

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ONEPLUS TECHNOLOGY (SHENZHEN) CO., LTD.,
Petitioner,

v.

PANTECH CORPORATION,
Patent Owner.

IPR2025-00762
Patent 10,863,573 B2

Before JAMESON LEE, CHRISTOPHER L. OGDEN, and
SCOTT B. HOWARD, *Administrative Patent Judges*.

HOWARD, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background and Summary

OnePlus Technology (Shenzhen) Co., Ltd. (“Petitioner”) filed a Petition (Paper 2, “Pet.”), seeking *inter partes* review of claims 1–5 and 8–12 (the “challenged claims”) of U.S. Patent No. 10,863,573 B2 (Ex. 1001, “the ’573 patent”). Pantech Corporation (“Patent Owner”) filed a Preliminary Response (Paper 8, “Prelim. Resp.”).

Patent Owner also filed a paper requesting discretionary denial of institution (Paper 6), Petitioner filed an opposition (Paper 7), and the Acting Director denied the request and referred this matter to the Board (Paper 9).

We have authority, acting on the designation of the Director, to determine whether to institute an *inter partes* review. 35 U.S.C. § 314 (2024); 37 C.F.R. § 42.4(a) (2024). *Inter partes* review may not be instituted unless “the information presented in the petition filed under [35 U.S.C.] section 311 and any response filed under [35 U.S.C.] section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). “When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” 37 C.F.R. § 42.108(a).

For the reasons set forth below, upon considering the briefing and the evidence of record, we determine that the information presented in the Petition establishes a reasonable likelihood that Petitioner will prevail with respect to at least one of the challenged claims. Accordingly, we institute *inter partes* review on all of the challenged claims based on all of the grounds identified in the Petition.

B. Real Parties in Interest

Petitioner identifies OnePlus Technology (Shenzhen) Co., Ltd. and Guangdong OPPO Mobile Telecommunications Corp., Ltd. as real parties in interest. Pet. 76.

Patent Owner identifies Pantech Corporation as the real party in interest. Paper 4, 1 (Patent Owner’s Mandatory Notices).

C. Related Matters

The parties each identify the following district court proceeding in which the ’573 patent is being asserted: *Pantech Corporation, v. OnePlus Technology (Shenzhen) Co.*, 5:24-cv-00038-RWS-JBB (E.D. Tex.). Pet. 76; Paper 4, 1.

D. The ’573 Patent

The ’573 patent is titled “Method and Apparatus for Sequential Forwarding Considering Multi-Flow in Dual Connectivity System” and is directed to “a method and an apparatus of in-sequence delivery considering a multi-flow in a wireless communication system supporting dual connectivity.” Ex. 1001, code (54), 1:22–25.

Figure 12 of the ’573 patent is reproduced below.

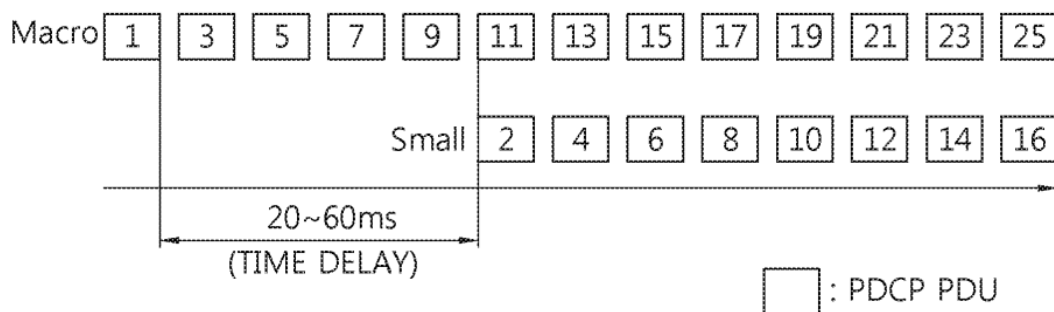


Figure 12 “illustrates an example of a PDCP [(packet data convergence protocol)] PDU [(packet data unit)] receiving timing in a PDCP entity of UE [(user equipment)].” Ex. 1001, 3:50–51; *see also id.* at 12:30–31. That

figure “illustrates a time when a PDCP PDU transmitted through a macro base station and a PDCP PDU transmitted through a small base station reach a PDCP entity of UE.” *Id.* at 12:31–34. More specifically, it “illustrates a case in which odd numbers among PDCP sequence numbers (SNs) are transmitted through the macro base station and even numbers are transmitted through the small base station” and shows that “there is a difference in time delay between a receiving time of the PDCP PDU transmitted through the macro base station in the UE and a receiving time of the PDCP PDU transmitted through the small base station in the UE.” *Id.* at 12:38–47. In this example, “[a] transmission delay of approximately 20 to 60 ms” is shown such that the “PDCP entity of the UE non-sequentially receives the PDCP PDUs due to a difference in time between RLC [(radio link control)] (AMD) SDUs [(service data units)] delivered from two RLC entities and the PDCP entity immediately delivers the received PDCP PDUs to the upper layer (for example, an application layer), sequential transmission is not performed.” *Id.* at 12:47–55. As a result, “there is a problem in sequentially transmitting the PDCP SDUs from the PDCP entity to the upper layer.” *Id.* at 12:61–63.

Figure 13 of the '573 patent is reproduced below.

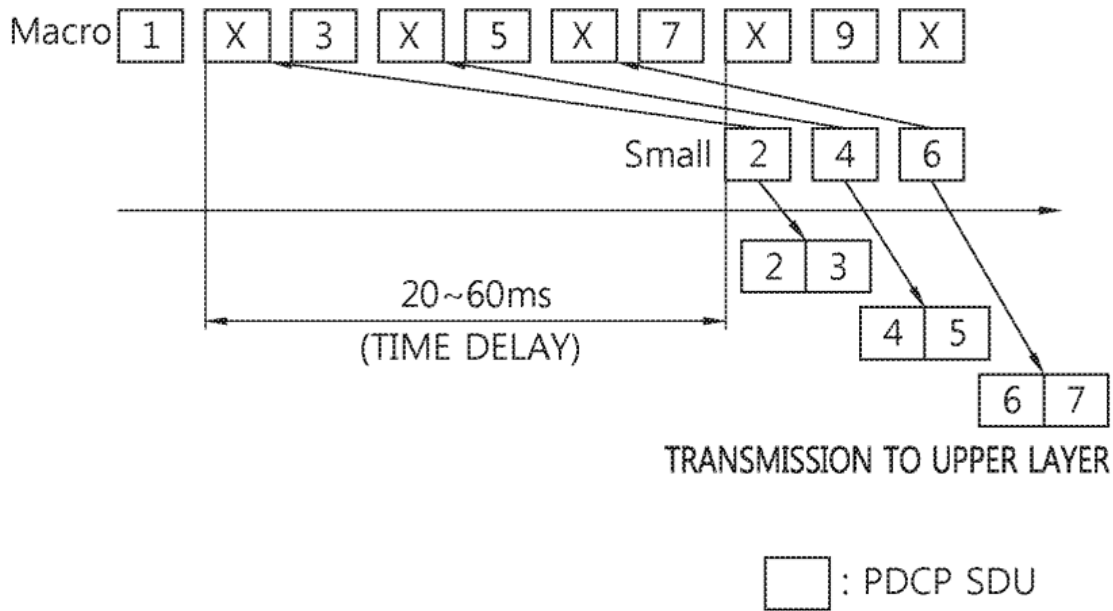


Figure 13 “illustrates an example of sequential upper layer transmission depending on the PDCP sequence number (SN) in the PDCP entity of the UE.” Ex. 1001, 3:52–54; *see also id.* at 14:16–18. Like in Figure 12, this figure “illustrates a case in which [PDCP] SDUs having odd PDCP SNs are received by the UE through the macro base station and PDCP SDUs having even PDCP SNs are received by the UE through the small base station.” *Id.* at 14:18–22. In order to ensure that PDCP SDUs are sent in order, an in-sequence timer is used. Ex. 1001, Fig. 13. As a result of that in-sequence timer, PDCP SDUs are delivered in sequential order:

When PDCP SDU #2 is present in the PDCP entity of the UE (that is, the PDCP PDU corresponding to PDCP SDU #2) before the in-sequence timer for PDCP SDU #3 has expired, the UE confirms that PDCP SDU #2 and PDCP SDU #3 are sequentially present after PDCP SDU #1 and sequentially delivers PDCP SDU #2 and PDCP SDU #3 to the upper layer. In this case, the in-sequence timer for PDCP SDU #3 expires or ends. However, even in this case, PDCP SDU #4 has not yet reached and an in-sequence timer for PDCP SDU #5 and an in-sequence timer for PDCP SDU #7 still operate.

Id. at 14:35–44.

E. Illustrative Claims

Challenged claims 1 and 8 are independent claims and claim 1, reproduced below, is illustrative of the subject matter of the challenged claims.

1. [1 pre] A method for user equipment receiving multi-flow data with respect to one evolved packet system (EPS) bearer through a macro base station (macro eNB) and a small base station (small eNB) serving a single cell in a wireless communication system supporting dual connectivity, the method comprising:

[1a] receiving packet data convergence protocol (PDCP) packet data units (PDUs) through the macro base station and the small base station;

[1b] obtaining PDCP service data units (SDUs) corresponding to the PDCP PDUs; and

[1c] receiving from the macro base station information related to an in-sequence timer for the PDCP SDUs through a radio resource control (RRC) message,

[1d] wherein the PDCP SDUs are indicated by a predefined PDCP sequence number (SN),

[1e] wherein the RRC message includes a PDCP-configuration information element (IE), and

[1f] the PDCP-configuration IE includes a field indicating a value of the in-sequence timer.

Ex. 1001, 17:65–18:18; *see also* Pet. vii (adding brackets).

F. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–5 and 8–12 would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–5, 8–12	103(a) ¹	Koskinen ²
1–5, 8–12	103(a)	Koskinen, Sammour ³
1–5, 8–12	103(a)	Deenoo, ⁴ Sammour

Pet. 1. Petitioner also relies on the testimony of Dr. Titus Lo (Ex. 1003).

II. ANALYSIS

A. Legal Standards

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under 35 U.S.C. § 103 that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) if in evidence, “secondary considerations” of non-obviousness such as “commercial success, long-felt but unsolved needs, failure of others, etc.” *Id.* at 17–18. “While the sequence of these questions might be reordered in any particular case,” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), the U.S. Court of Appeals for the Federal Circuit has repeatedly emphasized that “it is error to reach a conclusion of obviousness until all

¹ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. §§ 102 and 103 that became effective on March 16, 2013. Pub. L. No. 112–29, 125 Stat. 284, 287–88 (2011). The application that issued as the ’573 patent was filed after that date but claims priority to a foreign application filed before the effective date. Ex. 1001, code (30). For purposes of this Decision, we apply the pre-AIA version of the statute. We note that we would reach the same outcome applying the AIA version.

² US 2014/0301362 A1, filed Apr. 4, 2013 (Ex. 1005).

³ US 2009/0149189 A1, published June 11, 2009 (Ex. 1006).

⁴ US 2016/0021581 A1, PCT Filing Date Jan. 17, 2013 (Ex. 1007).

those factors are considered,” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016). Because the parties do not address objective evidence of obviousness or non-obviousness, we focus solely on the first three *Graham* factors.

B. Level of Ordinary Skill in the Art

The level of ordinary skill in the pertinent art at the time of the invention is a factor in how we construe patent claims. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). It is also one of the factors we consider when determining whether a patent claim is obvious over the prior art. *See Graham*, 383 U.S. at 17–18.

Factors pertinent to a determination of the level of ordinary skill in the art include “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Envtl. Designs, Ltd. v. Union Oil Co. of Cal.*, 713 F.2d 693, 696–97 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). “Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case.” *Id.*

Petitioner argues that a person having ordinary skill in the art “would have had a bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field and at least two years of practical experience with design or development of telecommunication and/or wireless communications systems, or the equivalent.” Pet. 7 (citing Ex. 1003 ¶¶ 19–21). Petitioner further argues that “[a]dditional education

could substitute for industry experience and vice versa.” *Id.* (citing Ex. 1003 ¶¶ 19–21).

Patent Owner does not address the level of ordinary skill in the art.
Prelim. Resp.

Because Petitioner’s proposed level of ordinary skill in the art is consistent with the field of the invention of the ’573 patent and not disputed by Patent Owner, for purposes of this Decision, we adopt Petitioner’s formulation of the person having ordinary skill in the art.⁵

C. Claim Construction

1. Analysis

We apply the same claim construction standard used in the federal courts, in other words, the claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), which is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). Under the *Phillips* standard, the “words of a claim ‘are generally given their ordinary and customary meaning,’” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective

⁵ If Patent Owner disagrees with this formulation of the level of skill in the art, it must raise that disagreement in its Response. If a different level of skill would affect the outcome in this case, the parties must brief that issue as well. The failure of Patent Owner to describe how a different level of skill in the art is determinative will be a forfeiture of that argument. If there is a dispute regarding the level of ordinary skill in the art, then the parties are also encouraged to submit evidence, other than conclusory expert testimony, that supports their position. *See* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

filing date of the patent application.” *Phillips*, 415 F.3d at 1312–13 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576 (Fed.Cir.1996)).

Petitioner states that “no express constructions are necessary to assess whether the prior art reads on the challenged claims” and that “[t]he claims should be given their plain and ordinary meaning.” Pet. 8 (citing Ex. 1003 ¶ 117).

Patent Owner notes that in the district court proceeding, Petitioner requested construction of two terms, which the Magistrate Judge adopted. Prelim. Resp. 9 (citing Ex. 2011). However, Patent Owner does not request that we adopt those constructions. Instead, Patent Owner agrees with Petitioner and “also applies the plain and ordinary meaning for these terms.” Prelim. Resp. 9 (citing Pet. 8).

For the purposes of this Decision, we need not expressly construe any claim terms.⁶ See *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

⁶ If either party intends to argue a claim construction at trial, including what is the plain and ordinary meaning of a term, they should do so in a clearly designated section of their briefing. See Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 21, 2019) (“Practice Guide”), 46, 49 (available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>); *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008). Claim construction arguments should not be relegated to patentability arguments on the facts. The failure to set forth an explicit claim construction may be deemed a forfeiture of that claim construction.

2. Order Regarding “In-sequence Timer”

Although we need not explicitly construe the phrase “in-sequence timer,” it is apparent that there is a dispute as to the plain and ordinary meaning of that phrase. Accordingly, each of Patent Owner and Petitioner must in the claim construction section of their next paper (Patent Owner in its Response and Petitioner in its Reply) set forth its explicit definition of “in-sequence timer” along with the basis for that definition. *See O2 Micro*, 521 F.3d at 1361 (“A determination that a claim term ‘needs no construction’ or has the ‘plain and ordinary meaning’ may be inadequate when a term has more than one ‘ordinary’ meaning or when reliance on a term’s ‘ordinary’ meaning does not resolve the parties’ dispute.”). Any argument or construction not set forth in that paper may be deemed forfeited.

D. Obviousness over Koskinen

Petitioner argues that claims 1–5 and 8–12 would have been obvious to a person having ordinary skill in the art as obvious over Koskinen. Pet. 8–37. Based on the current record, we are sufficiently persuaded that Petitioner has established a reasonable likelihood of prevailing on this asserted ground with respect to claim 1.

1. Summary of Koskinen

Koskinen is titled “Delivery of Protocol Data Units” and is directed to enhanced “[d]elivery of protocol data units or other suitable data or information units in various communication systems.” Ex. 1005, code (57), ¶ 2.

For example, in-sequence delivery of protocol data units received in parallel from several lower-layer acknowledged-mode protocol entities may benefit from timers and/or forwarding status reports. A method can include observing a gap in a sequence of protocol data units received from a plurality of

lower-layer protocol entities providing data transfer. The method can also include starting a timer upon the gap observation. The method can further include preventing the gap from blocking delivery of service data units to a higher layer, when the timer expires. The method can additionally include detecting a forwarding-status report. The method can also include immediately proceeding with data delivery to higher layer, containing the gaps because of the lack of forwarding at handover.

Id. at code (57).

2. Analysis of Claim 1

a. The “In-Sequence Timer”

Limitation 1c recites “receiving from the macro base station information related to an in-sequence timer for the PDCP SDUs through a radio resource control (RRC) message.” Ex. 1001, 18:9–11. Limitation 1f recites that “the PDCP-configuration IE includes a field indicating a value of the in-sequence timer.” *Id.* at 18:16–17. Petitioner argues both of those limitations would have been obvious in view of Koskinen. Pet. 18–19, 23–24.

Because Patent Owner’s focus on whether Koskinen teaches an in-sequence timer and the use of an information element to send a value of the in-sequence timer (*see* Prelim Resp. 11–13), we focus our analysis on those portions of the limitations. For the reasons set forth below, we are sufficiently persuaded by Petitioner’s argument and evidence that using an in-sequence timer and transmitting a value of that timer in an IE as recited in limitations 1c and 1f would have been obvious to a person having ordinary skill in the art over Koskinen.

Koskinen teaches that “[i]n the Evolved Universal Terrestrial Radio Access Network (E-UTRAN) air-interface protocol stack, the Packet Data

Convergence Protocol (PDCP) currently lies above the Radio Link Control (RLC) protocol. PDCP is currently defined by third generation partnership project (3GPP) technical specification (TS) 36.323, which is hereby incorporated herein by reference.” Ex. 1005 ¶ 4. Koskinen further teaches that “t-Reordering is a timer that is used by the receiving side of an AM RLC entity and receiving UMRLC entity in order to detect loss of RLC PDUs at lower layer.” *Id.* ¶ 16. Koskinen, via the incorporated 3GPP TS 36.323, teaches that reordering timer t-Reordering is used as a timer interval to determine whether received RLC data is out of order and must be reordered. Ex. 1013 § 5.1.2.2; Ex. 1003 ¶ 140; Ex. 1005 ¶¶ 36–37. Koskinen further teaches that, for the PDCP entity to determine a gap will not be filled, “the timer and its handling, along with the related state variables needed, that are currently specified for RL-CUM can be repurposed for AM data transfer.” Ex. 1005 ¶ 37. A person having ordinary skill in the art would have understood that t-Reordering is used to place the SDUs that were received out of order back into sequence (“reordered[]”), and, therefore, is an “in-sequence timer for the PDCP SDUs” as recited in claim 1. Ex. 1003 ¶ 140 (citing Ex. 1005 ¶¶ 37–39).

Additionally, a person having ordinary skill in the art would have known and been familiar with information elements (IEs) that specified an RLC reordering timer value based on (1) general knowledge that IEs carried information in RRC messages and (2) that 3GPP TSs describe an IE carrying recording timer duration information for the RLC layer. *See* Ex. 1003 ¶ 151; Ex. 1014, 219–20. Accordingly, it would have been obvious to a person having ordinary skill in the art “that the PDCP timer information, which used similar variables as its RLC counterpart (Koskinen, ¶¶ 37–38), would also be carried in a PDCP configuration IE.” Ex. 1003 ¶ 151.

Patent Owner argues that “Koskinen does not teach an ‘in-sequence timer for the PDCP SDUs’ wherein a radio resource control (RRC) message is received that includes a PDCP-configuration information element that ‘includes a field indicating a value of the in-sequence timer.’” Prelim Resp. 11–13. Specifically, Patent Owner argues that “Petitioner acknowledges at least part of this deficiency. *See* Pet. at 23 (Koskinen ‘does not explicitly describe a configuration IE field for the in-sequence timer’).” *Id.* at 11. According to Patent Owner, a person having ordinary skill in the art’s “general familiarity that IEs carried information in RRC message” and a knowledge of analogous teachings for the RLC layer, “even if true, do not show the obviousness of this limitation.” *Id.* Instead, Patent Owner argues, “[a]t most, Koskinen teaches a ‘reordering timer’ that is used to ‘conclude when a gap in received protocol data units can no longer be expected to be filled.’” Prelim. Resp. 11–12 (quoting Ex. 1005 ¶37).

We do not agree with Patent Owner’s argument. Petitioner relies on the knowledge of a person having ordinary skill in the art, as reflected in 3GPP TS 36.331, that reorder timer duration information is contained in an IE. *See* Pet. 24–24; Ex. 1003 ¶ 151. Given that Koskinen teaches a reordering timer (Ex. 1005 ¶¶ 16–17, 36–37), Petitioner has sufficiently shown why a person having ordinary skill in the art would use that general knowledge to place duration information about the timer in the IE, exactly as is taught by 3GPP TS 36.331. *See* Ex. 1003 ¶ 151; Ex. 1014, 219–20.

Patent Owner also argues that such a reordering timer is not “‘an in-sequence timer for the PDCP SDUs’ **based on the sequence of SDUs**” as required by claim 1. Prelim Resp. 12. According to Patent Owner, “[t]his is because Koskinen’s reordering timer (even if it were to be called an in-sequence timer) **is not properly configured by an information element**

from an RRC message: at most, an RRC message is taught as setting the expiry value for the reordering timer for the ‘delivery delay of protocol data units (EX1005 at [0039]) not an out of sequence SDU.’ *Id.* at 12.

We do not agree with Patent Owner’s arguments. First, Patent Owner’s argument relies on elements not recited in the claims, such as the in-sequence timer being “based on the sequence of SDUs.” Patent Owner does not explain how that is required by the language of the claim. Accordingly, we give the argument no weight.

Second, as discussed above, Petitioner sufficiently explains why a person having ordinary skill in the art would have modified Koskinen so that the value of the in-sequence timer would be included in the IE. That is, Petitioner has explained how a person having ordinary skill in the art “would have found obvious the PDCP timer information, which used similar variables as its RLC counterpart (Koskinen ¶¶ 37–38), would also be carried in a PDCP-configuration IE.” Ex. 1003 ¶ 151. Patent Owner’s argument does not address that understanding, which explains how a person having ordinary skill in the art would have understood that the “IE includes a field indicating a value of the in-sequence timer.” Based on the current record, no specific value is required by the claim.

Patent Owner also argues that the applicant distinguished timers like Koskinen’s during prosecution:

During prosecution, the applicant distinguished other forms of timers in the prior art, and the examiner ultimately agreed each time. *See, e.g.*, EX1002 at 42 (distinguishing the “cell activation/deactivation timer” of Hong), 128 (distinguishing the “discard timer” of Yi). **The reordering timer of Koskinen is no different: it is not an in-sequence timer, and does not render obvious such a concept.** Just as

Hong and Yi failed to render obvious such an inventive concept, so does Koskinen.

Prelim. Resp. 13.

We do not agree with Patent Owner's argument. Patent Owner has not proposed a definition of an in-sequence timer that excludes those types of timers. Moreover, because the prior art references Patent Owner cites do not appear in the record, the record does not contain sufficient evidence to support Patent Owner's argument. Nor is there any evidence showing how Koskinen is similar to those timers discussed during the prosecution of the '573 patent. A statement by counsel that they are similar is not evidence. *Elbit Systems of America, LLC v. Thales Visionix, Inc.*, 881 F.3d 1354, 1359 (Fed. Cir. 2018) (“[a]ttorney argument is not evidence’ and cannot rebut other admitted evidence” (quoting *Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017))); *Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1371, 1380 (Fed. Cir. 2009) (unsworn attorney argument is not evidence).

b. Undisputed Limitations

Petitioner argues that the other limitations (1pre, 1a, 1b, 1c (besides the in-sequence timer), 1d, and 1e) were taught or suggested by Koskinen. *See* Pet. 11–22. Petitioner's argument is supported by citation to documentary evidence, including Koskinen, and the testimony of Dr. Lo. *Id.*

On the current record, Patent Owner does not dispute Petitioner's arguments or evidence. *See* Prelim. Resp.

After reviewing Petitioner's arguments and information regarding claim 1, including the Lo Declaration, which are not addressed by Patent Owner at this stage, we are persuaded that Petitioner sufficiently

demonstrates, for purposes of this Decision, that the undisputed elements are would have been obvious over Koskinen.

c. Conclusion

Based on the current record, there is a reasonable likelihood that Petitioner will prevail in demonstrating that claim 1 would have been obvious over Koskinen.

3. Analysis of Claims 2–5 and 8–12

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the '573 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R.

§ 42.108(a). Therefore, at this stage of the proceeding, it is not necessary for us to provide an assessment of every challenge raised by Petitioner, especially, as in this case, when Patent Owner does not separately address Petitioner's arguments regarding claims 2–5 and 8–12. *See* Prelim. Resp. 11–13. Those challenges, in our view, are best left for trial after full development of the record.

E. Obviousness over Koskinen and Sammour

Petitioner argues that claims 1–5 and 8–12 would have been obvious to a person having ordinary skill in the art as obvious over Koskinen and Sammour. Pet. 38–43.

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the '573 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R.

§ 42.108(a). Therefore, at this stage of the proceeding, it is not necessary for us to provide an assessment of every challenge raised by Petitioner.

However, to provide the parties guidance, we will briefly address the parties' arguments.

1. Summary of Sammour

Sammour is titled “Method and Apparatus for Supporting Configuration and Control of the RLC and PDCP Sub-layers.” Ex. 1006, code (54). Sammour sets forth

Methods and apparatus support configuration and/or control of the radio link control (RLC) and packet data convergence protocol (PDCP) sub-layers by defining and utilizing radio resource control (RRC) parameters and procedures, and by including information elements (IEs) in RRC messages in both the uplink and downlink for RLC and PDCP configuration.

Id. at code (57).

2. Analysis

Petitioner argues that Sammour teaches a flush timer and that information relating to that flush timer is transmitted in a PDCP-configuration IE. Pet. 41–43. Petitioner further argues that the person having ordinary skill in the art “would have been guided by Sammour’s explanation that RRC information elements were used to provide PDCP configuration information to similarly provide PDCP timer information of Koskinen through an PDCP configuration IE delivered via the RRC message.” *Id.* at 40 (citing Ex. 1003 ¶ 192); *see also id.* at 39–41 (discussing reason to combine). According to Petitioner, “the Koskinen-Sammour combination renders limitations 1[e] and 1[f], and claim 1 as a whole, obvious.” Pet. 43 (citing Ex. 1003 ¶ 201).

Patent Owner argues that **“the “flush timer” of Sammour is not the in-sequence timer claimed by the ’573 Patent**, and not even Petitioner argues to the contrary.” Prelim Resp. 13. According to Patent Owner, “regardless of how Koskinen’s reordering timer is configured, it is not an in-

sequence timer, and the method of configuration from Sammour would not make it an in-sequence timer.” *Id.*

We do not agree with Patent Owner’s argument. Petitioner is not arguing that Sammour’s flush timer is an in-sequence timer. *See* Pet. 38–43. Instead, Petitioner is simply presenting an alternate argument in the event the Board finds Koskinen does not render obvious an RCC message with a PDCP IE that includes a value of an in-sequence timer, limitations 1e and 1f of the ’573 patent. *Id.* at 38. In this alternate argument, Petitioner is simply arguing that a person having ordinary skill in the art would have combined Sammour’s teaching of using a PDCP IE to transmit a value of a timer in order to transmit a value relating to Koskinen’s reordering timer, thus rendering limitations 1e and 1f obvious. *Id.* at 38–43. Because Petitioner does not rely on Sammour’s flush time as the recited in-sequence timer recited in limitation 1c (*see* Pet. 38–43), Patent Owner’s argument that the flush timer is not an in-sequence timer is inapposite.

F. Obviousness over Deenoo and Sammour

Petitioner argues that claims 1–5 and 8–12 would have been obvious to a person having ordinary skill in the art as obvious over Deeno and Sammour. Pet. 43–71.

Because Petitioner demonstrates a reasonable likelihood of success in proving that at least one claim of the ’573 patent is unpatentable, we institute on all grounds and all claims raised in the Petition. *See* 37 C.F.R.

§ 42.108(a). Therefore, at this stage of the proceeding, it is not necessary for us to provide an assessment of every challenge raised by Petitioner.

However, to provide the parties guidance, we will briefly address the parties’ arguments.

1. Summary of Deenoo

Deenoo is titled “Packet Data Convergence Protocol (PDCP) Placement” and “contemplate Small Cell Enhancements such as PDCP Placement and impact on control and data plane procedures.” Ex. 1007, codes (54), (57). As discussed in detail below, Deenoo has a typographical error on the front of the published patent application relating to its PCT filing date.

Deenoo is a published United States patent application that was published on January 21, 2016. Ex. 1007, code (43). The application is a US national stage filing from a PCT application that designated the United States. *Id.* at codes (22), (86). Deenoo states that the PCT application was filed on January 17, 2013. *Id.* at code (22). However, a review of the published version of the PCT indicates that it was filed on January 17, 2014, which is consistent with PCT application number, PCT/US2014/012067. Ex. 3002 (published PCT application); Ex. 1007, code (86). Additionally, the application data sheet for Deenoo identifies the PCT filing date as January 17, 2014. Ex. 3003, 3. Accordingly, based on the current record, the Deenoo PCT application was filed on January 17, 2014 and, by statute, that is also the filing date of Deenoo. 35 U.S.C. § 363 (“An international application designating the United States shall have the effect, from its international filing date under article 11 of the treaty, of a national application for patent regularly filed in the Patent and Trademark Office.”).

Deenoo also claims priority to two United States provisional patent applications, filed on January 17, 2013 and April 12, 2013. Ex. 1007, code (60). Neither of those provisional applications are in the record and Petitioner has not yet argued that Deenoo is entitled to rely on the priority dates of the provisional applications for purposes of this proceeding. *See*

Pet. Accordingly, at this stage of the proceeding, we do not rely on the filing dates of the provisional patent applications.

2. Prior Art Status of Deenoo

Petitioner argues that Deenoo is prior art under 35 U.S.C. § 102(a)(2). Pet. 1. Under that section, a printed United States patent application such as Deenoo is prior art if the application was “effectively filed before the effective filing date of the claimed invention.” *Id.*

Patent Owner argues that “Deenoo is not entitled to a priority date before May 10, 2013—its national stage entry (in which **substantial new material was added** in comparison to the original PCT application) occurred on July 16, 2015.” Prelim. Resp. 14. Specifically, Patent Owner argues that “Deenoo has 262 paragraphs of disclosures, whereas PCT Application No. US2014/012067 has just 189 paragraphs of disclosures.” *Id.*

Patent Owner further argues Petitioner did not establish a proper claim to priority. Prelim. Resp. 15. According to Patent Owner, “[g]iven that there is no showing that the PCT application or either provisional application[] describe[s] the subject matter at issue, there is no reasonable likelihood that Deenoo is prior art with respect to the teachings relied upon.” *Id.* (citing *Forescout Tech., Inc., v. Fortinet, Inc.*, IPR2021-01328, Paper 12 at 9–10 (PTAB Jan. 27, 2022)).

First, with regard to the alleged differences between Deenoo and its PCT application, we find Patent Owner’s argument lacking in evidentiary support. Patent Owner does not include PCT Application No. US2014/012067 as an exhibit and, instead, relies solely on attorney argument. But attorney argument as to the contents of the application are not evidence. *Elbit*, 881 F.3d at 1359; *Gemtron*, 572 F.3d at 1380.

Moreover, Patent Owner's comparison is cursory at best. It does not point to any new information in Deenoo, which would be easy to do if 73 paragraphs had been added.

Additionally, an examination of Deenoo and its PCT application shows the difference in paragraphs relates to how they are numbered, not new matter. For example, what is paragraph 5 of the PCT application is paragraphs 5–11 of Deenoo. *Compare* Ex. 3002 ¶ 5, *with* Ex. 1007 ¶¶ 5–11.

Second, we do not agree with Patent Owner that Petitioner has not sufficiently shown that Deenoo has the filing date of its PCT application. This is not a situation where a United States patent application is claiming priority to a provisional application under 35 U.S.C. § 119(e) or the benefit of the filing date of an earlier United States applications under 35 U.S.C. § 120. Instead, Deenoo is the national stage of a PCT filing which designated the United States. Ex. 3001, code (81). Patent Owner has not argued that any of the requirements for a national state filing have not been met. Accordingly, Deenoo has “the effect, from its international filing date under article 11 of the treaty, of a national application for patent regularly filed in the Patent and Trademark Office.” 35 U.S.C. § 363. In other words, the filing date of the PCT application is deemed to be its US filing date by statute and treaty.

Forescout, cited by Patent Owner, is inapposite. *Forescout* involved whether a United States patent was able to claim the benefit of the filing date of a provisional application. *Forescout*, IPR2021-01328, Paper 12 at 9–10. Although Deenoo claims on its face the benefit if earlier provisional patent applications (Ex. 1007, code (60), ¶ 1), Petitioner does not appear to be relying on those provisional applications. Notably, *Forescout* does not

involve national filings of a PCT application, which has different rules. *See* U.S.C. § 363.

Third, because neither party addressed the typographical error on Deenoo and its actual filing date, there remain additional issues surrounding the prior art status of Deenoo. This includes both (a) whether the '573 patent can claim priority to Republic of Korea patent application 10-2013-0053408 and (b) whether Deenoo can claim priority to either of its two provisional patent applications, either of which would be sufficient to antedate the '573 patent even if it can rely on the filing date of the foreign application under 35 U.S.C. § 119(a). Given the present status of the case, we defer our ruling until the trial, where the parties will have a chance to fully brief the issue.⁷

3. Analysis

For purposes of this section, we will assume Deenoo is prior art in order to give the parties as much guidance as possible. Our providing this guidance should not be taken as the Board reaching a preliminary determination of the prior art status of Deenoo.

Petitioner argues that the combination of Deenoo and Sammour teach all of the limitations recited in claim 1. Pet. 43–58. Specifically, Petitioner argues that Deeno teaches “a ‘re-ordering algorithm’ in the PDCP of the UE

⁷ If Petitioner intends to argue that Deenoo can claim priority to either or both of the provisional patent applications, Petitioner is encouraged to request authorization to file a motion to submit supplemental information with evidence that supports such a claim, including both the provisional applications and testimonial evidence that provides the basis for a claim of priority. *See* 37 C.F.R. § 42.123(a). If Petitioner waits until its Reply, Due Process concerns and the interests of justice might require us to authorize Patent Owner to submit evidence with its Sur-reply.

utilizing a reordering timer.” Pet. 54 (citing Ex. 1007 ¶¶ 205–212).

Petitioner further argues that a person having ordinary skill in the art “would have found obvious the RRC message to the UE in RRC CONNECTED mode would be used to set the duration of the reordering timer because the RRC message ‘configure[s] the measurement parameters/events/triggers for the UE.’” *Id.* (quoting Ex. 1003 ¶ 228) (citing Ex. 1007 ¶ 143). According to Petitioner, “the RRC message would have contained ‘information related to an in-sequence timer for the PDCP SDUs.’” *Id.* (quoting Ex. 1003 ¶228) (emphasis omitted).

Patent Owner argues that Deenoo does not teach the recited in-sequence timer and an IE including a field indicating a value of the in-sequence timer. Prelim Resp. 15–17. According to Patent Owner, Deenoo teaches a reordering timer like the one is Koskinen. *Id.* at 16. Patent Owner further argues that Sammour does not cure the deficiencies of Deeno. *Id.* at 16–17.

Patent Owner’s arguments are substantially the same as discussed above for the prior grounds. We do not agree with them for the same reasons discussed in Sections II.D.2.a and II.E.2, which are hereby incorporated by reference.

III. CONCLUSION

Following § 314, because the totality of the information presented at this stage shows there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition, we institute on all grounds raised and all claims challenged in the Petition.

Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of

claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that *inter partes* review of claims 1–5 and 8–12 of U.S. Patent No. 10,863,573 B2 is *instituted* with respect to all grounds of unpatentability set forth in the Petition;

FURTHER ORDERED that Patent Owner and Petitioner must, in the claim construction section of their next paper (Patent Owner in its Response and Petitioner in its Reply), set forth its explicit definition of “in-sequence timer” along with the basis for that definition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which commences on the entry date of this Decision.

IPR2025-00762
Patent 10,863,573 B2

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