UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte POWER INTEGRATIONS, INC.,

Appeal 2010-011021
Reexamination Control 90/008,326
Patent 6,249,876 B1
Technology Center 3900

Before KARL D. EASTHOM, KEVIN F. TURNER, and STEPHEN C. SIU, *Administrative Patent Judges*.

SIU, *Administrative Patent Judge*.

DECISION

This proceeding arose from a request for reexamination of U.S. Patent 6,249,876 B1, titled "Frequency Jittering Control for Varying the Switching Frequency of a Power Supply" and issued to Balu Balakrishnan, Alex Djenguerian, and Leif Lund on June 19, 2001 ("the '876 patent"). Presently, this case is on remand from the United States Court of Appeals for the Federal Circuit. *Power Integrations, Inc. v. Michelle K. Lee*, 2015 WL 2014-1123 (Fed. Cir. Aug. 12, 2015) ("*Power Integrations IV*") (remanding *Ex parte Powers Integration, Inc.,* No. 2010–011021, 2010 WL 5244756 (B.P.A.I. Dec. 22, 2010) ("*Power Integrations III* " or "Decision")).

The Federal Circuit remands this matter to us so that we may "carefully and fully assess whether the disputed claims of the '876 patent are anticipated by the prior art, setting out [our] reasoning in sufficient detail to permit meaningful appellate review." *Power Integrations IV*, at *15. In accordance with these instructions, we address the points raised.

Application of claim construction from the district court

The Federal Circuit states that the "district court adopted Power Integrations' proposed construction of the term 'coupled,' concluding that it was 'consistent with the claim language and the context of the specification which describes the purpose for which various parts of the claimed invention are coupled'" but that "the board failed to acknowledge the district court's claim construction or to assess whether its [the district court's] interpretation of the term 'coupled' was consistent with the broadest reasonable construction of the term." *Power Integrations IV*, at *10 (citing *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 422 F. Supp. 2d

446, 456 (D. Del. 2006) ("*Power Integrations I*"), *aff'd in part, rev'd in part*, 711 F.3d 1348 (Fed. Cir. 2013) ("*Power Integrations II*")). The Federal Circuit also reiterated this concern by stating that we "erred in failing to address the district court's previous interpretation [in *Power Integrations I*] of the term 'coupled'." *Power Integrations IV*, at *14.

As the record reflects, the present matter relates to concurrent litigation in which the district court, using a standard other than the broadest reasonable standard, adopted Patent Owner's proposed construction for the claim term "coupled," namely, that "two circuits are coupled when they are connected such that voltage, current, or control signals pass from one to another" but does not "require a direct connection or [] preclude the use of intermediate circuit elements." *See Power Integrations I* at 455–56.[1]

In our previous Decision (*Power Integrations III*) and in accordance with long-standing and well-established practices, extensive case law,[2] and recent further guidance from the Supreme Court in *Cuozzo Speed Technologies, LLC v. Lee*, No. 15-446, slip op. at 12–20 (June 20, 2016), we determined the broadest reasonable construction of the disputed claim term "coupled" as would have been understood by one of skill in the art in light of

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[1] *Power Integrations, Inc. v. Fairchild Semiconductor, Inc.*, 422 F.Supp.2d 446, 455 (D.Del. 2006), *aff'd in part, rev'd in part,* 711 F.3d 1348, 1367–68 (Fed.Cir.2013) (Claim 1 of '876 patent determined to be infringed and not invalid for obviousness over Martin).

[2] *See, e.g., In re Amer. Acad. Of Sci. Tech Ctr., 367 F.3d 1359, 1364* (Fed. Cir. 2004) (citing *In re Bond*, 910 F.2d 831, 833 (Fed. Cir. 1990)); *In re Hiniker Co.*, 150 F.3d 1362, 1368 (Fed. Cir. 1998); *In re Yamamoto*, 740 F.2d 1569, 1571 (Fed. Cir. 1984); *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989).

the Specification. Based on our analysis, we determined that one of ordinary skill in the art, under a broadest reasonable construction in light of the Specification, would have understood the claim term "coupled," in the context of the claims of electrical circuits being "coupled" to one another, to include the circuits being "join[ed] . . . into a single electric circuit." *See* Decision 6–9. We also determined that applying this broadest reasonable interpretation of the term "coupled," any of Martin,[3] Wang,[4] or Habetler[5] discloses a counter "coupled to" the output of the oscillator and a digital to analog converter "coupled to" the counter, as recited in claim 1, for example. Id. at 7–8.

Claim 1 recites that various components (e.g., a "counter," "digital to analog converter" or "output of the oscillator") are "coupled" to one another in some fashion but does not recite further characteristics of being "coupled." Hence, based on the context in which the term "coupled" is used in the claim, one of skill in the art would not understand the term "coupled" to include any specific characteristics. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005), *see Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) (stating that "[t]o begin with, the context in which a term is used in the asserted claim can be highly instructive," "the

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[3] U.S. Patent No. 4,638,417, issued January 20, 1987 ("Martin").
[4] Wang, A.C. & Sanders, S.R., *Programmed Pulsewidth Modulated Waveforms for Electromagnetic Interference Mitigation in DC-DC Converters*, 8 Power Electronics, IEEE Transactions on Power Electronics, 596-605 (1993) ("Wang").
[5] Habetler, T.G. & Divan, D.M., *Acoustic Noise Reduction in Sinusoidal PWM Drives Using a Randomly Modulated Carrier*, 6 Power Electronics, IEEE Transactions on Power Electronics, 356-363 (1991) ("Habetler").

claims themselves provide substantial guidance as to the meaning of particular claim terms").

One of skill in the art in attempting to construe the meaning of the claim term "coupled to," and having gleaned essentially no information from the context of the claim itself, would have turned to the Specification for guidance. The Specification "is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Vitronics Corp.*, 90 F.3d at 1582. We did not (and do not) observe, and Patent Owner did not (and does not) point out a specific definition of the term "coupled to" disclosed in the Specification. In fact, we were not (and are not) aware of the use of or reference to the term "coupled to" in the Specification at all. Instead, the Specification merely discloses one example of a "digital frequency jittering device" in which "[a] counter is connected to the output of the oscillator and to the current sources of the digital to analog converter." Spec. 3:35–37, 4:13–14. The Specification also discloses that, in this example, the outputs of the counter "are connected to a digital-to-analog (D-to-A) converter 150." Spec. 4:63–64. In other words, the Specification appears to disclose an example of various components "connected to" each other but fails to disclose even one example of components that are "coupled to" each other in any way, much less providing an explicit, specialized definition of the term "coupled" or "coupled to." Nor does the Specification provide a specific definition of the term "connected to" (a term used in the Specification) or its relationship to being "coupled" (a term recited in claim 1 but apparently not appearing in the disclosure of the Specification).

In light of the absence of an explicit, specialized definition of the term "coupled to" or even the use or general reference to the term in the Specification, we determined that one of skill in the art, using a broadest reasonable construction in light of the Specification, would have understood the term "coupled to" in accordance with the generally accepted understanding of the term in the art among those of skill in the art at the time of the invention.

Hence, after having gleaned no substantial guidance from either the context of the claim itself or the Specification, we then turned to extrinsic evidence to determine what one of ordinary skill in the art would have understood the term "coupled to" to broadly but reasonably encompass. As we stated in the Decision, "[t]he term 'couple' includes 'to join (electric circuits or devices) into a single electric circuit' (*Webster's Third New International Dictionary of the English Language Unabridged* (1993))." Decision 6. This definition of the term "coupled to" not only comports with what one of ordinary skill in the art would have understood the term to encompass (the dictionary definition being a reflection of the general understanding of the meaning of the term among those of skill in the art), but also is consistent with the Specification that, while failing to disclose the term "coupled to" at all, nevertheless, discloses at least one example in which devices are "joined into a single electric circuit." *See, e.g.*, Spec. Fig. 1. Even though extrinsic evidence has been considered "less significant than the intrinsic record," the court has also stated that "extrinsic evidence 'can shed useful light on the relevant art" and that "dictionaries and treatises can be useful in claim construction." *Phillips*, 415 F.3d at 1317–1318 (citing

Renishaw PLC v. Marposs Societa per Azioni, 158 F.3d 1243, 1250 (Fed. Cir. 1998) and *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1344 (Fed. Cir. 2001)).

Regarding the Federal Circuit's concern that we "failed to . . . assess whether [the district court's] interpretation of the term 'coupled' was consistent with the broadest reasonable construction of the term,"[6] we note that, in view of the extensive case law instructing us to apply the broadest reasonable construction as would have been understood by one of skill in the art in light of the specification, as well as recent guidance from the Supreme Court as mentioned above, such an assessment of claim construction performed at the district court in the present case is unwarranted. Hence, in accordance with this guidance, which confirms long-standing case law and precedent, we do not utilize the district court's claim construction for the term "coupled" in the present proceeding. Indeed, doing so would be the "choice of an inapplicable legal premise." *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989).[7]

Patent Owner's proposed construction of "coupled"

The Federal Circuit states that "the board fundamentally misconstrued Power Integrations' principal claim construction argument and failed to

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[6] *Power Integrations IV*, at *10.

[7] The Federal Circuit in this matter also acknowledges that "in reexamination [the board] applies a different claim construction standard than that applied by a district court, affording claims 'their broadest reasonable interpretation consistent with the specification.'" *Power Integrations IV,* at *14 (citing *In re NTP, Inc.*, 654 F.3d 1279, 1287 (Fed. Cir. 2011)).

provide a full and reasoned explanation of its decision to reject claim 1 of the '876 patent as anticipated." *Power Integrations, Inc. v. Michelle K. Lee*, 2015 WL 2014-1123, at *9 (Fed. Cir. Aug. 12, 2015). In particular, the Federal Circuit states that Patent Owner "has consistently argued that claim 1 . . . requires that the counter itself – not a pre-programmed memory – controls the digital to analog converter's output to vary the switching frequency" because, according to Patent Owner, "the 'coupled' limitation in claim 1 requires that the counter be connected to the digital to analog converter in a manner that allows it to pass voltage, current, or control signals to instruct the digital to analog converter." *Id.* (citing *Power Integrations I*, 422 F. Supp. 2d at 455). We provide the following points of clarification.

This particular argument relies on the (improper) application of the district court's claim construction for the claim term "coupled" to this reexamination proceeding. As the Federal Circuit points out, Patent Owner argues that the term "coupled," as recited in claim 1, "requires that the counter be connected to the digital to analog converter in a manner that allows it to pass voltage, current, or control signals to instruct the digital to analog converter." This feature that Patent Owner alleges to be a (non-recited) requirement of claim 1 comports with the claim construction of the term "coupled" adopted by the district court. As previously discussed, the district court does not construe claims under the broadest reasonable standard as we do. Patent Owner's argument is misplaced because, as the case law repeatedly indicates and as further supported by recent guidance from the Supreme Court (as previously discussed), we (properly) construe

claim terms using the broadest reasonable standard, not by (improperly) applying the claim construction standard utilized in district courts during companion litigation proceedings.

Does claim 1 preclude a "counter and memory functioning together"

> The Federal Circuit states that we
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> failed to straightforwardly and thoroughly assess the critical issue of whether claim 1 . . . requires the counter itself – and not the counter and a memory functioning together – to drive the digital to analog converter to adjust the control input and to vary the switching frequency of the power supply.

Power Integrations, Inc. v. Michelle K. Lee, 2015 WL 2014-1123, at *12 (Fed. Cir. Aug. 12, 2015). This issue was addressed in detail in the Decision. For the sake of convenience, we reproduce the relevant portion of the Decision here:

> Appellant has not asserted or demonstrated that claim 1 precludes the counter from utilizing or having a memory. Nor do we identify language in claim 1 requiring the lack of a memory in the counter. Each of Martin, Wang, and Habetler discloses that the signal from the counter adjusts a control input while merely using a memory (e.g., EPROM, ROM, or PROM) to obtain data to adjust the control input. As such, each counter and corresponding ROM function together as a unit to cause a digital to analog converter to adjust control input as recited in claim 1. For example, Martin discloses that a counter "is caused to count at different rates" (col. 2, ll. 40–41), which causes "the EPROM 11 [to be] stepped or addressed at different rates" (col. 2, ll. 42–43) to produce a signal that "is then applied to VCO 13" (col. 2, ll. 46–47). Similarly, the ROM disclosed in Wang (Fig. 20) and the EPROM disclosed in Habetler (Fig. 5) perform similar secondary functions for the corresponding counters to adjust control inputs. *In each case, a counter*

> *produces a signal that causes a digital to analog converter to adjust control input by utilizing a corresponding memory, the counter (with the corresponding memory) being 'coupled to' the digital to analog converter.*

Decision 8–9 (emphasis added).

We provided further clarification by revisiting this issue in the Decision on Request for Rehearing:

> As we have previously stated in the Opinion, Habetler, for example, discloses that counters dictate the selection of signals to be provided to the converter by indicating the address at which the signal is derived (Fig. 5). Likewise, Martin, for example, discloses that the "counter . . . produces an output signal [that] selectively steps the PROM . . . . in order to select the contents of a particular address" (col. 2, ll. 30–32). *In both cases, the counter (and not the ROM or EPROM) controls the input to the converter.*

Decision on Req. for Reh'g. 3–4 (emphasis added).

In summary, even if claim 1 requires the counter to drive the digital to analog converter, we found that it does that as the quotation above shows. We also determined that it does *not* require "the counter itself . . . to drive the digital to analog converter" and does *not* preclude "the counter and a memory functioning together." See above cited discussion for details.

Further with respect to the Martin reference, we note that the Federal Circuit agrees with our finding. The Federal Circuit found that "Martin . . . includes an EPROM memory between the counter and digital-to-analog converter (D/A)" and that "the purpose of the EPROM is to mask the power circuit's signature" and to "periodically chang[e] the frequency of the oscillating drive signal" to "increment a counter" such that "*changes to the*

counter's . . . value cause changes in the frequency of the oscillating drive signal." In other words, the Federal Circuit has held already that the counter disclosed in Martin "causes" changes in a signal (despite the inclusion of an EPROM). *Power Integrations II*, 711 F.3d at 1367–1368.

Therefore, for at least this additional reason, we remain persuaded that each of the cited references (for example, the Martin reference) discloses the invention as recited in claim 1, in line with findings outlined by the Federal Circuit in *Power Integration III*.

Finally, given the two different governing standards, it is not clear how to ascertain if "the district court's claim construction . . . of the term 'coupled' [i]s consistent with the broadest reasonable construction of the term," as mandated by the Federal Circuit. *Power Integrations IV*, at *10. In any event, we determine that the district court's claim construction is narrower than the broadest reasonable construction used in this reexamination proceeding, as it typically should be, according to *Cuozzo*, which essentially affirmed long-standing Federal Circuit precedent. *See Facebook, Inc. v. Pragmatus* AV, LLC, 582 Fed. Appx. 864, 869 (Fed. Cir. 2014) (nonprecedential) ("The broadest reasonable interpretation of a claim term may be the same as or broader than the construction of a term under the *Phillips* standard. But it cannot be narrower.").

Having addressed each concern raised by the Federal Circuit, we conclude, as before, that the Examiner did not err in rejecting claims 1 and 17–19 for at least the reasons previously presented in the Decision, dated December 22, 2010, and the Decision on Request for Rehearing, dated May

11, 2011, each incorporated herein in their entireties, as well as clarifying statements contained herein.

CONCLUSION

We continue to affirm the Examiner's decision to reject claims 1 and 17–19 under 35 U.S.C. § 102(b).

Requests for extensions of time in this *ex parte* reexamination proceeding are governed by 37 C.F.R. § 1.550(c). *See* 37 C.F.R. § 41.50(f).

AFFIRMED

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 37 CFR § 90.2, the undersigned certifies that on December 2, 2016, a complete and entire copy of this Notice of Appeal was provided by Priority Mail Express to the Third Party Requestor by serving the correspondence mail address of record as follows:

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I hereby certify that a copy of the foregoing, Notice of Appeal was served by hand on the Director of the United States Patent and Trademark Office, at the following address:

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I hereby certify that a copy of the foregoing, Notice of Appeal was filed electronically on December 2, 2016, with the Clerk's Office of the United States Court of Appeals for the Federal Circuit, at the following address:

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