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Paper 29
Date: July 6, 2026

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*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a)

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. 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.

We instituted an *inter partes* review of claims 1–8 of the ’889 patent on all of the grounds asserted by Petitioner. Paper 10 (“Dec. Inst.”). Patent Owner timely filed a Patent Owner Response. Paper 15 (“PO Resp.”). Petitioner subsequently filed a Reply (Paper 19, “Pet. Reply”), and Patent Owner timely filed a Sur-Reply to Petitioner’s Reply (Paper 22, “PO Sur-Reply”).

Oral argument was held on March 24, 2026 at USPTO Headquarters in Alexandria, VA and a transcript of the hearing is entered in the record. Paper 26.

We have jurisdiction under 35 U.S.C. § 6(b). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). Having reviewed the arguments of the parties and the supporting evidence, we find that Petitioner has demonstrated by a preponderance of the evidence that each of the challenged claims—i.e., claims 1–8 of the ’889 patent—is unpatentable.

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); *Intellectual Ventures II LLC v. Tesla, Inc*, No. 6:24-cv-00188 (W.D. Tex., filed April 21, 2024); and *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

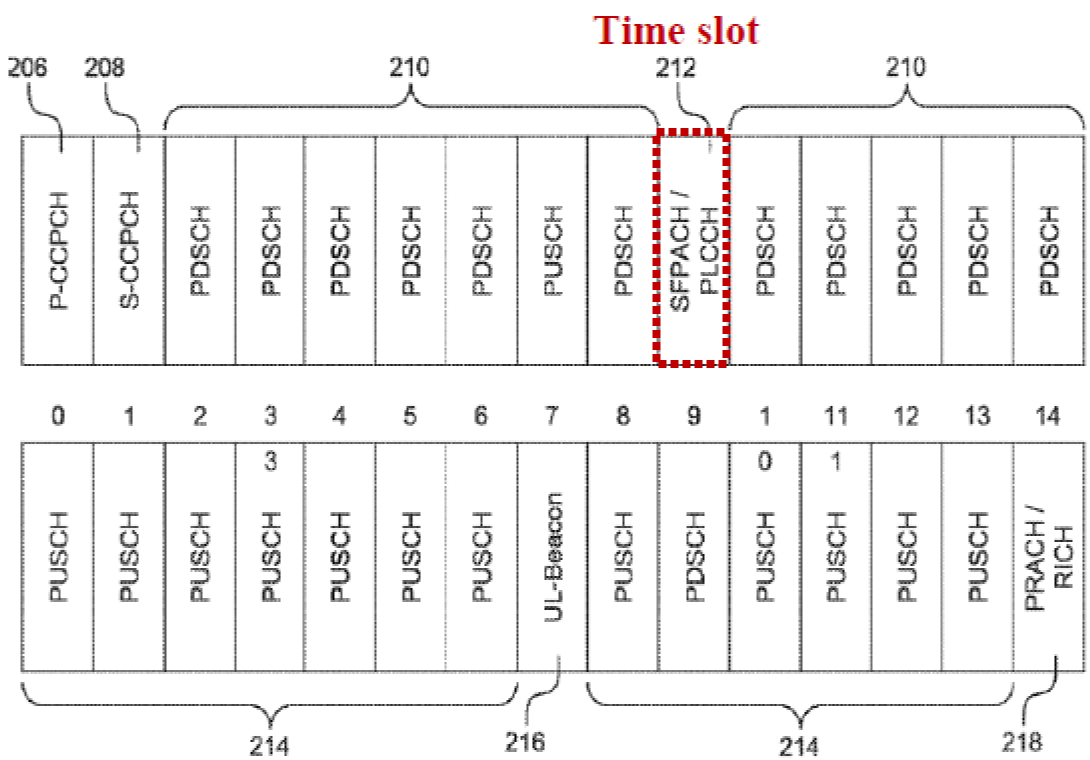
The ’889 patent is titled “Communications in a Wireless Network” and describes a universal mobile telecommunication system (UMTS) using a time division-code division multiple access (TD-CDMA) air interface application involving closed loop active feedback control by allocating a timeslot[1] in an uplink frame to send a control signal, i.e., a control message, from user equipment (UE) to a base station, which then sends specific power command control messages back to multiple UEs on a downlink frame. 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 received UL_Beacon signals on a downlink Physical Layer Control Channel (PLCCH) providing

[1] The ’889 Patent uses “timeslot” and “time slot” interchangeably.

specific transmission power control commands, ("TPC" or "TPCC"), back to the multiple UEs. *Id.* at 5:3–14. This technique provides active feedback control between a base station and UE terminals. *Id.* 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 as annotated by Petitioner's declarant, Dr. Kotzin, is reproduced below to illustrate the allocation of a separate downlink timeslot 212 for UL_Beacon and channel PLCCH.



'889 patent, FIG. 2

Figure 2 depicts an uplink (UL) frame, on the bottom portion of the figure, including 10 subframes 0–9, with timeslot 216 allocated to transmit

UL_Beacon separate from timeslots 214 used to transmit data. Ex. 1003 ¶ 45. For downlink (DL), depicted in the top portion of the figure, a base station allocates timeslot 212 in a downlink frame to transmit PLCCH power control commands to the UE along with another shared channel SFPACH. Ex. 1001, 6:5–14. The ’889 patent explains that “[t]he PLCCH can share a timeslot with other physical channels by exploiting the CDMA aspect of the system.” *Id.* at 2:63–64.

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.

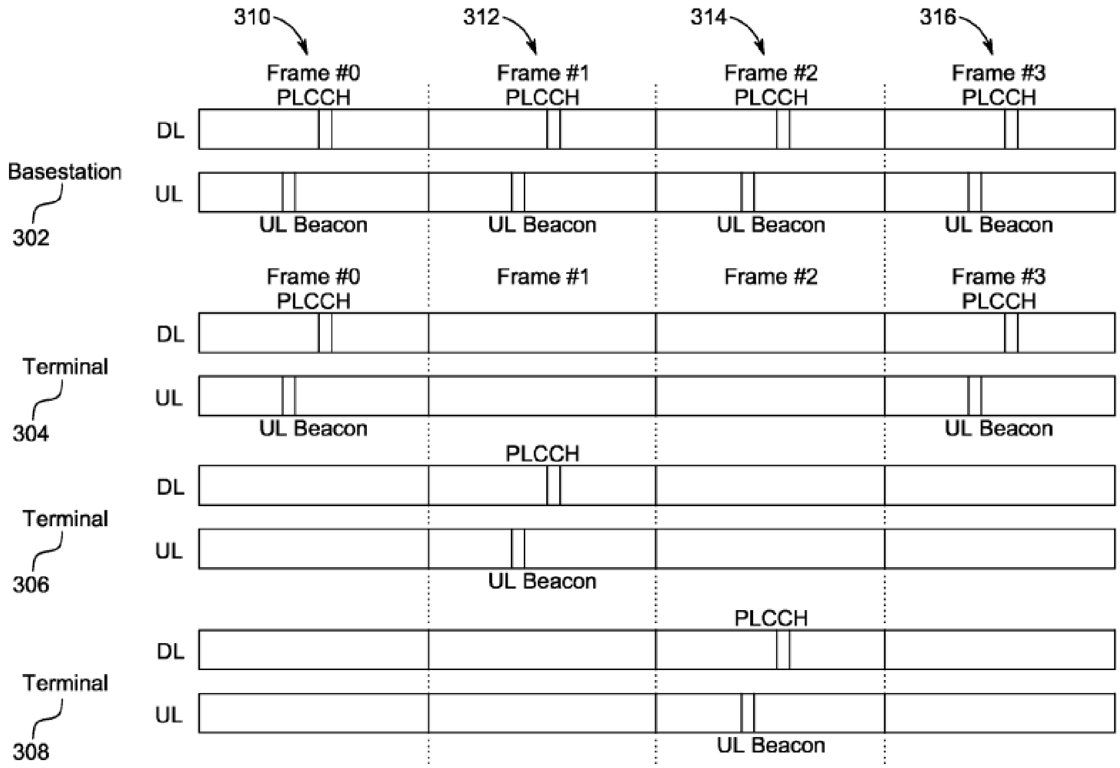


FIG. 3

Figure 3 illustrates a fractionation that provides updates in every third frame. Terminal 304 receives feedback in frames #0 310 and #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.* The ’889 patent explains that

> [b]y 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).

Importantly, the claims at issue relate to both the downlink and uplink transmissions of the closed loop feedback control. For example, as shown below, claim 1 limitations [1.0]–[1.5] relate essentially to downlink transmissions and limitation [1.6] to uplink transmissions. Ex. 1001, 10:2–62.

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*.

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.

[2] For consistency, we use Petitioner's claim limitation numbers and bracketing format.

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 and supplemental declaration of Michael D. Kotzin, Ph.D., (Exs. 1003, 1070), and Patent Owner submits the declaration of Gary R. Lomp, Ph.D., (Ex. 2017).

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* PO Resp.

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.

[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.

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, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

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

[4] Patent Owner does not present arguments or evidence of secondary considerations. Therefore, secondary considerations do not constitute part of our analysis.

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*, PO 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 indicated in the Petition 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)).

In its Response, Patent Owner provides specific claim construction arguments pertaining to claims 1 and 5, as well as 4 and 8, respectively. PO Resp. 25–27. Petitioner maintains that no express claim constructions are necessary. Pet. Reply 2–3.

1. *Claims 1 and 5 – the extracted power control information*

Patent Owner makes one main claim construction argument with respect to claims 1 and 5, arguing, e.g., that limitation [1.6] "requires that '*the* extracted power control information' upon which the UE bases its transmission of a signal be the *same* power control information extracted from *the control message (singular) having power control bits for a plurality of UEs*." PO Resp. 25–26.[5] Patent Owner explains further that

[5] Patent Owner contends that "a control message" as recited in claim 1 is singular. PO Resp. We preliminarily addressed this issue in our Institution Decision. Inst. Dec. 11–14. On the complete record now before us, we need not decide this issue because there is no actual dispute raised in the Response that Dateki discloses a (singular) control message in F-DPCH. *See* Pet. Reply 2, *see also* PO Resp. 55 (Patent Owner mainly arguing in its Response, that "[t]he Petition fails to explain why the second ACK/NACK signal (and its corresponding pilot signal) following the specified TPCC1 information on the FDPCH would be based on such TPCC1 information on the F-DPCH.").

"[s]imply put, the claim language would *not* be met if '*the* extracted power control information' used for transmitting the signal came from a control message that had power control bits for *only a single UE*." *Id.* at 27 (citing Ex. 2017 ¶ 69).

Patent Owner has tailored its claim construction, understandably so, to its main argument pertaining to Dateki, namely the assertion that during data packet transmission Dateki relies *only* on TPC, i.e., TPCC 2, for a single UE transmitted on HS-SCCH, and not the multiple UE control message TPCC 1 transmitted on F-DPCH. PO Resp. 25–26. A plain reading of claim 1 mostly supports Patent Owner's claim interpretation. On its face, claim 1 requires "*a control message* . . . wherein *the control message* has power control bits for a plurality of UEs." Ex. 1001, 10:8–12 (emphasis added). Claim 1 further requires that a first UE "extract power control information for the first UE from *the control message*, and . . . 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." *Id.* at 10:14–19 (emphasis added).

Petitioner disputes Patent Owner's interpretation of Dateki; however, Petitioner does not explicitly dispute Patent Owner's claim construction. Pet. Reply 2–3.

A reservation with Patent Owner's construction is that claims 1 and 5 do not recite, as Patent Owner interprets it, that the extracted power control information upon which the UE bases its transmission of a signal be "the *same*" power control information extracted from the control message. PO Resp. 25. Where the claim is clear on its face, we decline to inject "the same" into the construction, that is, words that are not actually in the claim.

Yet considering the plain language of claim 1, we mostly agree with Patent Owner's interpretation, namely that "a transmission power level based on the extracted power control information," as required in limitation [1.6] includes power control information extracted from "the control message," in limitation [1.5] having "power control bits for a plurality of UEs" as recited in limitation [1.4]. Ex. 1001, 10:2–19.

We understand and interpret the concluding limitation in method-type claim 5 in the same manner as limitation [1.6].

2. *Claims 4 and 8 – time synchronized*

For claims 4 and 8, Patent Owner argues that "*[w]hen* there *is* time synchronization, the UE must "transmit the signal over the physical control channel; and *when* there is *not* time synchronization, the UE must 'transmit a signal over a random access channel.'" *Id.* at 26. Patent Owner argues specifically that this is a "binary choice" where "this claim language requires that a UE *coming out of a 'time synchronized' state* such that the UE is 'not time synchronized' *transition* from transmitting 'the signal over *the physical control channel*' to transmitting 'a signal over *a random access channel.*'" *Id.* Patent Owner explains, "[p]ut another way, the claim language would *not* be met by a UE that continued transmitting 'the signal over the physical control channel' *when* there was "*not time synchronization*." *Id.* (citing Ex. 1001, 7:38–45).

Petitioner argues that "[n]either the claims nor the specification describe (i) a 'binary choice,' (ii) a step of transitioning from one channel to another, or (iii) a prohibition against ever sending a signal over a '*physical control channel*' when there was not time synchronization." Pet. Reply 3.

Petitioner contends that "[t]he claim language is clear and needs no construction." *Id.* (citing Ex.1070 ¶¶ 19, 22).

For the reasons that follow we agree with Petitioner. Claim 4 is representative, and reproduced below.

> 4. The first UE of claim 1 wherein the transmitter and the processor are further configured to transmit the signal over the physical control channel when time synchronized and to transmit a signal over a random access channel when not time synchronized.

Ex. 1001, 10:30–34. Claim 4 has a first requirement: "to transmit the signal over the physical control channel when time synchronized, and" a second requirement, "to transmit a signal over a random access channel when not time synchronized." *Id.* On its face, we do not read these requirements in claim 4 as a mutually exclusive "binary choice" as Patent Owner suggests. For instance, the claim does not say "to [only] transmit the signal over the physical control channel when time synchronized, and to [only] transmit a signal over a random access channel when not time synchronized." *Id.* In other words, if the UE and network are *not* time synchronized there is no claim language which restricts or prohibits the UE from transmitting "the signal" (albeit less efficiently) over the physical control channel. Similarly, there is no language which prohibits "a signal" from being transmitted over a random access channel when time *is* synchronized.

To say it another way, each limitation is an affirmative action, for example when the UE and base station are time synchronized, the claim requires "to transmit the signal over the physical control channel." The claim does not restrict or prohibit any other functionality relating to "the signal" transmitted over the physical control channel when time is not synchronized. Moreover, there is nothing in claim 4 which describes a "transition" as Patent Owner argues. PO Resp. 26. Indeed, the issue of transition as described in the '889 patent is instructive as to our understanding of claim 4. The challenged patent explains that

> it is necessary for these UEs to monitor the status of the downlink and automatically come out of CELL_ACTIVE state if the downlink is deemed to be out-of-synchronization (for example, very high downlink errors or low received signal strength). This feature prevents UEs continuing to transmit in a state where the feedback channel may be unreliable and thus causing interference.

Ex. 1001, 7:38–45. We find that this explanation in the '889 patent does not support Patent Owner's proposed "binary choice" construction because it explains that monitoring the downlink status "prevents UEs *continuing* to transmit in a state where the feedback channel may be unreliable and thus causing interference." *Id.* (emphasis added). This sentence, and the use of the word "continuing" more aptly describes that a UE may be (albeit inefficiently) transmitting in a CELL ACTIVE state when there is no time synchronization between the UE and base station, even though such transmissions may be undesirable. Patent Owner's declarant Dr. Kotzin testifies that "in CDMA systems, a UE may lose time alignment with the base station before it is detected (e.g., based on the measurements described above). As a result, a UE may transmit uplink signals without time alignment with the base station, prior to the UE's detection of it." Ex. 1070 ¶ 22 (citing Ex. 1008, 107, 193–196). This testimony is consistent with our understanding of claim 4, the specification of the '889 patent, and the limitations not being mutually exclusive. In any case, we find claim 4 clear on its face and that no specific construction is necessary.

Claim 8 recites similar limitations in method-type format. *Id.* at 10:58–62. For the same reasons as claim 4, we find claim 8 is also clear on its face and does not require express construction.

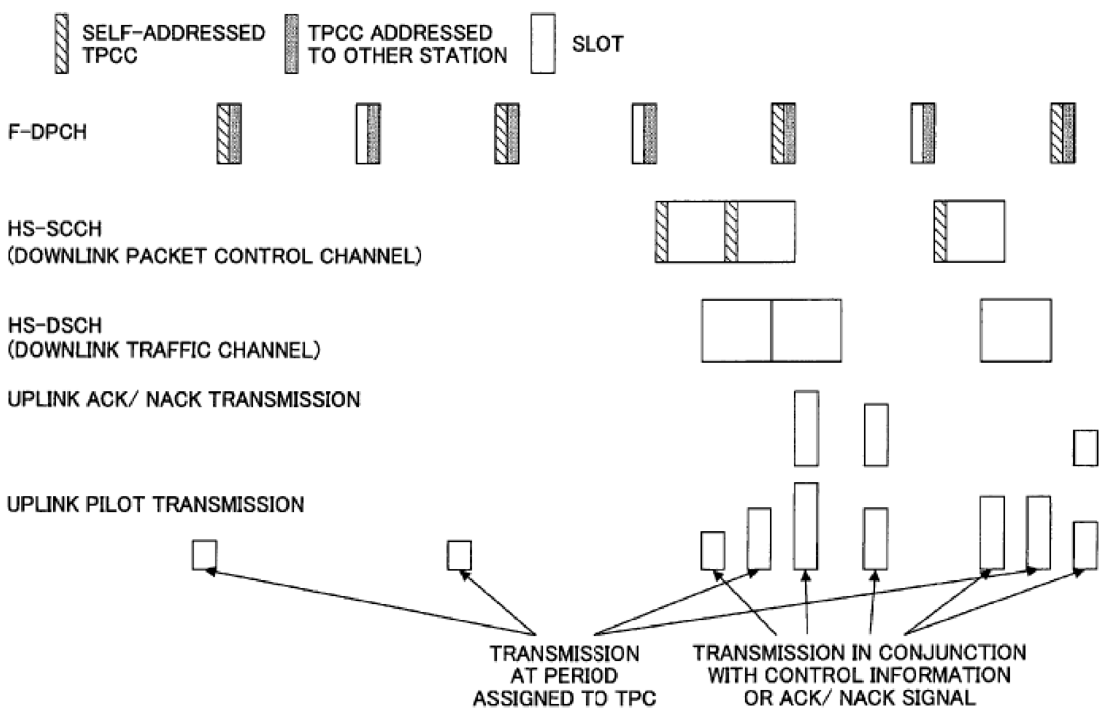
C. The Prior Art

Before turning to Petitioner's initial ground of unpatentability, we provide a 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.

FIG.6



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 data 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 12:15–16.

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. PO Resp. 21–66. Having considered the complete record now before us, we determine that Petitioner has shown by a preponderance of the evidence that claim 1, 2, 5, and 6 would have been obvious over Dateki.

1. *Independent claims 1 and 5*

Patent Owner argues independent claims 1 and 5 together, as claim 5 includes the same and similar limitations as claim 1, but in method-type format. Ex. 1001, 10:1–19, 35–47. After discussing the relevant limitations of claim 1, Patent Owner explains that "[i]ndependent claim 5 includes substantially similar limitations." PO Resp. 22. For purposes of this Decision, we analyze the relevant limitations of claim 1 below, and consequently, apply the same analysis to the corresponding limitations in claim 5.

In its Response, Patent Owner has limited the dispute mainly to limitations [1.3] and [1.6] and whether or not Dateki's power control message in F-DPCH is "the power control information" extracted from "the control message" as claimed. *See* Ex. 1001, 10:18–19 (Claim limitation [1.6] requiring an uplink signal "at a transmission power level based on the extracted power control information.").[6] Patent Owner contends that "in all cases where the F-DPCH channel and the downlink data traffic channel share a time slot, the power control information on the High-Speed Shared Control Physical[] Channel (HS-SCCH)—as opposed to the F-DPCH—is used to control the UE's transmission power." PO Response 1.

To best understand limitation [1.6], we begin by considering limitations [1.2]–[1.4] below.

a) Petitioner's arguments and evidence

(1) Limitation [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,

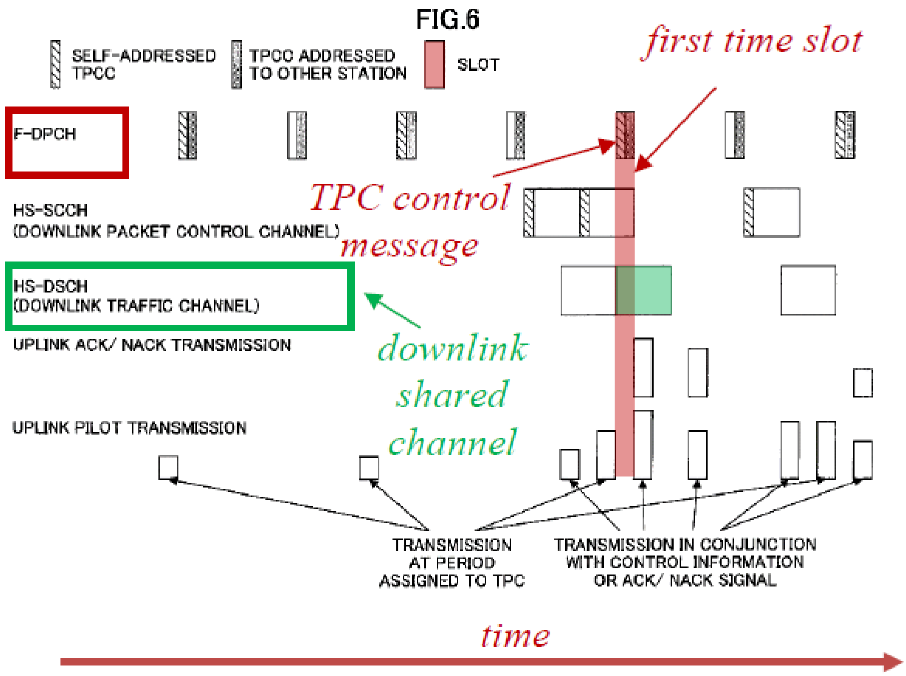
From a hardware perspective, Petitioner argues that Dateki discloses "a processor (TPCC extracting unit 37 and a transmission power control unit 43) and a receiver (antenna 31 and the high frequency processing unit 32)." Ex. 1005, Fig. 6, 10:55–57, 11:7–18. Functionally, and to an extent physically, channels are, at their heart, the road upon which radio waves carry binary data on the electromagnetic spectrum. Ex. 1008, 80–82. Petitioner argues that Dateki discloses physical control channel F-DPCH

[6] The remaining limitations in claim 1 are essentially undisputed by the parties, and for purposes of this Decision we accept and rely on Petitioner's analysis of the remaining undisputed claim limitations as our own. Pet. 25–43.

which carries time division multiplexed TPC (Transmit Power Control) data for multiple UEs. Pet. 30 (citing Ex. 1005, 4:35–40, 12:13–15; Ex. 1003 ¶ 79). With respect to "a first time slot," according to Petitioner, Dateki's multiplexed TPC data is sent as a control message in a time slot of "the frame structure of High Speed Downlink Packet Access (HSDPA)." *Id.* at 31 (citing Ex. 1005, 3:15–17).

Petitioner contends that "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, and the TPC commands are used to maintain the communication link." *Id.* at 32 (citing Ex. 1003 ¶ 81). Petitioner's declarant, Dr. Kotzin testifies that "[t]he slot during which the highlighted F-DPCH communication including the TPCCs discloses the first time slot." Ex. 1003 ¶ 81 (citing Ex. 1028 ¶ 31). Dr. Kotzin testifies further 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*." *Id.*

Dr. Kotzin testifies further that "Dateki's FIG. 6 illustrates transmitting a TPCC in the F-DPCH in a time slot." *Id.* ¶ 88. We reproduce below Figure 6 as annotated by Dr. Kotzin.



Dateki, FIG. 6 (annotated)

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, i.e., "self-addressed TPCC" and "TPCC addressed to other station," in the F-DPCH channel. *Id.*

Summarizing his testimony as to limitation [1.2], Dr. Kotzin states that in Dateki, "the TPCCs transmitted together in an instance or occasion of an F-DPCH discloses *a control message over a physical control channel in a first time slot.*" *Id.* ¶ 83.

(2) Limitation [1.3] – wherein the first time slot also includes a down link shared channel

Petitioner argues that "Dateki discloses that the UE receives data in the same time slot over a 'High Speed Physical **Downlink Shared Channel** (HS-PDSCH),' which is an example of the *downlink shared channel* in limitation [1.2]." Pet. 35 (citing Ex. 1005, 12:5–6, 14:26–28). Dr. Kotzin testifies, based on his annotated Figure 6 above, that "the TPCC command in the F-DPCH in vertically aligned with the transmission in the HS-PDSCH (green) indicating that they are transmitted in the same time slot." Ex. 1003 ¶ 87. Dr. Kotzin testifies further that Dateki's disclosure is "[c]onsistent with the design and purpose of CDMA systems, which includes the use of different channels to simultaneously transmit different types of information (e.g., traffic data, control data, and/or reference signals)." *Id.* ¶ 91. And, "[a]s Dateki illustrates, different channels are used for the transmission of these different types of information, and those different types of channels can be used at the same time." *Id.*

(3) Limitation [1.4] – wherein the control message has power control bits for a plurality of UEs, wherein the plurality of UEs includes the first UE,

Petitioner argues that, "Dateki explains that, during the 3GPP standards process for CDMA, also known as 3G, F-DPCH was introduced for transmitting 'transmission power control (TCP) information of a dedicated channel for plural users.'" Pet. 37 (quoting Ex. 1005, 4:16–21). Petitioner argues that the F-DPCH channel is a standard developed specifically to provide for sending specific power control commands to multiple mobile stations, i.e., different UEs, in the same control message and time slot. Pet. 37. Petitioner contends that "[i]n F-DPCH, the TPC commands for the multiple UEs are encoded using 'the same code to conduct a diffusion process and time division multiplexing with respect to TPC bits and pilot signals of plural users . . .'" *Id.* (citing Ex. 1005, 4:35–38; Ex. 1003 ¶ 94).

Dr. Kotzin testifies that in Dateki

> [t]he plural TPC bits processed using a same diffusion code discloses or at least renders obvious *a control message* having the TPC bits. In that regard, it would have been obvious to use a

> same code to encode the data in the F-DPCH so that the TPC bits could be transmitted together, which is one of the advantages and aims of CDMA protocols (like W-CDMA used in UMTS). *See* §§ V.A, B. Thus, Dateki discloses or renders obvious that the plural TPC bits addressed to differing mobile stations (*control message*) include *power control bits for a plurality of UEs*.

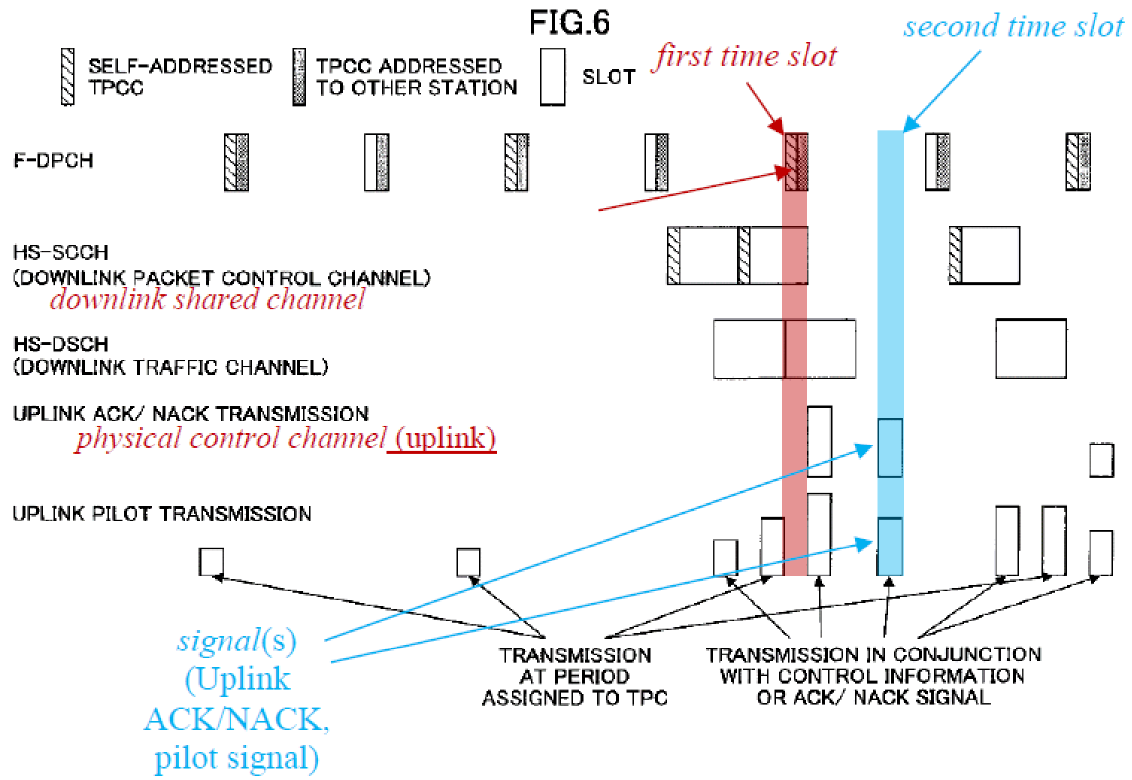
Ex. 1003 ¶ 95. Dr. Kotzin also testifies that Dateki teaches "the mobile station processes the TPC bits together (as a *control message*) before extracting the TPC bit that conveys power control for that mobile station. Thus, Dateki also discloses that *the plurality of UEs include the first UE*." *Id.* ¶ 96.

There is essentially no dispute as to limitations [1.2] and [1.4], namely that F-DPCH transmits TPC bits for multiple UEs in the same time slot. *See* generally PO Resp. As a bit of foreshadowing, what is disputed, and discussed below in greater detail with respect to limitations [1.3] and [1.6] is whether, when the F-DPCH channel and the downlink data traffic channel share a time slot, power control information on the F-DPCH is used for the UE's transmission power. *See* PO Resp. 1 (Patent Owner arguing that "*whenever the F-DPCH channel and the downlink data traffic channel share a time slot*, power control information on the F-DPCH (mapped to 'the control message') is *not used for the UE's transmission power*.").

(4) Limitation [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.

Limitations [1.0]–[1.5] relate mainly to the downlink functionality of the claimed UE, whereas limitation [1.6] pertains to uplink functionality between the UE and base station. Petitioner argues that Dateki's ACK/

NACK and Pilot signals (uplink transmissions) shown in Figure 6 are transmitted by a UE over a physical control channel in a second time slot to a base station. Pet. 39 (citing Ex.1005, 12:4–10, 10:60–62). We reproduce Dateki's Figure 6 as annotated by Petitioner.

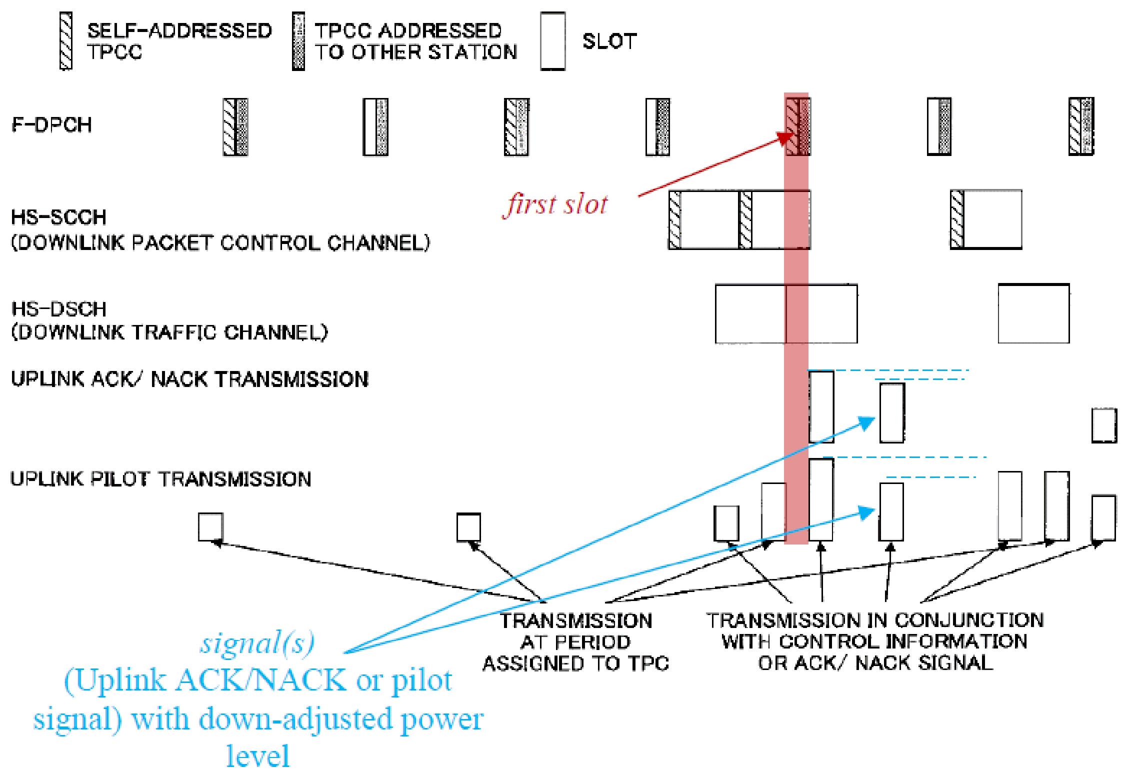


Dateki's Figure 6 as annotated here, illustrates in a first time slot a reddish-brown highlight of multiple different UE power control commands, i.e., "self-addressed TPCC" and "TPCC addressed to other station," in the F-DPCH channel and in a second time slot a light blue highlight of uplink pilot and ACK/ NACK signal transmissions. Pet. 43.

With respect to the "extracted power control information," Petitioner contends that prior to sending the ACK/ NACK and pilot signals the UE uses the TPC information from F-DPCH to adjust the power level of the ACK/NACK and pilot signals. Petitioner points to Dateki's Figure 6 asserting that

> the height of the second ACK/ NACK signal and second pilot signal changes after the UE receives and extracts the TPCC information from the F-DPCH. Thus, the second uplink ACK/ NACK signal, or the pilot signal, (*a signal*) is transmitted *based on the extracted power control information.*

Id. at 41–42 (citing Ex.1003 ¶ 106). We reproduce another of Petitioner's annotated versions of Figure 6 below.



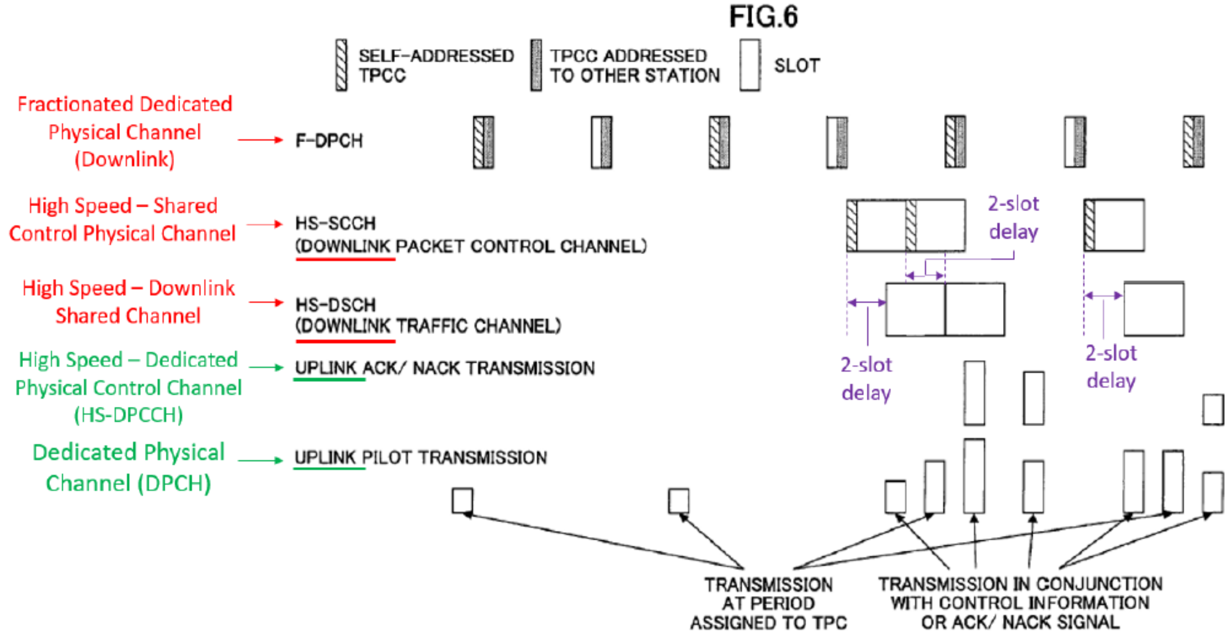
Dateki's Figure 6, as annotated by Petitioner, illustrates a reddish-brown highlight of a time slot including multiple different UE power control commands, and shows the difference between the height, i.e. power levels, of subsequent uplink ACK/ NACK signals indicated by light blue dashed lines. *Id.* at 41.

b) Patent Owner's arguments and evidence

Patent Owner's main argument disputes that Dateki discloses or teaches limitations [1.3] and [1.6]. PO Resp. 1. Considering the claim language, Patent Owner's main contention is that Dateki does not "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*." *Id.*; Ex. 1001, 10:18–19 (emphasis added). Considering Dateki's Figure 6, Patent Owner's specific argument is that "in all cases where the F-DPCH channel and the downlink data traffic channel <u>*share a time slot*</u>, the <u>*power control information*</u> on the High-Speed Shared Control Physical[] Channel (<u>*HS-SCCH*</u>)-- as opposed to the FDPCH-- is used to control the UE's transmission power." PO Resp. 1.

We reproduce below Patent Owner's annotated Figure 6 from Dateki.

FIG.6



Dateki's Figure 6, as annotated by Patent Owner, describes the various downlink channels (red), including the High Speed – Shared Control Physical Channel, HS-SCCH. *Id.* at 28. Also, Patent Owner illustrates the relative "2-slot delay" (purple) in data transmitted between the HS-SCCH and HS-DSCH, by which "information pertaining to the modulation method and diffusion code is provided beforehand via the HS-SCCH so that demodulation and decoding of the HS PDSCH may be suitably realized." Ex. 1005, 3:12–15.

With respect mainly to limitation [1.6] Patent Owner argues that "whenever the F-DPCH channel and the downlink data traffic channel share a time slot, power control information on the F-DPCH (mapped to 'the control message') is *not* used for the UE's transmission power." PO Resp. 1. Patent Owner asserts that in this case, the UE utilizes only the HS-SCCH channel "self-addressed TPCC" data "which is *addressed to the specific UE* that is the intended recipient of data traffic on the High Speed - Downlink Shared Channel." *See id.* at 29 (Patent Owner stating that "[i]t bears emphasis that the power control information transmitted to a UE on the HS-SCCH is not intended for a plurality of UEs -- but rather only for the specific UE to which data is to be transmitted on the High Speed - Downlink Shared Channel") (citing Ex. 2017 ¶ 75).

With respect to limitation [1.3], Patent Owner argues that "in Dateki's preferred embodiment of FIG. 6, a message addressed to the UE on the *F-DPCH* that includes the first transmission power control information (*TPCC1*) will *never share a timeslot* with transmissions addressed to a UE on the *HS-DSCH*." *Id.* at 52. Patent Owner points to Dateki's description of a preferred embodiment where HS SCCH and HS-DSCH are transmitted in between the transmission of TPCC1 on F-DPCH, arguing in that case "there is *no overlap in time* between transmissions addressed to a UE on the *HS-*

DPCH and transmissions of first transmission power control information (*TPCC1*) to the UE on the *F-DPCH*." *Id.* at 52 (citing Ex. 1005, 14:15–25).

Below, consistent with Dateki, we refer to first power control information, TPCC 1 on the F-DPCH, and second power control information TPCC 2, carried by HS-SCCH. *Id.* at 31–32 (citing Ex. 1005, 13:1–8). To be clear, Patent Owner's over-arching argument is that Petitioner has not met its burden to show that the UE uses TPCC 1 for multiple UEs on the F-DPCH channel for power control when downlink data for a single UE is sent on the shared channel HS-DSCH to the UE. *Id.* at 51.

The evidence which Patent Owner relies on is two-fold. First Patent Owner relies on Dateki itself asserting that "Dateki makes clear that where data traffic (on the HS-PDSCH) is sent from the base station to the mobile station, *the mobile station uses the second power control information (TPCC2) sent on the HS-SCCH to control the power of the ACK/NACK signal* returned by the mobile station to the base station." *Id.* at 34–35 (citing Ex. 1005, 13:8–23). Second, Patent Owner's declarant, Dr. Lomp, testifies that "[s]ignificantly, power control of the <u>*pilot signals transmitted in conjunction with an ACK/NACK*</u> is based on the *second* power control information (TPCC2) sent on the <u>*HS-SCCH*</u> (rather than the first power control information (TPCC1 sent on the F-DACH[])]." Ex. 2017 ¶ 86 (citing Ex. 1005, 12:48, 61–65, 13:57–62).

We consider Patent Owner's arguments and evidence in light of Petitioner's burden in our analysis below.

c) Analysis

(1) Limitation [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.*

Considering limitation [1.6], the question raised by Patent Owner and Dr. Lomp is fairly straightforward: When data packets are transmitted on Dateki's downlink shared channel HS-PDSCH, or TPCC 2 is sent on HS-SCCH, does the UE extract, and then transmit power in an uplink to the base station based on power control data TPCC 1 from the F-DSCH, or does it rely only on TPCC 2 transmitted on the HS-SCCH? Ex. 2017 ¶ 86. Considering Dateki along with the testimony of the declarants in this proceeding, we find that it does both.

Initially, Dateki explains that when data packet transmission *is not* conducted, only first transmission power control information—that is TPCC 1 on F-DPCH—is provided at long intervals to conserve power consumption. Ex. 1005, 11:48–52, Fig. 6. Then, where data packet transmission does occur Dateki describes that

> the first transmission power control information and the second transmission power control information are transmitted so that high-pace transmission power control may be conducted with regard to state changes such as fading occurring in the wireless propagation path.

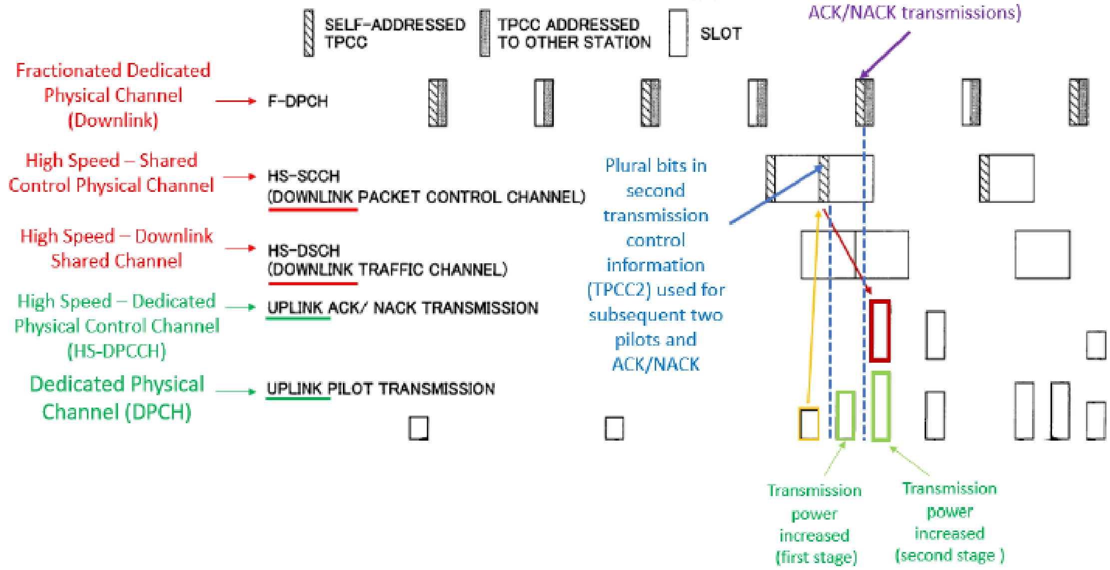
Id. at 11:59–65. Here, Dateki describes that the faster pace of transmission power control necessary to facilitate packet transmission is based on "the first transmission power control information *and* the second transmission power control information." *Id.* (emphasis added). Dateki consistently explains that during packet transmission "[t]he TPC bit (transmission power control information) is transmitted via the F-DPCH and HS-SCCH." *Id.* at 12:11–12; *see also id*. at 6:61–7:4 (Dateki stating "[a]ccording to an aspect of the present invention, transmission power control information is transmitted at prescribed periodic intervals via a channel for transmitting information including the transmission power control information, *and* when packet transmission is conducted, transmission power control information *is also* transmitted via a control channel.") (emphases added).

We acknowledge Patent Owner's argument that Dateki states that where packet transmission is conducted, "*the* transmission power control information is transmitted via the HS-SCCH as second transmission power control information TPCC at a shorter periodic cycle." PO Resp. 11 (quoting Ex. 1005, 13:11–13). But in context, after describing transmission of TPCC 1 on F-DPCH, Dateki says "[a]lso, in a case where packet transmission is conducted, the transmission power control information is transmitted via the HS-SCCH as second transmission power control information TPCC at a shorter periodic cycle." Ex. 1005, 13:8–13 (emphasis added). We find it significant that the word "also" is used by Dateki, here, to describe the relationship of TPCC 1 and TPCC 2 as used together. If the intent was to transmit and use only TPCC 2 on HS-SCCH when data packets are transmitted on HS-PDCH, it would have made more sense to say "alternatively," and otherwise make clear that only TPCC 2 is transmitted. But they did not.

On the other hand, the inventors certainly understood how to explain when TPCC 2 is not transmitted. For example, Dateki makes clear that in certain embodiments TPCC 2 is unnecessary and "transmission power control may be effectively realized without including transmission power control information in the HS-SCCH." *Id.* at 14:33–35. The same cannot be said for TPCC 1.

Considering Dateki's disclosure as a whole, to an extent, we agree with Patent Owner, that in the case where data packets are transmitted on HS-DSCH, as illustrated in Figure 6 below annotated by Patent Owner, there is an increase shown in transmission power (green boxes) caused by TPCC 2 transmitted on HS-SCCH. *See* Ex. 1001, 13:63–66 (Dateki explaining that "the leftmost TPC bit in the HS-SCCH is generated based on the most recently received pilot signal before this TPC bit (i.e., the second pilot signal from the left in FIG. 6).").

FIG.6



Dateki's Figure 6, as annotated by Patent Owner, describes the various downlink channels (red), including the "High Speed – Shared Control Physical Channel," as well as the two uplink channels (green). PO Resp. 42. However, we do not agree with Patent Owner (purple annotation) that Dateki discloses "[f]irst transmission control information (TPCC1) [is] not used in subsequent pilot and ACK/NACK transmissions." *Id.* In other words, we find little, if any, evidence in Dateki that the UE somehow ignores TPCC 1 on the F-DPCH (as pointed to by purple arrow) during packet transmission.

Apparently, if, as Patent Owner argues in annotated Figure 6 above, only TPCC 2 is relied upon by the UE, then TPCC 2 in HS-SCCH, would have to contain plural bits to account for the increase between the subsequent two (green) uplink pilot transmissions and the decrease to the pilot signal following the two green transmissions. Pet. Reply 16. Otherwise, the only control information which could account for the subsequent decrease would be TPCC 1 on the F-DPCH (as pointed to by purple arrow).

To account for this problem, Patent Owner argues that the absence of TPCC 1 is confirmed by Dateki's disclosure of TPCC 2 transmitting "plural bits" (blue annotations). PO Resp. 37–40. Patent Owner points to Dateki's disclosure that "the transmission power control information TPCC may be arranged to use plural bits so that transmission power control may be conducted in plural stages (i.e., so that transmission power may be increased or decreased in plural stages)." *Id.* at 73 (citing Ex. 1005, 11:15–18).

We acknowledge the teaching in Dateki, where "plural bits" are discussed in relation to Figure 4 and the CDMA scheme carried out between high frequency processing units 32 and 42. On the other hand, for the embodiment and HS-SCCH channel in Figure 6, Dateki describes HS-SCCH transmitting only single bits, explaining

> that in the illustrated example of FIG. 6, the leftmost TPC bit in the HS-SCCH is generated based on the most recently received pilot signal before this TPC bit (i.e., the second pilot signal from the left in FIG. 6). When a mobile station receives the third (from the left) pilot signal, the mobile station may generate the second (from the left) TPC bit in the HS-SCCH based on the third pilot

> signal, and thereby, accurate transmission power control may be conducted upon transmitting the first ACK signal.

Ex. 1005, 13:66–14:4. Dateki's description of Figure 6 is consistent—that each TPCC 2 in HS-SCCH is a single bit—:

> Also, in the illustrated example of FIG. 6, there is an interval between the second TPC bit and the third TPC bit in the HS-SCCH; … the TPC bit may be generated based on a pilot signal being transmitted at a shorter period compared to the transmission period of the first transmission power control information (e.g., the third TPC bit in the HS-SCCH is generated based on the sixth pilot signal).

Ex. 1005, 14:5–15.

Considering Patent Owner's assertion that TPCC 2 comprises plural bits (in this case 3 bits), Petitioner's declarant, Dr. Kotzin testifies that such an "interpretation of Dateki's FIG. 6 would require, in a single TPCC message, a first instruction to increase power, a second instruction to increase power again, and then a third instruction to ***decrease*** power." Ex. 1070 ¶ 42 (citing Ex. 2017 ¶¶ 94–99). Dr. Kotzin testifies further that

> Dateki describes no reason that the base station would instruct a UE to increase its transmission power twice and then decrease its transmission power **once**. Assuming the plural-stage TPC command functions analogously to Dateki's conventional up/down instruction (which is the only TPC power adjustment pattern Dateki describes), the third stage decreasing power would inexplicably nullify one of the first two stages increasing power.

Id. ¶ 43 (citing Ex. 1005, 11:4–1).

We find Dr. Kotzin's testimony persuasive. Although Dateki ostensibly mentions that a control message can contain "plural bits," Dateki describes that the TPCC is set to single bits, i.e., either +1 or -1. *See* Ex. 1005 9:33–38 (Dateki describing that "when the SIR value is greater than the threshold value, the TPCC may be set to TPCC=-1, and when the

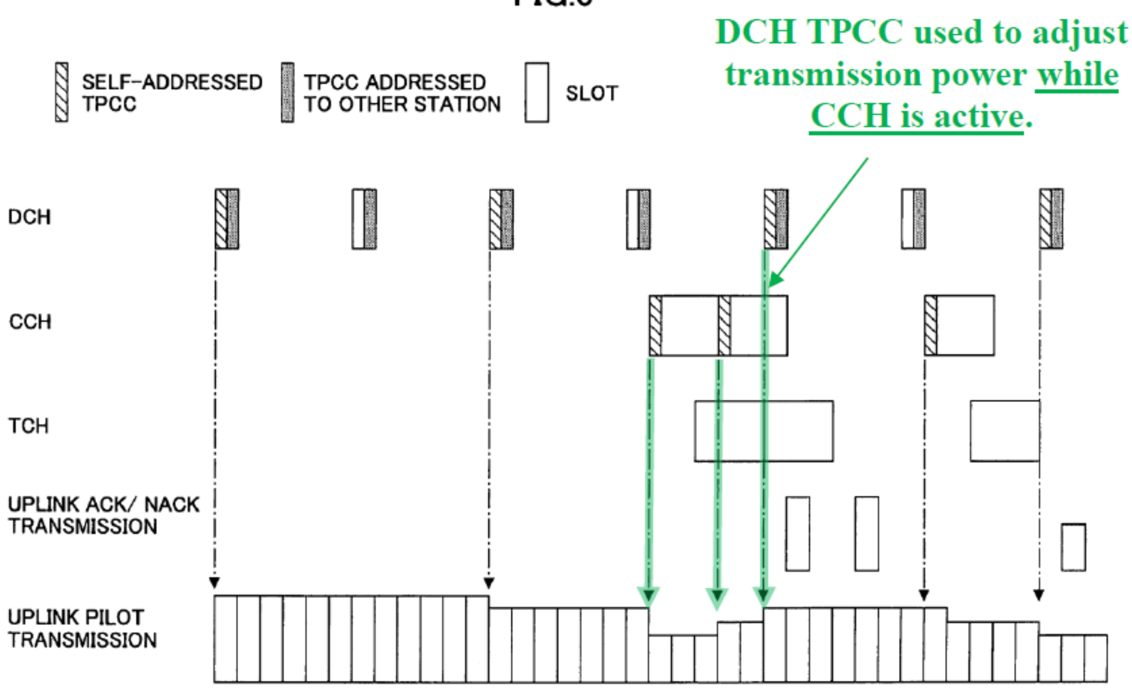
SIR value is less than the threshold value, the TPCC may be set to TPCC=+1."); *see also id.* at 11:4–11 (Dateki explaining that "the transmission power control unit 38 is configured to increment the transmission power Ptx by +1 dB when the transmission power control information TPCC extracted by the TPCC extracting unit 37 is greater than 0 (TPCC>0), and the transmission power control unit 38 is configured to decrement the transmission power Ptx by -1 dB when the transmission power control information is TPCC is less than 0 (TPCC<0).").

Patent Owner disputes Dr. Kotzin's testimony—that Dateki mainly teaches single bit TPCC commands—asserting that "Dateki makes clear in conjunction with Figure 6 that it uses the phrase 'TPC bit' as shorthand for transmission power control information *in general*." PO Sur-Reply 17. Patent Owner then points us to Dateki's statement that "[t]he TPC bit (transmission power control information) is transmitted via the F-DPCH and HS-SCCH." *Id.* at 17–18 (quoting Ex. 1005, 12:11–12). If "TPC bit" refers to plural bits, it not as clear as Patent Owner asserts. This disclosure can also be read simply to explain that a "TPC bit" is "transmission power control information," rather than as "shorthand" to globally encompass plural bits. Moreover, Patent Owner's interpretation of Dateki is attorney argument and unsupported by any citations or reliance on Patent Owner's declarant, Dr. Lomp. *See id.* Although it may be possible to use plural bits, we do not find sufficient evidence in Dateki that TPCC 2 in Figure 6 includes plural bits, or, that the same control message would include conflicting bits that, for example, negate one another.

Responding to Patent Owner's argument that the UE does not use TPCC 1 in the F-DCHP channel in Figure 6, Petitioner turns to the embodiment in Figure 5 to show that the UE more likely relies on both TPCC 2 in HS-SCCH and TPCC 1 in F-DPCH. Petitioner argues that "FIG. 5's arrows explicitly show that **both** sets of TPCC information are used in the time frame when CCH is active—no TPCC information sent to the UE is ignored." Pet. Reply 13 (citing Ex. 1070 ¶¶ 34–36).

Considering Figure 5, Petitioner's declarant, Dr. Kotzin, testifies that "Dateki does not describe or suggest that the UE stops monitoring the F-DPCH while HS-SCCH is active." Ex. 1070 ¶ 34. Dr. Kotzin provides annotated Figure 5 which we reproduce below.

FIG.5



Dateki's Figure 5, as annotated by Dr. Kotzin, illustrates a transmission power control operation including first transmission power control information, i.e., TPCC 1, transmitted on dedicated channel DCH and second power control information, i.e., TPCC 2 transmitted on control channel CCH. Ex. 1001, 11:19–42. Dr. Kotzin testifies that "[a]s shown above by the highlighted arrows, **both** sets of TPCC information are used to adjust the UE's transmission power level in the time frame when CCH is active—no TPCC information sent to the UE is ignored." Ex. 1070 ¶ 36 (citing Ex. 1005, 11:48–63). Dr. Kotzin testifies, persuasively, that the main difference between the embodiments of Figure 5 and Figure 6 "is that the embodiment of FIG. 6 has less frequent uplink pilot transmissions; not that FIG. 6 somehow includes plural-stage TPC commands from the base station." *Id.* (citing Ex. 1005, 13:11–15).

Our review shows that Dateki describes that, in the embodiment of Figure 5,

> when packet transmission is not conducted, the first transmission power control information is transmitted at relatively long periodic intervals, . . . On the other hand, *when packet transmission is conducted, the first transmission power control information and the second transmission power control information are transmitted* so that high-pace transmission power control may be conducted with regard to state changes such as fading occurring in the wireless propagation path.

Ex. 1005, 11:48–65 (emphasis added). This description is very similar to the description of the embodiment of Figure 6 where "[t]he TPC bit (transmission power control information) is transmitted via the F-DPCH *and* HS-SCCH." *Id.* at 12:11–12 (emphasis added). We credit Dr. Kotzin's testimony because it more closely aligns with Dateki's similar embodiments of Figures 5 and 6. Arguably, Figures 5 and 6 illustrate different embodiments, but as Dr. Kotzin testifies, these figures and relevant descriptions are different mainly in the number of uplink pilot transmissions. Overall, because there is no persuasive explanation in Dateki that Patent Owner or Dr. Lomp has pointed to as a basis for the UE ignoring TPCC 1, it is more likely based on the disclosures of Figures 5 and 6 that the UE utilizes both TPCC 1 and TPCC 2 in the embodiments of Figures 5 and 6.

Considering all the evidence of record, neither Patent Owner nor Dr. Lomp satisfactorily explain why the UE would ignore TPCC 1 even if plural bits were provided in TPCC 2. *See* PO Resp. 13 (Patent Owner arguing "Dateki not only suggested – but expressly disclosed – the use of plural stage TPC commands in the embodiment of Figure 6."). Patent Owner spends pages asserting that TPCC 2 includes plural bits, yet never really grapples with how, or why, it would override, or cause the UE to ignore TPCC 1 which is transmitted in the downlink transmission on F-DPCH during packet data transmission on HS-DSCH as shown in both Figures 5 and 6. In addition, Patent Owner's declarant, Dr. Lomp, is never really explicit that TPCC 1 is not used by the UE. *See* Ex. 2017 (Dr. Lomp testifying that when TPCC 2 is sent on HS-SCCH, "power control . . . is based on the second power control information (TPCC2) sent on the HS-SCCH (rather than the first power control information (TPCC1 sent on the F-DPCH)." Dr. Lomp's testimony mirrors the claim language and comes across as somewhat equivocating as to what is happening with TPCC 1 when TPCC 2 is sent on HS-SCCH. In other words, Dr. Lomp does not exactly reflect Patent Owner's arguments, specifically, where Petitioner argues that "*<u>whenever the F-DPCH channel and the downlink data traffic channel share a time slot</u>*, power control information on the F-DPCH (mapped to 'the control message') is *<u>not used for the UE's transmission power</u>*, as required by the Challenged Claims." PO Resp. 1.

Overall, we do not find compelling disclosure in Dateki that supports Patent Owner's position that TPCC 2 shown in Figure 6 comprises plural bits or, even if it does, that TPCC 2 is the only power control information utilized by the UE when data packets are transmitted on HS-DSCH. The evidence in Dateki and Dr. Kotzin's testimony more strongly persuades us that the embodiment of Figure 6 relies upon both TPCC 1 and TPCC 2 to control the uplink transmission power during packet transmission. Thus, Dateki shows that uplink pilot transmission power, even where TPCC 2 is provided so that "transmission power control may be conducted at a faster pace," is also based on the extracted power control information TPCC 1. Ex. 1005, 11:55–56, *see also id.* at 12:11–12 (Dateki states that "[t]he TPC bit (transmission power control information) is transmitted via the F-DPCH and HS-SCCH.").

(2) Limitation [1.3] - wherein the first time slot also includes a downlink shared channel,

Considering more specifically limitation [1.3], Patent Owner also argues that TPCC 2 is transmitted at shorter period cycles compared to TPCC 1 and that TPCC 2 is arranged to be greater than the TPCC 1. PO Resp. 32–33 (citing Ex. 1005, 13:54–57). Patent Owner contends that this "allows the second transmission power control information TPCC2 sent on the HS-SCCH '<u>*to swiftly control the transmission power*</u> to a desired level' <u>*when the base to station is sending data traffic*</u> to the mobile station over the HS-PDSCH." *Id.* at 33 (quoting Ex. 1005, 13:8–11, 50–62) (citing Ex. 2017 ¶ 81). And, because in a preferred embodiment of Dateki TPCC 2 is sent between TPCC 1 transmissions, as apparently shown in Dateki's Figure 6, Patent Owner argues "a message addressed to the UE that includes the first transmission power control information (*TPCC1*) on the *F-DPCH* will *never share a timeslot* with transmissions addressed to a UE on the *HS-DPCCH*." *Id.* at 34 (citing Ex. 2017 ¶ 83), *see id.* at 33–34 (Patent Owner asserting that the data on "*HS-PDSCH* is sent in an interval ("T") *between* successive transmissions of the first transmission power control information (*TPCC1*) on *F-DPCH*.") (citing Ex. 1005, 14:15–25).

Patent Owner goes on to clarify this argument as to limitation [1.3] later in the Response, arguing that "in the preferred embodiment, a message addressed to the UE that includes the first transmission power control information (*TPCC1*) on the *F-DPCH* will *never even share a timeslot* with transmissions addressed to a UE on the *HSDPCCH*." PO Resp. 52 (citing Ex. 2017 ¶ 107).

We appreciate Dateki's disclosure of a preferred embodiment where a shorter time period for sending data via shared channel HS-DSCH occurs between F-DPCH time slots. Although Patent Owner never expressly ties the written description to this aspect of Figure 6, this appears to be shown in Figure 6, as annotated by the Board, below.

FIG.6

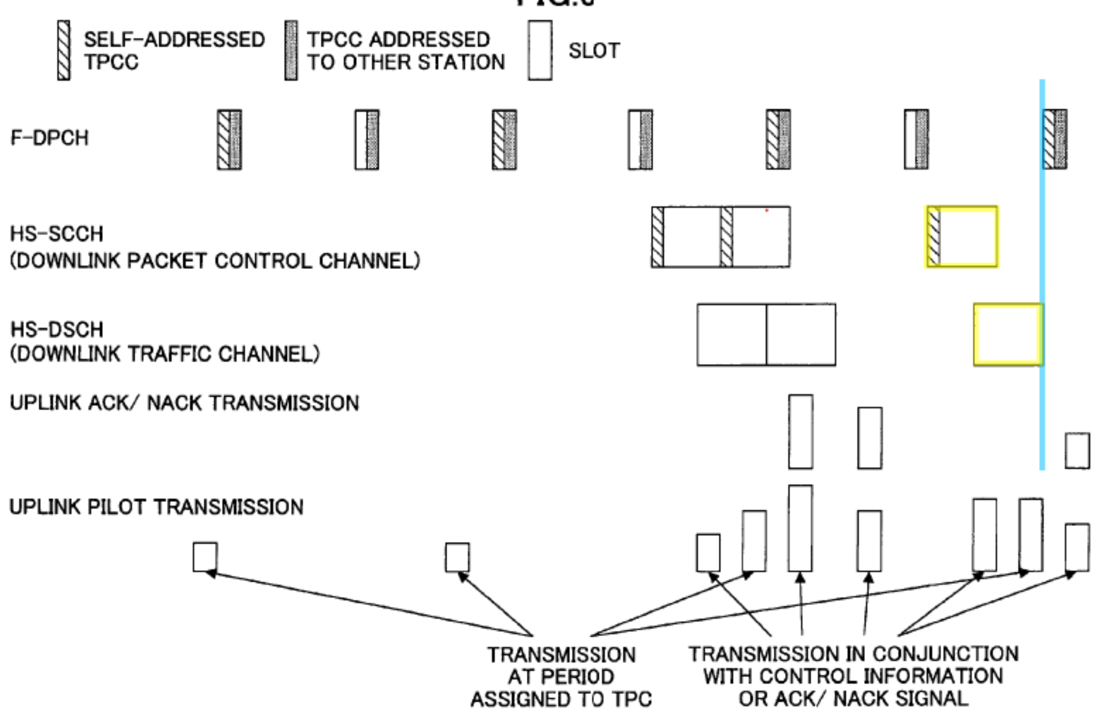


Figure 6 as annotated by the Board shows HS-SCCH and HS-DSCH (yellow) being sent between F-DPCH time slots, the added blue line showing no overlap between F-DPCH and HS-DSCH. Apparently, because it is a "preferred embodiment," Patent Owner characterizes Figure 6, in total, as disclosing that TPCC 1 in F-DPCH *never* overlaps with HS-DSCH. PO Resp. 51–57. On one hand, we agree, that TPCC 1 on F-DPCH, and data carried on HS-DPCH as shown here, do not overlap in a preferred embodiment. Ex. 1005, 14:15–25. However, to leave it there would be to ask us to dismiss what is also shown in Figure 6, and that is a shared time slot between TPCC 1 on F-DPCH and data carried on HS-DSCH in a preceding time slot. Ex. 1001, Fig. 6. Petitioner relies on F-DPCH in the as shown in Petitioner's annotated Figure 6, below, where there is overlap of F-DPCH and HS-DSCH. Pet. 33 (citing Ex. 1005, 4:35–40; Ex. 1003 ¶ 83).

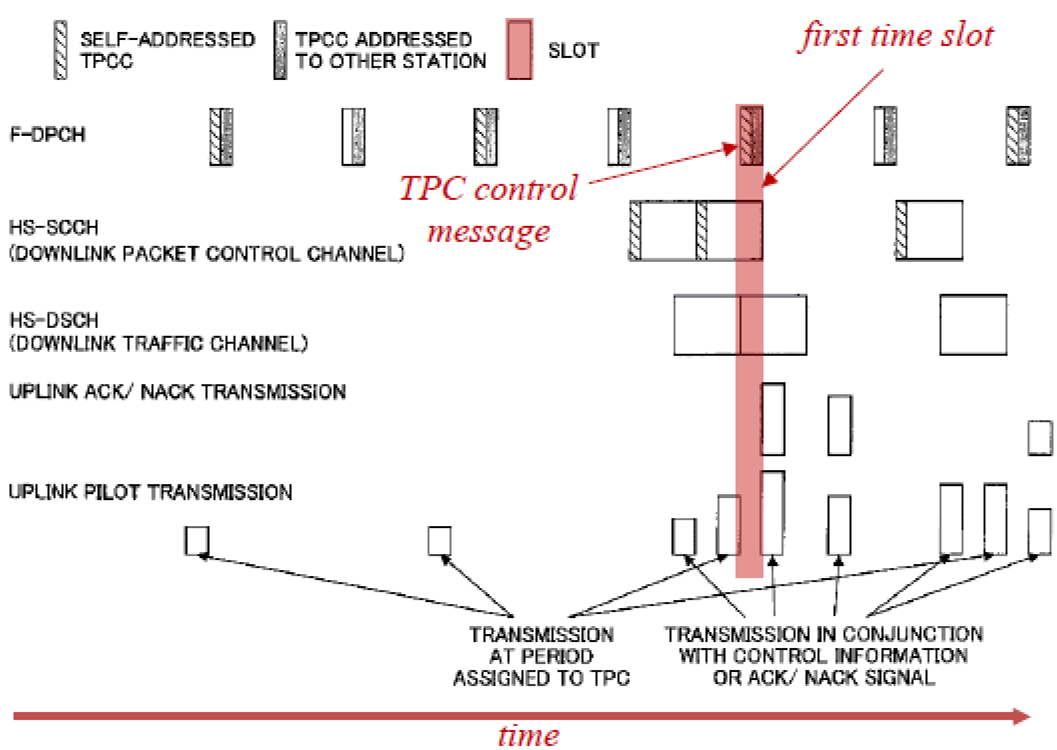
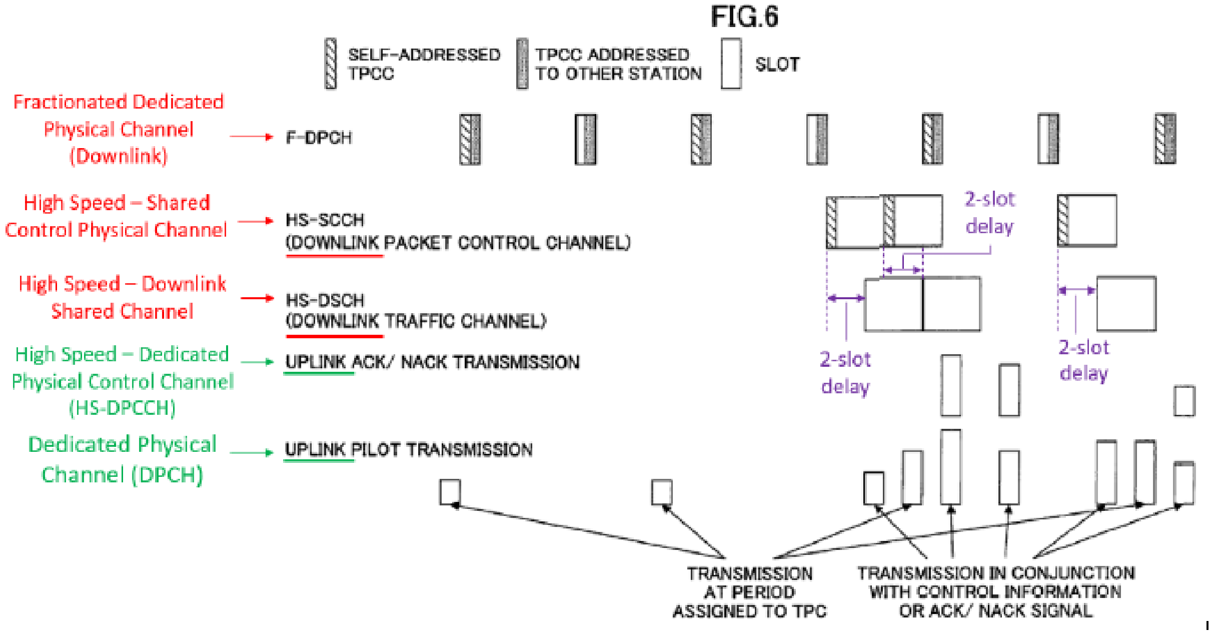


Figure 6 as annotated by Petitioner illustrating "the first time slot" (red) as mapped to claim 1. *Id.* Patent Owner's argument for the preferred embodiment does not squarely address Petitioner's mapping of the preceding overlap between TPCC 1 in F-DPCH in the same timeslot as HS-DSCH, as shown in Figure 6, to meet limitation [1.3], "wherein the first time slot also includes a downlink shared channel."

Also, Patent Owner's declarant Dr. Lomp, testifies that there is a two-slot delay between HS-SCCH and HS-DSCH "'so that the mobile station may receive and identify information pertaining to demodulation' of the High Speed Downlink Shared Channel before the receipt of a frame with data traffic on that channel." Ex. 2017 ¶ 76 (quoting Ex. 1005, 3:8–12). Dr. Lomp annotates Figure 6, reproduced below, to show the slot delay for each instance of HS-SCCH and HS-DPCH *including the F-DPCH time slot relied up on by Petitioner*.

FIG.6



For annotated Figure 6 Dr. Lomp testifies that

> [a]s shown by the purple markings in annotated version of Figure 6 above, the start of each frame of data traffic on the High Speed - Downlink Shared Channel is delayed by two slots from the start of the previous HS-SCCH frame "so that the mobile station may receive and identify information pertaining to demodulation" of the High Speed Downlink Shared Channel *before the receipt of a frame with data traffic on that channel*.

Ex. 2017 ¶ 76 (quoting Ex. 1005, 3:8–12) (emphasis added). Dr. Lomp's explanation including the second from left purple "2-slot delay" prior to HS-DSCH frame with shared data traffic confirms our understanding of Figure 6 showing that in the same time slot relied upon by Petitioner for "the first time slot" the TPCC 1 on F-DPCH is overlapping, and thus sharing a time slot with the HS-DSCH frame transmitting data traffic to the UE.

We acknowledge that sending TPCC 2 in a shorter time cycle than TPCC 1 will cause the uplink signals to change at a faster rate and, in a preferred embodiment asserted by Patent Owner, shared channel data may not overlap with TPCC 1 in F-DPCH. PO Resp. 51–57. But this does not explain sufficiently why a person of ordinary skill in the art would understand that TPCC 1, when transmitted on F-DPCH overlapping with HS-DSCH as also shown in Figure 6, is either not disclosed by Dateki or somehow disregarded by the UE. *See Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014), (The court explaining that "[w]hile we read claims in view of the specification, of which they are a part, we do not read limitations from the embodiments in the specification into the claims.").

We are persuaded that the specification describes and Figure 6 illustrates, an embodiment, an example, that TPCC 1 including bits for a plurality of UEs, i.e., "a control message" is clearly transmitted in a first time slot to a UE overlapping with a shared data channel HS-DSCH as well as TPCC 2 on HS-SCCH. Ex. 1005, 12:11–12 (Dateki's description of Figure 6 explains that "TPC bit (transmission power control information) is transmitted via the F-DPCH and HS-SCCH.").

Considering Dateki and weighing the testimony from the parties' respective declarants, the evidence shows that a person of ordinary skill in the art would have understood that the UE utilizes both TPCC 1 and TPCC 2 when packet data is transmitted on HS-DSCH, thus meeting limitation [1.6], and as for limitation [1.3], Dateki discloses TPCC 1 on F-DPCH being transmitted and used by the UE in a shared time slot with the downlink shared data channel HS-DSCH. The same goes for the corresponding limitations in claim 5 requiring that "the first time slot also includes a downlink shared channel," and that the UE 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." Ex. 1001, 10:16–19, 38–47.

2. *Claims 2 and 6 - wherein the signal transmitted over the physical control channel is produced using a code sequence, wherein a plurality of UEs transmit in the second time slot using different code sequences.*

Petitioner argues that "mobile stations applying *different code sequences* to their uplink signals for transmission in the same time slot as the ACK/NACK and/or pilot signal (*in the second time slot*) would have been an obvious and expected part of Dateki's Wideband **Code** Division Multiple Access (W-CDMA) communication scheme." Pet. 44 (citing Ex.1005, 2:1–3, 4:16–22, 4:53–55, 10:8–13; Ex. 1003 ¶ 113). Dr. Kotzin testifies that

> in CDMA, each mobile station applies its own spreading code and scrambling code (also called a diffusion code) to uplink

> signals. *See* § V.A. In this way, signals from multiple mobile stations (*plurality of UEs*) can be transmitted in the same time resources and in the same frequency band without interfering.

Ex. 1003 ¶ 114 (citing (Tanenbaum), Ex. 1011, 321–325).

Patent Owner does not expressly address, or rebut, Petitioner's evidence that F-DPCH power control features discussed above were well-known to be implemented in W-CDMA protocols. PO Resp. 21–25, 49–57.

On the complete record now before us, having considered all the parties' arguments and evidence, we determine that Petitioner has shown by a preponderance of the evidence that claims 2 and 6 would have been obvious over Dateki.

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

Petitioner argues that claims 3 and 7 would have been obvious over Dateki in view of Mate. Pet. 47.

1. *Mate (Ex. 1009)*

Mate describes UMTS communication protocols for communications between UEs and base stations. Ex.1009 ¶¶ 1–4. Mate describes "fast downlink packet switching" procedures for switching UEs in a network between different connected states, such as cell_DCH, and cell_FACH. Ex. 1009 ¶¶ 10–13.

Mate explains that "[i]n the cell_DCH state, the dedicated channel (DCH) is used to carry all the signaling messages and all the information from higher protocol layers, including data for the service as well as control information." *Id.* ¶ 4. Also, Mate explains that in the associated downlink shared channel "[t]he DSCH is used to carry user data" which can be either a single user, or also multiple users. *Id.* Mate describes that "[i]n the cell-_FACH state, the counterpart of the uplink RACH and CPCH is FACH in the downlink. The FACH is used to carry control information and signaling messages to the mobile terminals known to locate in a given cell or in a given paging area." *Id.*

Mate describes how the UMTS protocol uses different physical channels, mapped to different transport channels. For example, the Physical Common Packet Channel (pCPCH) "has a data part that can carry small amounts of information." Ex. 1009 ¶ 43. The pCPCH is mapped to the CPCH transport channel, which is "a counter part of the DSCH." *Id.* And, the pCPCH can be used while the UE is still in a "cell_FACH" state, without the need to move to the "cell_DCH" state, which consumes more power and network resources. *Id.* ¶¶ 43–44.

2. *Dependent claims 3 and 7- wherein the transmitter and the processor are further configured to transmit data over a physical shared channel in a third time slot and the transmitter and the processor are further configured to not transmit the signal over the physical control channel at a same time that data over a physical shared channel is transmitted.*

Petitioner argues that like Dateki, "Mate is directed to UMTS (W-CDMA) wireless communication protocols." Pet. 48–49 (citing Ex. 1009 ¶¶ 2–5). Petitioner asserts that "Mate describes protocols for a UE to switch between different connected states. . . [t]hus, Mate is relevant to the particular problem the '889 patent attempts to solve." *Id.* at 49 (citing Ex. 1001, 7:4–16; Ex. 1003 ¶ 125). As for a reason to combine Mate with Dateki, Petitioner argues that

> Mate discloses additional W-CDMA-based protocols and features that would have been performed alongside Dateki's F-DPCH procedures in the same 3GPP standardized UMTS system

> . . . [f]or instance, the various transport and physical channels Mate describes were part of the same 3GPP-standardized UMTS protocols on which Dateki is based . . . [t]he 3GPP standardized channels and associated procedures described in Mate therefore provide additional UMTS implementation details that are not explicitly described in Dateki. Ex. 1009, [0002]-[0005]

Id. (citing Ex. 1009 ¶¶ 2–5; Ex. 1003 ¶¶ 126).

To promote more efficient switching between states, Petitioner argues "the pCPCH channel described by Mate allows the UE to transmit small amounts of data without the need to transition to a cell_DCH state." *Id.* (citing Ex. 1009 ¶¶ 43–44). And Dr. Kotzin testifies that "[t]he combination would simply use Mate's uplink common packet channel and Dateki's W-CDMA-based power control mechanisms as part of a more comprehensive UMTS-standardized common data channel communication protocol. The combination would have been predictable, because both Dateki's and Mate's features were part of the same protocols using the same underlying CDMA mechanisms." Ex. 1003 ¶ 127. Petitioner reasons that a person of ordinary skill in the art "would have found it beneficial to implement base stations and terminals according to the known 3GPP standards on which both Dateki and Mate are based to ensure compatibility and marketability of the product." Pet. 50 (citing Ex. 1003 ¶ 127).

Patent Owner argues that Petitioner's "proposed use of Mate's pCPCH channel to implement Dateki's uplink data traffic would not have been appealing to a POSITA" because "the purpose of an uplink data traffic channel (as disclosed in Dateki) was to efficiently transport *data traffic* (referred to as 'user data') at data rates between 2-9 kbits/s." PO Resp. 58 (citing Ex. 2016, 26; Ex. 2017 ¶ 119). Contrary to such user data, according to Patent Owner, "Mate explains that its pCPCH is limited to carrying small amounts of control information on the uplink" and a person of ordinary skill in the art "would have understood that Mate's pCPCH, which was designed to carry *small amounts of control information*, was not suitable for implementing a *data traffic* channel for carrying data traffic (or user data) at the data rates (2-9 kbits/s) specified in the standard." *Id.* at 58–59 (citing Ex. 2017 ¶ 119; Ex. 1009 ¶ 43).

Petitioner responds that Patent Owner's "data rate requirement has nothing to do with the challenged claims, Dateki, or Mate. The relevant claim limitation recites '*data over a physical shared channel*,' not an 'uplink data traffic channel.'" Pet. Reply 21. Petitioner argues that Patent Owner's "arguments do not dispute that Mate's pCPCH is a '*physical shared channel*' over which '*data*' is transmitted." *Id.*

Petitioner has the better arguments and evidence here, claims 3 and 7 do not require any specific data rate, data traffic, or user data, simply requiring the UE "*to transmit data over a physical shared channel in a third time slot*." *Id.* at 22. Moreover, Petitioner, supported by Dr. Kotzin's testimony, points out that the "3GPP specification **contradicts** the alleged '2-9 kbits/s' requirement in [Patent Owner]'s Response; two of the listed 'traffic channels' ('TCH/F2,4' and 'TCH/H2,4') support data rates of <u>**less than**</u> **2 kbits/s**." *Id.* (citing Ex. 2016, 48; Ex. 1070 ¶ 52).

As for a reason to combine, Petitioner's declarant, Dr. Kotzin persuasively explained *why* including Mate's pCPCH channel would have been contemplated by a person of ordinary skill in the art:

> Although pCPCH was not widely used by wireless service providers, it was nevertheless a well-known channel type and would have been an obvious feature to add to the suite of standards that would have been used in Dateki's system. For instance, a POSITA would have appreciated the benefits of

> allowing for small transmissions of uplink data without requiring the UE to move from the Cell_FACH state to the Cell_DCH state . . the Cell_DCH state typically involves greater use of power and network resources in order to provide the services (e.g., dedicated channels) available in the dedicated connected states.

Ex. 1003 ¶ 136.

With respect to "the signal" recited in claims 3 and 7, Dr. Kotzin's unrebutted testimony is that where data is transmitted on pCPCH in the Cell_FACH state, "Dateki's ACK/NACK signal (the signal) is transmitted on the High-Speed **Dedicated** Physical Control Channel (HS-DPCCH)" and "Dateki's pilot signal (the signal, alternatively) is transmitted on the **Dedicated** Physical Channel (DPCH) . . . [t]hose dedicated channels are only available when the UE is in a dedicated connected state—specifically the cell_DCH state. Ex. 1003 ¶ 140 (citing Ex. 1005, 2:67–3:3, 4:59–62, 12:9–10; Ex. 1009 ¶ 4). Thus, "the signal" is not transmitted when the UE is in the Cell_FACH state.

On the complete record now before us, having considered all the parties' arguments and evidence, we determine that Petitioner has shown by a preponderance of the evidence that claims 3 and 7 would have been obvious over Dateki and Mate.

F. Ground 3: Dependent claims 4 and 8 – Obviousness over Dateki and Chitrapu

1. *Chitrapu (Ex. 1008)*

Chitrapu is non-patent literature titled "Wideband TDD: WCDMA for the Unpaired Spectrum." Ex. 1008, 1. Chitrapu describes Wideband TDD (WTDD) as "a radio interface technology that combines the best of WCDMA and TDMA." *Id.* at 2. Chitrapu also describes the random access procedures for WCDMA to obtain time synchronization between the UE and the network so that "the received chips and the spreading code should be synchronized in time for the correlation operation." *Id.* at 76.

Chitrapu explains that when a UE desires to enter an RRC connected state from an Idle mode it performs a random access procedure via a random access channel (RACH). The random access procedure is how "a UE in the Idle Mode or CELL FACH/CELL PCH/URA PCH states of the Connected Mode can request access for Network Services." *Id.* at 134. To initiate a RACH procedure, a UE transmits a "PRACH burst," or "RACH burst." *Id.* at 135, 157. Chitrapu explains further that the RACH burst initiates a connection procedure, resulting in the UE receiving timing advance information to time synchronize with the network. *Id.* at 157.

2. *Dependent claims 4 and 8 - wherein the transmitter and the processor are further configured to transmit the signal over the physical control channel when time synchronized and to transmit a signal over a random access channel when not time synchronized.*

Petitioner argues that a person of ordinary skill in the art would have combined Dateki and Chitrapu because "Dateki's F-DPCH procedures are based on W-CDMA technologies" and "Dateki's description of the power control mechanisms in the context of W-CDMA-based standards would have motivated a POSITA to use Chitrapu's additional teachings concerning W-CDMA technologies to comply with the W-CDMA standards." Pet. 64 (citing Ex. 1003 ¶ 160; Ex. 1005, 2:1–3, 4:16–22, 4:53–55, 10:8–13). Dr. Kotzin testifies that a person of ordinary skill in the art "would have found it beneficial to implement base stations and terminals according to the known 3GPP standards on which both Dateki and Chitrapu are based to ensure compatibility and marketability of the product." Ex. 1003 ¶ 161.

Petitioner argues that Chitrapu

> explains that the connected state CELL_DCH is required for dedicated channel transmissions. Ex. 1008, 89, 91, 104, 105, 120-121. Thus, in UMTS, dedicated channel transmissions are performed in CELL_DCH with time synchronization, while other transmissions (e.g., RACH transmission) are performed from an Idle state without time synchronization.

Pet. 69 (citing Ex. 1003 ¶ 166). Petitioner points out that, similar to Chitrapu, Dateki transmits the ACK/NACK and uplink pilot signals on dedicated physical control channels HS-DPCCH. *Id.* at 69–70 (citing Ex. 1005, 2:35–40). Dr. Kotzin testifies that a person of ordinary skill in the art would have understood that "[t]he dedicated W-CDMA channels Dateki describes (e.g., HS-DPCCH, DPCH) are used in a dedicated RRC connected state and depend on time synchronization with the network." Ex. 1003 ¶ 168.

With respect to the unsynchronized state limitation, Petitioner argues that Chitrapu teaches that when a UE needs to go from Idle to connected state and "enter an RRC connected state [it] performs a random access procedure via a Random Access Channel (RACH) . . . [t]he random access channel (RACH) does not require time synchronization like dedicated WCDMA channels do." Pet. 71 (citing Ex. 1008, 90). Dr. Kotzin explains that "[t]he random access procedure include the UE selecting a channelization code and transmitting a 'PRACH burst'. . . which includes the RACH preamble (*a signal*), facilitates a request to enter an RRC connected state, such as Cell_DCH)." Ex. 1003 ¶ 171 (citing Ex. 1008, 141, 142). Dr. Kotzin summarizes, testifying that "[t]hus, Chitrapu discloses transmitting a RACH/PRACH burst (*a signal*) before there is any application of timing advance (*when not time synchronized*)." *Id.* ¶ 172. Dr. Kotzin testifies further, that

> [r]andom access procedures are fundamental for establishing initial access to a W-CDMA network, to facilitate handovers between cells, and to save power when a mobile device did not have data to communicate. Chitrapu, 89, 90. The RACH protocol a well-known industry standard incorporated into UMTS, and would have been the expected behavior for the mobile station in Dateki's UMTS based communication and power control procedures.

Id. ¶ 173.

Patent Owner argues that "the language of dependent claims 4 and 8 requires that the first UE be configured to make a *binary* choice depending on *whether or not* the 'time synchronized' condition is met" and "*[w]hen* there *is* time synchronization, the UE must 'transmit the signal over the physical control channel[']' and *when* there is *not* time synchronization, the UE must 'transmit a signal over a random access channel.'" PO Resp. 64. Patent Owner specifically contends that "[t]he claim language is *not* met by such a connected UE that continues transmitting 'the signal over the physical control channel' *when* there is '*not time synchronization*.'" *Id.* at 65.

As discussed in our claim construction, we do not agree with Patent Owner's position that claims 4 and 8 recite a binary choice. *Supra* Section III.B.2. Patent Owner's argument relies on its incorrect interpretation of claims 4 and 8, namely that the claim limitation means that the system cannot send *the signal* when not synchronized, and also, cannot send a signal when the UE and network are synchronized. *Id.* This is not what the claims recite. Claims 4 and 8 are affirmative and open-ended, reciting, e.g., "wherein the transmitter and the processor are further configured to transmit the signal over the physical control channel when time synchronized." Ex. 1001, 10:30–34.

We find Petitioner and Dr. Kotzin's arguments and evidence persuasive that a person of ordinary skill in the art would have known from Dateki, considering the level of skill and knowledge in the art, that Dateki's dedicated W-CDMA channels HS-DPCCH, DPCH "are used in a dedicated RRC connected state and depend on time synchronization with the network" to send *the signal*. Ex. 1003 ¶ 168. And, considering Dateki in combination with Chitrapu, would have understood that in order to move to a connected state, a UE would have transmitted "a [different] signal"—that is—"a RACH/PRACH burst (a signal) before there is any application of timing advance (when not time synchronized)." *Id.* ¶ 172.

Patent Owner also asserts that claims 4 and 8 require that the UE leave the connected state in response to losing time synchronization." PO Resp. 64–65. However, the claims do not recite such language. Even if they did, Chitrapu explains that "the UE can transition between the Idle Mode and the Connected Mode (only CELL FACH and CELL DCH states) via RRC Connection Establishment and RRC Connection Release procedures." Ex. 1008, 127. Dr. Kotzin testifies persuasively that it was well known in the art that "the UE moving out of an RRC connected state when it loses synchronization is consistent with 3G cellular technologies at the time." Ex. 1003 ¶¶ 48, 149–153 (citing Ex. 1008, 89–91).

On the complete record now before us, having considered all the parties' arguments and evidence, we determine that Petitioner has shown by a preponderance of the evidence that dependent claims 4 and 8 would have been obvious over Dateki and Chitrapu.

IV. CONCLUSION

Petitioner has proved by a preponderance of the evidence that claims 1, 2, 5, and 6 would have been obvious over Dateki.

Petitioner has proved by a preponderance of the evidence that claims 3 and 7 would have been obvious in view of Dateki and Mate.

Petitioner has proved by a preponderance of the evidence that claims 4 and 8 would have been obvious in view of Dateki and Chitrapu.

Our conclusion is summarized in the following table.

Claim(s)	**35 U.S.C. §**	**Reference(s) /Basis**	**Claim(s) Shown Unpatentable**	**Claim(s) Not Shown Unpatentable**
1, 2, 5, 6	103(a)	Dateki	1, 2, 5, 6	
3, 7	103(a)	Dateki, Mate	3, 7	
4, 8	103(a)	Dateki, Chitrapu	4, 8	
Overall Outcome[7]			1–8	

V. ORDER

For the reasons given, it is

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

ORDERED, based on a preponderance of the evidence, that claims 1–8 are unpatentable; and

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

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