

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC.,
Petitioner,

v.

TOT POWER CONTROL, S.L.,
Patent Owner.

IPR2021-01092
Patent 7,532,865 B2

Before MICHAEL R. ZECHER, LYNNE E. PETTIGREW, and
IFTIKHAR AHMED, *Administrative Patent Judges*.

PETTIGREW, *Administrative Patent Judge*.

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

I. INTRODUCTION

Petitioner, Ericsson Inc., filed a Petition for *inter partes* review of claims 1–12 of U.S. Patent No. 7,532,865 B2 (Ex. 1001, “the ’865 patent”). Paper 1 (“Pet.”). Patent Owner, TOT Power Control, S.L., filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

Under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a), we have authority to institute an *inter partes* review if “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). After considering the parties’ briefing and the evidence of record, we conclude the information presented does not show there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of at least one of claims 1–12 of the ’865 patent. Accordingly, we do not institute an *inter partes* review.

II. BACKGROUND

A. Real Parties-in-Interest

Petitioner identifies Ericsson Inc. and Telefonaktiebolaget LM Ericsson as real parties-in-interest. Pet. 87. Patent Owner identifies TOT Power Control, S.L. as the real party-in-interest. Paper 5, 1 (Patent Owner’s Mandatory Notices).

B. Related Matters

The parties identify the following district court proceedings related to the ’865 patent: *TOT Power Control, S.L. v. AT&T Mobility L.L.C.*, No. 6:21-cv-00107-ADA (W.D. Tex.); *TOT Power Control, S.L. v. Sprint Corporation*, No. 6:21-cv-00108-ADA (W.D. Tex.); *TOT Power Control, S.L. v. T-Mobile USA, Inc.*, No. 6:21-cv-00109-ADA (W.D. Tex.); and *TOT*

Power Control, S.L. v. Verizon Communications, Inc., No. 6:21-cv-00110-ADA (W.D. Tex.). Pet. 87; Paper 5, 1. Petitioner states that Patent Owner dismissed its lawsuits against the Sprint entities and Verizon entities before the Petition was filed. Pet. 88.

C. Overview of the '865 Patent

The '865 patent describes a method and device for use in outer loop power control systems in wireless telecommunication networks based on Code Division Multiple Access (CDMA) technology. Ex. 1001, code (57), 1:18–20. The disclosed method and device focus on managing the target signal to interference ratio (SIR), specifically during wind-up and unwinding modes. *Id.* at 1:21–26. Wind-up occurs, for example, when a mobile unit encounters a physical obstruction, causing channel conditions to worsen suddenly. *See id.* at 2:47–3:7. In this situation, outer loop power control typically increases the target SIR to a level much higher than before conditions worsened. *Id.* at 3:3–7. Unwinding begins when conditions improve (e.g., when the physical obstruction is no longer present). *Id.* at 3:8–27.

The '865 patent explains that in the prior art, upon detecting the end of wind-up, outer loop power control typically returns to normal operation, which involves gradually reducing the target SIR that has substantially increased during wind-up. *Id.* at 4:2–6 (describing the method outlined in Chi,¹ one of the references asserted by Petitioner in this proceeding). When outer loop power control returns to normal operating mode at the start of unwinding, the target SIR can take an extended period of time to converge

¹ U.S. Patent Application Publ'n No. 2003/0148769 A1, published Aug. 7, 2003 (Ex. 1004, "Chi").

gradually to a suitable value. *Id.* at 3:18–38. As the ’865 patent notes, this inflated target SIR during unwinding results in a received frame error rate (FER) that is much less than required and increases interference in the channel, which reduces capacity and degrades the quality in other connections. *Id.* at 3:8–17.

The outer loop power control method described in the ’865 patent purports to address this problem of prior art methods. *Id.* at 4:14–15. Specifically, at the start of unwinding, the method described in the ’865 patent sets the target SIR “equal to a value suitably close to that which the desired [SIR] had before the start of wind-up” and then resumes normal operations. *Id.* at 4:23–34. Thus, the outer loop power control method described in the ’865 patent reduces the duration of the period during which the target SIR is unnecessarily high by immediately lowering the target SIR at the start of unwinding to the target SIR value just prior to wind-up, rather than gradually lowering the target SIR from its wind-up value through normal operation. *Id.* at 5:9–23.

Figure 4 of the '865 patent is reproduced below:

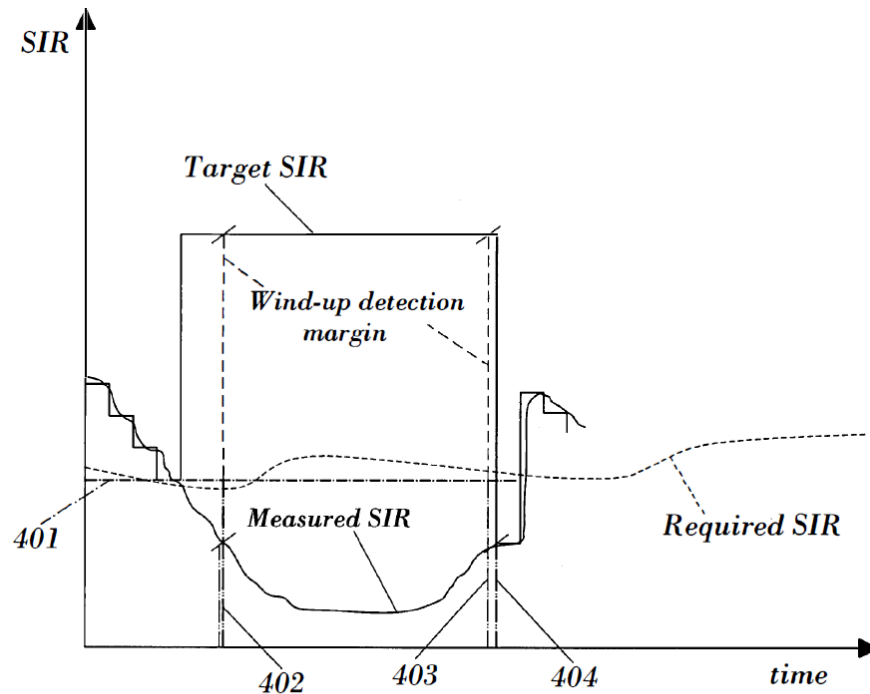


FIG. 4
400

Figure 4 above is a graph showing “the development of the desired signal to interference ratio target (SIR_{target}) in time, according to the” method described in the '865 patent. *Id.* at 6:11–14. As shown in Figure 4, wind-up occurs between point 402 and point 403. *Id.* at 7:59–64. The device detects wind-up when the difference between the target SIR and the received SIR meets or exceeds a wind-up detection margin (M). *Id.* at 7:53–62. Unwinding begins at point 404, immediately after wind-up ends at point 403, at which time the target SIR precipitously decreases and is set to the value it had prior to the start of wind-up. *Id.* at 7:62–8:3. In Figure 4, the value for the target SIR at the beginning of unwinding is calculated by subtracting M from the target SIR during wind-up. *Id.* at 7:64–66.

D. Illustrative Claim

Challenged claims 1 and 5 are independent; claims 2–4 depend directly or indirectly from claim 1; and claims 6–12 depend directly from claim 5. Claim 1 is illustrative of the claimed subject matter and is reproduced below:

1. Outer loop power control method for wireless communications systems, based on CDMA technology, the method comprising:

estimating a desired signal to interference ratio received (SIR_{rec}) based on a data signal (107, 108) received from a base station (102, 103) or mobile station (104),

setting a desired signal to interference ratio target (SIR_{target}) that is close to a signal to interference ratio required (SIR_{req}) during the normal mode of the outer loop,

detecting a start (402) of the outer loop wind-up,

setting a specific desired signal to interference ratio target (SIR_{target}) during the outer loop wind-up,

and detecting a start (403) of the outer loop unwinding,

wherein the desired signal to interference ratio target (SIR_{target}) is modified at the start (403) of the outer loop unwinding, to match it to the outer loop power control in normal mode just prior to the start of the outer loop wind[-]up.

Ex. 1001, 8:45–64.

E. Asserted Ground of Unpatentability

Petitioner asserts that the challenged claims are unpatentable based on the following ground (Pet. 24–25):

Claims Challenged	35 U.S.C. §	References
1–12	103(a) ²	Chi, Murata ³

In support of its contentions, Petitioner relies on the Declaration of James A. Proctor (Ex. 1003).

III. DISCUSSION

A. Principles of Law

A claim is unpatentable under § 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 indicia of non-obviousness.⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. Because the ’865 patent has an effective filing date prior to the effective date of the applicable AIA amendment, we refer to the pre-AIA version of § 103.

³ U.S. Patent Application Publ’n No. 2004/0259584 A1, published Dec. 23, 2004 (Ex. 1005, “Murata”).

⁴ With respect to the fourth *Graham* factor, the parties do not present arguments or evidence regarding objective indicia of non-obviousness. Therefore, the obviousness analysis is based on the first three *Graham* factors.

B. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art at the time of the alleged invention of the '865 patent would have

been familiar with power control mechanism for cellular systems, and specifically outer loop power control. A [person of ordinary skill in the art] would have gained knowledge of these concepts through a mixture of training and work experience, such as by having a Bachelor's degree in electrical engineering and four years of experience; or by obtaining a Master's degree in electrical engineering, but having only one to two years of experience; or by having no formal education but experience in cellular communications of at least eight years.

Pet. 14 (citing Ex. 1003 ¶ 27). “For the purposes of this preliminary response only, Patent Owner does not dispute Petitioner’s definition of a person of ordinary skill in the art.” Prelim. Resp. 10.

On the present record, we determine that Petitioner’s proposed level of ordinary skill in the art is consistent with the '865 patent and asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Therefore, we adopt Petitioner’s proposal for purposes of deciding whether to institute *inter partes* review.

C. Claim Construction

In an *inter partes* review, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), following the standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2019). In applying this standard, we generally give claim terms their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–14.

Neither party proposes a construction for any claim term. Petitioner contends that no claim terms require express construction for purposes of applying the prior art. Pet. 14. Patent Owner submits that, at this stage of the proceeding, the Board should adopt the ordinary and customary meaning of the claim terms. Prelim. Resp. 10. For purposes of this decision, we determine that no claim terms require express construction. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (holding that only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Asserted Obviousness over Chi and Murata

Petitioner contends that claims 1–12 of the '865 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Chi in view of Murata. Pet. 26–79. Patent Owner opposes. Prelim. Resp. 11–36. For the reasons discussed below, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claims 1–12 are unpatentable based on this asserted ground.

1. Overview of Chi

Chi discloses a method and apparatus for performing outer loop power control and mitigating the effects of wind-up. Ex. 1004 ¶¶ 1, 8. Chi discloses procedures for detecting the start of wind-up and the end of wind-up. *Id.* ¶ 8. According to Chi, its method is able to prevent excessive increases to the target SIR during wind-up by capping the amount it can increase, which results in a quicker convergence of the target SIR to required SIR during unwinding, thus minimizing some of the harmful effects of wind-up. *Id.* ¶ 40.

Figure 8 of Chi is reproduced below:

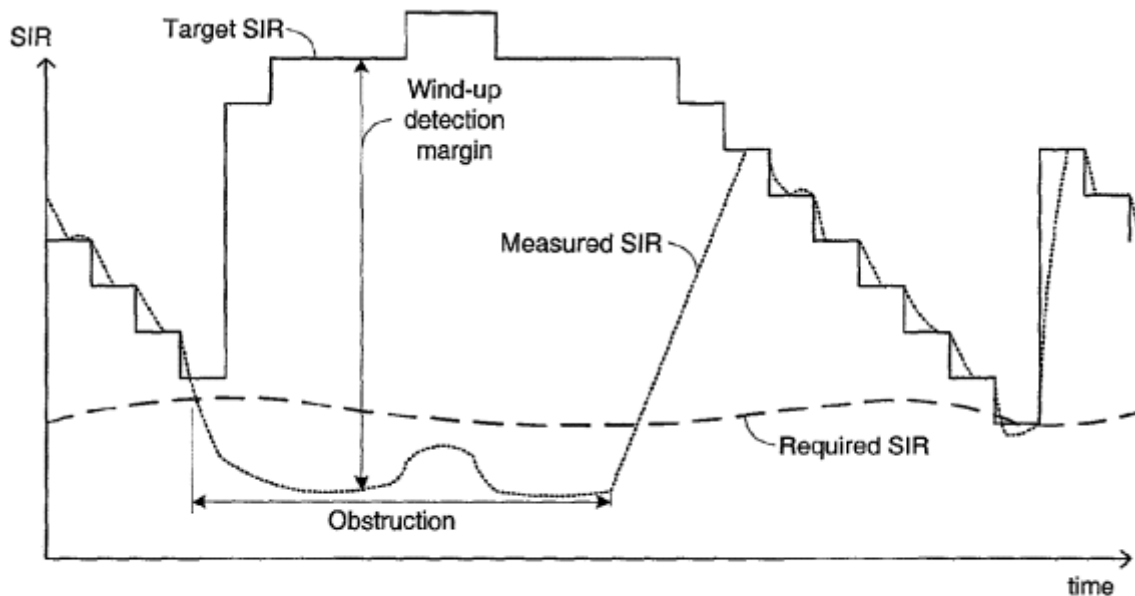


FIG. 8

Figure 8 above depicts an idealized graphical representation of SIR values over time using Chi's disclosed method of closed loop power control to minimize wind-up. *Id.* ¶ 18. As shown in Figure 8, during the period of an "Obstruction," an error occurs when the received SIR is lower than the required SIR, which then causes the outer loop to increase the target SIR. *Id.* ¶ 39. Due to the obstruction, the received SIR is still lower than the required SIR, so the system increases the target SIR again. *Id.* ¶ 40. However, according to Chi's disclosed method, if the target SIR exceeds the measured SIR plus the wind-up detection margin, the system detects wind-up and caps the target SIR at the value of the received SIR plus the wind-up detection margin. *Id.* ¶¶ 39–40. As shown in Figure 8, Chi's method prevents the target SIR from excessively increasing by limiting the target SIR to the value of the received SIR plus the detection margin. *Id.* Although not depicted in Figure 8, Chi also discloses another method

involving capping the target SIR by freezing it “at a particular level, such that it is not a function of SIR” during wind-up. *Id.* ¶ 43.

As Figure 8 shows, when the obstruction clears, the received SIR rapidly increases to converge with the target SIR. *Id.* ¶ 40. At that time, the system detects unwinding because the difference between the target SIR and received SIR is less than the detection margin, and the system returns to normal mode. *Id.* ¶¶ 40, 46. As depicted in Figure 8, during unwinding the “measured SIR ramps up to track the target, which then begins climbing down to track the required SIR” through normal mode operations. *Id.* ¶ 40. According to Chi, by limiting the target SIR during the period of the obstruction, “wind-up has been prevented (or at least minimized),” which results in “the loops converg[ing] more quickly, thus minimizing the time spent with excessive power transmitted from the base station.” *Id.*

2. Overview of Murata

Murata discloses a method for outer loop power control in CDMA systems, with a specific focus on “controlling transmission power on the transmitting side in such a manner that measured reception quality will agree with a target reception quality.” Ex. 1005 ¶ 1. In relevant part, Murata discloses a method for controlling the target SIR during periods of wind-up and unwinding due to changes in the propagation environment (such as travel or an obstruction causing a “shadowing state”). *Id.* ¶¶ 8–9, 51, 61. One object of the method disclosed in Murata is to rapidly lower the target SIR after wind-up “and prevent transmission power from a base station from becoming excessive at departure from a shadowing state.” *Id.* ¶ 55.

Figure 3 of Murata is reproduced below:

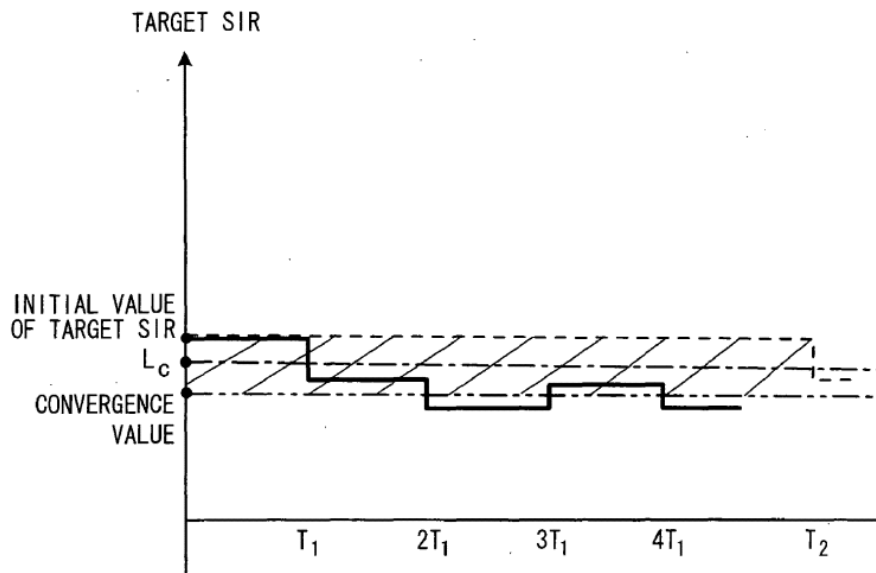


Figure 3 is a graphical representation of a second embodiment of the method disclosed by Murata. *Id.* ¶ 66. Figure 3 shows the change in the target SIR over time, starting from a default initial value in the initial state and then transitioning to the steady state. *Id.* ¶¶ 96–98. In Figure 3, the target SIR is represented by the solid line in a low-quality bearer system, and the target SIR is represented by the homogeneously-dashed line for a high-quality bearer system. *Id.* ¶ 97. According to Murata’s second embodiment and as seen in Figure 3, “a SIR convergence point is acquired beforehand using experimental data, [and] the initial value of target SIR is set to be larger than a value ($=L_c$) at which a dedicated control channel DCCH can be decoded correctly.” *Id.* ¶ 96. Next, the target SIR incrementally decreases until the system detects a CRC NG (a Cyclic Redundancy Code that is “No Good,” indicating an error), at which time the system incrementally increases the target SIR and enters the steady state of operations. *Id.* ¶¶ 11, 96, 98, 100–104.

Figure 7 of Murata is reproduced below:

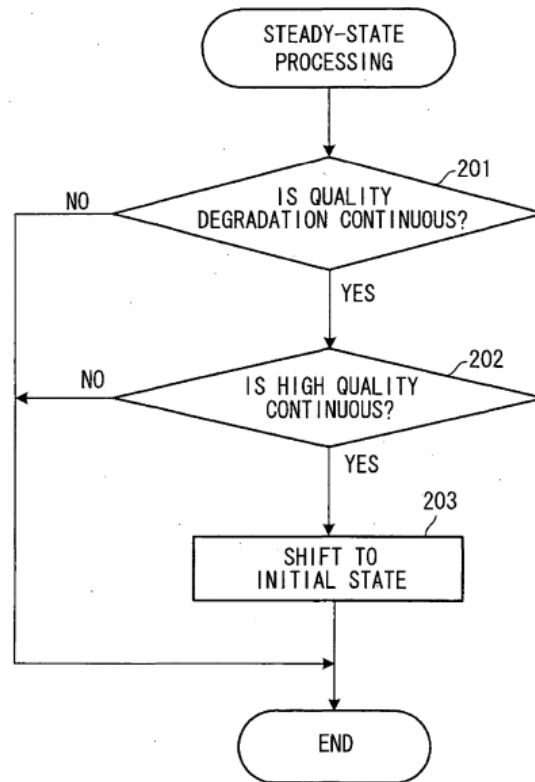


Figure 7 of Murata is a flowchart illustrating Murata's third embodiment. *Id.* ¶ 70. Murata's third embodiment is directed to controlling the target SIR during and after wind-up and efficiently managing "excessive demand for downlink transmission power . . . during communication using a high-quality bearer." *Id.* ¶¶ 110–111. According to Murata's third embodiment, the system can detect a wind-up state followed by the end of wind-up when it senses a period of continuous quality degradation at step 201 and then senses a period of continuous high quality at step 202. *Id.* ¶ 117. As shown in Figure 7, the system then shifts back to the initial state when it senses the end of wind-up. *Id.*

Figure 8B of Murata is reproduced below:

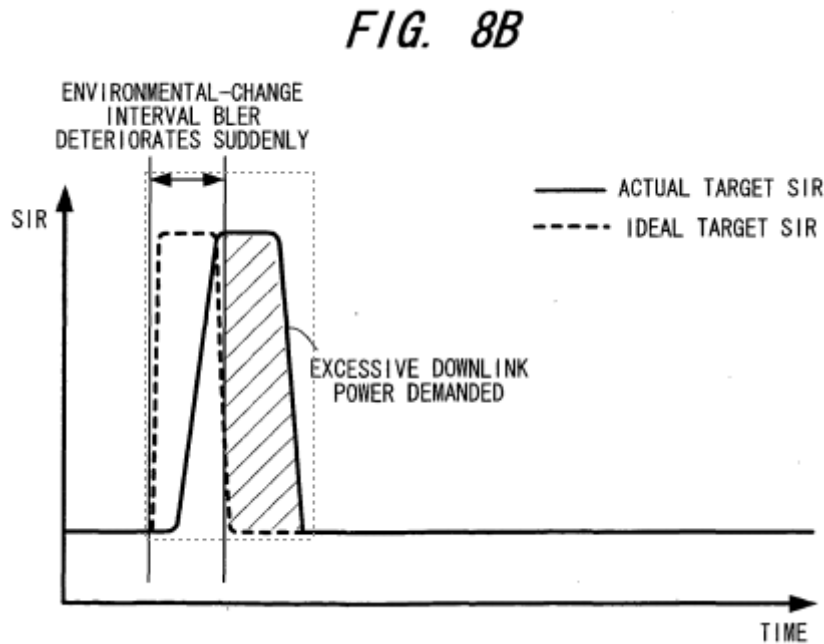


Figure 8B is a graphical representation showing control of the target SIR over time utilizing the methods outlined in Murata's third embodiment.

Id. ¶ 71. As Figure 8B shows, an environmental change causes a sudden deterioration in the block error rate (BLER) measured during a fixed interval and corresponding wind-up of the target SIR, followed by sudden environmental improvement and an excessive downlink power demand.

Id. ¶¶ 112–116, 121. According to the method outlined in Murata's third embodiment and shown in Figures 7 and 8B, the system then returns to the initial state of operation and sets the target SIR to its default initial value.

Id. ¶¶ 61, 117. Specifically, Murata explains that following detection of the end of the environmental obstruction and corresponding wind-up, “a transition is made to the initial state” (*id.* ¶ 117), which involves “setting target quality to an initial value when high quality has been detected continuously” (*id.* ¶ 61). Thus, according to Murata's disclosed methods, “when a shadowing state is departed from, target quality is lowered rapidly

so that downlink transmission power from a base station can be prevented from becoming excessive.” *Id.* ¶ 62; *see id.* ¶ 121 (“[I]n accordance with the third embodiment, excessive downlink transmission power can be reduced over the prior art.”).

3. Analysis

Petitioner relies on Chi alone for teaching most of the limitations of claim 1 of the ’865 patent and relies on the combination of Chi and Murata for teaching the final limitation. Pet. 48–66. We focus our analysis on that final limitation, which recites “wherein the desired signal to interference ratio target (SIR_{target}) is modified at the start (403) of the outer loop unwinding, to match it to the outer loop power control in normal mode just prior to the start of the outer loop wind[-]up.” Ex. 1001, 8:60–64.

Petitioner asserts that Chi discloses “the importance of returning outer loop power control to normal mode when unwinding is detected.” Pet. 47. Petitioner acknowledges, however, that “Chi does not expressly disclose[] changing the SIR_{target} to match the outer loop power control in normal mode just prior to the outer loop wind-up,” as required by the final limitation of claim 1. *Id.* at 62. Given Chi’s teachings, Petitioner argues that a person of ordinary skill in the art “would have been motivated to return to pre-wind-up power control and setting as quickly as possible to reduce interference with other communications, maintain system capacity, voice quality, data transmission rates and throughput, as well as preserve battery power in the mobile.” *Id.* (citing Ex. 1004 ¶¶ 4, 8; Ex. 1003 ¶ 144).

Petitioner then turns to Murata, arguing that it “discloses explicitly setting the desired SIR_{target} to the pre-wind-up SIR_{target} .” *Id.* at 63. According to Petitioner, Murata’s Figure 8B discloses “setting the power control conditions to their ‘initial state again’ including setting the SIR to

match its target SIR (SIR_{target}) prior to shadowing.” *Id.* (quoting Ex. 1005 ¶ 110) (citing Ex. 1003 ¶ 146); *see id.* at 64–65 (quoting Ex. 1003 ¶¶ 55, 124, 110, 117) (citing Ex. 1003 ¶ 146). Therefore, Petitioner asserts, “it would have been obvious to a [person of ordinary skill in the art] to modify the teachings of Chi with the teachings of Murata, such that upon the detection of un-winding, the desired SIR_{target} is set to its previous value just prior to wind-up as taught by Murata.” *Id.* at 65.

In its Preliminary Response, Patent Owner asserts that Chi and Murata disclose substantially identical methods for controlling the target SIR when exiting shadowing or unwinding. Prelim. Resp. 29. Patent Owner argues that “neither Chi nor Murata describes, teaches, or suggests that . . . ‘the [SIR_{target}] is modified at the start (403) of the outer loop unwinding, to match it to the outer loop power control in normal mode just prior to the start of the outer loop wind-up’ as required by the claims of the ’865 Patent.” *Id.* at 36 (quoting Ex. 1001, 8:60–64). Patent Owner specifically argues that Murata never discloses setting the target SIR to its value just prior to the start of wind-up. *Id.* at 35. Regarding Figure 8B’s illustration of Murata’s third embodiment, Patent Owner contends that Petitioner is “mistaken” in its interpretation of the graph, arguing that “Figure 8B is designed to ‘illustrate’ an example of the control of SIR_{target} according to Murata’s third embodiment.” *Id.* (citing Ex. 1005 ¶ 71).

On the record before us, we agree with Patent Owner that Petitioner fails to show sufficiently that the combination of Chi and Murata teaches or suggests setting the target SIR at the start of unwinding to its value just prior to wind-up, as required by claim 1 of the ’865 patent. *See id.* at 36. As discussed above, Petitioner acknowledges that Chi does not explicitly teach this limitation, even if Chi may teach a desire for the target SIR to decrease

quickly to necessary levels after wind-up. Thus, we consider the disclosure in Murata on which Petitioner relies for meeting this limitation.

Based on the current record, we are not persuaded that Murata teaches or suggests setting the target SIR to the value it had just prior to wind-up upon detecting the start of unwinding. Murata's third embodiment teaches returning to the "initial state" when the system detects the end of wind-up (i.e., departure from the "shadowing state"). Ex. 1005 ¶¶ 110, 116–118. Murata explains that this initial state of operations includes starting with an "initial value of target SIR [that] is the same for all bearers (all services)." *Id.* ¶ 19. Murata explicitly describes "setting target quality to an *initial value* when high quality has been detected continuously" upon detecting departure from a shadowing state (i.e., at the start of unwinding). *Id.* ¶¶ 61–62 (emphasis added). Thus, it appears that Petitioner has misinterpreted Murata's disclosure, which explicitly describes setting the target SIR at the start of unwinding to a default "initial value" rather than the value of the target SIR just prior to the start of wind-up.

On the present record, we also agree with Patent Owner that "Petitioner is mistaken" regarding Petitioner's interpretation of Murata's Figure 8B. Prelim. Resp. 35. Although Figure 8B appears to show the target SIR returning to its pre-wind-up value when wind-up ends, Murata's description of Figure 8B and Murata's preferred embodiments does not support such a reading of Figure 8B. "[A]rguments based on drawings not explicitly made to scale in issued patents are unavailing." *Nystrom v. TREX Co., Inc.*, 424 F.3d 1136, 1149 (Fed. Cir. 2005). The U.S. Court of Appeals for the Federal Circuit has expressed its "disfavor in reading precise proportions into patent drawings which do not expressly provide such proportions." *Id.* (citing *Hockerson-Halberstadt, Inc. v. Avia Group Int'l*,

Inc., 222 F.3d 951, 956 (Fed. Cir. 2000)). The written description can support an interpretation of a drawing's disclosure, but "[a]bsent any written description in the specification of quantitative values, arguments based on measurement of a drawing are of little value." *In re Wright*, 569 F.2d 1124, 1127 (CCPA 1977) (citing *In re Chitayat*, 408 F.2d 475 (CCPA 1969)).

As Patent Owner points out, "Figure 8B is designed to 'illustrate' an example of the control of SIR_{target} according to Murata's third embodiment." *Id.* (quoting Ex. 1005 ¶ 71). As discussed above, Murata's third embodiment teaches setting the target SIR to a default initial value at the end of wind-up and the start of unwinding. In view of what Murata's written description provides, and because Figure 8B does not identify any sort of scale or quantitative values, at most Figure 8B shows the target SIR starting at a relatively lower value, increasing during wind-up, and then (in accordance with the written description) returning to a default initial value at the start of unwinding. *See* Ex. 1005 ¶¶ 19, 61–62, 110, 116–118, 121. This interpretation is consistent with Murata's explicit description of its methods. Thus, based on the present record, we are not persuaded that Murata's Figure 8B teaches or suggests setting the target SIR at the start of unwinding to the value it had just prior to wind-up.

For these reasons, based on the record before us, Petitioner has not shown sufficiently that a person of ordinary skill in the art would have understood that the combination of Chi and Murata teaches or suggests "wherein the desired signal to interference ratio target (SIR_{target}) is modified at the start (403) of the outer loop unwinding, to match it to the outer loop power control in normal mode just prior to the start of the outer loop wind[-]up" when the system detects the start of unwinding. Ex. 1001, 8:59–64. For the same limitation in claim 5, Petitioner refers back to its

arguments for claim 1. Pet. 71. Thus, for the same reasons, Petitioner has not made a sufficient showing with respect to claim 5. Therefore, we determine the information presented does not demonstrate a reasonable likelihood that Petitioner would prevail in establishing that claims 1–12 of the '865 patent are unpatentable under 35 U.S.C. § 103(a) for obviousness over the combination of Chi and Murata.

IV. CONCLUSION

After considering the parties' evidence and arguments, we determine that the information presented does not show a reasonable likelihood that Petitioner would prevail in establishing that at least one of claims 1–12 of the '865 patent is unpatentable based on the only ground asserted in the Petition.

V. ORDER

Accordingly, it is

ORDERED that the Petition is *denied*, and no *inter partes* review is instituted.

IPR2021-01092
Patent 7,532,865 B2

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