

NOTE: This disposition is nonprecedential.

**United States Court of Appeals  
for the Federal Circuit**

---

**WIRELESS PROTOCOL INNOVATIONS, INC.,**  
*Appellant*

v.

**TCT MOBILE, INC., TCT MOBILE (US) INC.,**  
*Appellees*

---

2018-1836, 2018-1837, 2018-1838, 2018-1840

---

Appeals from the United States Patent and Trademark  
Office, Patent Trial and Appeal Board in Nos. IPR2016-  
01494, IPR2016-01704, IPR2016-01861, IPR2016-01865.

---

Decided: May 23, 2019

---

KAYVAN B. NOROOZI, Noroozi PC, Santa Monica, CA,  
argued for appellant. Also represented by ROBERT H.  
SLOSS, Procopio, Cory, Hargreaves and Savitch LLP, Palo  
Alto, CA.

WILLIAM R. PETERSON, Morgan, Lewis & Bockius LLP,  
Houston, TX, argued for appellees. Also represented by  
JULIE S. GOLDEMBERG, Philadelphia, PA; BRADFORD  
CANGRO, JEREMY DEANE PETERSON, Washington, DC.

---

Before TARANTO, SCHALL, and CHEN, *Circuit Judges*.

TARANTO, *Circuit Judge*.

Wireless Protocol Innovations, Inc. (WPI) owns U.S. Patent Nos. 8,274,991, 8,565,256, and 9,125,051. All three patents share a specification and claim methods involving point-to-multipoint communication systems, as well as the systems themselves. Between July and September 2016, TCT Mobile, Inc. and TCT Mobile (US) Inc. (together, TCT) filed four petitions for inter partes reviews (IPRs) of various claims of the '991, '256, and '051 patents—one each for the '991 and '256 patents, and two for the '051 patent—with the Patent and Trademark Office (PTO) under 35 U.S.C. §§ 311–319. The PTO's Patent Trial and Appeal Board, acting on behalf of the PTO's Director, *see* 37 C.F.R. §§ 42.4, 42.108, instituted reviews of all challenged claims in all four petitions under 35 U.S.C. § 314.

In February and March 2018, the Board issued final written decisions in all four IPRs under 35 U.S.C. § 318, concluding that all challenged claims are unpatentable. For the '991 patent, the Board held claims 1 and 3–5 unpatentable for obviousness under 35 U.S.C. § 103 on two independent grounds. For the '256 patent, the Board held claims 1, 4, and 7 unpatentable for anticipation under 35 U.S.C. § 102 and also for obviousness. For the '051 patent, the Board held claims 1, 2, 4–7, 9–12, 14–19, 21–23, 25, and 26 similarly unpatentable for obviousness.

WPI appeals all four Board decisions. For the '991 patent, we reverse the Board's decision on the first obviousness ground because the combination of asserted prior-art references does not disclose every element of the challenged claims. We vacate and remand the Board's decision on the second obviousness ground because the Board applied a claim construction that contradicts explicit teachings in the '991 patent. As to the Board's decisions for the

'256 and '051 patents, we see no error and therefore affirm the unpatentability rulings as to those patents.

## I

### A

The '991, '256, and '051 patents are all titled “Protocol for Allocating Upstream Slots over a Link in a Point-to-Multipoint Communication System.” The shared specification, describing a base station controller (BSC) and multiple customer premises equipment (CPE) devices that can communicate with it, identifies three “states” a CPE can be in with regard to slots made available for that communication: (1) a “grant pending” state, (2) a “grant pending absent” state, and (3) an “idle” state. '991 patent, col. 2, lines 23–41.<sup>1</sup> In the grant pending state, the CPE transmits data upstream after the BSC has granted it a data slot. *Id.*, col. 2, lines 37–41. Using a process called “piggybacking,” the CPE can continue sending upstream data in that state until it has no more data to send. *Id.*, col. 2, lines 42–47. The other states are two different states in which the CPE may seek slots for sending data upstream, *i.e.*, states from which the CPE may transition into the grant pending state. In the grant pending absent state, the CPE “sends no upstream data to the [BSC],” but it can request a data slot for that purpose without contending for slots with other CPEs (a process called “contention”). *Id.*, col. 2, line 66 through col. 3, line 3. The CPE makes the request by responding to a periodic “unicast” communication from the BSC. *Id.*, col. 2, lines 15–22. In the idle state, the CPE must go through contention to receive a data-transmission slot; the CPE enters the idle state after it runs out of data to send upstream and a specified time elapses. *See id.*, col. 2, lines 30–32.

---

<sup>1</sup> Because the patents share a specification, for simplicity we cite only the '991 patent.

Claim 1 of the '991 patent reads:

1. A method for obtaining uplink (UL) transmission bandwidth in a point-to-multipoint communication system, where a customer premises equipment (CPE) is communicating with a base station controller (BSC) over a link shared with other CPEs, comprising the steps of:

operating the CPE in a grant pending state wherein the CPE awaits receipt of a bandwidth grant from the BSC, receives the bandwidth grant, transmits data to the BSC using the granted bandwidth, transmits further bandwidth requests using the granted bandwidth and transitioning from the grant pending state to a grant pending absent state once the CPE has transmitted upstream data to the BSC within a bandwidth specified by the bandwidth grant received from the BSC during the grant pending state and the CPE has no pending bandwidth requests;

*operating the CPE in the grant pending absent state awaiting arrival of data for transmission to the BSC and transmitting a first type bandwidth request to the BSC without entering into contention when the CPE receives data for transmission;*

*transitioning operation of the CPE from the grant pending absent state to the grant pending state after a subsequent bandwidth grant is received at the CPE; and*

transitioning operation of the CPE from the grant pending absent state to an idle state if the CPE does not transmit any first type bandwidth request to the BSC during a timeout period.

*Id.*, col. 11, line 39 through col. 12, line 26 (emphases added). Claims 3–5 directly or indirectly depend on claim 1, *id.*, col. 12, lines 31–40, but WPI makes no patentability

arguments for those claims separate from its arguments for claim 1. We do not quote claims from the '256 and '051 patents.

## B

In October 2015, WPI sued TCT, along with other firms not involved in this appeal, for infringement of the '991, '256, and '051 patents. TCT responded by filing the four IPR petitions.

In IPR2016-01494, the Board instituted a review of claims 1 and 3–5 of the '991 patent on two independent grounds: (1) obviousness over International Patent Pub. No. WO 99/61993 (Abi-Nassif) and Data-Over-Cable Service Interface Specifications, Radio Frequency Interface Specification, Second Interim Release (DOCSIS 1.1) and (2) obviousness over U.S. Patent No. 6,466,544 (Sen), U.S. Patent No. 6,665,307 (Rydneil), and admitted prior art. In its final written decision, the Board construed the phrase “transitioning operation of the CPE from the grant pending absent state to the grant pending state after a subsequent bandwidth grant is received at the CPE” to mean that the transition between states occurs “subsequent to and in consequence of a subsequent bandwidth grant.” *TCT Mobile, Inc. v. Wireless Protocol Innovations, Inc.*, No. IPR2016-01494, 2018 WL 914699, at \*4 (P.T.A.B. Feb. 13, 2018) (*'991 Decision*). For the first ground, the Board determined that Abi-Nassif and DOCSIS 1.1 disclose all elements of claims 1 and 3–5 and that those references render those claims unpatentable for obviousness. *Id.* at \*6–11. For the second ground, the Board determined that Sen alone discloses all elements of those claims and renders them unpatentable for obviousness, *id.* at \*11–15, and the Board therefore did not rely on Rydneil or admitted prior art, *see id.*

In IPR2016-01704, the Board instituted a review of claims 1, 4, and 7 of the '256 patent on two grounds: (1) anticipation by DOCSIS 1.1 and (2) obviousness over Abi-

Nassif and DOCSIS 1.1. In its final written decision, the Board adopted WPI's proposed construction of the term "idle state" to mean "a state in which the CPE awaits arrival of data packets to send as upstream data to the BSC." *TCT Mobile, Inc. v. Wireless Protocol Innovations, Inc.*, No. IPR2016-01704, 2018 WL 1150496, at \*3 (P.T.A.B. Mar. 2, 2018). On the first ground, the Board determined that DOCSIS 1.1 anticipates claims 1, 4, and 7. *Id.* at \*4–7. On the second ground, the Board determined that Abi-Nassif and DOCSIS 1.1 render those claims unpatentable for obviousness. *Id.* at \*7–9.

In IPR2016-01861, the Board instituted a review of claims 1, 2, 4, 5, 21–23, 25, and 26 of the '051 patent for obviousness over Abi-Nassif, DOCSIS 1.1, and admitted prior art. In its final written decision, the Board again adopted WPI's same construction of "idle state" and determined that all challenged claims are unpatentable for obviousness. *TCT Mobile, Inc. v. Wireless Protocol Innovations, Inc.*, No. IPR2016-01861, 2018 WL 1472580, at \*4, \*6–11 (P.T.A.B. Mar. 22, 2018). In related IPR2016-01865, the Board instituted a review of claims 6, 7, 9–12, and 14–19 of the '051 patent on essentially the same obviousness ground, but without considering any admitted prior art. In its final written decision, the Board determined that those claims are unpatentable for largely the same reasons. *See TCT Mobile, Inc. v. Wireless Protocol Innovations, Inc.*, No. IPR2016-01865, 2018 WL 1474509, at \*4–9 (P.T.A.B. Mar. 22, 2018).

WPI timely appealed all four Board decisions to this court. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

## II

Under the applicable version of the statutory provision,<sup>2</sup> an inventor is not entitled to a patent “if the differences between the subject matter sought to be patented 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.” 35 U.S.C. § 103(a) (2006). At least the following factual determinations inform this inquiry: (1) “the scope and content of the prior art”; (2) “differences between the prior art and the claims at issue”; (3) “the level of ordinary skill in the pertinent art”; and (4) “[s]uch secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc.” *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966). As the Supreme Court has explained, we apply “an expansive and flexible approach” to obviousness. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 415–16 (2007).

There was no dispute before the Board that, on the obviousness grounds advanced in the petitions, TCT had the “burden to prove that all claimed limitations are disclosed in the prior art.” *Par Pharm., Inc. v. TWi Pharm., Inc.*, 773 F.3d 1186, 1194 (Fed. Cir. 2014). We review the Board’s ultimate obviousness determination de novo, but we review its underlying factual findings—including its reading of what the prior art discloses—for substantial evidence. *Owens Corning v. Fast Felt Corp.*, 873 F.3d 896, 902 (Fed. Cir. 2017).

---

<sup>2</sup> The patents at issue have effective filing dates before the relevant effective date of changes made by the Leahy-Smith America Invents Act (AIA), Pub. L. No. 112-29, 125 Stat. 284 (2011), to 35 U.S.C. §§ 102 and 103. We apply the pre-AIA version of those provisions.

## A

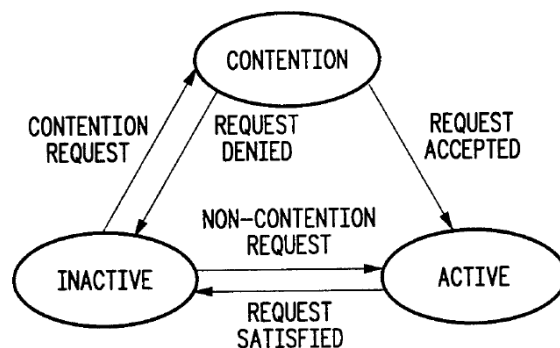
We first address the Board’s ruling that the combination of Abi-Nassif and DOCSIS 1.1 renders the ’991 claims at issue unpatentable for obviousness. WPI argues, among other things, that the combination of those two references is insufficient to prove obviousness of claims 1 and 3–5 because the combination does not disclose every limitation required by those claims. We agree with WPI.

The first of the two “transitioning” clauses of claim 1 clearly requires that the CPE transition from the grant pending absent state to the grant pending state only *after* the BSC grants bandwidth to the CPE. ’991 patent, col. 12, lines 15–22. In its petition, TCT asserted that the grant pending absent state and the grant pending state in the ’991 patent correspond, respectively, to an “inactive” state and an “active” state disclosed in Abi-Nassif. *E.g.*, J.A. 209. Agreeing with TCT, the Board found that Abi-Nassif discloses a transition between its active and inactive states at the time required by the ’991 claims. ’991 *Decision* at \*9. But we cannot find substantial evidence in the record to support the Board’s finding.

Abi-Nassif teaches that the transition between its inactive and active states occurs *before* the CPE receives a slot for sending upstream data: “When the [Medium Access Control, or MAC] User receives data to be transmitted, the MAC User transitions into the ACTIVE state upon receiving a contention-free opportunity to transmit a request, provided it is not required to contend for upstream bandwidth, as in the case of unicast polling.” J.A. 1312. If Abi-Nassif’s MAC user transitions between states at the first *opportunity to send a request* for a data slot, then it can no longer be in the required state (grant pending absent state) by the time it receives the bandwidth grant.



In making its contrary finding, the Board relied on Figure 9 from Abi-Nassif:



**FIG. 9**

J.A. 1328. The Board credited TCT’s argument that, “while not expressly shown in Abi-Nassif’s Figure 9, the Figure implies by REQUEST SATISFIED that the MAC user receives a bandwidth grant before sending data in the ACTIVE state.” ’991 *Decision* at \*9. But the Board cited no reasonable support for its reading of Figure 9. The “Request Satisfied” label is associated with the arrow that points from the active state to the inactive state, *i.e.*, it identifies something about when the active-to-inactive transition occurs. It does not address when the transition from the inactive state to the active state occurs.

The Board did not rely on the “Non-Contention Request” label associated with the arrow from the inactive state to the active state, and in any event that label would not support the Board’s finding. That label refers only to the “Request”—in evident contrast to the other labels in the figure, which refer to actions following requests (“satisfied,” “denied,” or “accepted”). Given the language in the context of the entire figure, the “Non-Contention Request” label cannot reasonably be read as saying anything other than that the making of the non-contention request suffices for the transition from the inactive to the active state.

TCT argues that, even if Abi-Nassif does not disclose the timing of the transition between the two states required by the first “transitioning” clause of claim 1 of the ’991 patent, any error in the Board’s decision is harmless because state names are merely convenient groupings of steps, and Abi-Nassif discloses the same steps as the ’991 claims. We reject that argument. The ’991 claims are built around “states” and include a limitation that specifically requires transitioning from the grant pending absent “state” to the grant pending “state” only at a particular time. *See* ’991 patent, col. 12, lines 20–22. The harmless-error argument asks us to draw conclusions about the meaning of the “state” language and its relation to the timing requirement that TCT did not fairly present to the Board and that, in any event, we do not find persuasive on the record before us.

We conclude, therefore, that the record does not contain substantial evidence that Abi-Nassif discloses the correct timing for the transition between the ’991 patent’s grant pending absent and grant pending states. Because TCT has not identified the disclosure of this claim limitation in DOCSIS 1.1, we reverse the Board’s decision on the ’991 patent with respect to the first ground of unpatentability involving Abi-Nassif and DOCSIS 1.1.

## B

We turn to the Board’s ruling that Sen alone renders the challenged claims unpatentable for obviousness. WPI argues that the Board’s decision rests on a faulty claim construction of “grant pending absent state” because the Board contradicted the ’991 patent’s explicit teachings. More specifically, WPI argues that, contrary to the Board’s finding, the “packet standby” state disclosed in Sen is not a grant pending absent state, as required by the ’991 claims, because in Sen’s packet standby state some data is sent upstream, which cannot happen in the grant pending

absent state of the '991 patent. We agree that the Board applied a flawed claim construction.

The Board rested its determination about Sen on its conclusion that the claims “do[] not preclude the sending of any data while the CPE is in the grant pending absent state.” ’991 *Decision* at \*14. That conclusion is counter to what the specification plainly teaches. The specification of the '991 patent clearly and repeatedly explains that the CPE cannot send upstream data during the grant pending absent state. '991 patent, col. 7, lines 24–25 (“During grant pending absent state 23, CPE 13 sends *no upstream data* to BSC 12.” (emphasis added)); *see also id.*, Abstract (similar); *id.*, col. 2, lines 18–22 (similar in Summary of the Invention)).

TCT argues that the “no upstream data” language in the specification describes only a preferred embodiment and is therefore not limiting. Although one instance of the “no upstream data” language appears in the Description of the Preferred Embodiment, other instances of that language appear in both the Abstract and the Summary of the Invention. The repetition of that language in sections meant to describe the overall invention, together with the uniformity of the specification on this point, makes clear that “no upstream data” is not merely a preferred embodiment for the grant pending absent state, but rather a requirement. For a phrase like “grant pending absent state” that hardly has a plain ordinary meaning, specification language of this sort has decisive significance in identifying the proper construction of the claim term. *See World Class Tech. Corp. v. Ormco Corp.*, 769 F.3d 1120, 1124 (Fed. Cir. 2014) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315–16 (Fed. Cir. 2005) (en banc)).

Because the Board’s ruling on the second ground for unpatentability of the '991 claims rests on a mistaken construction, the Board’s ruling cannot stand. We vacate that portion of the Board’s decision and remand. We do not here

prejudge what arguments TCT has properly preserved or should now be permitted to advance or what determinations as to Sen, Rydnell, and admitted prior art are supported by the evidence when the evidence is assessed under “grant pending absent state” as properly construed not to permit the transmission of upstream data while the CPE is in that state.

### III

We have considered the parties’ remaining arguments but find them unpersuasive. In particular, we do not see any deficiency in the Board’s motivation-to-combine analysis for the ’256 patent. Nor do we discern any problem with the Board’s finding for the ’256 and ’051 patents that DOCSIS 1.1 discloses an idle state. Therefore, we affirm the Board’s decisions as to the ’256 and ’051 patents. For the reasons outlined above, we reverse in part and vacate in part the Board’s decision for the ’991 patent, and we remand for further proceedings consistent with this opinion.

Each party shall bear its own costs.

**REVERSED IN PART, VACATED IN PART, AND  
REMANDED IN APPEAL NO. 2018-1836  
AFFIRMED IN APPEAL NOS. 2018-1837, 2018-1838,  
AND 2018-1840**