

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

INTELLECTUAL VENTURES II LLC,
Patent Owner.

IPR2025-00343
U.S. Patent No. 10,292,138 B2

Before SCOTT A. DANIELS, FREDERICK C. LANEY, and
MATTHEW S. MEYERS, *Administrative Patent Judges*.

DANIELS, *Administrative Patent Judge*.

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

I. INTRODUCTION

Tesla Inc., (“Tesla,” or “Petitioner”), filed a Petition requesting *inter partes* review (“IPR”) of claims 1–6 and 8–13 of U.S. Patent No. 10,292,138 B2 (Ex. 1001, “the ’138 patent”). Paper 1 (“Pet.”). Intellectual Ventures II LLC (“Intellectual Ventures” or “Patent Owner”) filed a Request for Discretionary Denial. Paper 7 (“Request”). Patent Owner also filed a Preliminary Response to the Petition. Paper 8 (“Prelim. Resp.”). Petitioner filed an Opposition to Patent Owner’s Request. Paper 9. On July 2, 2025, the Acting Director of the United States Patent and Trademark Office issued a Decision denying Patent Owner’s Request resolving the discretionary denial issues. Paper 10.

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Upon consideration of the arguments and evidence presented by Petitioner and Patent Owner, we are persuaded that Petitioner demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims. *See* 35 U.S.C. § 314(a). Accordingly, we institute an *inter partes* review of the challenged claims.

II. BACKGROUND

A. Real Parties in Interest

Petitioner identifies Tesla, Inc., as the real party in interest. Pet. 85. Patent Owner identifies Intellectual Ventures II LLC as the real party in interest. Paper 3, 2.

B. Related Matters

The parties indicate that the ’138 patent has been asserted in the following lawsuits, including, *Intellectual Ventures II LLC v. Tesla, Inc.*,

1:24-cv-00390 (W.D.Tex) (terminated); *Intellectual Ventures II LLC v. Tesla, Inc.*, 1:24-cv-00390 (W.D.Tex); *Intellectual Ventures II LLC v. Tesla, Inc.*, 6:24-cv-00188 (W.D.Tex); *Intellectual Ventures II LLC v. Tesla, Inc.*, 1:24-cv-00884 (W.D.Tex) (transferred); *Intellectual Ventures II LLC v. Volvo Car Corp. et al.*, 6:23-cv-00429 (W.D.Tex) (transferred); *Intellectual Ventures I LLC et al. v. Toyota Motor Corp. et al.*, 2:21-cv-00389 (E.D.Tex); *Intellectual Ventures I LLC et al. v. General Motors Company*, 6:21-cv-01088 (W.D.Tex); and *Intellectual Ventures I LLC et al. v. Honda Motor Company, Ltd. et al.*, 3:22-cv-00761 (N.D.Tex); and *Intellectual Ventures I LLC and Intellectual Ventures II LLC, v. Honda Motor Co., Ltd. et al.* 2:21-cv-00390 (E.D.Tex).

Petitioner also indicates that the '138 patent has been involved in the following *inter partes* review proceedings: *American Honda Motor Co., Inc. v. Intellectual Ventures II LLC*, IPR2023-00020; and *Toyota Motor Corp. et al v. Intellectual Ventures II LLC*, IPR2022-01127. Pet. 86.

C. The '138 Patent (Ex. 1001)

The '138 patent, titled “Determining Buffer Occupancy and Selecting Data for Transmission on a Radio Bearer,” relates to allocation of bandwidth resources for Internet Protocol data flows in a wireless network.¹ Ex. 1001 code 54, 1:23–25. The '138 patent explains that “[t]he invention is applicable to, but not limited to, gateway queuing algorithms in packet data transmissions, for example, for use in the universal mobile telecommunication standard.” *Id.* at 1:25–28.

¹ Petitioner explains that “[e]ach radio bearer forms a data pipe[] or flow that are created and flow down through each layer of the protocol stack (RLC layer to MAC layer to physical layer). Pet. 37–38 (citing Ex. 1003 ¶ 98).

Figure 1 illustrates user equipment (UE) 118 communicating data with Node – B 122 which, in turn, communicates data with radio network controller (RNC) 124 within UTRAN (UMTS Radio Access Network) 126. The '138 patent explains that

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radio resource to each of the RBs.”² *Id.* at 7:49–53. (emphasis added). In addition, the ’138 patent provides that

element manager logic 140 has been incorporated into the system, which is used to contain the database that defines the mapping characteristics for IP packets to RBs. The element manager logic 140 also contains the values of the queue weighting parameters, S_{tier} , as 60 described in more detail later.

Id. at 7:56–61.

The ’138 patent describes a particular embodiment of the radio resource allocation in Figures 5 and 6 reproduced below.

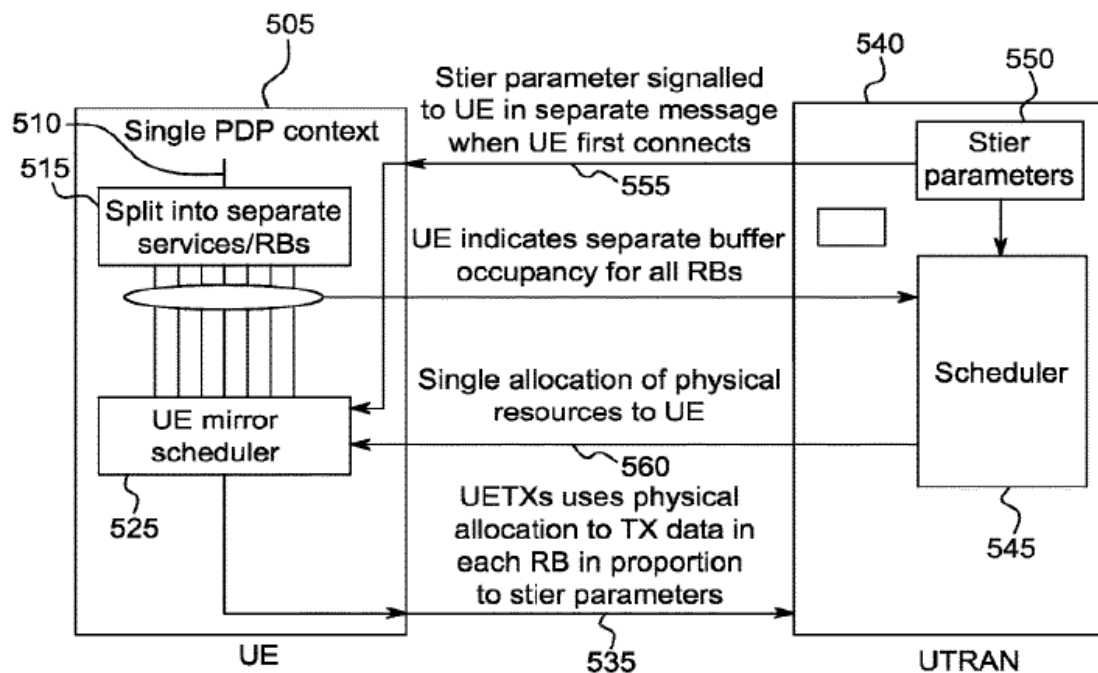


FIG. 5

Figure 5 illustrates “the communication between UE 505 and the UTRAN 540 to support an uplink scenario.” *Id.* at 10:3–5. The ’138 patent explains that “the UE 505 may receive a single PDP [packet data protocol] context

² Radio bearers, “RBs,” are also understood by those of ordinary skill in the art as Radio Access Bearer’s, “RABs.” Ex. 1003 ¶ 39.

510 and split the single PDP context 510 into separate services on individual radio bearers in divider logic 515.” *Id.* at 10:5–8. The UE then informs UTRAN 540 and scheduler 545 of buffer occupancies for the individual radio bearers, and scheduler 545 returns a single allocation of physical resources to the UE based on S_{tier} parameters 550. *Id.* at 10:8–18.

Subsequently, “[t]he UE mirror scheduler 525 is then able to inform the UTRAN 540 in a message 535 on its use of the physical allocation, in order to transmit data in each radio bearer in proportion to the informed S_{tier} parameters 550.” *Id.* at 10:18–22.

The ’138 patent describes that W'_{tier} weight values are computed for each radio bearer data queue from the S_{tier} parameter (*id.* at 8:44–54) and that uplink data for each radio bearer is transmitted by dividing up the allocated bandwidth based on the W'_{tier} values (*id.* at 8:55–59, 10:23–28).

Figure 6, reproduced below as annotated by the Board, is a flow chart illustrating algorithm 600 that “describes one mechanism to limit a number of queues served at a single instant of time.” *Id.* at 10:49–50.

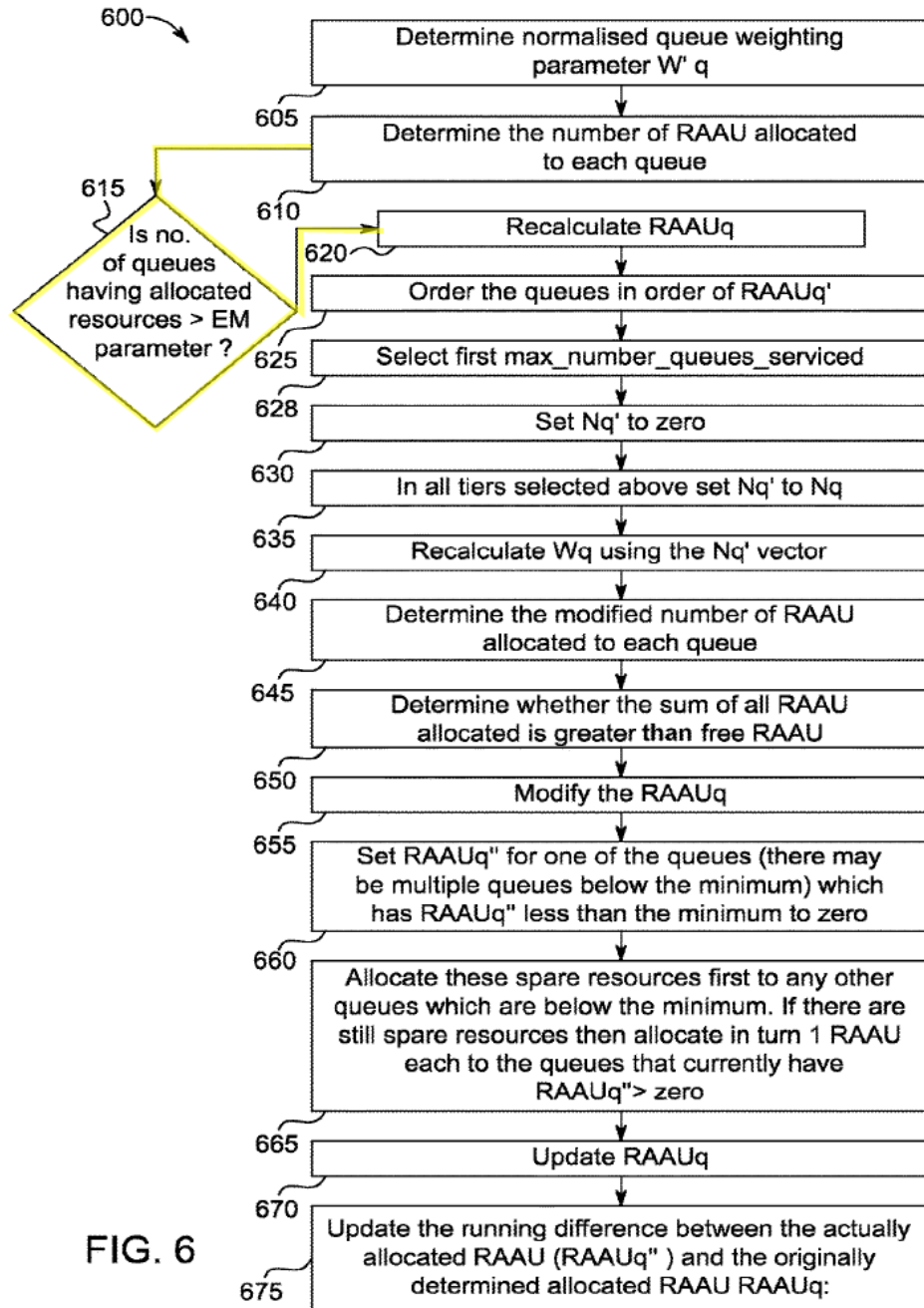


FIG. 6

Figure 6 details an algorithm that is run “when a number of active users (i.e. those users known to have a buffer occupancy greater than zero in any queue) is greater than a known fixed parameter, for example ‘max_number_queues_served’, as defined by the Element Manager (EM).”

Id. at 10:51–55. After determining the number of resources RAAU allocated to each queue at step 610,

[t]he algorithm may then determine whether the number of queues that have resources allocated greater than the EM parameter-max_number_queues_served, as shown in step 615 [highlighted yellow]. If the number of queues that have resources allocated is greater than a threshold, for example the EM parameter max_number_queues_served, the process moves to step 620.

Id. at 11:11–17.

As depicted in Figure 6, and following step 620, the algorithm begins a scheduling process for data packets where an amount of resources RAAU_q are allocated according to a weighted average of the priority level of each input flow. *Id.* at 10:47–11:10. The weighting of each input flow using a counter or running backlog, running_RAAU_delta, tracks flows that have been previously denied transmission. *Id.* at 11:22–11:30. Then, the running backlog that is added to the resources (RAAU_q) and allocated to a given radio bearer provides an adjusted RAAU_q' at step 625. *Id.* at 11:31–33. Flows with lowest adjusted resource allocations RAAU_q' are dropped, and the remaining resources RAAU_q' are divided up among the surviving radio bearers. *Id.* at 11:38–44.

D. Illustrative Claim

Claims 1 and 8 are independent. Claims 2–6 each depend directly from claim 1, and claims 9–13 each depend directly from claim 8. Claim 1 is reproduced below with limitations [1.7], [1.8] and [1.9] partially italicized for emphasis:

1. [1.0] A user equipment (UE) comprising:
 - [1.1] a processor communicatively coupled to a transmitter and circuitry configured to receive; and

[1.2] the processor is configured to:

[1.3] cause the circuitry to receive parameters associated with a plurality of radio bearers,

[1.4] determine a plurality of buffer occupancies, wherein each of the plurality of buffer occupancies is associated with one or more radio bearers of the plurality of radio bearers,

[1.5] cause the transmitter to transmit a message including the plurality of buffer occupancies to a network,

[1.6] cause the circuitry to receive a single allocation of uplink resources,

[1.7] select data from the plurality of radio bearers for transmission using the single allocation of uplink resources, wherein the selection of the data occurs *using a first iteration and a second iteration*,

[1.8] wherein in the first iteration, *the selection of the data is selected from a subset of the plurality of radio bearers based on the received parameters*,

[1.9] wherein in the second iteration, *the selection of the data is based on buffered data for respective radio bearers*, and

[1.10] cause the transmitter to transmit a signal including the selected data.

Ex. 1001, 13:58–14:16 (emphases added).³ Independent claim 8 is a method claim reciting “[a] method performed by a user equipment (UE), the method comprising.” *Id.* at 14:33–34. Otherwise, independent claim 8 contains the same and similar limitations as claim 1, for example limitation [8.1] “receiving, by the UE, parameters associated with a plurality of radio bearers.” *Id.* at 14:35–36.

³ For consistency, we refer to Petitioner’s claim limitation references [1.0]–[1.10].

E. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–6 and 8–13 would have been unpatentable based on the following grounds:⁴

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1–4 and 8–11.	103(a) ⁵	Eckert, ⁶ Bucknell, ⁷ Lohr-1 ⁸
2	5 and 12.	103(a)	Eckert, Bucknell, Lohr-1, Hans ⁹
3	6 and 13.	103(a)	Eckert, Bucknell, Lohr-1 and Lohr-2 ¹⁰

III. PATENTABILITY ANALYSIS

Petitioner contends that claims 1–6 and 9–13 of the ’138 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over either over Eckert, Bucknell, and Lohr-1, or Eckert, Bucknell, Lohr-1, and either Hans or Lohr-2. Pet. 13.

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said

⁴ Petitioner supports its challenges with a Declaration of Zhi Ding, Ph.D. (Ex. 1003). *See infra*.

⁵ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011 amended 35 U.S.C. §§ 102–103, effective March 16, 2013. Because the application from which the ’138 patent issued has an effective filing date prior to March 16, 2013, the pre-AIA version of § 103 applies. *See* Ex. 1001, code (63).

⁶ Ex. 1005, US Patent Publ’n No. 2006/0088058 (Apr. 27, 2006).

⁷ Ex. 1006, US Patent Publ’n No. 2007/0297435 (Dec. 27, 2007).

⁸ Ex. 1007, PCT Publ’n No. WO2005/125252 (Dec. 29, 2005).

⁹ Ex. 1008, US Patent No. 7,245,636 B1 (July 17, 2007).

¹⁰ Ex. 1009, US Patent Publ’n No. 2008/0254804 (Oct. 16, 2008).

subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.¹¹ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1889, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

We organize our patentability analysis into four sections. First, we address the level of ordinary skill in the art. Second, we address claim construction. Third, we provide an overview of the necessary asserted references. And fourth, taking account of the information presented by both parties, we consider and determine for the reasons explained below why the Petition satisfies the threshold requirement for instituting an *inter partes* review under 35 U.S.C. § 314(a).

¹¹ Patent Owner does not present arguments or evidence of secondary considerations in its Preliminary Response. Therefore, secondary considerations do not constitute part of our analysis.

A. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art at the time of the '138 patent

would have had a bachelor's degree from an accredited program in electrical engineering, computer engineering, computer science, or equivalent training, and at least two years of professional experience relating to wireless communication technology. Lack of professional experience can be remedied by additional education, and vice versa.

Pet. 12 (citing Ex. 1003 ¶¶ 19–21).

Patent Owner does not expressly dispute Petitioner's definition of a person of ordinary skill in the art. *See generally* Prelim. Resp.

On this record, Petitioner's proposed level of ordinary skill in the art is not disputed and is consistent with our review and understanding of the technology and descriptions in the '138 patent and the asserted prior art references. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). For purposes of this Decision, we rely on Petitioner's proposed level of ordinary skill in the art.

B. Claim Construction

We interpret a claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b) (2020). Under this standard, we construe the claim “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.” *Id.* Furthermore, at this stage in the proceeding, we expressly construe the claims only to the extent necessary to determine whether to institute *inter partes* review. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017)

(“[W]e 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))).

Petitioner points out that in IPR2022-01127 the Board “preliminarily determined that *a subset of the plurality of radio bearers*” means “*less than all of the plurality of radio bearers*.” Pet 12 (citing Ex. 1019, 18–19). Petitioner explains that, in the present proceeding, it has applied “the prior art in accordance with that construction; however, in view of the asserted grounds, no claim term requires express construction to find the Challenged Claims unpatentable.” *Id.* (citing *Nidec* 868 F.3d 1017). Patent Owner neither disputes the prior construction of “a subset of radio bearers,” nor offers additional constructions.

To the extent necessary, and in accordance with our prior determination, we construe “a subset of the plurality of radio bearers” to mean “less than all of the plurality of radio bearers.” At this early stage of the proceeding, no claim terms are disputed and we need not construe any other terms for purposes of institution.

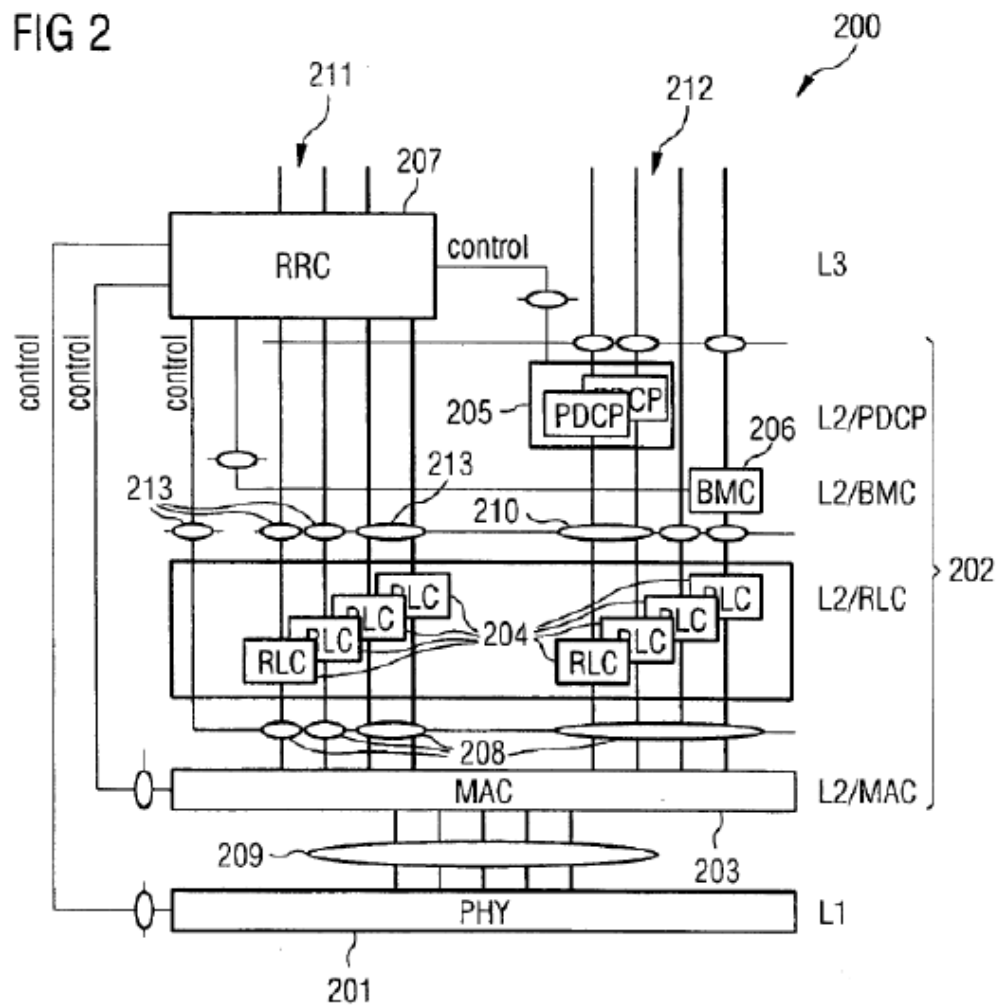
C. The Prior Art

Before turning to Petitioner’s initial ground of unpatentability, we provide a brief summary of the asserted references to Eckert, Bucknell, and Lohr-1.

1. Eckert (Ex. 1005)

Eckert describes that “UMTS air interface 117 is logically divided into three protocol layers,” where the “protocol layers...are implemented both in the mobile radio terminal 118 and in the UMTS base station 108, 109, 110, 111 or in the respective mobile radio network control unit 106, 107.” Ex.1005 ¶ 143. Eckert illustrates in Figure 2, reproduced below,

“layer 1” (L1), “layer 2” (L2), and “layer 3” (L3), corresponding respectively to “physical,” “data link,” and “network” layers. Ex.1006 ¶¶ 143–147. Layer 2 includes “a plurality of subprotocol layers,” including “the Medium Access Control protocol Layer (MAC protocol layer) 203” and “the Radio Link Control protocol layer 204 (RLC protocol layer).” *Id.* ¶ 146.

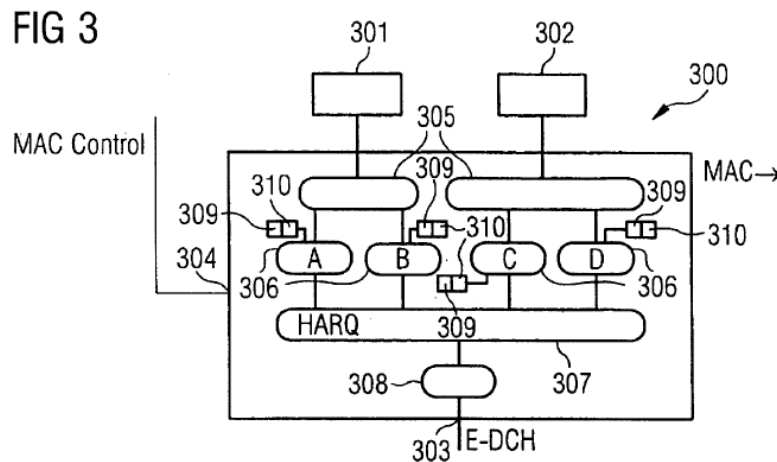


Eckert’s Figure 2 illustrates “a protocol structure for the UMTS air interface.” *Id.* ¶ 35. Eckert explains that Radio Resource Control (RRC) protocol layer 207 is responsible for “signalling radio bearers and radio

bearers, and also for negotiating all parameters of the protocol layers of layer 1 and layer 2 on the basis of UMTS.” *Id.* ¶ 6.

Eckert further explains that “[t]he physical layer 201 provides the MAC protocol layer 203 with its services via transport channels 209 and these are used to stipulate how and with what characteristics the data are to be transported via the air interface 117.” *Id.* ¶ 153. In turn, the MAC protocol layer 203 “maps the data which are present on a logical channel 208 above the MAC protocol layer 203 onto the transport channels 209 of the physical layer 201.” *Id.* ¶ 154. Eckert further describes that “[t]he RLC protocol layer 204 is modelled such that there is an independent RLC entity for each radio bearer.” *Id.* ¶ 160.

Within MAC protocol layer 203 is subprotocol layer 300 as shown in Figure 3 reproduced below.



Eckert’s Figure 3 illustrates “the units in an MAC-e protocol layer,” which receive MAC-d flows 301 and 302. *Id.* ¶ 36. Each MAC-d flow is assigned “a priority . . . implemented in a priority queue distribution unit 305 in the MAC-e subprotocol layer 300, to split the data over the data buffer storages 306 with the different priorities.” *Id.* ¶ 170.

2. *Bucknell (Ex. 1006)*

Similar to Eckert, Bucknell discloses a MAC-e subprotocol layer including the E-DCH transport channel. Ex. 1006 ¶ 2. Bucknell describes output buffer 80 forming a MAC-e Protocol Data Unit (PDU) is divided into “a first portion 90 and a second portion 95.” *Id.* ¶ 20. Bucknell’s Figure 2 is reproduced below.

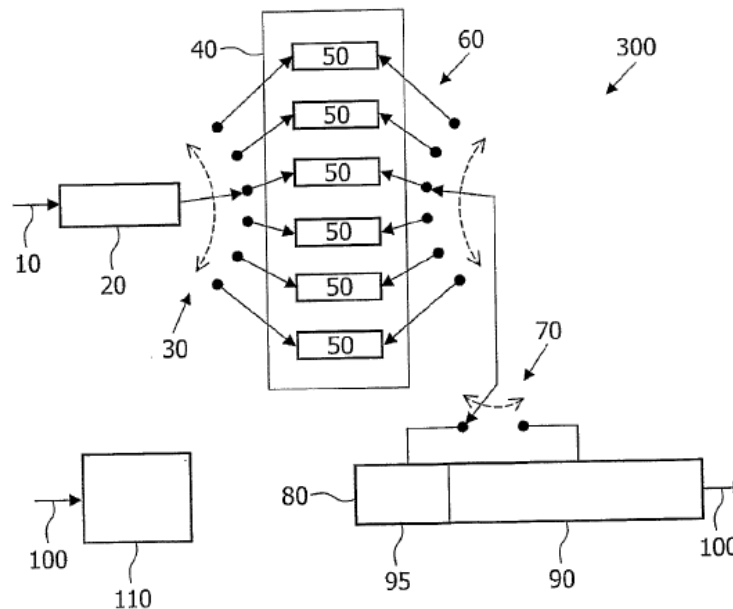


FIG. 2

Bucknell’s Figure 2 illustrates multiplexing unit 300 including output buffer 80 having first portion 90 and second portion 95. *Id.* Bucknell explains that “[t]he control means 110 controls the routing of the data packets to the output buffer 80 according to a predetermined criterion.” *Id.* In one embodiment “each MAC-d flow is assigned a priority. Then for the first selection, data packets are taken from the queue having the highest priority until the resource available for the first portion 90 is filled.” *Id.* ¶ 26. Bucknell further explains that “[f]or the second portion 95 the same procedure is carried out, but for a subset of the queues.” *Id.*

3. *Lohr-1 (Ex. 1007)*

Consistent with Eckert and Bucknell, Lohr-1 describes the MAC-d subprotocol layer as having data flows and “different QoS (Quality of Service), e.g. delay and error requirements” so that “the data packets can be stored in different Priority Queues.” Ex. 1007, 5:26–6:1. Lohr-1 also describes a “radio bearer control message” sent from the network to a mobile terminal for providing uplink resources includes a “set of parameters indicating the priorities of a logical channel of the radio bearer” and that a radio bearer may be established according to these parameters. *Id.* at 20:14–24.

D. Ground 1: Claims 1–4 and 8–11 – Alleged Obviousness over Eckert in view of Bucknell and Lohr-1

On this record, Petitioner has established a reasonable likelihood of prevailing on its assertion that at least one of claims 1–4 and 8–11 would have been obvious over Eckert, Bucknell, and Lohr-1, for the reasons explained below. In their Preliminary Response, Patent Owner has limited the dispute at the institution stage mainly to limitations [1.7], [1.8], and [1.9] and the claimed “first iteration” and “second iteration.” Prelim. Resp. 36–46. We, therefore, address specifically the parties’ arguments with respect to these claim limitations.

1. *Petitioner’s Arguments as to Limitations [1.7]–[1.9] and the Claimed “first iteration” and “second iteration.”*

a) *Limitation [1.7] - select data from the plurality of radio bearers for transmission using the single allocation of uplink resources, wherein the selection of the data occurs using a first iteration and a second iteration,*

Petitioner asserts that Eckert in view of Bucknell disclose these limitations. Pet 36–45. Petitioner argues that “Eckert describes the use of a radio bearer to provide a service and describes a UE providing a plurality of services at the same time, thereby disclosing or rendering obvious *a plurality of radio bearers*.” Pet. 37 (citing Ex. 1003 ¶ 95). As far as “select[ing] data . . . for transmission,” Petitioner argues that Bucknell’s MAC-d flows correspond to the plurality of radio bearers, and Bucknell “describes a selection of data from each of the MAC-d flows for transmission in a MAC-e PDU over E-DCH,” corresponding to “(*select data ... for transmission using the single allocation of uplink resources*).” *Id.* at 36 (citing Ex. 1003 ¶ 94).

With respect to the claimed “single allocation of uplink resources,” Petitioner contends that “the data selected from the MAC-d flows in Bucknell (*a plurality of radio bearers*) is transmitted in a single E-DCH (*a single allocation of uplink resources*,” as taught by Eckert. *Id.* at 45. The E-DCH transport channel, Petitioner argues, is a defined time interval Enhanced Dedicated Channel. *Id.* at 16. Petitioner’s declarant, Dr. Zhi Ding, testifies “[t]he allocated E-DCH channel, which is a transport channel and also an uplink channel, Eckert, [0012], is an example of a single allocation of uplink resources.” Ex. 1003 ¶ 87.

Petitioner argues further that “Bucknell describes that its data selection process iterates over the MAC-d queues 50 multiple times to populate a MAC-e PDU.” *Id.* at 44 (citing Ex. 1006 ¶ 6). Dr. Ding testifies that “Bucknell describes that ‘packets may be routed to the queue stores 50 according to their respective MAC-d flows, with each flow having an associated priority.’” Ex. 1003 ¶ 107 (quoting Ex. 1006 ¶¶ 20, 25–28). Dr. Ding testifies also that “Bucknell describes the selection of data for

transmission from MAC-d flows using at least two iterations, as described in the analysis of claim elements [1.8] and [1.9], thereby rendering obvious *wherein the selection of the data occurs using a first iteration and a second iteration.*” *Id.* ¶ 111.

b) Limitation [1.8]- wherein in the first iteration, the selection of the data is selected from a subset of the plurality of radio bearers based on the received parameters,

Petitioner argues that from Bucknell, “the ‘received parameters’ are the priority values of the logical channels associated with the MAC-d flows.” Pet. 45–46. And, where Bucknell describes selecting data in the MAC-d queues 50 based on the described priority values, Petitioner argues that “[t]he ‘MAC-e PDU’ is divided ‘into at least two portions’ thus ‘enabling different multiplexing rules to be used for the different portions’ to provide ‘flexibility for appropriate handling of priorities, guaranteed bit-rates and starvation scenarios.’” Pet. 46 (quoting Ex. 1006 ¶ 6).

Considering Bucknell’s Figure 2 below, as annotated by Petitioner, Petitioner relies specifically on certain examples in Bucknell as disclosing data selection from the MAC-d queues 50 for populating the MAC-e PDU. *Id.* at 44.

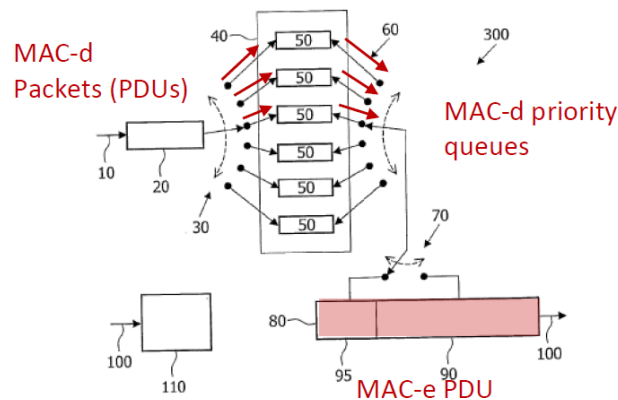


FIG. 2

Bucknell's Figure 2, as annotated by Petitioner, illustrates selecting data packets from MAC-d queues 50 to populate MAC-e PDU 80 divided into "a first portion 90 and a second portion 95." Ex. 1006 ¶ 20. Specifically, Petitioner argues that in a first iteration "[f]or example, in Bucknell's example (2), 'the second portion 95 is populated by **taking one data packet in turn from each of the subset of queues**, excluding the highest priority queue.'" Pet. 47 (quoting Ex. 1006 ¶ 27).

c) Limitation [1.9] - wherein in the second iteration, the selection of the data is based on buffered data for respective radio bearers

Petitioner contends that "each data selection pass through the relevant set or subset of MAC-d queues 50 to populate MAC-e PDU portions 90 or 95 is an example *iteration*, as recited in claim 1." *Id.* at 54. Thus, in a subsequent second iteration, according to Petitioner "the selection of data for the first portion 90 is based on priority, which in turn is based on the amount of buffered data, thereby making the selection of data for portion 90 based on the amount of buffered data (*based on buffered data for respective radio bearers*)."
Id. (citing Ex. 1003 ¶ 127).

Petitioner points out that Bucknell provides specific examples where buffered data determines the selection of data for MAC-e PDU portions 90 or 95. Pet 55–56 (citing Ex. 1006 ¶¶ 27–28; Ex. 1003 ¶ 129). Petitioner points to examples 2), 3), and 4) in Bucknell, where example 3) explains that "As a variation on 2), if the resource available for the first portion 90 is not fully used, then the unused resource can be made available for the second portion 95." *Id.* at 55 (citing Ex. 1006 ¶ 27).

Further, Petitioner argues that example 4) teaches "to reverse the order of serving first portion 90 and second portion 95" as taught in example

2), and, in that case, the unused portion of 90 would be filled using the same subset of queues in a second iteration. *Id.* Dr. Ding testifies that

[c]ombining example (3) with example (4) (linked via example (2)) to reverse the order of serving first portion 90 and second portion 95 yields the following procedure:

- a. Fill second portion 95 using a subset of the queues; (first iteration)
- b. Attempt to fill first portion 90 but first portion 90 not fully used;
- c. Fill remaining unused portion of first portion 90 using the same subset of queues from step (a),

where steps (b) and (c) together are an example of the second iteration and step (c) alone is also an example of the second iteration.

Ex. 1003 ¶ 129.

2. *Patent Owner's Arguments as to Limitations [1.7]–[1.9]*

Patent Owner makes three specific arguments asserting that Petitioner's mapping of Bucknell's disclosure as to limitations [1.8]–[1.9] fails to meet the limitations of claim 1.¹² Prelim. Resp. 36–37. We address each of Patent Owner's three main arguments below.

a) *Whether Bucknell discloses selecting data "based on the received parameters," as required in claim limitation [1.8], and "based on buffered data for respective radio bearers," as required by limitation [1.9]*

Patent Owner argues that the Petition fails to explain how "the selection of the data is selected from a subset of the plurality of radio bearers *based on the received parameters*" as recited in limitation [1.8]. *Id.* at 38

¹² Patent Owner's arguments are mainly focused on limitations [1.8] and [1.9], but the specific attributes of "a first iteration and a second iteration" are initially recited in limitation [1.7]. Ex. 1001, 14:5–8.

(quoting Ex. 1001, 14:9–11). More specifically, Patent Owner argues that “the Petition has failed to demonstrate that [Bucknell’s] process can be the claimed first iteration which must be based on a *plurality* of received parameters – *not just one*.” *Id.* In other words, Patent Owner argues that Bucknell selects data from the *highest priority queue*, which is a single parameter, and thus the selection is not “based on the received parameters” as called for in claim 1. *Id.* Patent Owner argues further that

[t]he priorities of all of the other queues (other than the highest priority queue) are completely *irrelevant* in this process – as one packet is taken in turn from each of these other queues *regardless of the relative priority of each of the other queues to one another*. Since *only one* received parameter (the identity of the highest priority queue) matters when Bucknell takes one data packet in turn from each of the queues other than the highest priority queue.

Id.

On this record, we do not agree with this comparison of Bucknell and the claim language. Claim limitation [1.8] recites:

wherein in the first iteration, the selection of the data is selected from a subset of the plurality of radio bearers *based on the received parameters*,

Ex. 1001, 14:9–11 (emphasis added). First, claim 1 does not recite that the selection of data is “based on a *plurality of* received parameters,” as Patent Owner argues. Claim 1 simply recites, “based on the received parameters” and the prepositional phrase “based on” does not clearly preclude the selection of data from being based on one, some, or all of “the received parameters.” However, we can agree with Patent Owner that “the received parameters” are plural. *Id.* at 14:11. Second, on the current record, Bucknell discloses receiving a plurality of parameters which are the priority values of logical channels associated with the MAC-d flows. *See* Ex. 1006

¶ 26 (Bucknell explaining that “each MAC-d flow is assigned a priority”), *see also id.* Abstract (Bucknell describing that “[d]ata packets having different assigned priorities are multiplexed by operating a queue for each different priority of data packet.”). Bucknell’s “priorities,” are plural, just like the claimed “received parameters.” Indeed, it is not clear at this stage how one can logically assign a higher priority value without having a relative lower priority value to provide a relevant comparison. In other words, you cannot assign data to a higher priority logical channel without also having a lower priority channel upon which the higher priority is based.¹³ Reading the claim in context, on this record, Bucknell’s priority values (plural) of logical channels associated with the MAC-d flows, meets the “received parameters” limitation in claim 1.

Patent Owner similarly argues that “the Petition fails to explain how populating the first portion *using the highest priority queue* constitutes the “second iteration” wherein “the selection of the data is based on buffered data for respective radio bearers” recited in limitation [1.9]. Prelim. Resp. 39. Patent Owner’s argument is that the claimed “respective radio bearers” is plural, and that the Petition does not explain “how populating Bucknell’s first portion based on data in *only one queue* –namely, the highest priority queue, constitutes selection of data based on buffered data for “respective radio bearers.” *Id.*

¹³ Patent Owner also argues that “*only one* received parameter (the identity of the highest priority queue) matters when Bucknell takes one data packet in turn from each of the queues other than the highest priority queue.” Prelim. Resp. 38. We disagree with this assertion because the relevant identity of a highest priority queue is, of course, based on at least one other relative lower priority queue.

Bucknell's selected data is dependent on assigned priorities (plural), and thus it is not based on *only* the highest priority queue, but on the highest queue compared to lower priority queues. Patent Owner's argument appears to be based on the incorrect assertion that Bucknell's disclosure is limited to the priority of a single highest priority queue. As Petitioner explained, there are multiple queues, having different priorities, such that

during a second iteration the first portion 90 of the MAC-e PDU may be populated "based on the *amount of data* in the respective queues, for example assigning highest priority to the queue with most data" (based on buffered data for respective radio bearers).

Pet. 54 (citing Ex. 1006 ¶ 28) (emphasis added). In other words, where there is a highest priority queue with a certain amount of buffered data, there is logically a lower priority queue with lesser amounts of buffered data. Therefore, on this record, Bucknell discloses that in a second iteration the data selection "is based on buffered data for respective radio bearers" as recited in limitation [1.9].

b) Whether Bucknell discloses ordering queues based on priority

Patent Owner argues that "example (9) in Bucknell refers to selection from queues exceeding a certain length, *nothing in example (9) (or examples (2) or (4)) discloses or even suggests ordering queues based on priority.*"

Prelim. Resp. 40. As an initial matter, we do not find, nor does Patent Owner point us to, any limitation in claim 1 requiring "ordering queues based on a priority." See Ex. 1001, 13:57–14:16. The word "ordering" is not found in the claims, and the first time we see the word "priority" in the claims is dependent claim 4, which recites "[t]he UE of claim 1, wherein the selected data is selected based on a priority or a Quality of Service (QoS)." *Id.* at 14:22–23. Also in claim 4, we do not see any limitations reciting

“ordering” queues based on priority, but only “selected based on priority.”
Id.

Although we are mainly focused on claim 1 at this early stage, even considering dependent claim 4 we do not agree, on this record, with Patent Owner’s argument. Patent Owner argues that “[r]ather than disclosing ‘ordering’ the queues according to priority, example (2) of Bucknell puts the highest priority queue in the first portion, and for the second portion treats all other queues *equally regardless of their relative priorities to each other.*” Prelim. Resp. 41. This argument does not appear commensurate with the claim language, and fails to explain why we should consider such “ordering” language as part of the claims.

To the extent we need to address this argument, we find, as to claims 1 and 4, that Bucknell’s example 9) discloses “[o]ne or both selections for the first and second portions 90, and 95 can be modified to take into account the length of the queue, for example by preferentially selecting from queues exceeding a certain length.” Ex. 1006 ¶ 28. On this record, we find that Bucknell is prioritizing data selection, that is—preferentially selecting data—from queues based on their length.

*c) Whether Bucknell’s examples 2), 3), and 4)
disclose the second iteration as recited in limitation [1.9]*

Patent Owner next contends that “Bucknell does not combine example 3 and 4 as alleged in the Petition. Rather, Bucknell combines examples 2 and 3, and alternatively, combines examples 2 and 4.” Prelim. Resp. 43 (Patent Owner arguing that “Bucknell describes example 3 as ‘*a variation on 2)*’ and example 4 as ‘*a further variation on 2).*’”). According to Patent Owner, “Bucknell describes examples 3 and 4 as different *alternatives*. Bucknell never discloses or suggests combining examples 3 and 4 together

as alleged in the Petition.” *Id.* at 44. Patent Owner argues that “the Petition has provided *no explanation whatsoever* why a POSITA would have been motivated to combine examples 3 and 4 as alleged in the Petition.” *Id.*

Patent Owner’s argument here focuses on mainly the third of three alternative arguments that Petitioner makes with respect to limitation [1.9]. Prior to its argument relying on the disclosure of examples 2), 3), and 4) Petitioner offers two arguments relevant to limitation [1.9]. Initially, Petitioner argues that “Bucknell also teaches that the highest priority can be assigned to the queue with the ‘most data,’ *id.*, [0028] (the selection of the first portion 90 ‘**can be based on the amount of data in the respective queues, for example assigning highest priority to the queue with most data.**’” Pet. 69. According to Petitioner, “the selection of data for the first portion 90 is based on priority, which in turn is based on the amount of buffered data, thereby making the selection of data for portion 90 based on the amount of buffered data” as required by limitation [1.9].

Next, Petitioner argues alternatively, that “in example (9), **‘one or both selections for the first and second portions 90, 95 can be modified to take into account the length of queue, for example by preferentially selecting from queues exceeding a certain length.’**” Pet. 54 (quoting Ex. 1006 ¶ 28). Petitioner explains that “all queues exceeding a certain length may be identified and then ordered according to priority, with Bucknell’s examples (2) and (4) (as examples) applied to read data from those queues.” *Id.* According to Petitioner, “the queue length exceeding a certain length” taught in example 9) is based on buffered data, thus disclosing “the selection of the data is based on buffered data for respective radio bearers,” as required by limitation [1.9]. *Id.* at 55 (citing Ex. 1003 ¶ 128).

Patent Owner’s argument as to the combination of examples 2), 3), and 4) does not address Petitioner’s first two arguments and evidence, which, on this record, appear to show that Bucknell’s prioritized queue length is based on buffered data in either, or both, of a first and second iteration. Therefore, at this stage of the proceeding, we need not reach Patent Owner’s assertions as to the third alternative argument and evidence Petitioner provides, namely the combination of examples 2), 3), and 4).

For completeness, however, we acknowledge that Bucknell does not expressly combine examples 2), 3), and 4), mainly because example 4) only refers back to example 2). However, we note that from a plain reading of Bucknell’s written description it may not be a significant leap to understand that the disclosed combination of examples 2) and 4), with first and second portions 90 and 95 populated in reverse order as taught in example 4), that this combination could be subsequently modified by example 3) to provide a “second iteration . . . based on buffered data.” Ex. 1006 ¶¶ 26–27. In other words, on the current record it is not clear why “the unused resource” of Bucknell’s second portion 95 cannot also “be made available,” to the first portion 90 if the order was simply reversed per the combination of examples 2) and 4).

3. *Conclusion as to Claim 1*

In summary, we find Petitioner’s arguments and evidence sufficient to show a reasonable likelihood that claim 1 is unpatentable over Eckert in view of Bucknell and Lohr-1. On the current record, we find that Bucknell discloses “a first iteration” *based on* receiving the priority values for logical channels associated with the MAC-d flows. Ex. 1006 ¶ 26. And, as discussed above, Bucknell’s described “priorities,” are plural, just like the claimed “received parameters.” Ex. 1001, 14:11; Ex. 1006 ¶ 26. In

addition, there is no limitation in claim 1 requiring “ordering queues based on a priority.” *See* Ex. 1001, 13:57–14:16. As to the issue of whether the Petition provides sufficient explanation or motivation to combine Bucknell’s examples 2), 3), and 4), which is an alternative argument to Petitioner’s other mappings for limitation [1.9] which we find sufficient for institution, we leave this alternative mapping issue for development at trial. *See* Pet. 55 (Petitioner explaining that “Bucknell describes additional ways that limitation [1.9] is disclosed, based on the teachings of examples 2 and 4 (discussed previously) in view of example 3.”).

Considering all the evidence before us at this early stage of the proceeding, we are persuaded that Petitioner has shown a reasonable likelihood that claim 1 would have been obvious over Eckert in view of Bucknell and Lohr-1.

4. *Patent Owner’s arguments as to claims 2–4 and 8–11*

Considering the other independent claim 8, Patent Owner argues that “the Petition has failed to demonstrate a likelihood of success with respect to claim 8 under Ground 1 for the same reasons that the Petition failed to demonstrate a likelihood of success with respect to independent claim 1 in Ground 1.” Prelim. Resp. 46. As for dependent claims 2–4 and 9–11, Patent Owner argues, broadly, that “Ground 1 relies on the same deficient mappings for the ‘first iteration’ and ‘second iteration’ discussed above. Accordingly, the Petition has failed to demonstrate a likelihood of success with respect to dependent claims 2–4 and 9–11 in Ground 1.” *Id.*

At this stage of the proceeding, Patent Owner does not raise any substantive arguments regarding claims 2–4 and 8–11 besides the arguments considered above with respect to claim 1. *Id.* We have reviewed Petitioner’s evidence and arguments and, at this stage, we find them

sufficient for institution. Pet. 14–63. Accordingly, on the current record, Petitioner has shown a reasonable likelihood that claims 2–4 and 8–11 would have been obvious over Eckert in view of Bucknell and Lohr-1.

E. Ground 2: Claims 5 and 12 as obvious over Eckert in view of Bucknell, Lohr-1, and Hans

Petitioner contends that Eckert in view of Bucknell, Lohr-1, and Hans teaches or suggests each limitation of dependent claims 5 and 12. Pet. 63–73. Patent Owner does not raise any substantive arguments regarding claims 5 and 12 asserting that “Ground 2 relies on the same deficient mappings for the “first iteration” and “second iteration” discussed above in connection with Ground 1.” Prelim. Resp. 47. As discussed above, Petitioner has sufficiently demonstrated that the information presented in the Petition shows a reasonable likelihood that claim 1 would have been obvious over Dateki, and we institute on all challenges raised in the Petition. *See SAS Inst., Inc.*, 138 S. Ct. 1348, 1354, 1359–60 (2018); 37 C.F.R. § 42.108(a).

F. Ground 3: Claims 6 and 13 as obvious over Eckert in view of Bucknell, Lohr-1, and Lohr-2

Petitioner contends that Eckert in view of Bucknell, Lohr-1, and Lohr-2 teaches or suggests each limitation of dependent claims 6 and 13. Pet. 73–78. Patent Owner does not raise any substantive arguments regarding claims 6 and 13 asserting that “Petitioner has failed to demonstrate a reasonable likelihood of success in challenging independent claims 1 and 5.” Prelim. Resp. 47. As discussed above, Petitioner has sufficiently demonstrated that the information presented in the Petition shows a reasonable likelihood that claim 1 would have been obvious over Dateki, and we institute on all challenges raised in the Petition. *See SAS Inst., Inc.*, 138 S. Ct. 1348, 1354, 1359–60 (2018); 37 C.F.R. § 42.108(a).

IV. CONCLUSION

After considering the arguments presented in the Petition, the Preliminary Response, and the evidence of record, we determine that Petitioner has demonstrated at least a reasonable likelihood of success in proving that at least one claim of the '138 patent is unpatentable. Thus, we institute an *inter partes* review of all challenged claims (i.e., claims 1–6 and 8–13) on all grounds set forth in the Petition. Our determinations at this stage of the proceeding are based on the evidentiary record currently before us. This decision to institute trial is not a final decision as to patentability of any claim for which we have instituted an *inter partes* review. See *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (noting that “there is a significant difference between a petitioner’s burden to establish a ‘reasonable likelihood of success’ at institution, and actually proving invalidity by a preponderance of the evidence at trial”). We will base any final decision on the full record developed during trial.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted for claims 1–6 and 8–13 of the '138 patent on the unpatentability grounds asserted in the Petition; 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.

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