

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,

v.

INTELLECTUAL VENTURES II LLC,
Patent Owner.

IPR2025-00221
Patent 11,664,889 B2

Before KRISTEN L. DROESCH, SCOTT A. DANIELS, and
FREDERICK C. LANEY, *Administrative Patent Judges*.

DANIELS, *Administrative Patent Judge*.

DECISION
Granting 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 1–8 of U.S. Patent No. 11,664,889 B2 (Ex. 1001, “the ’889 patent”). Paper 2 (“Pet.”). Intellectual Ventures II LLC (“Intellectual Ventures” or “Patent Owner”) filed a Request for Discretionary Denial. Paper 6 (“Request”). Patent Owner also filed a Preliminary Response to the Petition. Paper 7 (“Prelim. Resp.”). Petitioner filed an Opposition to Patent Owner’s Request. Paper 8. On June 13, 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 9.

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. Related Matters

The parties identify the following district-court proceedings involving the ’889 patent and related patents: *Intellectual Ventures II LLC v. Tesla, Inc.*, No. 1:24-cv-00390 (W.D. Tex., filed April 11, 2024). Pet. 80; Paper 3, 2 (Patent Owner’s Mandatory Notices); *Intellectual Ventures II LLC v. Tesla, Inc.*, No. 6:24-cv-00188 (W.D. Tex., filed April 21, 2024). Pet. 80;

Paper 3, 2; *Intellectual Ventures II LLC v. Tesla, Inc.*, No. 1:24-cv-00884 (W.D. Tex., filed April 12, 2024). Pet. 80; Paper 3, 2

B. Real Parties in Interest

Petitioner identifies Tesla, Inc., as the real party in interest. Pet. 80. Patent Owner identifies Intellectual Ventures II LLC as the real party in interest. Paper 5, 2.

C. The '889 patent

The '889 patent is titled “Communications in a Wireless Network” and describes closed loop active feedback control by allocating a timeslot¹ in an uplink frame to send a control signal from user equipment (UE) to a base station, which then sends power command controls back to multiple UEs. Ex. 1001, 2:24–51, 4:55–5:2, 6:5–17. Each UE allocates a timeslot to send an uplink beacon signal (UL_Beacon) in an uplink frame separated from timeslots to send data. *Id.* at 2:34–64, 4:55–62, 5:3–7. Base stations respond to UL_Beacon signals on a downlink Physical Layer Control Channel (PLCCH) providing transmission power control commands, (“TPC” or “TPCC”), back to the multiple UEs. *Id.* at 2:46–51, 5:3–14.

This technique provides active feedback control between a base station and UE terminals separate from the shared uplink physical channel. *Id.* at 2:41–46. An Uplink Beacon (UL_Beacon) signal is received by a base station. From the UL_Beacon, the base station derives appropriate power and channel information and then sends power and other control commands to the UE terminals on the PLCCH to control uplink transmission parameters of the UEs. *Id.* at 2:20–61, 4:35–5:41, 5:50–60. Figure 2 of the '889 patent

¹ The '889 Patent uses “timeslot” and “time slot” interchangeably, as do we.

is reproduced below to illustrate the allocation of a separate timeslot for a UL_Beacon and a downlink PLCCH.

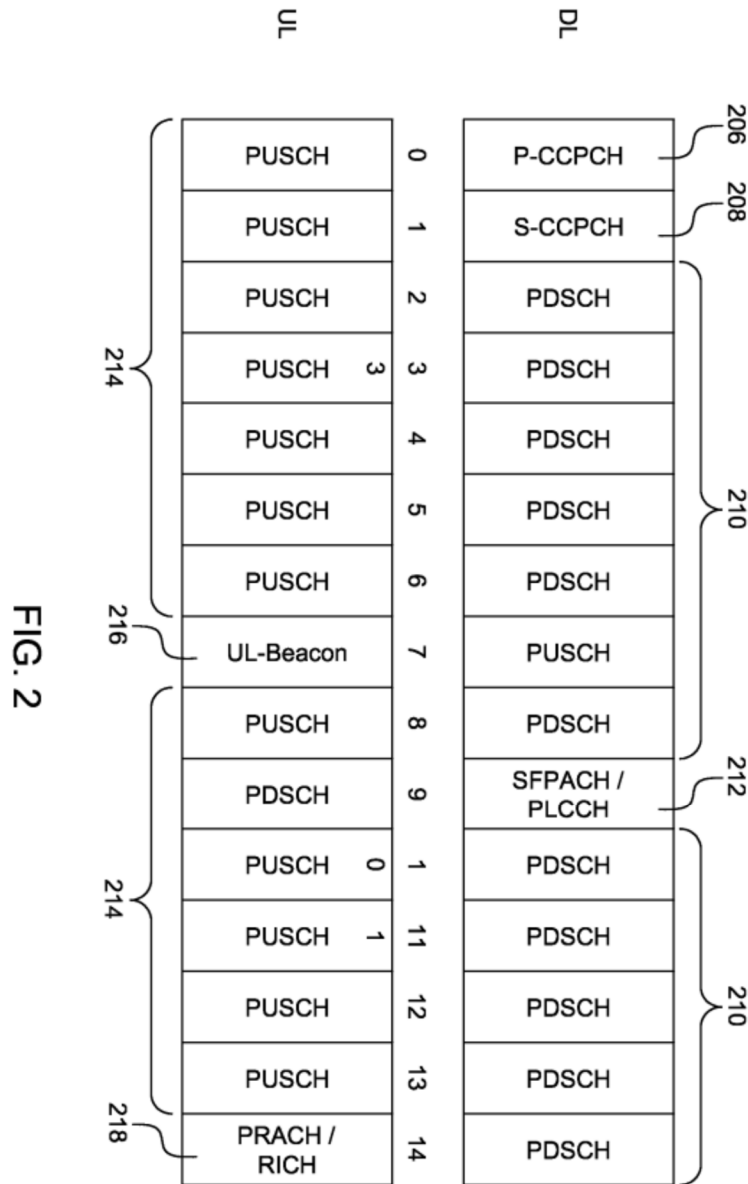


FIG. 2

Figure 2 depicts an uplink (UL) frame with a timeslot 216 allocated to transmit a UL_Beacon *separate* from timeslots 214 used to transmit data. A base station allocates a timeslot 212 in a downlink (DL) frame to transmit PLCCH power control commands to the UE *separate* from timeslots 210 used to transmit data. *Id.* at 2:11–48, 4:55–5:42, 6:5–17.

Separating uplink control channel and UL_Beacon timeslot 216 from uplink physical traffic timeslots 214 “allows the control feedback to operate even when the terminal does not have data to send, with the consequence that uplink shared channels can be used with maximum efficiency.” *Id.* at 6:59–62. If a slower update rate is desired, UL_Beacon and PLCCH timeslots can be fractionated as illustrated in Figure 3, which is reproduced below. *Id.* at 5:64–6:4.

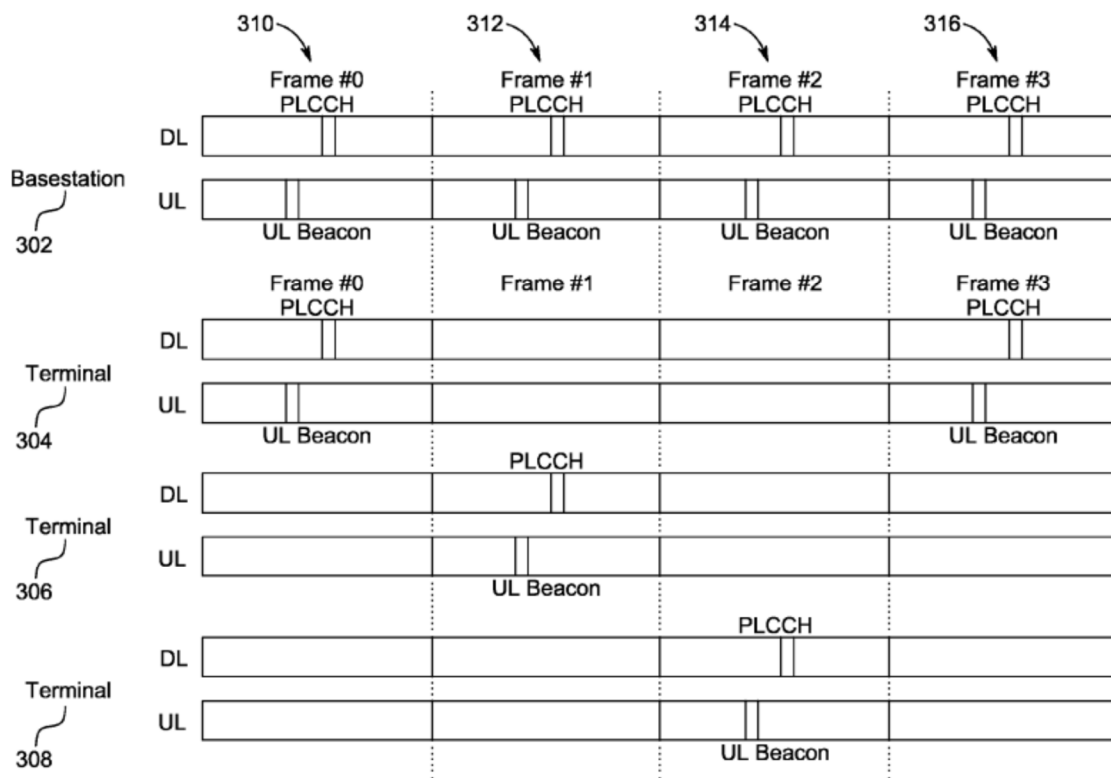


FIG. 3

Figure 3 illustrates a fractionation that provides updates in every third frame. Terminal 304 receives feedback in frames #0 310, #3 316. Terminal 306 receives an update in frame #1 312, and terminal 308 receives an update in frame #2 314. *Id.* at 6:18–28. The fractionation phase is 3. *Id.* at 6:23.

As a result of allocating at least one separate timeslot per uplink frame to send a UL_Beacon control signal 216 separated from normal data

physical channels 214, a Time Division Multiple Access (TDMA) frame structure may be adapted to provide separation between the UL_Beacon and the normal physical channels as illustrated in Figure 2. *Id.* at 5:37–42.

Alternatively, this use of an allocated, separated timeslot for sending control signals such as a UL_Beacon may be used to send at least one signal per multiple uplink frames by allocating a separate timeslot every two, three, or more uplink frames as illustrated in Figure 3 for system applications that can tolerate a slower feedback rate. *Id.* at 5:41–53.

More than one UL_Beacon and its associated PLCCH timeslot may be allocated within a frame structure if the feedback update rate is required to be faster than the frame rate (at the expense of system capacity). *Id.* at 5:54–63. Allocating a separate timeslot to send a UL_Beacon allows a large number of possibilities to arrange a UL_Beacon and PLCCH in a frame. *Id.*

By placing UL_Beacon signals in a dedicated timeslot, a dedicated detection scheme can be applied which may include performance enhancing features such as intra-cell cancelling (for alleviating the effects of cross-correlation interference between UL_Beacon signals transmitted by multiple terminals in the same cell), or inter-cell cancelling (for reducing the interference from neighboring cells in the case where the UL_Beacon timeslots are time synchronized). Cross-interference between UL_Beacon and normal uplink bursts is avoided *by the separation obtained from the use of separate time slots.*

Id. at 5:43–53 (emphasis added).

Although the claims at issue relate to the downlink component of the closed loop feedback control, the '889 Patent makes clear that allocation of a separate timeslot for sending a UL_Beacon control signal in an uplink frame or uplink channel with the allocated timeslot for the UL_Beacon *separated from* timeslots used to send data in the uplink frame is a key feature. As a result, feedback control can operate “even when the terminal does not have

data to send” so that the separated “uplink shared channels can be used with maximum efficiency.” *Id.* at 6:33–37.

D. The Challenged Claims

Petitioner challenges claims 1–8 of the ’889 patent. Pet. 1. Claims 1 and 5 are independent. Claim 1, reproduced below, with italics added to certain limitations of interest, is illustrative of the subject matter recited in the challenged claims.²

- [1.0] A first user equipment (UE) comprising:
 - [1.1] a transmitter;
 - a receiver; and
 - a processor, operatively coupled to the transmitter and the receiver,
 - [1.2] wherein:
 - the receiver and the processor are configured to receive *a control message* over a physical control channel in a first time slot,
 - [1.3] wherein the first time slot also includes a downlink shared channel,
 - [1.4] wherein *the control message has power control bits for a plurality of UEs*, wherein the plurality of UEs include the first UE,
 - [1.5] the processor is further configured to extract power control information for the first UE from the control message, and
 - [1.6] the transmitter and the processor are configured to transmit a signal over a physical control channel to a base station in a second time slot at a transmission power level based on the extracted power control information.

² For consistency, we use Petitioner’s claim limitation numbers and bracketing format.

Ex. 1001, 10:2–62. Independent claim 5 is quite similar and recites in method claim format, “[a] method performed by a first user equipment (UE).” *See id.* at 10:35–47.

E. Evidence

Petitioner submits the following evidence:

Evidence	Exhibit No.
Dateki, U.S. Pat. No. 8,072,916 (Dec. 6, 2011) (“Dateki”)	1005
Mate, Pub. No. US 2002/0141331(Published Oct. 3, 2002)(“Mate”)	1009
Chitrapu, WIDEBAND TDD-WCDMA FOR THE UNPAIRED SPECTRUM, John Wiley & Sons, Ltd (2004)	1008

Petitioner also submits the declaration of Michael D. Kotzin, Ph.D, (Ex. 1003), and Patent Owner submits the declaration of Gary R. Lomp, Ph.D, (Ex. 2013).

F. Asserted Ground of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Claim(s) Challenged	35 U.S.C. §	Reference(s)
1, 2, 5, and 6	103(a) ³	Dateki
3 and 7	103(a)	Dateki and Mate
4 and 8	103(a)	Dateki and Chitrapu

Pet. 4, 47, 56. Patent Owner disputes Petitioner’s asserted grounds of unpatentability. *See generally* Prelim. Resp.

³ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. The ’889 patent issued from a series of continuation applications, claiming the benefit of U.S. Patent No. 8,009,639, filed Dec. 27, 2006, which is before the effective date of the applicable AIA amendments. Ex. 1001, code (63); Pet. 17. Thus, we refer to the pre-AIA version of 35 U.S.C. § 103. Our decision would be the same were we to apply the AIA version of the statute.

III. PATENTABILITY ANALYSIS

Petitioner contends that claims 1–8 of the ’889 patent are unpatentable under 35 U.S.C. § 103(a) as obvious either over Dateki, Dateki in view of Mate, or Dateki in view of Chitrapu. Pet. 21–47, 47–56, 56–75.

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 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.⁴ *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*,

⁴ 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.

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 reference. And fourth, taking account of the information presented, we consider—and have determined, that the Petition satisfies the threshold requirement for instituting an *inter partes* review under 35 U.S.C. § 314(a).

A. Level of Ordinary Skill in the Art

We consider the asserted grounds of unpatentability in view of the understanding of a person of ordinary skill in the art. In assessing the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)). “[O]ne or more factors may predominate.” *Id.*

Relying on the declaration testimony of Dr. Kotzin, Petitioner contends that an ordinarily skilled artisan for the ’889 patent

[w]ould have been someone knowledgeable and familiar with the wireless communications systems that are pertinent to the ’889 patent. That person would have a bachelor’s degree in electrical engineering, computer engineering, computer science, or equivalent training, and approximately two years of experience working in the field of wireless communication systems or design of similar communication systems.

Pet. 18–19 (citing Ex. 1003 ¶ 25). Patent Owner does not dispute Petitioner’s contention as to the level of ordinary skill in the art. *See generally*, Prelim. Resp.

Based on this record, and because there is no dispute, we adopt Petitioner’s articulation of the level of ordinary skill in the art, which is consistent with the ’889 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art, itself, can reflect appropriate level of ordinary skill in art).

B. Claim Construction

In interpreting the claims of the ’889 patent, we “us[e] the same claim construction standard that would be used to construe the claim[s] in a civil action under 35 U.S.C. [§] 282(b).” *See* 37 C.F.R. § 42.100(b) (2020). The claim construction standard includes construing claims in accordance with the ordinary and customary meaning of such claims as would have been understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (*en banc*).

Petitioner indicates that “no claim term requires express construction.” Pet. 19 (citing *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017)).

Patent Owner makes one main argument with respect to claim construction. Prelim. Resp. 24–29. Patent Owner points out that claim 1 recites “‘a control message . . . wherein *the* control message has power control bits for a plurality of UEs.’” *Id.* at 25 (quoting Ex. 1001, 10:8–12). Patent Owner argues that “[t]his claim language requires that there be *one* control message (singular) that has *power control bits for a plurality of*

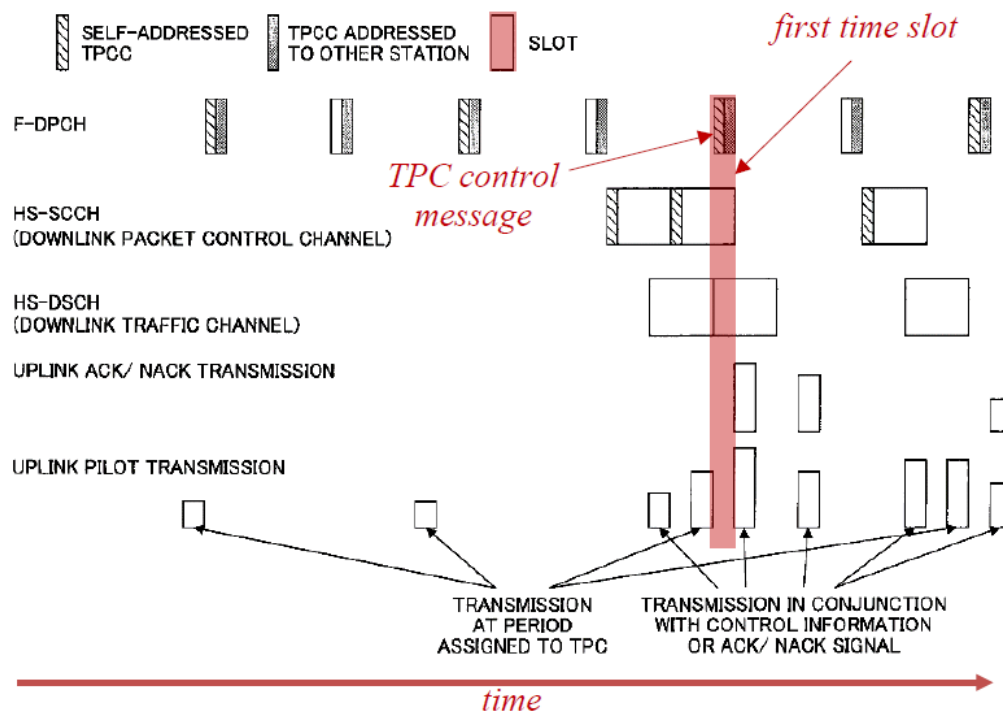
UEs.” *Id.* Patent Owner asserts that “[t]he claim language itself, as well as the specification, supports this construction.” *Id.*

Patent Owner argues that where the indefinite article of “a” element precedes a later recitation in the claim of “the” element, such recitations limit the claim to a singular meaning of that element. *See* Prelim. Resp. 26–29 (citing *Salazar v. AT&T Mobility, LLC*, 64 F. 4th 1311 (Fed. Cir. 2023), *Convolve, Inc. v. Compaq Computer Corp.*, 812 F.3d 1313 (Fed. Cir. 2016), *In re Varma*, 816 F.3d 1352 (Fed. Cir. 2016), and *Harari v. Lee*, 656 F.3d 1331 (Fed. Cir. 2011)). In sum, Patent Owner argues that the proper claim construction “requires that there be *one* control message (singular) that has *power control bits for a plurality of UEs.*” *Id.* at 29.

We point out that in contrast with Patent Owner’s case law, the “indefinite article ‘a’ or ‘an’ in patent parlance usually carries the meaning of ‘one or more’ in open-ended claims containing the transitional phrase ‘comprising.’” *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000). “That ‘a’ or ‘an’ can mean ‘one or more’ is best described as a rule, rather than merely as a presumption or even a convention.” *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008). “The subsequent use of definite articles ‘the’ or ‘said’ in a claim to refer back to the same claim term does not change the general plural rule, but simply reinvokes that non-singular meaning.” *Id.* “The exceptions to this rule are extremely limited: a patentee must evince a clear intent to limit ‘a’ or ‘an’ to ‘one.’” *01 Communique Lab’y, Inc. v. LogMeIn, Inc.*, 687 F.3d 1292, 1297 (Fed. Cir. 2012). But for the time being, we need not decide this issue.

Petitioner explains that in Dateki “the TPC commands carried in the F-DPCH (control channel) comprise a *control message*, because the TPC commands are communicated together in a F-DPCH.” Pet. 32 (citing Ex. 1003 ¶ 81). In other words, we understand Petitioner to equate Dateki’s multiplexed TPC information, i.e., “commands” or “instructions” for multiple UEs, with “a control message.” See Ex. 1005, 4:17–21 (Dateki describing that “[a]ccording to this technique, the same diffusion code is assigned to the pilot signals and transmission power control (TPC) information of a dedicated channel for plural users, and transmission is conducted through time division multiplexing within the same slot.”).

Providing annotated Figure 6 from Dateki, reproduced below, Petitioner argues that “Dateki’s F-DPCH communication that includes TPCC for plural users (‘self-addressed,’ and ‘to other station’), grouped and transmitted together in the slot, is an example of a *control message*.” Pet. 33 (citing Ex. 1005, 4:35–40; Ex. 1003 ¶ 83).



Dateki's Figure 6 illustrates "a transmission power control operation."
Ex. 1005, 7:44–45.

Whether or not "a control message" is limited to a singular control message is best left for a full development of the record during trial, mainly because at this early stage, it is not entirely clear what the meaning of "control message" is, regardless of whether it is singular. Our review of the '889 patent's written description fails to find any specific mention, or even allusion to, a "control message." Nor does Patent Owner point us to any clear contextual meaning or definition in the specification or prior art. Currently, the only relevant description of "control message" is found in the claims, for example in claim 1 which recites "the control message has power control bits for a plurality of UEs." Ex. 1001, 10:11–12. We discuss this matter further, below, in our merits analysis.

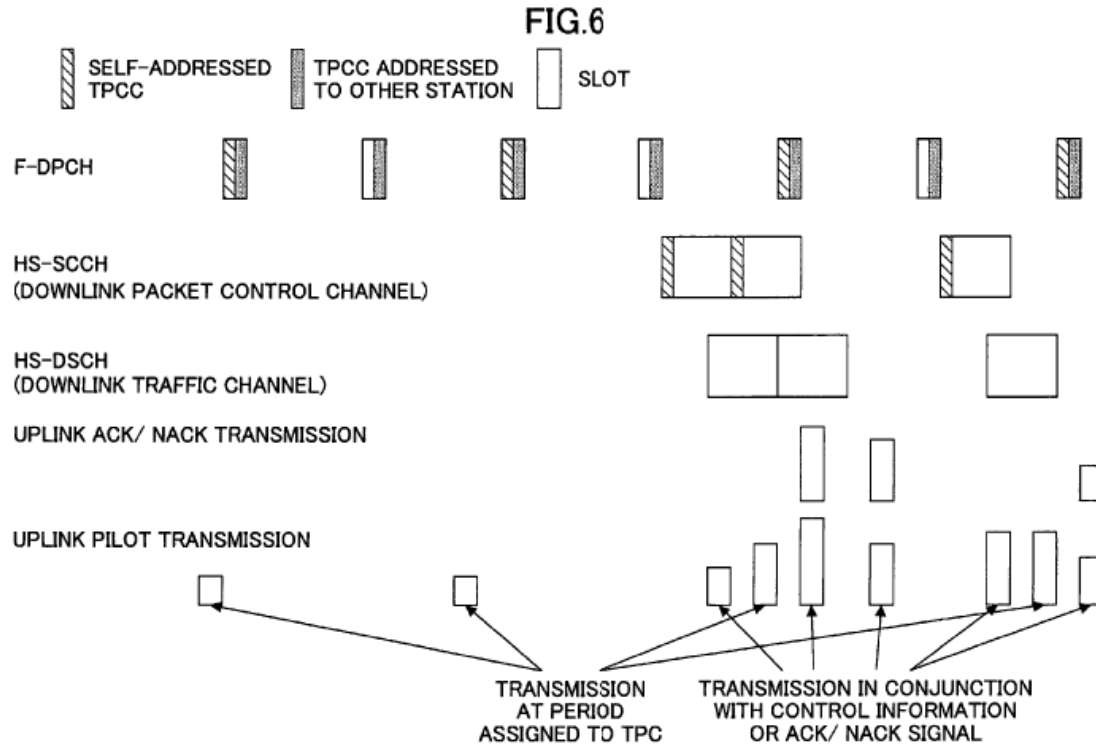
Because neither party at this stage of the proceeding has provided a particularly helpful construction or explanation of "a control message" we leave this issue for development at trial. In the meantime, the parties are encouraged to better explain the meaning of "a control message" and "the control message," in their subsequent briefing.

C. The Prior Art

Before turning to Petitioner's initial ground of unpatentability, we provide a brief summary of the asserted reference to Dateki.

1. Dateki (Ex. 1005)

Dateki describes a wireless communication system and apparatus "that establishes wireless communication by controlling transmission power according to transmission power control information." Ex. 1005, 1:10–13. Dateki's Figure 6 is reproduced below.



Dateki’s Figure 6 illustrates “a transmission power control operation.” Ex. 1005, 7:44–45. The top channel “F-DPCH,” means a “Fractioned - Dedicated Physical Channel.” *Id.* at 12:1–2. The F-DPCH channel, the HS-SCCH channel, “High Speed-Shared Control Physical Channel,” and HS-DSCH channel, “High Speed-Downlink Shared Channel” are all downlink channels carrying transmissions from a base station to one or more UEs.

Dateki explains that “[t]he F-DPCH corresponds to a channel that is capable of transmitting a [time] slot including plural TPC bits addressed to differing mobile stations.” *Id.* at 12:13–15. For example, the first, third, fifth, and seventh time slots in F-DPCH channel include the “self-addressed TPCC” and “TPCC addressed to other station.” Dateki further explains that in Figure 6 “TPC bits addressed to two mobile stations are temporally multiplexed.” *Id.* at 15–16.

D. Ground 1: Claims 1, 2, 5, and 6 – Obviousness over Dateki

Petitioner contends that claims 1, 2, 5, and 6 of the '889 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Dateki. Pet. 21–47. Patent Owner opposes. Prelim. Resp. 33–64. Having considered the arguments and evidence before us, we determine that the record establishes a reasonable likelihood that Petitioner would prevail on this asserted ground of unpatentability. In their Preliminary Response, Patent Owner has limited the dispute at the institution stage mainly towards limitations [1.2], [1.3] and [1.4] and the claimed “control message.” We, therefore, address specifically the parties’ arguments with respect to these claim limitations.

1. *Petitioner’s Arguments as to Limitations [1.2] and [1.4] and “a control message”*

Petitioner argues that Dateki discloses “a control message . . . wherein the control message has power control bits for a plurality of UEs” as required by limitations [1.2] and [1.4]. Pet. 30–38. Specifically, Petitioner argues that “Dateki discloses transmitting a power *control message* over the FDPCH: ‘[t]he F-DPCH corresponds to a channel that is capable of transmitting a slot including plural TPC [transmit power control] bits addressed to differing mobile stations.’” *Id.* at 30–31 (quoting Ex. 1005, 12:13–15).

Petitioner’s expert, Dr. Kotzin, testifies that

[t]he TPC commands (or bits) carried in the F-DPCH comprise *a control message*, because the TPC commands are communicated together in a control channel (F-DPCH), and the TPC commands are used to facilitate the maintenance, stability, and quality of the communication link. UEs and network nodes (e.g., base stations) exchange control information, including TPC information, as bits in message form. Messages are the

conventional mechanisms for exchanging digital information in networks, including cellular networks like UMTS.

Ex. 1003 ¶ 80. Dr. Kotzin testifies further that “Dateki similarly explains that transmitting the TPC bits ‘is conducted through time division multiplexing **within the same slot . . .**’ Thus, a POSITA would have understood that the TPC commands comprise “*a control message*.” *Id.* (quoting Ex. 1005, 4:21–22).

2. *Patent Owner’s Arguments as to Limitations [1.2]–[1.4] and “a control message”*

Patent Owner’s arguments are based on its claim construction asserted above, namely that “a control message,” recited in limitation [1.2], as the antecedent basis for “the control message,” recited in limitation [1.4], is singular. Based on this claim construction, Patent Owner makes two particular arguments which we address below.

First, considering Dateki’s Figure 6, Patent Owner contends that in the case where Dateki’s F-DPCH channel and the downlink data traffic channel share a time slot, “the HS-SCCH -- as opposed to the first power control information (TPCC1) transmitted on the F-DPCH -- *is used by the UE to control the UE’s transmission power*.” Prelim. Resp. 53. Patent Owner asserts that HS-SCCH carries only a power control command for a single UE, and “[t]hus, the power control information in each HS-SCCH frame cannot be ‘the control message’ because it lacks power control bits for ‘*a plurality of UEs*’” as required by limitation [1.4]. *Id.* at n.2 (quoting Ex. 2013 ¶ 81, n.3).

With respect to this issue of whether the UE uses TPCC1 on the F-DPCH time slot, or uses TPCC2 on the HS-SCCH frame, the parties’ experts

provide competing testimony, based on Dateki's written description and Figure 6. Patent Owner's declarant, Dr. Lomp, testifies that

Dateki makes clear that even though the height of the *first ACK/NACK signal* (and its corresponding pilot signal) changes after the UE receives the specified TPCC information on the F-DPCH -- that height change is *not* based on the specified TPCC information sent on the F-DPCH *but rather on second power control information transmitted over the HS-SCCH*.

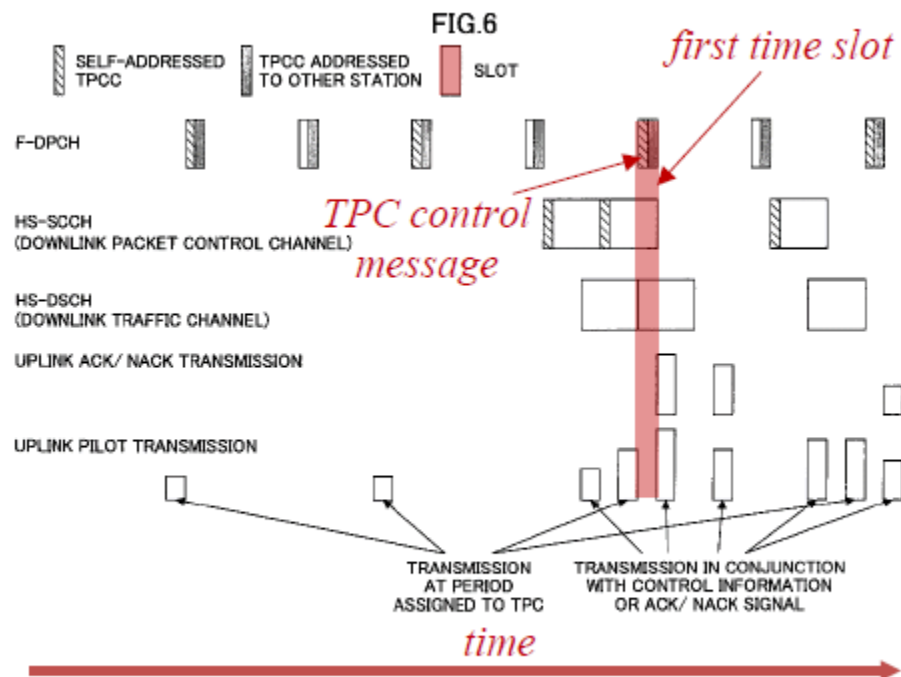
Ex. 2013 ¶ 85 (citing Ex. 1005, 13:66–14:4).

Petitioner's declarant, Dr. Kotzin, testifies otherwise, namely that "Dateki's F-DPCH communication that includes TPCC for plural users ('self-addressed,' and 'to other station'), grouped and transmitted together in the slot, is an example of a *control message*." Ex. 1003 ¶ 83. Dr. Kotzin testifies further that Dateki's "mobile station's TPCC extracting unit 37 (part of the processor) extracts TPC bits addressed to the mobile station, which are received from the antenna 31 and high frequency processing unit 32 (*the receiver*). *Id.* (citing Ex. 1005, 10:51–59, 11:6–10, 12:13–15). Thus, according to Dr. Kotzin,

Dateki discloses that the UE obtains its TPCC from the F-DPCH occasion such that the UE can use that TPCC to update its transmit power in future communications. Thus, Dateki's TPCC extracting unit 37, which is part of *the processor*, extracts *power control information for the first UE from the control message*.

Id. ¶ 100.

Dateki's Figure 6 as annotated by Dr. Kotzin is reproduced below.



Dateki, FIG. 6 (annotated)

Noting that time runs horizontally, Dateki’s Figure 6, as annotated by Dr. Kotzin, illustrates a reddish-brown highlight of a time slot including multiple different UE power control commands in the F-DPCH channel. The highlighted time slot extends through both HS-SCCH and HS-DSCH downlink channels and depicts the relative temporal difference with the immediately previous and following uplink ACK/NACK and Pilot transmissions. *Id.* ¶¶ 82–83.

Considering the testimony of both experts, we have a factual dispute as to whether, in the time slot indicated by Dr. Kotzin’s annotated Figure 6, reproduced above, Dateki’s UE is utilizing the multiple UE power control commands from F-DPCH or single UE power command from HS-SCCH. This dispute is best left for resolution during trial.

Patent Owner’s second argument is also based on its singular construction of “a control message,” specifically that “the Petition fails to

explain how the collection of TPC commands carried in the F-DPCH includes *one* control message (singular) that has *power control bits for a plurality of UEs*, as required by the Challenged Claims.” Prelim. Resp. 60 (citing Ex. 2013 ¶ 90). Dateki is different from the claimed singular “control message ha[ving] power control bits for a plurality of UEs,” Patent Owner asserts, because “Dateki makes clear that, even though multiple TPCC messages may share a time slot, *separate addressing is used for each message*.” *Id.* at 61 (citing Ex. 2013 ¶ 91). In support, Patent Owner’s expert, Dr. Lomp, testifies that “[t]he fact that the TPC commands are communicated together in a control channel does not mean that such TPC commands equate to a *single* message with power control bits for a plurality of UEs, as claimed.” Ex 2013 ¶ 94.

3. *Analysis*

a) *Limitations [1.2] and [1.4]*

Patent Owner’s arguments and Dr. Lomp’s testimony go to the heart of our claim construction question articulated above. Section III.B. That is, what is a “control message?” With respect to Patent Owner’s second argument, the very nature of multiplexing is a method by which multiple digital signals are combined into one composite signal over a shared path, such as a channel, e.g., a desired frequency range.⁵ If Patent

⁵ The online, A DICTIONARY OF COMPUTER SCIENCE explains that “[t]he process of combining multiple messages simultaneously on the same physical or logical transmission medium. There are two main types: time division multiplexing (TDM) and frequency division multiplexing (FDM). In TDM a device is allocated specific time slots in which to use the transmission medium. FDM divides the transmission medium into channels of smaller bandwidth to which the user has exclusive rights. FDM and TDM can be combined to provide devices with time slots of logical channels.” A

Owner's position is that a "control message" as claimed, means, or is doing, something other than multiplexing signals (commands) for multiple UEs into a single transmission, this should be explained with more clarity.

On this record, we find Petitioner's arguments and evidence sufficient to show a reasonable likelihood that claim 1 is unpatentable over Dateki. First, it is not clear on the record before us that "a control message" and "the control message" must be singular. And, as discussed above, there is a question of fact as to whether or not Dateki's UE is utilizing the multiple UE power control commands from F-DPCH, or from the single UE power command from HS-SCCH. *See* Ex. 1005, 12:25–27 (Dateki describing that "[t]he frames of the HS-SCCH are also configured to transmit TPC bits to mobile stations that are subject to control data transmission."). Second, to the extent it is understood by those of ordinary skill that "a control message" is a composite multiplexed signal, including "power control bits for a plurality of UEs" as recited in claim 1, Dateki similarly describes that "[t]he F-DPCH corresponds to a channel that is capable of transmitting a slot including plural TPC bits addressed to differing mobile stations." Ex. 1005, 12:13–15.

Considering all the evidence before us at this early stage of the proceeding, we are persuaded that Petitioner has shown a reasonable likelihood that Dateki teaches or discloses "a control message" as recited in

DICTIONARY OF COMPUTER SCIENCE, 7th Ed., Oxford University Press, Andrew Butterfield, Gerard Ekembe Ngondi, and Anne Kerr, <https://www.oxfordreference.com/display/10.1093/acref/9780199688975.001.0001/acref-9780199688975-e-3394?rskey=pGIX8l&result=2> (last visited July 2, 2025).

limitation [1.2] and that “the control message has power control bits for a plurality of UEs” as recited in limitation [1.4].

b) Limitation [1.3]

Patent Owner makes a particular argument with respect to the prosecution history of the '889 patent and limitation [1.3], specifically, that to gain allowance, “the Applicant amended independent claim 1 to further recite ‘*wherein the first timeslot also includes a downlink shared channel.*’”

Prelim. Resp. 22 (citing Ex. 1002). Patent Owner argues that

[b]ased on the prosecution history, it is clear that, from the Examiner’s perspective, the point of novelty of the independent claims of the ‘889 Patent was the requirement that a *single* timeslot is *shared* by a physical control channel with *power control bits for a plurality of UEs* and *another downlink shared channel*, and information transmitted over the physical control (i.e., a control message with *power control bits for a plurality of UEs*) is used by the mobile station *to effectuate power control*.

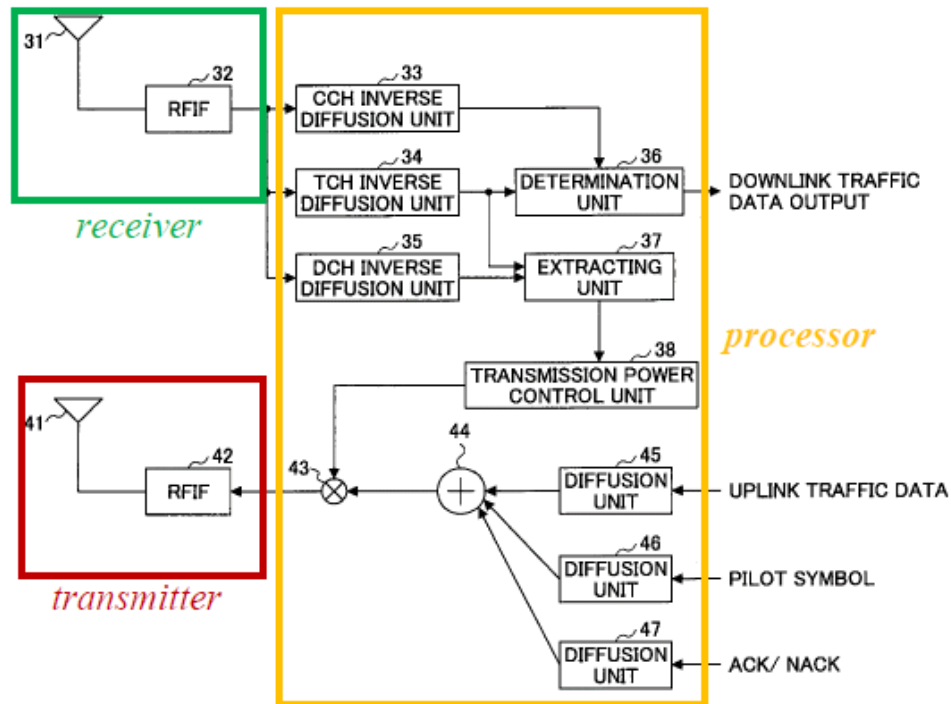
Id. at 23 (citing Ex. 2013 ¶ 44). What is certainly true is that claim 1 was amended to include the limitation “wherein the first time slot also includes a downlink shared channel.” Ex. 1002, 126. And to this point, Petitioner argues that “Dateki’s FIG. 6, . . . illustrates transmitting the TPCC in the FDPCH in a time slot and concurrently transmitting data in the HS-PDSCH (listed in figure as “HS-DSCH”) (*downlink shared channel*) within the same time slot.” *Id.* at 35 (citing Ex. 1003 ¶ 88; Ex. 1005, Fig. 6).

Considering Petitioner’s arguments and evidence, particularly Dateki’s Figure 6 as annotated by Petitioner, above, we see that the TPC control message in the F-DPCH channel, as well as traffic data in the HS-DSCH downlink shared channel, are transmitted in the same time slot, i.e., what Petitioner refers to as the “first time slot.” *Id.* at 33. Thus, on this record, Petitioner has shown a reasonable likelihood that Dateki’s HS-

PDSCH is a “downlink traffic channel,” and a “shared channel” the same as in limitation [1.3] requiring that “the first timeslot also includes a downlink shared channel.” Ex. 1001, 10:9–10.

c) Limitations [1.0]–[1.1] and [1.5]–[1.6]

As for the remaining limitations [1.0]–[1.1] and [1.5]–[1.6], of claim 1, Petitioner argues that Dateki discloses for [1.0]–[1.1] “a ‘wireless communication apparatus such as a mobile station’” including, as shown in Petitioner’s annotated Figure 4 from Dateki, reproduced below, “a *transmitter* (red) a *receiver* (green); and a *processor* (yellow).” Pet. 26–27 (citing Ex. 1003 ¶ 68; Ex. 1005, 7:56–57).



Dateki's Figure 4, as annotated by Petitioner, illustrates "a mobile station of the mobile wireless communication system using the CDMA scheme that includes a wireless communication apparatus and a counterpart wireless communication apparatus." Ex. 1005, 10:10–13.

As for limitations [1.5]–[1.6], Petitioner argues, consistent with limitation [1.5], that "Dateki explains that the TPCC extracting unit 37 of the mobile station (part of *the processor*) extracts *power control information* from the TPCC (hence the name 'TPCC extracting unit')." *Id.* at 38 (citing Ex. 1003 ¶ 98; Ex. 1005, 10:51–59). And, for limitation [1.6], Petitioner argues that "Dateki teaches using the extracted TPC command to set a transmission power level for the pilot symbols and the ACK/NACK signals." *Id.* at 40 (citing Ex. 1003 ¶ 104; Ex. 1005, 10:60–11:1).

Patent Owner does not substantively dispute Petitioner's position as to these limitations. *See, generally*, Prelim. Resp. 52–64.

On this record, we find persuasive Petitioner's arguments and evidence, including Mr. Kotzin's testimony, and determine that there is a reasonable likelihood that an ordinary skilled artisan would have understood Dateki to teach or disclose limitations [1.0]–[1.1] and [1.5]–[1.6] as recited in claim 1.

4. *Conclusion as to claim 1*

Based on the complete record before us and for the reasons expressed above, Petitioner has shown a reasonable likelihood that claim 1 would have been obvious over Dateki.

5. *Claims 2, 5, and 6.*

Claim 2 depends from claim 1, and claim 6 depends from claim 5. Ex. 1001, 10:20–23, 35–51. Claim 5, like claim 1, is independent, and

includes the same disputed limitations as claim 1 of “a control message,” and “wherein the control message has power control bits for a plurality of UEs.” *Id.* at 10:37–41.

As discussed above, Petitioner has sufficiently demonstrated that the information presented in the Petition renders obvious at least claim 1, and we institute on all challenges raised in the Petition. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1354, 1359–60 (2018); *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute to require “a simple yes or no institution choice respecting a petition, embracing all challenges included in the petition”); 37 C.F.R. § 42.108(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.”).

At this stage of the proceeding, Patent Owner does not raise any substantive arguments regarding claims 2, 5, and 6 besides the arguments considered above with respect to claim 1. Prelim. Resp. 64. We have reviewed Petitioner’s evidence and arguments and, at this stage, we find them sufficient for institution. Pet. 43–47. Accordingly, on the current record, Petitioner has shown a reasonable likelihood that claims 2, 5, and 6 would have been obvious over Dateki.

E. Ground 2: Dependent Claims 3 and 7 – Obviousness over Dateki and Mate

Petitioner contends that Dateki in view of Mate teaches or suggests each limitation of dependent claims 3 and 7. Pet. 37–59. Patent Owner does not raise any substantive arguments regarding claims 3 and 7 asserting that “Petitioner has failed to demonstrate a reasonable likelihood of success in challenging independent claims 1 and 5.” Prelim. Resp. 64. 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: Dependent Claims 4 and 8 – Obviousness over Dateki and Chitrapu

Petitioner contends that Dateki in view of Chitrapu teaches or suggests each limitation of dependent claims 4 and 8. Pet. 56–74. Patent Owner does not raise any substantive arguments regarding claims 4 and 8 asserting that “Petitioner has failed to demonstrate a reasonable likelihood of success in challenging independent claims 1 and 5.” Prelim. Resp. 65. 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 ’889 patent is unpatentable. Thus, we institute an *inter partes* review of all challenged claims (i.e., claims 1–8) 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 1–8 of the ’889 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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