

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TESLA, INC.,
Petitioner,
v.

INTELLECTUAL VENTURES II LLC,
Patent Owner.

IPR2025-00219
U.S. Patent No. 9,706,500

**PETITIONER'S REPLY
TO PATENT OWNER'S RESPONSE**

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Ex.1004	U.S. Patent No. 6,600,772 to Zeira et al. (“Zeira”)
Ex.1005	U.S. Patent Application Publication No. 2004/0190485 by Khan (“Khan”)
Ex.1006	U.S. Patent No. 7,493,133 to Krishnan et al. (“Krishnan”)
Ex.1007	U.S. Patent No. 6,529,741 to Tong et al. (“Tong”)
Ex.1008	U.S. Patent Application Publication No. 2004/0077370 by Dick et al. (“Dick”)
Ex.1009	U.S. Patent No. 6,334,047 to Andersson et al. (“Andersson”)
Ex.1010	U.S. Patent Application Publication No. 2001/0036238 by Baker et al. (“Baker”)
Ex.1011	Prosecution File History of U.S. Patent Application No. 10/917,968 (“’968 Application”) issued as U.S. Patent No. 8,897,828 to Anderson (“’828 Patent”)
Ex.1012	Harri Holma & Antti Toskala, WCDMA for UMTS: Radio Access for Third Generation Mobile Communications (2d ed. 2002)
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Ex.1014	<i>Curriculum Vitae</i> of Michael Kotzin
Ex.1015	IV’s Preliminary Infringement Contentions, <i>Intellectual Ventures II, LLC v. Tesla, Inc.</i> , No. 6:24-cv-188-ADA (WDTX)
Ex.1016	Shin & Zeira et al., “Pathloss-Aided Closed Loop Transmit Power

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Ex.1017	IV’s Complaint, <i>Intellectual Ventures II, LLC v. Tesla, Inc.</i> , No. 6:24-cv-188-ADA (WDTX)
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Ex.1023	Reserved
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Ex.1025	Andrew S. Tanenbaum, “Computer Networks,” 4th ed. (2002)
Ex.1026	United States Copyright Office Catalog Record for Andrew S. Tanenbaum, Computer Networks, 4th ed. (Ex.1025)
Ex.1027	Behrouz A. Forouzan, “Data Communications and Networking,” (3 rd ed. 2003)
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Ex.1029	Prabhakar Chitrapu, et al., “Wideband TDD: WCDMA for the Unpaired Spectrum,” (2004)
Ex.1030	U.S. Patent No. 7,519,390 (the “’390 patent”)
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Ex.1059	Bifurcation Order – Videolabs, Inc. v. Asustek Computer, Inc. 6:22-cv-00720-ADA (WDTX)
Ex.1060	Joint Claim Construction Statement, <i>Intellectual Ventures II, LLC v. Tesla, Inc.</i> , No. 6:24-cv-188-ADA, ECF No. 37 (WDTX) (March 28, 2025)
Ex.1061	“The economic contributions of Tesla to the California economy, 2018–2021,” IHS Markit (Oct. 2022), available at https://digitalassets.tesla.com/tesla-contents/image/upload/Tesla-California-Economic-Impact-Final-Report-October-2022
Ex.1062	“Tesla’s ‘American-made’ cars won’t get hit as hard by the auto tariffs,” CNN.com, https://www.cnn.com/2025/03/29/cars/american-made-cars-tesla-auto-tariffs/index.html , retrieved Apr. 14, 2025
Ex.1063	“An Assessment of the Impact of the Inter Partes Review Process under the Patent Trial and Appeal Board on the US Economy,” The Perryman Group, available at https://www.perrymangroup.com/publications/report/2021/9/23/an-assessment-of-the-potential-impact-of-expanding-inter-partes-review-ipr-under-the-america-invents-act-on-the-us-economy/

Ex.1064	Reserved
Ex.1065	"Tesla's California Footprint," https://www.tesla.com/blog/teslas-california-footprint (retrieved Apr. 25, 2025)
Ex.1066	"FAQs for Interim Processes for PTAB Workload Management," available at https://www.uspto.gov/patents/ptab/faqs/interim-processes-workload-management (retrieved May 13, 2025).
Ex.1067	Notice of <i>Sotera</i> Plus Stipulation for Defendant Tesla, Inc., <i>Intellectual Ventures II, LLC v. Tesla, Inc.</i> , 1:24-cv-884-ADA, ECF No. 59 (WDTX) (May 27, 2025)
Ex.1068	Defendant's Final Invalidity Contentions, <i>Intellectual Ventures II, LLC v. Tesla, Inc.</i> , 1:24-cv-884-ADA (WDTX) (May 22, 2025)
Ex.1069 (NEW)	Gandal et al., <i>Standards in wireless telephone networks</i>, Telecommunications Policy 27, pp. 325–332 (2003)
Ex.1070 (NEW)	Parameshwar et al., <i>A Comparative Study of CDMA2000 and W-CDMA</i>, 1999 IEEE Emerging Technologies Symposium - Wireless Communications and Systems (1999)
Ex.1071 (NEW)	Deposition Transcript of Dr. Gary R. Lomp, Ph.D., November 24, 2025
Ex.1072 (NEW)	Supplemental Declaration of Michael D. Kotzin, Ph.D.

I. INTRODUCTION

The Petition, supported by Dr. Kotzin's testimony, establishes how the prior art renders obvious challenged claims 11-22 of the '500 patent. Intellectual Ventures II's ("IV") Patent Owner Response does nothing to rebut this *prima facie* case of obviousness. IV challenges the motivation to combine Andersson with Khan (Ground 1) and Zeira with Khan (Ground 4), alleging technical incompatibilities. These arguments fail because they rely upon bodily incorporation (where there is none) and improperly limit the cellular systems described in the references to specific types of systems (e.g., WCDMA).

Additionally, IV relies upon a narrow claim construction of "*accumulation of TPC commands*" requiring an "integrator." Neither the claims nor the specification requires an integrator. Instead, consistent with the Board's preliminary understanding a similar term in the '500 patent's child patent, U.S. 10,952,153, "*accumulation of TPC commands*" merely requires received TPC commands to cumulatively affect transmission power. The prior art renders obvious the "*accumulation of TPC commands*" limitation both under this understanding and under IV's "integrator" construction.

Petitioner respectfully requests that the Board confirm the unpatentability of the challenged claims.

II. CLAIM CONSTRUCTION

A. “*Accumulation of TPC commands*”

Although the construction of the term “*accumulation of TPC commands*” was not disputed pre-Institution, IV proposes a construction for this term in its Response. Response, 10-16. IV proposed a construction for a substantially similar term—“*TPC command accumulation*”—in a co-pending IPR challenging the child '153 patent, *Tesla, Inc. v. Intellectual Ventures II LLC*, IPR2025-00217 (the “'153 IPR”). In that IPR, the Institution Decision asked the parties to address a perceived claim construction dispute over the term “*TPC command accumulation*.” '153 IPR, Paper 11 at 8-9. The Board preliminarily understood “*TPC command accumulation*” to mean that “TPC commands cumulatively affect transmission power.” '153 IPR, Paper 11 at 8.

Petitioner agrees with that understanding and the Board should apply that understanding to “*accumulation of TPC commands*” in this IPR. Specifically, the Board is correct that the “magnitude” of each TPC command adjustment is summed to cumulatively affect transmission power. '153 IPR, Paper 11 at 8 (citing '153 patent, 9:29-42); *see, e.g.*, Ex.1001, 9:21-33 (“[S]tep is the **magnitude**

of the amount added to an accumulator upon receipt of **each** TPC command.”¹;
Ex.1072, ¶20. This understanding is consistent with the intrinsic evidence and both
experts' testimony, as explained below.

In its Response, IV appears to initially agree, stating that under its proposed
construction “‘accumulation’ refers to the process of collecting and **summing TPC
commands** so that they cumulatively affect transmit power, regardless of whether
the update occurs once per command, once per frame, or at another interval.”

Response, 15. But, in its claim construction conclusion, IV changes course and
instead proposes that “*accumulation of TPC commands*” means “adding a TPC
command value to an integrator.” *Id.*, 16. This new construction is unsupported,
confusing, and inconsistent with IV's own statements and should be rejected.

Petitioner notes, however, that even under this construction, when Baker's PCA=2,
TPC command accumulation is not enabled because TPC command values are not
summed within an integrator.

¹ All emphases in quoted material has been added unless indicated otherwise.

1. Accumulation of TPC commands requires the magnitude of each TPC command to cumulatively affect transmission power.

IV recognizes that the claim language does not define or impart any meaning to the term *accumulation of TPC commands*. Response, 10-11. Turning to the specification, *accumulation of TPC commands* requires the magnitude of each received TPC command adjustment to cumulatively affect transmission power: “A UE accumulates the increase and decrease TPC commands to determine a proper uplink transmit power level.” Ex.1001, 6:63-65, 6:61-63 (“For example, ...the system will take **15 TPC commands to compensate for the 15 dB fade.**”). As recognized by the Board in the '153 IPR Institution Decision, the specification expressly states that “magnitude[s]” of TPC command adjustments are added to an accumulator after receiving “each” TPC command to cumulatively affect transmission power:

[F]or the current frame k , the UE may calculate the transmit power $P_{Tx}(k)$ as shown [in Equation 2] where K is the initial frame number determined when the power control process begins; TPC_i is -1 for a down TPC command and +1 for an up TPC command and 0 if no TPC command is received; **and step is the magnitude of the amount added to an accumulator upon receipt of each TPC command.**

Ex.1001, 9:21-27, 7:10-12; '153 IPR, Paper 11 at 8. Consistent with this, the '500 patent describes summing adjustment magnitudes associated with received TPC commands and outputting a single, cumulative “sum” to update—and thus cumulatively affect—transmission power: an “accumulator [has] **an input for accepting step increase and decrease instructions and an output providing a sum of past step instructions.**” Ex.1001, 3:33-35. The accumulated TPC command step magnitudes may be applied to transmit power at different time intervals, including at “every frame period” or “each time a new TPC command is received.” Ex.1001, 9:27-32. But regardless of application timing, adjustment magnitudes for *every* received TPC command are summed to cumulatively affect transmit power. Ex.1001, 9:21-27 (“upon receipt of **each** TPC command,” magnitude of adjustment added to accumulator); Ex.1072, ¶¶21-23.

IV's expert, Dr. Lomp, confirms that *accumulation of TPC commands* refers to summing the magnitude of each received TPC command adjustment to cumulatively affect transmission power. For example, in his declaration, Dr. Lomp explains that “the network sends a TPC command instructing the UE to increase or decrease its transmit power—typically by a small, fixed size step, such as $\pm 1\text{dB}$ [T]he UE keeps a running tally of **all the ‘up’ and ‘down’ commands.** This process of **summing these incremental adjustments** over time is what the patent refers to as accumulation.” Ex.2016, ¶43.

Accordingly, the intrinsic evidence, IV's arguments, and IV's expert's testimony all support construing *accumulation of TPC commands* as the magnitude of each TPC command adjustment cumulatively affecting transmission power. Ex.1072, ¶¶19-24.

2. IV's "integrator" construction is unsupported

IV's proposed construction requiring "adding a TPC command value to an integrator" finds no support in the claims, specification, or even IV's own claim construction arguments. Response, 16.

None of the claims of the '500 patent recite an "integrator." See Ex.1001, 13:57-16:20. Nor does the specification define or require TPC command accumulation to use an integrator. The specification only mentions an "integrator" once in passing, stating that "[e]very time a TPC command is received an integrator in the UE is used within the inner loop to update the UE transmit power by a step amount $\pm \Delta$ dB." *Id.*, 7:10-12. But nothing in this sentence requires an integrator as part of TPC command accumulation. On the contrary, the '500 patent repeatedly describes accumulation more generally without reference to an integrator. See, e.g., Ex.1001, 6:63-65 ("A UE accumulates the increase and decrease TPC commands to determine a proper uplink transmit power level."), 7:35-38, 10:12-15, 3:5-25; see also 4:5-8, 13:32-35, 13:49-56; Ex.1072, ¶25.

Even IV's Response does not support a construction requiring an integrator. The Response's claim construction discussion refers to accumulating and summing TPC commands. Response, 10-14. Although IV asserts that the '500 patent "emphasizes that accumulation is performed in the UE using an integrator," IV does not argue that the TPC command accumulation *requires* an integrator. Response, 12. And while IV describes an integrator in the context of "Delta Modulation," using an integrator in Delta Modulation does not mean the '500 patent requires using an integrator. Response, 14. It is not until the conclusion of IV's claim construction argument that IV proposes construing *accumulation of TPC commands* to require "adding a TPC command value to an integrator." Response, 16.

At bottom, IV's construction impermissibly reads the integrator example from the specification into the claims—a "cardinal sin[]" of patent law." *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1340 (Fed. Cir. 2001). The Board should reject IV's attempt to improperly import an integrator requirement into the claims.

III. THE ANDERSSON-KHAN COMBINATION RENDERS OBVIOUS THE CHALLENGED CLAIMS OF GROUND 1

A. Andersson in view of Khan renders obvious receiving allocation of an uplink resource and power control information on a single channel

The Petition, supported by Dr. Kotzin's declaration, presents a simple combination of Andersson and Khan in which both allocation of an uplink resource ("an uplink signaling grant") and power control information (a "TPC command") is transmitted on Andersson's "dedicated physical control channel" based on Khan's disclosure of transmitting both parameters on a single physical channel. Petition, 19-22; Ex.1003, ¶¶62-65. In its Response, IV ignores this simple combination and instead directs its arguments to a strawman combination involving physical incorporation of Khan's communication channel into Andersson's system. Response, 33-39; Ex.1072, ¶38. IV further mischaracterizes the teachings of Andersson and Khan as being respectively limited to WCDMA and CDMA2000 HRPD in order to allege technical incompatibilities. Response, 36-39. IV's arguments thus fail to overcome the *prima facie* case of obviousness presented in the Petition.

1. IV's arguments address a physical incorporation of Khan's channel into Andersson's system, which the Petition does not propose

The Petition proposes a straightforward combination of Andersson and Khan in which both allocation of an uplink resource and power control information are received on Andersson's *existing* "dedicated physical control channel." Petition,

19-22; Ex.1003, ¶¶62-65. This modification to Andersson's control channel is based upon Khan's *technique* of transmitting both allocation of an uplink resource and power control information on a single physical channel. Petition, 19-22; Ex.1003, ¶¶62-65; Ex.1072, ¶40. The Petition states that a "POSITA would have been motivated to transmit *on Andersson's 'dedicated physical control channel (DPCCH)'* both the TPC command and an uplink scheduling grant, as taught by Khan[.]" Petition, 20.

Despite this, IV repeatedly mischaracterizes the combination as an incompatible physical incorporation. *See* Response, 33-39. For example, IV argues that the combination "would require substantial re-design of Andersson's DPCCH/DPCH channel" due to alleged incompatibilities between Andersson and Khan's channel structures. Response, 36-38.

But, as described in the Petition, no redesign is needed. The proposed combination merely contemplates, for example, utilizing the existing "other bits" in Andersson's DPCCH for an uplink signaling grant, based on Khan's teachings. Petition, 19-22; *see, e.g.*, Ex.1005, [0043], [0047] (teaching receiving both TPC command and uplink signaling grant on the same channel). IV's strawman arguments thus fail.

2. IV mischaracterizes Andersson and Khan as each being directed only to a single type of wireless network

In addition to mischaracterizing the combination as physical incorporation, IV also mischaracterizes Andersson and Khan as each directed *only* to a *specific* type of wireless network—Andersson to “WCDMA” and Khan to “CDMA2000 HRPD.” *See, e.g.*, Response, 33 (describing “WCDMA” as “the underlying technology of the Andersson patent”), 40 (Khan as directed to “CDMA2000 HRPD”); *see also id.*, 23, 36-38, 42. Based upon this mischaracterization, IV leverages alleged technical incompatibilities between these networks to attack the proposed combination. Response, 32-33 (arguing that based on “the fundamental architectural differences between WCDMA and CDMA2000 HRPD” a “skilled artisan would have avoided such a combination rather than pursued it”). For example, IV points to alleged incompatibility between “scheduling” schemes in WCDMA and CDMA2000 HRPD: “In the *WCDMA technology explicitly described in Andersson*, scheduling was performed semi-statically....By contrast, *CDMA2000 HRPD* employed base-station-centric, slot-by-slot scheduling, ...These approaches were not interchangeable.” Response, 38.

Even if IV is correct that there are technical differences between WCDMA and CDMA2000 HRPD, Andersson and Khan are *not exclusively directed* to WCDMA and CDMA2000 HRPD. Ex.1009, 7:16-18; Ex.1005, [0005], [0008],

[0018], [0034], [0037]; Ex.1072, ¶43. And in the case of Andersson, Dr. Kotzin explicitly stated he was analyzing the combination under “CDMA” (not WCDMA): “A POSITA would have thus naturally expected to be successful applying well-known signaling techniques such as Khan’s—especially in view of Andersson’s statement that it utilizes “*well-known CDMA techniques...*” Ex.1003, ¶65 (citing Ex.1009, 7:46-54); Ex.1072, ¶43.

In more detail, Andersson explains that its network “may be, for example, a **CDMA or a wideband CDMA [WCDMA] communications system.**” Ex.1009, 7:16-18; Ex.1072, ¶¶14-17, 44. IV’s expert, Dr. Lomp, confirmed during deposition that this disclosure means that Andersson is not limited to WCDMA:

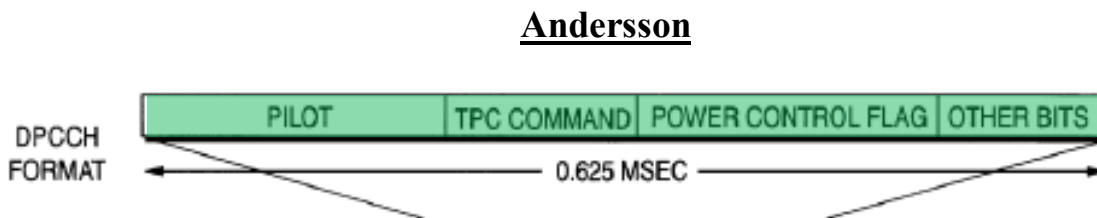
Q. ...Does that sentence mean that the context of Andersson includes both CDMA and WCDMA?

A. I think that’s a fair interpretation of the sentence.

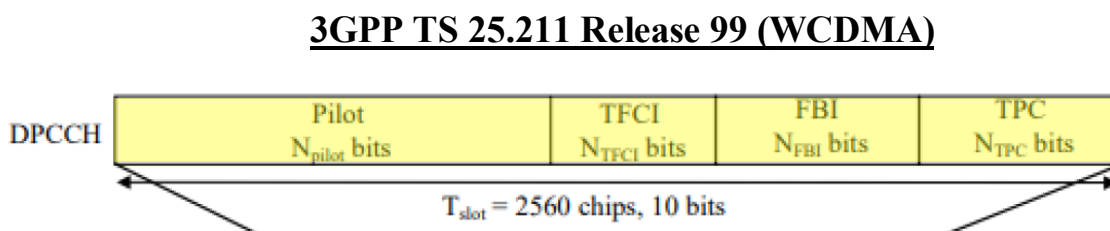
Ex.1071, 52:15-53:8; *see also* Ex.1072, ¶44 (Dr. Kotzin explaining that Andersson uses the word “or” between CDMA and WCDMA because WCDMA is associated with the different GSM branch of wireless technology).

Further undermining IV’s characterization, Andersson’s description of its “dedicated physical control channel (DPCCH)” differs significantly from the WCDMA channel IV alleges to be analogous. IV and its expert appear to argue that Andersson’s “dedicated physical control channel (DPCCH)” actually

corresponds to a channel described in the “3GPP TS 25.211 Release 99” specification (not mentioned in Andersson), which allegedly describes channel structures for WCDMA. Response, 37 (citing Ex.2016, ¶¶58-61, 100-101). But Andersson’s channel includes *entirely different fields* (in order: pilot, TPC command, power control flag, and other bits, as shown below) than the supposedly analogous channel described in “3GPP TS 25.211 Release 99” (in order: pilot, TFCI (“Transport Format Combination Indicator”), FBI (“Feedback Information”), and TPC commands, as shown below):



Ex.1009, Detail of FIG. 5 (annotated)



Ex.2014, Detail of FIG. 1 (annotated)

In addition, Andersson describes its “DPCCH” as operating in both “the uplink direction and downlink direction,” while the allegedly analogous channel in “3GPP TS 25.211 Release 99” (WCDMA) only operates in the uplink direction.

Ex.2016, ¶60. Andersson further describes the frame in which the DPCCH is transmitted as having a slot duration of “0.625 msec” (as shown in FIG. 5 above), while the supposedly analogous frame in “3GPP TS 25.211 Release 99” (WCDMA) has different a slot duration of “0.667 msec.” *See* Ex.1009, FIG. 5; Ex.2016, ¶61 (citing Ex.2014, §5.3.2, FIG. 9). These differences in channel structure further confirm that Andersson's disclosure, and specifically the DPCCH shown in FIG. 5 and described in column 9, is not limited to WCDMA as IV argues.

IV also repeatedly mischaracterizes Khan as limited to “CDMA2000 HRPD.” Response, 23, 33, 36, 38. But Khan describes several different types of wireless networks—including “CDMA,” “UMTS,” and “HSDPA”—in addition to “CDMA2000 HRPD.” Ex.1005, [0005], [0008]; Ex.1072, ¶45. Further, Khan repeatedly refers to its descriptions of “CDMA2000 HRPD” networks as “exemplary,” thereby indicating that its disclosure is not limited to only that type of network. Ex.1005, [0018], [0034], [0037]; Ex.1072, ¶45.

Because Andersson is not limited to WCDMA and Khan is not limited to CDMA2000 HRPD, as alleged, IV's arguments in the Response are moot. Nevertheless, Petitioner notes that there is, in fact, significant overlap between the types of wireless networks to which the techniques of Andersson and Khan are applicable. For example, both references are explicitly directed to compatible

“CDMA” type wireless networks, and the proposed combination is based on the “CDMA” example in Andersson. *See* Ex.1009, 7:16-18 (Andersson’s techniques are applicable to “CDMA” systems); Ex.1005, [0003], [0005], [0008], [0018], [0034] (Khan’s techniques are applicable to “CDMA” systems); Petition, 22 (citing Ex.1003, ¶65); Ex.1072, ¶46; *see also, e.g.*, Ex.1069, 325-330; Ex.1070, 1-3. Further, both references describe transmission of TPC commands on their respective control channels. Ex.1009, 9:12-24 (Andersson’s “DPCCH” transmits TPC commands); Ex.1005, [0012], [0043] (Khan’s channel transmits TPC commands); Ex.1072, ¶46. IV’s arguments ignore this clear disclosure in Andersson and Khan in a self-serving attempt to render the references incompatible. Accordingly, IV’s arguments fail.

3. IV’s attempts to explain away the benefits of the combination fail

The Petition describes multiple benefits that would have motivated a POSITA to combine Andersson and Khan in the proposed manner. *See* Petition, 20-21. In its Response, IV attempts to explain away these benefits by relying on the same mischaracterizations of Andersson and Khan discussed above. *See* Response, 39-42. IV argues that “fundamental architectural differences between UMTS (Andersson) and CDMA2000 HRPD (Khan)” would prevent the described benefits from being obtained. Response, 39-40. But, as described above (§III.A.2),

Andersson is not limited to UMTS/WCDMA and Khan is not limited to CDMA2000 HRPD based on the clear disclosure in both references. *See* Ex.1009, 7:16-18; Ex.1005, [0005], [0008], [0018], [0034]; Ex.1072, ¶¶43-46. Accordingly, IV's attempts to discount the benefits of the Andersson-Khan combination must fail because they are based on the erroneous mischaracterizations of the references explained above.

IV. THE ANDERSSON-KHAN-BAKER COMBINATION RENDERS OBVIOUS THE CHALLENGED CLAIMS OF GROUND 2

A. Andersson in view of Baker renders obvious receiving an indication as to whether accumulation of TPC commands is enabled under any interpretation

There is no dispute that both Andersson and Baker teach accumulation of TPC commands. Response, 43-44 (explaining that in Andersson “[w]hen the TPCs indicate + or -, the value in the accumulator either increases or decreases”), 46 (explaining that in Baker “[i]f PCA is 1, $\Delta\text{TPC} = 1$ or $\Delta\text{TPC}=2$ is added to the accumulator”). IV instead argues that neither Andersson nor Baker disclose the recited “*indication*” because TPC command accumulation is “always enabled” in both references. Response 44, 46 (underlining in original). IV is wrong, both under the correct construction of *accumulation of TPC commands* (summing magnitude of each TPC command adjustment to cumulatively affect transmission power) and its “integrator” construction.

1. When Baker's PCA=2 the magnitude of each TPC command does not cumulatively affect transmission power

As explained in the Petition, Andersson teaches a mobile station receiving a “power control indicator” sent with a TPC command that may “indicate[] whether a first type or a second type of power control adjustment should be used.” Petition, 40-42; Ex.1009, 9:1-11, 10:58-61; Ex.1003, ¶117. As further explained in the Petition, it would have been obvious for Andersson's power control to indicate that TPC command accumulation is enabled based on Baker's teaching of a “Power Control Algorithm (PCA).” Petition, 36-40, 40-43 (citing Ex.1010, [0002], [0021]-[0023]). When PCA=1, TPC command accumulation is enabled because the magnitude of each TPC command adjustment (i.e., Δ_{TPC} which may be 1 or 2) is added (or subtracted) to the previous transmission power to cumulatively affect the transmission power of the mobile station. Ex.1010, [0022]; Petition, 43; Response, 46 (“If PCA is 1, $\Delta_{\text{TPC}} = 1$ or $\Delta_{\text{TPC}}=2$ is added to the accumulator”).

When PCA=2, however, TPC command accumulation is disabled. As described in Baker,

Δ_{TPC} can only take the value of 1 and **the MS 110 combines TPC commands in groups of five. If all five TPC commands are “1” the transmission power is increased by Δ_{TPC} dB, if all five TPC commands are “0” the transmission power is decreased by Δ_{TPC} , otherwise the transmission power is unchanged.**

Ex.1010, [0023]. In other words, when PCA=2, the mobile station *compares* the received TPC command binary values, it does not *sum* the magnitude of the TPC command adjustments to cumulatively affect transmission power. For example, if five TPC commands of “1” are received, the transmit power is *not* increased five times by Δ_{TPC} dB (as it is when PCA=1). Transmit power is only increased one time by Δ_{TPC} dB (i.e., a set amount not cumulative of the five TPC commands received). Ex.1072, ¶28.

Accordingly, as stated in the Petition, “[w]hen PCA is 2,...TPC command accumulation is not enabled because the UE will not iteratively update the transmission power based on each TPC command.” Petition, 42. Baker’s PCA controls whether accumulation of TPC commands is enabled and is thus “*an indication as to whether accumulation of TPC commands is enabled.*” Ex.1072, ¶29.

2. When Baker’s PCA=2, TPC command values are not summed within an “integrator”

Even if the Board adopts IV’s construction of *accumulation of TPC commands* as “adding a TPC command value to an integrator,” Baker’s PCA is still *an indication as to whether accumulation of TPC commands is enabled*. Ex.1072, ¶30. IV already admits that “[i]f PCA is 1, $\Delta_{\text{TPC}} = 1$ or $\Delta_{\text{TPC}}=2$ is added to the accumulator” and accumulation is enabled. Response, 46. If PCA=2,

TPC accumulation is *disabled* under IV's understanding because Baker's TPC command values are not summed within an integrator—they are compared, as noted above. §IV.A.1; Ex.1072, ¶31.

With respect to the term “integrator,” Dr. Lomp explained in his deposition that an integrator holds a single value, where an incoming value is added to the single value to form a new value:

Q. Okay. So what is an integrator?

A. So there's a register which has a number in it. And when new inputs to that accumulator arrive, **the input number is added to the contents of the register to create a new value. So the new value is equal to the old value, plus the increment that comes to the input.**

Ex.1071, 40:2-13, 41:4-18.²

As explained above, when PCA=2, Baker's mobile station does not *sum* the value of received TPC commands within an integrator. Instead, Baker *compares* the received TPC command values to look for five “1” commands or five “0”

² The '500 patent, IV, and Dr. Lomp appear to treat an “accumulator” and an “integrator” interchangeably. Ex.1001, 3:39-48, 7:18-22, 9:33-35; Response, 6; Ex.1071, 41:15-42:4.

commands. Ex.1010, [0023]; Ex.1072, ¶32. To the extent Baker holds the last five TPC commands in a buffer for comparison purposes, that buffer would not be an integrator under Dr. Lomp's understanding because it does contain a single value that is continuously incremented. Ex.1072, ¶33. Moreover, when Baker receives five "1" TPC commands, for example, the transmit power is incremented by a set amount of 1 dB. This 1 dB increment is not "a TPC command value" under IV's construction—it is a separate value that is associated with receiving five "1" TPC command values. Ex.1072, ¶33.

Thus, when PCA=2, TPC command accumulation is disabled under IV's construction, and Baker's mobile station receiving an indication that PCA=1 establishes that the mobile station *receive[s] an indication as to whether accumulation of TPC commands is enabled.*³ Ex.1072, ¶¶30-34.

³ Petitioner further notes that even if Baker's TPC command accumulation is always enabled, as IV alleges, Baker still meets this limitation. **Both** PCA=1 and PCA=2 would be an indication that accumulation of TPC commands is enabled. Ex.1072, ¶¶35-37. The claim does not require receiving an indication that accumulation of TPC commands is *disabled*. See *Xerox Corp. v. Snap Inc.*, No. 2023–1983, 2025 WL 2080743, at *3 (Fed. Cir. July 24, 2025).

V. THE ANDERSSON- KHAN-DICK COMBINATION RENDERS OBVIOUS THE CHALLENGED CLAIMS OF GROUND 3

IV's arguments as to Ground 3 appear to rely on its arguments for Grounds 1 and 2. Response, 49. For the same reasons discussed above in §§III-IV, the prior art renders obvious claims 14 and 20.

VI. THE ZEIRA-KHAN-TONG COMBINATION RENDERS OBVIOUS THE CHALLENGED CLAIMS OF GROUND 4

A. Zeira and Khan render obvious receiving allocation of an uplink resource and power control information on a single channel

The Petition presents a simple combination of Zeira and Khan in which both allocation of an uplink resource and power control information is transmitted on Zeira's "dedicated channel" based on Khan's disclosure of transmitting both parameters on a single physical channel. Petition, 59-60; Ex.1003, ¶¶154-156. As it did with the Andersson-Khan combination discussed above (§III.A), IV chooses not to direct its arguments to the Zeira-Khan combination presented in the Petition, and to instead address a strawman involving physical incorporation of Khan's communication channel into Zeira's system. Response, 49-60. And as it did with Andersson, IV again mischaracterizes the teachings of Zeira and relies on its earlier mischaracterization of Khan in an attempt to concoct incompatibilities between their systems that do not exist. Response, 49-60. As explained below, IV's arguments fail.

1. IV's arguments address a physical incorporation of Khan's channel into Zeira's system, which the Petition does not propose

IV repeatedly mischaracterizes the combination as a physical incorporation of Khan's communication channel into Zeira's system, and argues that alleged technical incompatibilities between the two systems would have led a POSITA away from the combination. *See* Response, 49-60. But the Petition does not propose physically incorporating any feature from Khan into Zeira. Instead, it proposes a straightforward combination in which both allocation of an uplink resource and power control information are transmitted on Zeira's existing "dedicated channel" based on Khan's disclosure of transmitting both allocation of an uplink resource and power control information on a single physical channel. Petition, 59-60; Ex.1003, ¶¶154-156. IV's alleged technical incompatibilities between Zeira and Khan thus would not have dissuaded a POSITA from implementing concepts described in Khan—such as transmitting both parameters on a single channel—in the context of Zeira's system. Ex.1072, ¶¶47-49.

For example, IV argues that "Zeira is directed to UTRA-TDD in UMTS Release 99," while "Khan's disclosure arises from a different technology family than Zeira's, namely CDMA2000 High Rate Packet Data (HRPD)." Response, 55. From this, IV concludes that alleged incompatibilities between these two technologies would have dissuaded a POSITA from performing the proposed

combination. Response, 56-57. But, as described above, the Zeira-Khan combination presented in the Petition involves simply transmitting one additional parameter (an “uplink signaling grant” as taught by Khan) on Zeira’s existing “dedicated channel.” Petition, 59-60; Ex.1003, ¶¶154-156. The proposed combination does not involve incorporating Khan’s channel into Zeira or changing the format of Zeira’s dedicated channel to match the format of Khan’s channel, and thus would not “require substantial re-design of Zeira’s” channel. Petition, 59-60; Ex.1072, ¶49. Thus, IV’s arguments do not address the Zeira-Khan combination presented in the Petition, and thus fail.

2. IV mischaracterizes Zeira and Khan as each being directed only to a single type of wireless network

As it did with Andersson-Khan, IV also repeatedly mischaracterizes both Zeira and Khan as each directed only to a different type of wireless network—Zeira to “UTRA-TDD in UMTS Release 99” and Khan to “CDMA2000 HRPD” (as discussed in §III.A above). *See, e.g.*, Response, 55. IV leverages alleged technical incompatibilities between these networks in attacking the proposed combination. Response, 52 (arguing that based on “the fundamental architectural differences between UTRA/TDD and CDMA2000 HRPD” a “skilled artisan would have avoided such a combination rather than pursued it”). But based on explicit disclosures in each reference, neither Zeira nor Khan is directed only to the single

type of network alleged by IV, and thus the alleged “technical incompatibilities” between Zeira and Khan upon which IV bases its arguments do not, in fact, exist. Ex.1072, ¶50.

For example, IV repeatedly characterizes Zeira as limited only to “UTRA-TDD in UMTS.” Response, 52-56. But the terms “UTRA” and “UMTS” do not appear in Zeira’s disclosure. *See generally* Ex.1004. Zeira does include the term “TDD,” but that term merely refers to “time division duplexing,” a communications *technique* (not system) that is used in many different types of wireless networks and is not specific to “UTRA” or “UMTS” networks. *See, e.g.*, Ex.1004, 1:7-11, 4:10-30; Ex.1071, 33:9-34:1 (IV’s expert confirming that “TDD” is a “broadly applicable” technique used in many different types of wireless systems). Dr. Kotzin explains in his supplemental declaration that Zeira’s use of the term TDD was simply meant to indicate that Zeira’s hybrid power control technique may be used in any cellular system that employs TDD. Ex.1072, ¶51. Accordingly, IV’s mischaracterization of Zeira as limited only to “UTRA-TDD in UMTS” has no basis in the reference.

As it did when addressing the Andersson-Khan combination, IV relies on its mischaracterization of Khan as limited to “CDMA2000 HRPD” when addressing the Zeira-Khan combination. *See, e.g.*, Response, 55. But, as previously shown

(*see* §III.A.2), Khan is not so limited. Ex.1005, [0005], [0008], [0018], [0034], [0037].

Thus, IV's characterizations of Zeira as limited to "UTRA-TDD in UMTS Release 99" and Khan as limited to "CDMA2000 HRPD" have no basis in the disclosures of the references themselves. IV's arguments are predicated upon these mischaracterizations and thus fail.

3. IV's attempts to explain away the benefits of the combination fail

The Petition describes multiple benefits that would have motivated a POSITA to combine Zeira and Khan in the proposed manner. Petition, 59-60. Again repeating its strategy from the Andersson-Khan combination, IV attempts to explain away these benefits by relying on the same mischaracterizations of Zeira and Khan discussed above. Response, 57-60. As with Andersson-Khan, IV's attempts to explain away the benefits of the Zeira-Khan combination are based on the mischaracterizations of the references explained above, and thus must fail.

VII. THE ZEIRA-KHAN-TONG-BAKER COMBINATION RENDERS OBVIOUS THE CHALLENGED CLAIMS OF GROUND 5

A. Zeira and Baker render obvious receiving an indication as to whether accumulation of TPC commands is enabled

In the Institution Decision, the Board preliminarily determined that Zeira discloses TPC command accumulation. ID, 13. The Board observed that Zeira

teaches a weighting factor that “may be applied to the closed loop factor or both the open and closed loop factors.” ID, 13 (citing Ex.1004, 7:16-18). The Response ignores this express teaching recognized by the Board. *See* Response, 50-54. Importantly, the Response does not dispute that disabling Zeira's closed loop power control with a weighting factor disables TPC command accumulation. Response, 60-64. It only disputes whether Zeira *receives* the weighting factor from a network operator. Response, 61-63. Despite this, the Response does not dispute that Zeira, **when combined with Baker**, renders obvious *receiv[ing] an indication as to whether accumulation of TPC commands is enabled*. *See* Response, 64. The Board should confirm its initial finding of obviousness.

1. Zeira renders obvious receiving an indication as to whether accumulation of TPC commands is enabled

As explained in the Petition, Zeira renders obvious *receiv[ing] an indication as to whether accumulation of TPC commands is enabled*. Petition, 66-69; Ex.1003, ¶¶174-187. As recognized by the Board, Zeira teaches a weighting factor α that “may be applied to the closed loop factor or both the open and closed loop factors” and determines whether the UE uses purely open loop (where accumulation is not enabled), purely closed loop (where accumulation is enabled), or a combined scheme (where accumulation is enabled). Ex.1004, 7:16-22; Petition 66-69; Ex.1003, ¶177; ID, 13. When the weighting factor is applied to the closed

loop factor or both the open and closed loop factor, a non-zero weighting factor for the closed loop factor indicates that closed loop mode (and accumulation) is enabled. Petition, 67-68; Ex.1003, ¶177.

A non-zero weighting factor applied to the closed loop factor enables “*TPC command adjustment*” under the Board’s understanding by summing the magnitude of each TPC command adjustment to cumulatively affect transmission power. Petition, 66-67 (discussing Equations 4 and 6). The weighting factor applied to the closed loop factor is thus *an indication as to whether accumulation of TPC commands is enabled*. Zeira expressly contemplates disabling closed loop functionality (and accumulation) by teaching that “the network operator may desire to use **solely open loop** or solely closed loop power control.” Petition, 68; Ex.1004, 7:16-22.

As explained in the Petition, Zeira teaches that the UE receives the weighting factor from a “network operator” to set which power control technique the UE utilizes. Petition, 68; Ex.1004, 7:16-22; Ex.1003, ¶178. Zeira teaches that “[u]nder certain conditions, **the network operator may desire to use solely open loop or solely closed loop power control**. For example, **the operator may use solely closed loop power control by setting α to zero.**” Ex.1004, 7:16-22. Zeira’s UE receiving from the network operator the weighting factor indicating closed loop power control (and thus TPC command accumulation) is enabled renders

obvious *receiv[ing] an indication as to whether accumulation of TPC commands is enabled*. Petition, 57; Ex.1003, ¶140.

IV argues that “Petitioner’s theory never identifies a network signal to toggle accumulation on/off at the UE.” Response, 61; *see also id.* 62-63. But IV ignores the Petition’s discussion of Zeira’s network operator setting α within the UE to control which power control technique the UE utilizes, including the weighting factor for closed loop power control. Petition, 67-68.

IV also argues that in Zeira, the weighting factor is calculated at the UE. Response, 61, 63. Although Zeira teaches that the UE may sometimes calculate the weighting factor α (Ex.1004, 6:31-54), Zeira ***also*** expressly teaches that “**the network operator** may desire to use solely open loop or solely closed loop power control” and that “**the operator** may use solely closed loop power control by setting α [for open loop power control] to zero.” Ex.1004, 7:16-22.

Accordingly, Zeira renders obvious *receiv[ing] an indication as to whether accumulation of TPC commands is enabled*.

2. Zeira and Baker together render obvious receiving an indication as to whether accumulation of TPC commands is enabled

Although Zeira discloses the UE receiving from the network operator the weighting factor to indicate which power control mode is enabled, the Petition further explained how Zeira and Baker together render obvious that capability.

Petition, 69-71. *IV does not dispute the Zeira-Baker combination.* Response, 64.

For example, it does not dispute that communication between a base station and UE regarding “power control” was well known (as taught by Baker), or that it would have been obvious for Zeira’s “network operator” to set the α power control parameter on a UE according to these known communications. Response, 64;

Petition, 69-71. The Response merely states that “Baker does not, however, make up for the deficiencies with respect to enabling TPC command accumulation.”

Response, 64 (emphasis in original). Thus, for the reasons discussed in §§IV.A and VII.A.1 above, it is uncontested that Zeira in view Baker renders obvious *receiv[ing] an indication as to whether accumulation of TPC commands is enabled.*

VIII. THE ZEIRA-KHAN-TONG-DICK COMBINATION RENDERS OBVIOUS THE CHALLENGED CLAIMS OF GROUND 6

IV’s arguments as to Ground 6 appear to rely on its arguments for Grounds 4 and 5. Response, 65. For the same reasons discussed above in §§VI-VII, the prior art renders obvious claims 14 and 20.

IX. CONCLUSION

For the foregoing reasons, Petitioner requests that all challenged claims be found unpatentable.

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner hereby certifies, in accordance with and reliance on the word count provided by the word-processing system used to prepare this Reply, that the number of words in this paper is 5,591. This word count excludes the table of contents, table of authorities, mandatory notices under §42.8, certificate of service, certificate of word count, signature block, and appendix of exhibits. *See* 37 C.F.R. §42.24(c).

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CERTIFICATE OF SERVICE

The undersigned certifies that, in accordance with 37 C.F.R. § 42.6(e),
service was made on Patent Owner as detailed below.

Date of service December 15, 2025

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RESPONSE; EXHIBITS Ex.1069- Ex.1072**

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