NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

DEEP GREEN WIRELESS LLC,
Appellant

v.

OOMA, INC.,
Appellee

2019-1570

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2017-01541.

Decided: March 31, 2020

MICHAEL DEVINCENZO, King & Wood Mallesons LLP, New York, NY, argued for appellant. Also represented by ANDREA PACELLI, ROBERT WHITMAN, CHARLES WIZENFELD.

JEFFREY C. MORGAN, Barnes & Thornburg LLP, Atlanta, GA, argued for appellee. Also represented by MICHAEL ANTHONY CARRILLO, JONATHAN FROEMEL, JOSEPH H. PAQUIN, JR., Chicago, IL; L. RACHEL LERMAN, Los Angeles, CA.

Before LOURIE, MOORE, and CHEN, *Circuit Judges*.

Opinion for the court filed by *Circuit Judge* CHEN.

Dissenting opinion filed by *Circuit Judge* MOORE.

CHEN, *Circuit Judge*.

Deep Green appeals from the final written decision of the United States Patent and Trademark Office Patent Trial and Appeal Board (the Board) in the above-captioned *inter partes* review (IPR) proceeding holding claims 35, 37–39, 43, 44, 46–48, 52, 53, and 55–57 of U.S. Patent No. RE42,714 (the '714 patent) as obvious over U.S. Patent No. 6,600,734 (Gernert) and U.S. Patent No. 6,452,923 (AT&T) based on the Board's claim construction of "incoming voice signals." Because we agree with the Board's construction of "incoming voice signals" under the broadest reasonable interpretation (BRI) standard, we *affirm*.

BACKGROUND

The '714 patent describes a device for sharing telephone lines among connected telecommunications equipment such as modems, telephones, and fax machines. '714 patent at col. 2, ll. 24–35. The equipment can be connected to the line-sharing device via wire or wirelessly. *Id.* at col. 6, ll. 8–20. The specification contemplates that the line-sharing device sends and receives voice and data signals between the telecommunications equipment and the shared telephone lines, for example employing telephony circuitry for voice calls, *id.* at col. 3, l. 62–col. 4, l. 23, or a modem to access the Internet. *Id.* at col. 5, ll. 63–65. Claim 35 is representative for the purposes of this appeal:

> 35. An apparatus for routing digital data signals among a plurality of telecommunications devices over a network, the apparatus comprising:
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> a network interface for connection to at least one network communication line, wherein the network interface receives digital data signals over the at

> least one network communication line, the digital data signals comprising at least one voice signal*;*
>
> *a discrimination circuit connected to the network interface for detecting incoming voice signals from among other digital data signals;*
>
> a wireless interface, wherein the wireless interface communicates the digital data signals between a plurality of wireless telecommunications devices; and
>
> a processor for executing instructions to route the digital data signals between the network interface, the wireless interface, and the plurality of wireless telecommunications devices for communication over the network; and
>
> a circuit for routing voice communication sessions to specific telecommunications devices.

Id. at claim 35 (emphasis added).

The parties' dispute focuses on the functionality of the claimed "discrimination circuit"—specifically, whether "detecting incoming voice signals" requires that the voice signals are incoming from the claimed "network interface" to the "plurality of wireless telecommunications devices," as Deep Green urges. Under its proposed construction, Deep Green alleges that Gernert fails to disclose the claimed "incoming voice signals" because, in Deep Green's view, Gernert's corresponding "discrimination circuit" only discloses detection of outgoing voice signals traveling from Gernert's telecommunications devices to the network line.

The Board rejected Deep Green's proposed construction of "incoming voice signals." J.A. 23. The Board explained that the claim only requires the discrimination circuit to be connected to the network interface, which does not impose the additional requirement that these voice signals are incoming from the network interface. *Id.* Rather, the Board

determined that this limitation encompasses voice signals "incoming" to the discrimination circuit from the other direction as well—that is, from the recited telecommunication devices. Based on this understanding of "incoming voice signals," the Board concluded that the claims at issue would have been obvious over Gernert and AT&T. J.A. 34. Deep Green appeals, and we have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

We review the Board's claim construction[1] here de novo because it relied only on evidence intrinsic to the '714 patent. *Jazz Pharm., Inc. v. Amneal Pharm., LLC*, 895 F.3d 1347, 1360 (Fed. Cir. 2018).

When an IPR is instituted from a petition filed before November 13, 2018, as here, the claims are given the "broadest reasonable interpretation" consistent with the specification. *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016); *Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board*, 83 Fed. Reg. 51340 (Oct. 11, 2018). Thus, the Board's construction must be reasonable in light of the record evidence and the understanding of one skilled in the art. *See Knowles Elecs. LLC v. Iancu*, 886 F.3d 1369, 1374 (Fed. Cir. 2018).

Our analysis begins with the language of the claim itself. *Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1375 (Fed. Cir. 2017). Claim 35 recites "a discrimination circuit connected to the network interface for detecting incoming voice signals from among other digital data signals." '714 patent at claim 35. As the Board noted,

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[1] Although the Board did not purport to conduct any claim construction, it effectively did so when it interpreted "incoming voice signals" as not limited to voice signals from the network interface.

the "discrimination circuit" is "connected to the network interface" and its purpose is "for detecting incoming voice signals from among other digital data signals," but the claim does not specify that the incoming voice signals detected by the discrimination circuit must be conveyed from the network interface to the wireless telecommunications devices. J.A. 23. The claim only requires that the "incoming voice signals" are "detect[ed] . . . from among other digital data signals." '714 patent at claim 35. And it is not clear that, in the context of the claim, these "other digital data signals" must be conveyed only in the particular direction that Deep Green urges.

The term "digital data signals" first appears in the preamble of claim 35, which introduces "[a]n apparatus for routing digital data signals among a plurality of telecommunications devices over a network." *Id.* But the function of routing digital data signals over a network is agnostic as to the direction in which they are routed. Thus, the preamble imposes no constraints on the directionality of the digital data signals routed by the claimed apparatus. Stated differently, the preamble does not exclude the apparatus from routing digital data signals from the network line to the telecommunications devices or from the telecommunications devices to the network line.

Next, the claim requires "a network interface" that "receives digital data signals over . . . [a] network communication line." *Id.* The claim does not specify whether these digital data signals are the same as those introduced in the preamble. For example, the network interface limitation could have but did not recite "*said* digital data signals." That these digital data signals mentioned in this network interface limitation are received in a particular direction—i.e., by the network interface from a network communication line—still leaves open a permissible reading of the preamble as contemplating a claimed apparatus that may also route digital data signals in the opposite direction—from

the telecommunications devices to the network communication line.

Claim 35 then recites the discrimination circuit limitation at issue: "a discrimination circuit connected to the network interface for detecting incoming voice signals from among other digital data signals." *Id.* While the claim limitation requires the discrimination circuit to detect voice signals from among other digital data signals "incoming" to the discrimination circuit, the limitation does not limit these signals as coming from any particular direction, e.g., the digital data signals received at the network interface from the network communication line. Again, where the claim could have referred to "said" or "the" digital data signals received at the network interface—thereby indicating that these digital data signals are the same as the digital data signals referenced in the network interface limitation—the claim limitation instead simply detects incoming voice signals from among "other" digital data signals. The claim, as written, lacks any requirement that the incoming voice signals detected by the discrimination circuit must be coextensive with voice signals received at the network interface. Rather, the breadth of the claim reasonably supports the conclusion that, like the preamble, the discrimination circuit is agnostic as to whether these voice signals are received from the network communication line or from the telecommunications devices.

Deep Green argues that the Board erroneously interpreted "incoming" to encompass both "incoming" and "outgoing" signals. But signals are only understood as "incoming" or "outgoing" when viewed against a particular reference point. Although it might be reasonable to interpret "incoming" signals from the perspective of the telecommunications devices, such that signals are incoming to those devices after having been initially received from the network communication line by the network interface, the broadly written claim language also supports the interpretation of "incoming" as incoming from the view of the

discrimination circuit, without regard from where the signals come. And Deep Green does not allege that the "other" digital data signals of the discrimination circuit must refer to the "digital data signals" received at the network interface. Thus, as the Board concluded, the claim "only requires that the discrimination circuit be connected to the network interface, not that the signals being detected are incoming from that interface." J.A. 23.

The Board's interpretation does not, as Deep Green contends, render "incoming" superfluous. Instead, it identifies voice signals that are incoming to the discrimination circuit from external sources, as opposed to voice signals produced by or outgoing from the discrimination circuit.

Deep Green also argues that a skilled artisan would read "incoming" with a particular conception in mind in light of the specification. It is true that the specification uses "incoming" when describing calls received from a telephone line, and "outgoing" when connecting a telephone device to a telephone line. But the directionality of these calls is described in the particular context of the telephone devices making and receiving the calls. '714 patent at col. 2, ll. 38–42 (describing "incoming calls to the equipment," defined as "modems, telephones, fax machines, answering machines, or any other device that needs access to a telephone line"); *id.* at col. 4, ll. 24–28 (processing "outgoing calls" according to the "priority in which communication lines are accessed by a device"); *id.* at col. 4, ll. 57–60. In contrast, claim 35 is silent as to the source or destination of the "incoming voice signals." With the claim lacking that concomitant context laid out in the specification, the Board's interpretation of "voice signals" as incoming to the discrimination circuit is not inconsistent with the specification's disclosure, but instead reflects the broad scope of the claim.

Deep Green next argues that the specification's description of the discrimination circuit in the context of

processing incoming calls from the network interface mandates that "incoming" be read as incoming from the network interface. The specification describes the discrimination circuit in a single sentence: "[o]ptionally, the invention can be fitted with a discrimination circuit that can detect the type of call and automatically route the communication line to the corresponding DO."[2] '714 patent at col. 5, ll. 8–10. But disclosure of one embodiment does not mean that broadly written claim language must be limited to that embodiment. *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1117 (Fed. Cir. 2004). The specification never defines the word "incoming," nor does it explicitly require that incoming be measured against any particular perspective. And, as explained above, nothing in the claim preamble restricts the data signals to being conveyed in any particular direction, nor does Deep Green argue to the contrary.

In light of the broad language of the claim, which does not demand identity between the digital data signals received at the network interface and the "other" digital data signals from which the "incoming voice signals" are detected, it was reasonable for the Board to decline to read in to the claim a particular network direction to the "incoming voice signals." Although Deep Green's interpretation of "incoming" with respect to the flow of network traffic to the telephone equipment might also be reasonable,[3] the Board

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[2] "DO," or device order setting, refers to the order in which downstream equipment is polled to connect incoming calls from the communications line. For example, the line-sharing device begins by ringing the first device listed in the device order setting, then the second device, and so on. *Id.* at col. 4, l. 57–col. 5, l. 4.

[3] It may very well be that Deep Green's construction better reflects the meaning of "incoming" as understood in view of the networking technology disclosed in the

did not err in adopting the broadest of the two reasonable constructions.

CONCLUSION

We have considered Deep Green's remaining arguments and find them unpersuasive. Deep Green relies solely on its claim construction argument in appealing the Board's conclusion that the challenged claims would have been obvious over Gernert and AT&T. Significantly, Deep Green does not dispute that Gernert and AT&T teach "incoming voice signals" under the Board's construction. Thus, for the reasons stated above, we *affirm* the Board's construction of "incoming voice signals" and the Board's conclusion that the claims at issue are unpatentable.

AFFIRMED

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specification. But claim construction in this IPR is not governed by the framework laid out in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and the Board's construction here is not unreasonable, nor is it inconsistent with the specification.

NOTE: This disposition is nonprecedential.

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MOORE, *Circuit Judge*, dissenting.

The majority does not contend that the Board's construction of "incoming voice signals" is correct, and it is not. Instead, the majority holds that the Board's construction is not wrong enough to be unreasonable. I respectfully dissent.

The broadest reasonable interpretation standard, while certainly broad, does not give the Board an unfettered license to interpret claim terms without regard for the full claim language and the specification. *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016). Even under the broadest reasonable construction, "claim

language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). Indeed, the Board must give claims their broadest reasonable construction in view of the specification, not their broadest possible construction. The Board therefore erred in construing the claim term "incoming voice signals" as not requiring that the claimed voice signals be the voice signals incoming from the claimed network interface.

The '714 patent is directed to a telephony device with a telephone line distribution system enabling connected devices to share telephone lines. '714 patent at Abstract. The claimed device assigns outgoing usage of the telephone line according to a priority system. *Id.* at 4:24–26. Incoming calls, on the other hand, are processed in accordance with a Device Order (DO) establishing the order in which the devices are signaled by a communications line. *Id.* at 4:57–60. The claimed device utilizes a "discrimination circuit" that can detect the type of call and automatically route the communication line to the corresponding telecommunications device. *Id.* at 5:8–10. Claim 35 is representative and recites:

> 35. An apparatus for routing *digital data signals* among a plurality of telecommunications devices over a network, the apparatus comprising:
>
> > a network interface for connection to at least one network communication line, wherein the network interface receives *digital data signals* over the at least one network communication line, *the digital data signals comprising at least one voice signal*;
> >
> > a discrimination circuit connected to the network interface for detecting *incoming voice signals from among other digital data signals*;

> a wireless interface, wherein the wireless interface communicates *the digital data signals* between a plurality of wireless telecommunications devices; and
>
> a processor for executing instructions to route *the digital data signals* between the network interface, the wireless interface, and the plurality of wireless telecommunications devices for communication over the network; and
>
> a circuit for routing voice communication sessions to specific telecommunications devices.

Claim 35 recites routing *digital data signals* among a plurality of telecommunications devices over a network. The claim refers to the *digital data signals* 6 times as it routes them through the system. I believe that these digital data signals are the same digital data signals being routed through the system. The Board's construction is basically that 5 of the mentioned digital data signals are the same because most of them are preceded by the word "the" and thus are the same digital data signals mentioned in the preamble. However, because the word "the" does not appear before the use of "digital data signals" routed through the discrimination circuit (one component within the system), the Board concludes these can be any digital data signals and therefore do not have to be the same digital data signals being passed through the rest of the system.

The claimed discrimination circuit is connected to the network interface and detects "incoming voice signals from among other *digital data signals*." In light of the claim as a whole, the only reasonable reading of this limitation is that the digital data signals received by the discrimination circuit are the same data signals (comprising at least one

voice signal) received by the network interface. That the claimed incoming voice and data signals are not modified by the words "said" or "the" does not mean that we can ignore the plain language of the claims. The remaining limitations further reveal the error in the Board's construction. The third limitation recites a "wireless interface" that "communicates *the* digital data signals between a plurality of wireless telecommunications devices." *Id.* Likewise, the fourth limitation recites "a processor for executing instructions to route *the* digital data signals between the network interface, the wireless interface, and the plurality of wireless telecommunications devices . . . ." *Id.* Lastly, the claim recites a circuit for "routing voice communication sessions to specific telecommunications devices." *Id.* When read as a whole, the functional relationship between the claim elements is clear: the system elements are recited in the order in which the data signals flow. Data signals, including at least one voice signal, are received by the network interface. The discrimination circuit is used to detect voice signals from among the other digital data signals incoming from the network interface. The wireless interface then communicates the data signals between a plurality of connected telecommunication devices according to the instructions executed by the processor. Voice signals, in particular, are routed to specific telecommunications devices. Based on the plain language of the claim, the Board's construction that the digital data signals routed through the discrimination circuit need not be the same digital data signals routed through the rest of the system is unreasonable.

The specification strongly reinforces Deep Green's proposed construction that the *digital data* signals processed by the discrimination circuit are the same *digital data signals* flowing through the rest of the system. The claimed "incoming voice signals" are incoming from the network interface. The specification describes the signals as traveling

in two directions: "incoming" and "outgoing." Every use in the specification of "incoming" (and this term is used 21 times in the patent) is compatible with only one view – that the incoming signals are from a network communication line toward the telecommunications devices. *See, e.g.*, '714 patent at Abstract, Fig. 4, 1:48–50, 2:30–32, 2:43–45, 2:62–63, 4:57–62, 5:14–17; *see also id.* at Claims 26, 35, 44, 53, 62, 67, 72, 77, 82, 87, 121, 126. Every use of the term "outgoing" (and this term is used 5 times) likewise reflects the direction from a telecommunications device to a network communication line. *See, e.g.*, '714 patent at Fig. 3, 2:38–42, 2:60–61, 4:24–29. "Outgoing" signals are processed in accordance with a Communications Line Use Priority (CLUP) setting. *Id.* at 4:24–26. When transmitting outgoing signals, a device accesses the communication lines according to the priority established by the CLUP and independently of the type of signal being sent. *Id.* at 4:26–27. In contrast, the specification states that the invention "may process incoming calls" according to a DO, which "establishes the order in which the devices are signaled by a communication line." *Id.* at 4:60–5:19. In the sole embodiment in which a discrimination circuit is used, it is contemplated that the discrimination circuit "can detect the type of call and automatically route the communication line to the corresponding DO." *Id.* at 5:8–17.

The specification and the claims only discuss a discrimination circuit in connection with calls that are incoming over the network communication line. And the claims make clear that the incoming voice signals are transmitted "over the at least one network communication line" and are "rout[ed] . . . to specific telecommunications devices." *See, e.g.*, *Id.* at Claim 35. Deep Green's construction is the only construction that accurately reflects the meaning of "incoming" in view of the networking technology disclosed in the specification and claimed in the asserted claims.

I am not certain exactly where the line is. How wrong must a construction be before it becomes unreasonable?

For me, this one crosses that line. I would hold that the claimed "digital data signals" are the same throughout the claim and thus the "incoming voice signals" are among the digital data signals which as claimed are incoming from the network interface. I respectfully dissent.