view screen.”**

Kim discloses or suggests the features in each of claims 12 to 15. EX1002, ¶196-201.

Kim is directed to a mobile terminal comprising a main device and a sub-device that detachably coupled to each other. EX1002, ¶197. As discussed above in Sections VIII.A.1.d and VIII.A.1.e, *Kim* discloses or suggests that each of the sub-device and the main device comprise a case to enclose and/or protect their respective electronic components. *Kim* discloses such cases “may be formed by injection molding of synthetic resin or may be formed of metal substance such as stainless

steel (STS), titanium (ti) or the like.” EX1010, ¶126. A POSITA would have understood synthetic resin to be used to make various forms of plastics. EX1002, ¶197, (citing EX1023, 3, 5).¹⁸

A POSITA would also have understood that plastic and metal substances are material that can be used to form surfaces that are non-abrasive to the lens/view screen. Indeed, these materials are the same ones the '021 patent identifies as suitable for making non-abrasive surfaces. EX1001, 6:5-8 (“protective cases, often made of ... rigid are [sic] flexible plastic, that serve to prevent scratches and blemishes”), 16:5-14 (making switch/cleaner from “plastic or even metal.”). Thus, *Kim* discloses making the main device’s case (“surface of the first case”) using plastic or metal which are the same materials identified in the '021 patent for making surfaces non-abrasive to the lens/view screen (“is composed of a material non-abrasive to the [lens/view screen]”). EX1002, ¶198.

12. Claim 19

- a. **“The system of claim 1 wherein the switching device can be employed to perform at least one function selected from the group consisting of: control volume, pause, play, next slide, switch on, switch off, and combinations thereof; to an electronic device.”**

Kim discloses this feature. EX1002, ¶202. As discussed above in Sections

¹⁸ See footnote 11.

VIII.A.1.e and VIII.A.1.g, *Kim* discloses a system in which the sub-device (“switching device”) turns on and off the main device (“electronic device”) based on the two devices’ coupling status or based on a user manipulating the sub-device. Accordingly, *Kim* discloses the sub-device (“switching device”) turning on or off (“can be employed to perform at least one function selected from the group consisting of ... switch on, switch off”) the main device (“electronic device”). EX1002, ¶202.

B. Ground 2: *Kim* and *Koh* Render Obvious Claim 10

1. Claim 10

- a. “The system of claim 1 wherein the switching device is wireless earplugs.”**

Kim in combination with *Koh* discloses or suggests this feature. EX1002, ¶¶203-234.

As explained above in Section VIII.A.1.a, *Kim* discloses or suggests a system comprising a sub-device detachably coupled to the second body 100b of a watch-type main device using coupling members 510 (brown), as shown below:

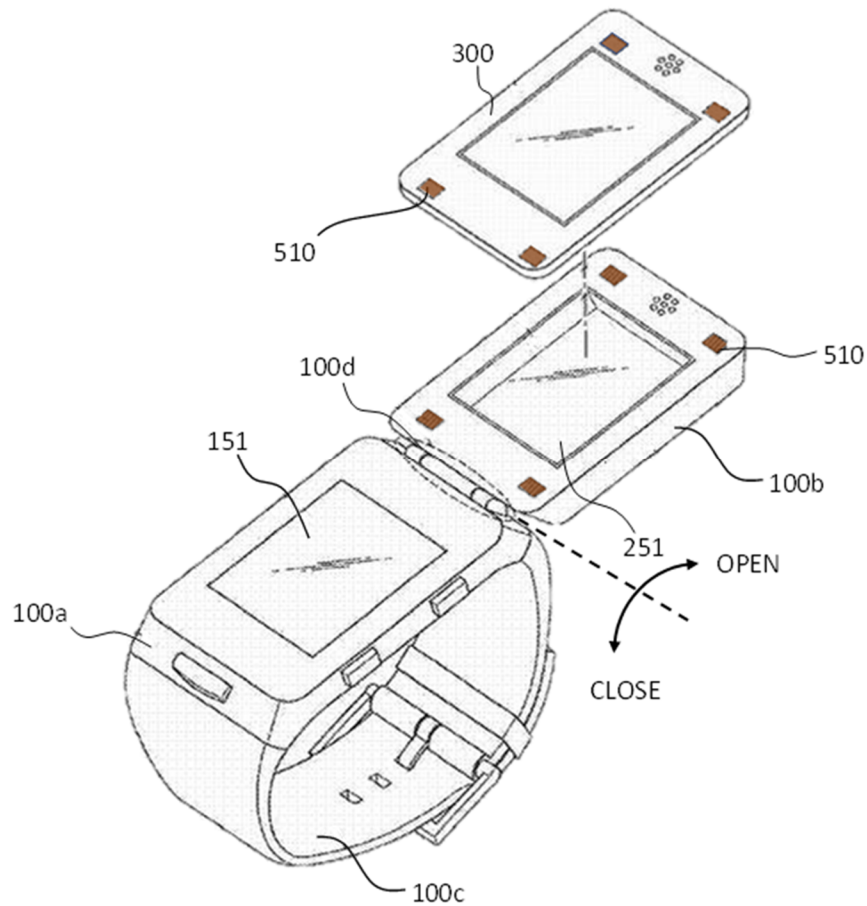
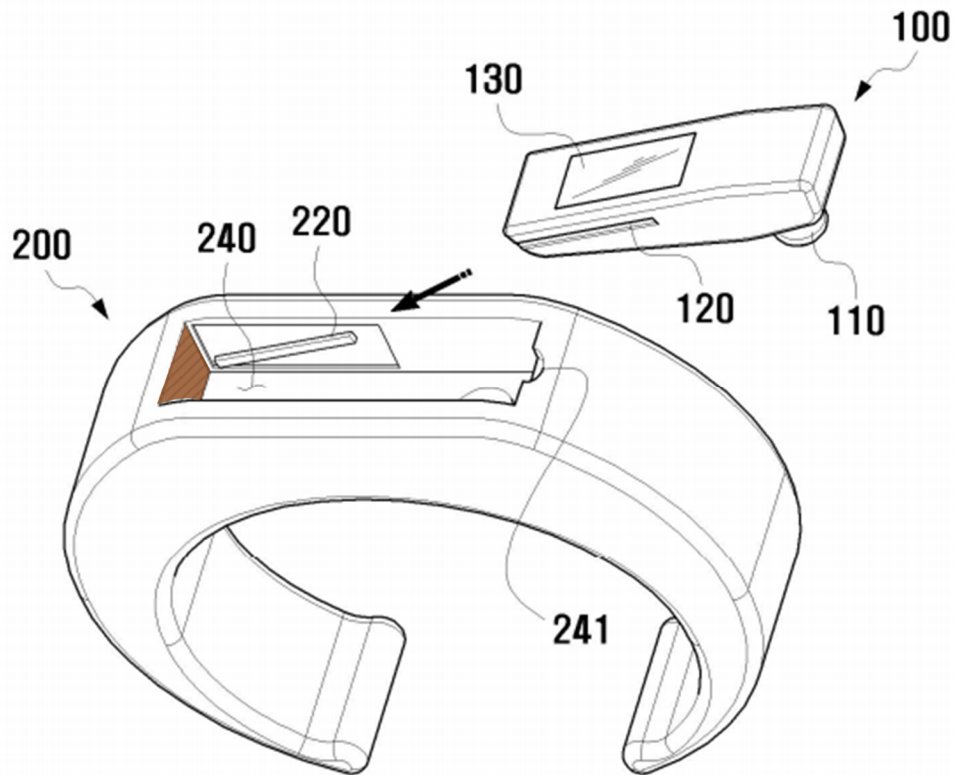


Figure A (based on *Kim*'s disclosure)

Kim further discloses configuring sub-device 300 (“switching device”) “in one of various 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.” *Id.*, ¶¶194, 445 (“[T]he second body 300 may be used as a Bluetooth headset.”); *see also id.*, ¶266; EX1002, ¶¶209-211. Finally, *Kim* discloses detachably coupling one or more sub-devices to the main device. EX1010, ¶181.

Accordingly, a POSITA would have understood *Kim* to disclose or suggest an embodiment of the mobile terminal in which a watch-type main device comprises a first body 100a and a second body 100b connected to each other by hinge 100d so that the two bodies can be opened or closed in a folding manner, 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. EX1002, ¶¶212-213. *Kim*, however, does not include a discussion of example techniques for coupling wireless earphone/headset sub-devices with a watch-type device.

Koh discloses “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.” EX1012, ¶12. In one embodiment, *Koh* describes the “portable electronic device module” as a wireless headset (*id.*, ¶27), using Bluetooth (*id.*, ¶29), and that the “electronic device storage unit 200 comprises a fastening unit to be worn on a user’s wrist” (*id.*, ¶36). Figure 4A, reproduced below, shows the wireless headset 100 as it is to be coupled into the storage unit 200:

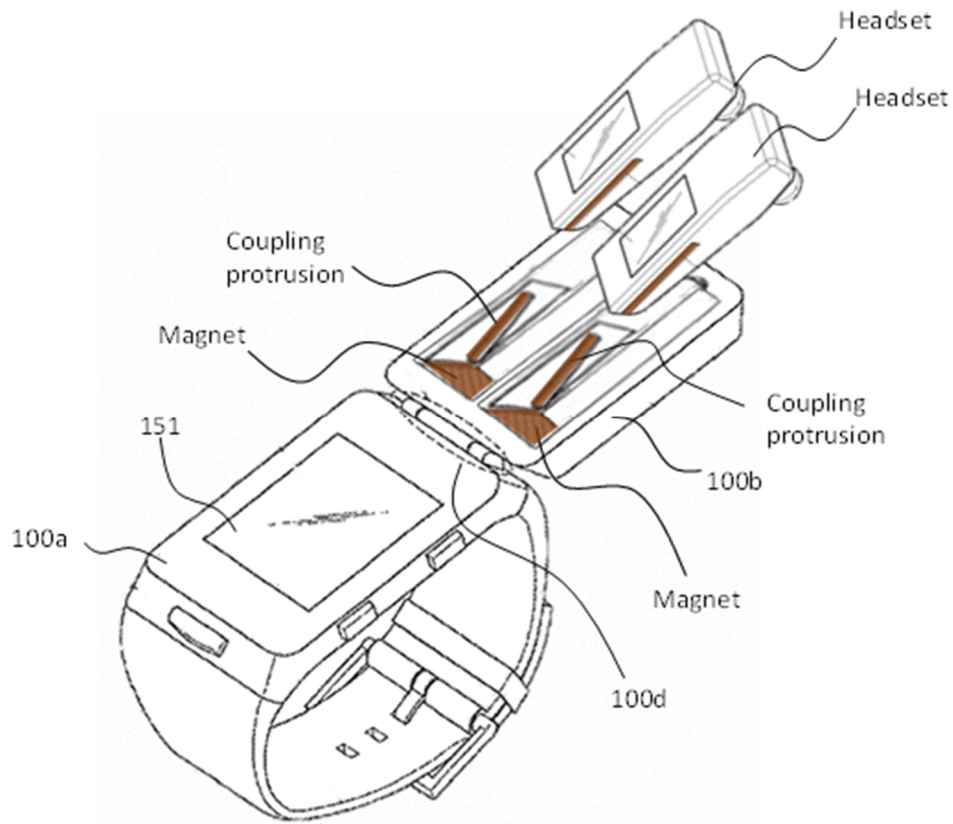


EX1012, FIG. 4A.

Koh explains that the wireless headset is stored in a compartment (240) formed in the storage unit 200 and “coupled in a sliding manner by inserting the coupling protrusion 220 of the electronic device storage unit 200 into the guide groove 120 of the wireless headset 100.” *Id.*, ¶¶37-46. The coupling protrusion is used to lock the headset in place. *Id.*, ¶46. The storage unit 200 can also include a magnet in the cross-hatched area of the compartment (240) (brown), and the headset can include a magnet of opposite polarity on the surface of the headset. *Id.*, ¶48. The two magnets attract each other such that “when the wireless headset is coupled to the electronic device storage unit, the magnets may be attracted to one other so as

to be coupled.” *Id.*, ¶19. *Koh* also discloses the wireless headset including a display unit 130, “typically formed on a surface opposite to the surface on which the speaker unit 110 is formed, so that the user can easily see the display unit 130 from the outside.” EX1012, ¶¶30, 33.

A POSITA would have understood *Koh*’s teachings for detachably coupling a wireless headset to a watch-type device to be suitable for use with *Kim*’s watch-type mobile terminal. EX1002, ¶¶214-219. For example, *Koh* discloses using magnets and complementary protrusions/guide grooves to detachably couple a wireless headset to a watch-type device. EX1012, ¶¶46-49. 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 a Bluetooth headset. Ex1002, ¶219. Below is a schematic representation of an example mobile terminal as a POSITA would have understood is disclosed or suggested by *Kim* in view of *Koh*. *Id.*



In the example *Kim-Koh* watch-type mobile terminal shown above, the sub-devices (wireless headsets) detachably couple within a recess in a second body 100b (“lid”) of the main device via magnets and complementary protrusions/guide grooves (brown). The main device, in turn, comprises a first body 100a connected to the second body 100b by a hinge 100d so that the first and second bodies can be opened or closed in a folding manner. *Id.*, ¶220.

The manner in which *Kim*’s sub-device controls the state and/or operation of the main device is not dependent on the specific form factor of the main device or the sub-device. A POSITA would have understood that in the *Kim-Koh* system, the

wireless earphone/headset sub-device would continue to control the state and/or operation of the watch-type main device in the same manner as discussed above. EX1002, ¶221; *see supra* Sections VIII.A.1.e and VIII.A.1.g (discussing the main device controlling the state and/or operation of the sub-device). A POSITA would have further known that Bluetooth headsets are capable of controlling phone call operations and media playback on the main device, and would have found it obvious to incorporate such functionality into the *Kim-Koh* headset because *Kim* states that the main device can be a mobile phone, smart phone or portable media player. EX1010, ¶¶69-70; EX1002, ¶¶222-226 (citing, *e.g.*, EX1028, 14-16 (§3), 27-31 (§4.13), 31-32 (§4.14), 33-34 (§4.15); EX1029, 9 (§1.1), 15-16 (§§2.3.1.2, 2.3.1.3); EX1018, 8:1-7)¹⁹, 227-228.

A POSITA would have found it obvious to incorporate *Koh*'s teachings with *Kim*'s watch-type mobile terminal. EX1002, ¶¶229-234. *Kim* discloses detachably coupling wireless earphones/headsets to the watch-type main device and configuring the main device to have a structure (or shape) to attach the earphones to the interior of the main device. EX1010, ¶194. *Kim* also discloses that the sub-device 300 can be a Bluetooth headset. *Id.*, ¶445. But since *Kim* does not provide additional detail regarding how to implement these features, a POSITA would have been motivated

¹⁹ *See* footnote 11.

to identify a compatible device and to locate additional detail regarding techniques for detachably coupling earphone(s) to *Kim*'s watch-type main device. EX1002, ¶229.

A POSITA would have been motivated to combine *Koh*'s disclosure with *Kim*'s for several reasons. *Id.*, ¶230-233. For example, *Koh* discloses a technique for detachably coupling a wireless headset to a device having a watch-type form factor. *Compare* EX1012, ¶¶46-49 (describing coupling and decoupling of the wireless headset and storage device and explaining that when the wireless headset is coupled to the storage unit the combination acts as a wristwatch) *with* EX1010, ¶¶181, 194, 255 (disclosing a main device having a watch-type form factor detachably coupling to a sub-device, such as earphones). *Koh* provides additional detail regarding how to detachably couple wireless headset(s) to the watch-type main device. EX1012, ¶¶46-49; *see also* EX1010, ¶¶193-194 (explaining that the earphone sub-device can be “coupled to the main device 100 such that it is inserted into the interior of the main device”); *see also* EX1002, ¶¶232-233 (explaining why a POSITA would have been motivated to combine *Koh* and *Kim*).

A POSITA would have realized that the combination of *Kim* and *Koh* would have amounted to no more than combining known prior art elements (*Kim*'s watch-type main device and *Koh*'s teaching of how to detachably couple a wireless headset to such a device) according to known methods (using magnets and complementary

protrusions/grooves, which are discussed in both *Kim* and *Koh*) to yield predictable results (detachably coupling wireless headset sub-devices to *Kim*'s watch-type main device). EX1002, ¶232.

To the extent PO argues that *Koh*'s disclosure cannot be directly incorporated into *Kim*'s system, such an argument would be factually incorrect for the reasons discussed above. In any event, “[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference, but rather whether a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention.” *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016) (citations omitted); *see also Elbrus Int'l Ltd. v. Samsung Elecs. Co.*, 738 F. App'x 694, 698-99 (Fed. Cir. 2018) (“[PO]’s argument that combining [references] would lead to an unworkable circuit is ‘basically irrelevant.’ ... [A] person of ordinary skill would have been able to make ‘simple adjustments’ to the circuit to make it work.”); *ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1219 (Fed. Cir. 2016) (“The rationale of KSR does not support ClassCo's theory that a person of ordinary skill can only perform combinations of a puzzle element A with a perfectly fitting puzzle element B.”).

Although *Koh* discloses detachably coupling one wireless headset to the watch-type device, it would have been obvious to a POSITA to detachably couple

two wireless headsets to *Kim*'s watch-type main device. EX1002, ¶234. For example, *Kim* discloses detachably coupling more than one sub-device to the main device. EX1010, ¶181, FIG. 7. *Kim* also discloses the mobile terminal being a portable multimedia player. EX1010, ¶69; *see also id.*, ¶135 (disclosing a mobile terminal that “implement[s] a stereo function” with two speakers). A POSITA would have been motivated 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 using two earphones/headsets instead of listening to mono audio through one earphone/headset. EX1002, ¶234. Incorporating two detachable wireless earphones/headsets into *Kim*'s watch-type mobile terminal would have been well within the skill of a POSITA as it would have entailed merely implementing *Koh*'s techniques with respect to two wireless earphones/headsets instead of one. *Id.*

C. Ground 3: *Kim* and *Lee* Render Obvious Claims 16 & 17

1. Claim 16

- a. “The system of claim 1 wherein the first magnet is employed in actuating the electronic circuit.”**

Kim in combination with *Lee* discloses or suggests this feature. EX1002, ¶236-245. As explained above in Sections VIII.A.1.a and VIII.A.1.c, *Kim* discloses or suggests a mobile terminal system comprising a sub-device having magnets (“first magnet”) detachably coupled to the watch-type main device's second body 100b. *Kim* further discloses the main device detecting whether the sub-device and the main

device are coupled, and changing a state and/or operation of the main device based on the detected coupling status, *e.g.*, turning on the main device (“actuating the electronic circuit”). EX1010, ¶¶181-185, 195, 299-302, FIGs. 7, 24; *see also* Sections VIII.A.1.e and VIII.A.1.g.

Lee discloses a mobile terminal that, like *Kim*, can be a phone or a personal digital assistant having a folding-type form factor. EX1013, ¶¶27, 71. The mobile terminal includes sensing unit 140 to sense whether the mobile terminal is open or closed. *Id.*, ¶¶28, 44. *Lee* discloses implementing the sensing unit using a Hall sensor to detect changes to a magnetic field (*e.g.*, based on the proximity of a magnet to the Hall sensor). *Id.*, ¶¶79, 119; EX1002, ¶¶239-241.

A POSITA would have understood *Lee*'s Hall sensor to be suitable for use in *Kim*'s mobile terminal system. EX1002, ¶242. For example, *Kim* discloses or suggests coupling a sub-device to a main device using magnets, and *Lee* discloses a Hall sensor to detect changes in a magnetic field created by a magnet to determine whether two bodies are coupled to each other. Thus, a POSITA would have understood the *Kim-Lee* system to disclose or suggest a watch-type main device with a second body 100b having a Hall sensor to detect the coupling status of the sub-device to the main device by detecting changes in a magnetic field created by the magnet in the sub-device 300. In such a system, changes in the magnetic field created by the magnet in the sub-device (“first magnet”) are detected by the Hall

sensor in the second body 100b, causing the main device (“electronic circuit”) to turn on (“the first magnet ... is employed in actuating the electronic circuit”). *Id.*

A POSITA would have been motivated to combine *Kim*’s and *Lee*’s disclosures for several reasons. EX1002, ¶¶243-245. For example, *Lee* is directed to a system that is comparable to and compatible with the systems disclosed in *Kim*. Compare EX1013, ¶¶27-70 (discussing mobile electronic devices having folder-type and slide-type form factors), with EX1010, ¶¶69-122 (discussing mobile electronic devices, including those having folder-type and slide-type form factors); EX1002, ¶¶243-244. *Lee* also provides additional detail regarding how to use a Hall sensor and a magnet to detect the coupling status of two bodies.

EX1013, ¶¶119-121. A POSITA would have realized that the combination of *Kim* and *Lee* would have amounted to no more than the combination of known prior art elements (the mobile system of *Kim* detecting the coupling status of a sub-device to a main device, and the Hall sensor and magnet of *Lee* for detecting the coupling status of two bodies) to yield predictable results (detecting the coupling status of the sub-device and a main device using a magnet on the sub-device and a Hall sensor on the main device). EX1002, ¶245.

2. Claim 17

- a. “The system of claim 8 wherein the second or a third magnet is employed in the lid to actuate the electronic circuit.”**

Kim in combination with *Lee* discloses or suggests this feature. EX1002, ¶¶246-255.

As explained above in Sections V.A and VIII.A.1.a, *Kim* discloses or suggests the watch-type mobile terminal shown in Figure A, which can be opened or closed in a folding manner. As further explained above in Sections VIII.A.1.a and VIII.A.8.a, in the main device, second body 100b (“lid”) includes magnets (“second or a third magnet ... in the lid”). *Kim* also discloses a sensing unit 140 for detecting an open/close status of the main device (EX1010, ¶88), and changing the operation of the main device based on the open/close status (“actuating the electronic circuit”) (*id.*, ¶¶164, 214, 216, 257). EX1002, ¶247-249.

Lee discloses a mobile terminal that, like *Kim*, can be a phone or a personal digital assistant having a folding-type form factor. EX1013, ¶¶27, 71-72. Like *Kim*, *Lee* discloses changing the operation of the device (*e.g.*, display) depending on the open and closed state. *Id.*, ¶¶108-109, FIGs. 9A-9B, Claim 8. Also like *Kim*, *Lee* discloses a sensing unit 140 to sense whether the mobile terminal is open or closed. *Id.*, ¶¶28, 44. *Lee* discloses implementing the sensing unit using a Hall sensor to detect changes to a magnetic field (*e.g.*, based on the proximity of a magnet to the

Hall sensor). *Id.*, ¶¶79, 119; EX1002, ¶¶250-252. For the reasons discussed in Section VIII.C.1.a, a POSITA would have understood *Lee*'s Hall sensor to be suitable for use in *Kim*'s mobile terminal system and would have found it obvious to combine *Kim*'s and *Lee*'s disclosures.

A POSITA would have understood the *Kim-Lee* system to disclose or suggest a watch-type main device with a first body 100a having a Hall sensor to detect the open/close status of the second body 100b by detecting changes in a magnetic field created by the magnet in the second body. EX1002, ¶¶253-254. In such a system, changes in the magnetic field created by the magnet in the second body 100b (“second or a third magnet ... in the lid”) is detected by the Hall sensor in the first body 100a, causing the main device (“electronic circuit”) to change its operation such as displaying different information on each display unit as the second body is open or closed (“the second or third magnet ... is employed in actuating the electronic circuit”). EX1010, ¶257; EX1002, ¶254.

A POSITA would have realized that the combination of *Kim* and *Lee* would have amounted to no more than the combination of known prior art elements (the mobile system of *Kim* detecting the open/close status of a main device, and the Hall sensor and magnet of *Lee* for detecting the open/close status of two bodies) to yield predictable results (detecting the open/close status of the main device using a magnet on one body and a Hall sensor on the other). EX1002, ¶255.

D. Ground 4: *Kim* and *Jiang* Render Obvious Claim 18

1. Claim 18

- a. “The system of claim 1 wherein the switching device additionally comprises a laser.”**

Kim in combination with *Jiang* discloses or suggests this feature. EX1002, ¶¶256-266.

As explained in Section V.A, *Kim* discloses the main device including the components shown in Figure 1, including wireless communication unit 110 with a short-range communication module 114. EX1010, ¶¶72-73, 182, FIG. 1. *Kim* explains that the “short-range communication module 114 may facilitate short-range communications” using, for example, “infrared data association (IrDA)” (*id.*, ¶81), and that the main device and the sub-devices “wirelessly connect [] by using a wireless scheme (e.g., Bluetooth™, IrDA, or the like)” (*id.*, ¶183). A POSITA would have thus understood *Kim* to disclose or suggest an IrDA communication module in the main device (“switching device”) and the sub-device (“electronic device”) for wireless communication. EX1002, ¶¶258-259. A POSITA would have known IrDA communication modules include a light source. EX1002, ¶259.

Jiang discloses a vertical cavity surface emitting laser (VCSEL) as a light source in an IrDA data link device. EX1014, Abstract, 2:15-25; EX1002, ¶260. A POSITA would have been motivated to incorporate into the main device and the sub-device an IrDA communication module having a laser light source, such as

Jiang's VCSEL light source, because *Jiang* explains the desirability of incorporating a laser light source into an IrDA communication module. EX1002, ¶¶261-266. More particularly, *Jiang* explains that conventional IrDA light sources, *i.e.*, LEDs, are “energy inefficient,” which is “highly undesirable for portable applications,” and suffer from slow communication speed. EX1014, 1:20-29. *Jiang* explains that this problem can be mitigated by using a VCSEL with “a diverger positioned in the path for diverging the emitted beam of light.” *Id.*, 1:44-50; EX1002, ¶¶261-262. *Jiang* also explains that using a VCSEL as a light source in an IrDA communication module can significantly reduce power consumption and improve communication speed. *Id.*, 2:66-3:8; EX1002, ¶262.

A POSITA would have recognized the desirability of incorporating an IrDA communication module having a laser light source, such as *Jiang's* VCSEL light source, into *Kim's* main device and sub-device because such a module would mitigate the problem of excessive power consumption and slow transmission speed. EX1014, 1:39-41 (explaining that the VCSEL is “ideal for portable use”); EX1002, ¶¶264-265. A POSITA would have found using IrDA communication modules having a laser light source highly advantageous for wireless communication between *Kim's* main device and sub device because of the sub-device's low power consumption needs and volume of data transmitted between the main device and the sub-device. EX1002, ¶266; *see also* EX1010, ¶¶186 (explaining that the sub-device

may include a small battery or no battery at all), 327-329 (describing transferring media files via “a short-range wireless communication path”).

IX. THE DISCRETIONARY FACTORS FAVOR INSTITUTING TRIAL

On July 28, 2020, Patent Owner filed suit at the United States District Court for the Southern District of Texas (the “Court”) alleging infringement by Petitioner of four related patents, including the ’020 patent. (EX1100.) One day prior, Patent Owner separately filed suit alleging infringement by Samsung Electronics Co., et al. (“Samsung”) of the same four patents. (EX1101.) On October 23, 2020, Patent Owner and Samsung jointly moved to consolidate the suit naming Petitioner (Civil Action No. 4:20-cv-2652) with the suit naming Samsung (Civil Action No. 4:20-cv-2624) solely for pretrial purposes. (EX1102; EX1103.) The Court granted the consolidation motion on November 17, 2020. (EX1104.)

On December 16, 2020, the parties, now consolidated to a single proceeding (Civil Action No. 4:20-cv-2624, the “Litigation”), filed a joint submission regarding certain initial scheduling dates. (EX1107.) The Court adopted these dates and later extended them in four amended scheduling orders. (EX1108; EX1112; EX1113; EX1114; EX1115) On July 8, 2021, the parties jointly moved to “postpon[e] the upcoming litigation deadlines” until the Board renders institution decisions in the four pending IPR proceedings previously initiated by Petitioner against the patents-in-suit. (EX1116.) Should the Board institute review in those proceedings, the parties have agreed that Petitioner and Samsung will file an unopposed motion to stay the consolidated district court litigation. (EX1116.)

On December 29, 2020, Samsung petitioned for IPR of the '020 patent (“the Samsung Petition”) in Case No. IPR2021-00335. The Board instituted review in that proceeding on July 2, 2021. On February 11, 2021, Petitioner petitioned for IPR of the '020 patent (“the Apple Petition”) in Case No. IPR2021-00470. The Board has yet to render an institution decision based on the Apple Petition. Petitioner presently submits this Petition (“the Copycat Petition”) with a conditional motion to join Petitioner to IPR2021-00335 if, and only if, the Board declines to institute the Apple Petition in IPR2021-00470.¹

The purpose of this Copycat Petition and its conditional motion for joinder is twofold: **(1)** to avoid the unnecessary cost of duplicative litigation in different forums on the subject of validity over printed publication prior art; and **(2)** to avoid potentially inconsistent decisions from different forums addressing the same prior art grounds. If the Board were to deny both the Apple Petition and this Copycat Petition, Apple would have no choice but to pursue its printed publication invalidity defenses in district court, separate and apart from the already-instituted proceeding in IPR2021-00335. Against that outcome, institution of one petition or the other in the alternative would very likely confine adjudication of invalidity grounds based on

¹ Petitioner ranks the Apple Petition higher than this Copycat Petition. *See* Ranking Paper.

printed publication prior art to the PTAB, and would also very likely result in a stay of the district court litigation. EX1115, EX1116.

A. 35 U.S.C. § 314(a)

1. A *General Plastic* Analysis Favors Institution

The Board’s “intent in formulating the [*General Plastic*] factors was to take undue inequities and prejudices to Patent Owner into account” when evaluating second-in-time petitions. *General Plastic Indus. Co. v. Cannon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 16 (PTAB Sept. 6, 2017)(precedential). The Board recently applied this framework to the copycat joinder petition of a petitioner that previously filed its own petition. *Apple Inc., v. Uniloc 2017 LLC*, IPR2020-00854, Paper 9 (PTAB Oct. 28, 2020)(precedential). And while the Board denied institution in *Apple v. Uniloc*, the seven *General Plastic* factors do not expose “undue inequities and prejudices” when applied to the facts at hand. Quite the opposite. “[A] balanced assessment of all relevant circumstances” reveals institution as the course that serves the Board’s stated goals of promoting fairness and efficiency for both parties. *See* November 2019 Consolidated Trial Practice Guide (“CTPG”) at 58; *General Plastic* at 18 (the articulated list of factors is non-exclusive).

The unique circumstances in this case provide a unique opportunity. As discussed above, institution would promote adjudication of all printed publication prior art by the PTAB. The prospect of conserving significant judicial resources is

obvious. Less obvious, but equally important, is the substantial benefit to Patent Owner. Institution will avoid a situation where Patent Owner must expend resources defending against the same prior art references in two different forums at the same time. Denial will instead bring this unfavorable hypothetical into reality. Unlike the fact patterns presented in *General Plastic* and *Apple v. Uniloc*, the facts here support a conclusion that institution will maximize efficiency and fairness.

(a) Factor 1: Petitioner’s Multiple Petitions Do Not Prejudice Patent Owner

The fact that Petitioner previously filed a petition (the Apple Petition) against overlapping claims of the ’020 patent does not reveal prejudice to Patent Owner. Indeed, it is not uncommon for petitioners to submit more than one petition against the same patent with an understanding that the Board will typically institute no more than one of them. *See* CTPG at 59-61 (discussing “parallel petitions”). Given the unique circumstances here—i.e., where Patent Owner’s suit against two independent parties at roughly the same time resulted in two independent IPR petitions filed in close proximity—Petitioner is similarly situated to a typical “parallel petitioner” that submitted parallel petitions. Like a parallel petitioner, **(i)** Petitioner is not barred or estopped from requesting IPR (EX1118); **(ii)** Petitioner has not received an institution decision from the Board on its primary, first ranked petition (the Apple Petition); and **(iii)** Petitioner could not reasonably leverage any of the filings or

decisions regarding any other petition against Patent Owner. Just as a parallel petitioner does not introduce prejudice by requesting institution of multiple petitions in the alternative, Petitioner does not introduce prejudice by filing this Copycat Petition with a conditional request for joinder if the Apple Petition is denied.

(b) Factor 2: Petitioner's Knowledge of the Prior Art in the Samsung Petition Did Not Prejudice Patent Owner

Petitioner learned of the prior art in the Samsung Petition around the time that petition was filed. Entirely independent of Samsung, Petitioner was concurrently preparing the Apple Petition based on materially different prior art. Petitioner promptly filed the Apple Petition roughly six weeks after the Samsung Petition. Given the close timing and distinctive prior art, Petitioner could not have reasonably leveraged its knowledge of the Samsung Petition's prior art against Patent Owner. This is not a situation where Petitioner was intentionally holding back prior art to gain an unfair advantage.

(c) Factor 3: This Petition Does Not Implicate Road-Mapping or Playbooking Concerns

Unlike the petitioners in *General Plastic* and *Apple v. Uniloc*, Petitioner has not received the Board's institution decision on its first petition (the Apple Petition). And while Petitioner *has* received a Preliminary Response to the Apple Petition, the patentability analysis of this Copycat Petition was not modified in any way to account for Patent Owner's flawed arguments against materially different prior art.

Nor was the filing of this Copycat Petition prompted by the Preliminary Response. Petitioner's impetus was institution of the Samsung Petition, and the aspiration to promote fairness and efficiency by confining adjudication of printed publication prior art to the PTAB. As to the relative timing between the various proceedings, this was a direct result of Patent Owner's litigation tactics, not an attempt by Petitioner to gain a strategic advantage.

(d) Factors 4 & 5: Petitioner Diligently Prepared This Copycat Petition at the Appropriate Time

Petitioner learned of the prior art asserted in this Petition in late 2020, around the time the Samsung Petition was filed. Petitioner's independent efforts on the Apple Petition were already underway and continued for several weeks. Petitioner spent the remaining time awaiting the Board's decision on institution of the Samsung Petition. As a matter of statutory law, under 35 U.S.C. § 315(c), Petitioner could not have been joined to IPR2021-00335 any earlier than the Board's institution of the Samsung Petition. And the filing date of this Copycat Petition is within the one-month timeline set by the Board's rules. It would have been wasteful for Petitioner to expend the substantial resources required to pursue joinder any earlier. Again, the facts here are unique and in stark contrast to *General Plastic* and *Apple v. Uniloc*. In each of those cases, the petitioner "provided no explanation...for the delay." *General Plastic* at 10-11; *see also Apple v. Uniloc* at 10-11. Not so here.

(e) Factors 6 and 7: Institution Promotes Efficiency,
Fairness, and Patent Quality

The Board’s finite resources are well spent here. Careful vetting of the ’020 patent’s claims did not occur during prosecution, and it is fully consistent with the AIA’s goals for the Board to review the validity of the overly broad claims Patent Owner presently asserts against Petitioner. *General Plastic*, p.16. Equally significant, institution will allow *inter partes* review to serve its intended function as a true alternative to district court litigation on the subject of validity over printed publication prior art. *See, e.g., General Plastic* at 16 (“In exercising discretion...we are mindful of the goals of the AIA—namely, to improve patent quality and make the patent system more efficient by the use of post-grant review procedures”).

Both parties will benefit from confining adjudication on this issue to a single forum. As to the capacity of the Board to issue a FWD within one year, Petitioner’s willingness to serve as an “understudy” in IPR2021-00335 is fully consistent with the Board’s statutory goal.

2. The *Fintiv* Factors Favor Institution

Petitioner’s contingent stipulation to avoid identical prior art grounds in the Litigation—a proceeding in its infancy, with no trial date, and where the Court will soon consider a stay—ensures that institution will result in the Board alone considering the challenges raised in this Petition. (EX1115, EX1116; EX1117.) As a result, the *Fintiv* factors convincingly favor institution.

X. MANDATORY NOTICES UNDER 37 C.F.R § 42.8

A. Real Party-In-Interest

Petitioner Apple Inc. is the real party-in-interest.

B. Related Matters

Petitioner is not aware of any disclaimers or reexamination certificates addressing the '020 patent. Patent Owner asserted the '020 patent, and related patents US 10,562,077, US 10,259,021, and US 10,589,320, against Petitioner in Civil Action No. 4:20-cv-2652 (SDTX), which has been consolidated with Civil Action No. 4:20-cv-2624 (SDTX), where Patent Owner asserted the same four patents against Samsung Electronics Co., LTD and Samsung Electronics America, Inc. (“Samsung”).

This Copycat Petition addressing the '020 patent is being filed concurrently with three other copycat IPR petitions addressing the above-identified related patents and requesting joinder. The table below summarizes the pre-existing and currently pending *inter partes* review proceedings.

US 10,589,320	Samsung: IPR2021-00338
	Apple: IPR2021-00473
	Apple Copycat: IPR2021-01292
US 10,562,077	Samsung: IPR2021-00337
	Apple: IPR2021-00472
	Apple Copycat: IPR2021-01291
US 10,259,021	Samsung: IPR2021-00336
	Apple: IPR2021-00471
	Apple Copycat: IPR2021-01290
US 10,259,020	Samsung: IPR2021-00335

	Apple: IPR2021-00470
	Apple Copycat: IPR2021-01289

C. Lead And Back-Up Counsel

Lead Counsel	Backup counsel
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D. Service Information

Please address all correspondence and service to the address listed above.

Petitioner consents to electronic service by email at IPR50095-0028IP2@fr.com (referencing No. IPR50095-0028IP2 and cc'ing PTABInbound@fr.com, axfptab@fr.com, patrick@fr.com, devoto@fr.com, kdarby@fr.com, and leung@fr.com).

XI. FEES

Petitioner authorizes the Patent and Trademark Office to charge Deposit Account No. 06-1050 for the fee set in 37 C.F.R. § 42.15(a) for this Petition and further authorizes payment for any additional fees to be charged to this Deposit Account.

Respectfully submitted,

Dated: July 30, 2021

/Andrew B. Patrick/

W. Karl Renner, Reg. No. 41,265
Andrew B. Patrick, Reg. No. 63,471
Roberto Devoto, Reg. No. 55,108
Kenneth Wayne Darby Jr., Reg. No. 65,068
Kim Leung, Reg. No. 64,399

(Control No. IPR2021-01289)

Attorneys for Petitioner

CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter partes* Review totals 13,922 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated: July 30, 2021

/Andrew B. Patrick/
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Attorneys for Petitioner

CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on July 30, 2021, a complete and entire copy of this Petition for *Inter partes* Review and all supporting exhibits were provided via Express Mail, to the Patent Owner, by serving the correspondence address of record as follows:

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