NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

APPLE INC.,
Appellant

v.

UUSI, LLC, DBA NARTRON,
Cross-Appellant

KATHERINE K. VIDAL, UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,
Intervenor

2021-1035, 2021-1036, 2021-1057, 2021-1058

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2019-00358, IPR2019-00359.

Decided: April 25, 2023

LAUREN ANN DEGNAN, Fish & Richardson P.C., Washington, DC, argued for appellant. Also represented by CHRISTOPHER DRYER; NITIKA GUPTA FIORELLA, Wilmington, DE.

LAWRENCE MILTON HADLEY, Glaser Weil Fink Howard Avchen & Shapiro LLP, Los Angeles, CA, argued for cross-appellant. Also represented by STEPHEN UNDERWOOD.

BENJAMIN T. HICKMAN, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, for intervenor. Also represented by MARY L. KELLY, THOMAS W. KRAUSE, FARHEENA YASMEEN RASHEED.

Before DYK, BRYSON, and PROST, *Circuit Judges*.

PROST, *Circuit Judge*.

Apple Inc. ("Apple") filed two petitions for inter partes review of various claims of U.S. Patent No. 5,796,183 ("the '183 patent"), which UUSI, LLC, d/b/a Nartron ("Nartron") owns. The Patent Trial and Appeal Board ("Board") determined that some claims were shown to be unpatentable while others weren't. *Apple, Inc. v. UUSI, LLC*, IPR2019-00358, Paper 26, 2020 WL 4546916, at *44 (P.T.A.B. Aug. 4, 2020) ("*Final Written Decision*"); *Apple, Inc. v. UUSI, LLC*, IPR2019-00359, Paper 27, 2020 WL 4542561, at *37 (P.T.A.B. Aug. 4, 2020).[1] Apple appeals, and Nartron cross-appeals. We affirm as to both the appeal and cross-appeal.

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[1] Because the issues on appeal are common to both underlying final written decisions and the outcomes do not depend on any differences in the record, the remainder of this opinion cites only the Petition and Final Written Decision in the '358 proceeding for simplicity.

BACKGROUND

I

The '183 patent relates to capacitive responsive electronic switching circuits. Claims 37, 94, and 97 are representative for purposes of this appeal.

Claim 37 recites:

> 37. A capacitive responsive electronic switching circuit for a controlled device comprising:
>
> an oscillator providing a periodic output signal having a predefined frequency, wherein *an oscillator voltage is greater than a supply voltage*;
>
> a microcontroller using the periodic output signal from the oscillator, the microcontroller *selectively providing signal output frequencies* to *a closely spaced array* of input touch terminals of a keypad, the input touch terminals comprising first and second input touch terminals;
>
> the first and second touch terminals defining areas for an operator to provide an input by proximity and touch; and
>
> a detector circuit coupled to said oscillator for receiving said periodic output signal from said oscillator, and coupled to said first and second touch terminals . . . .

'183 patent claim 37 (emphasis added); J.A. 233.

Claim 94 recites:

> 94. A capacitive responsive electronic switching circuit for a controlled keypad device comprising:
>
> an oscillator providing a periodic output signal having a predefined frequency; [and]

> a microcontroller using the periodic output signal from the oscillator . . ., and wherein *a peak voltage of the signal output frequencies is greater than a supply voltage* . . . .

'183 patent claim 94 (emphasis added); J.A. 238.

> Claim 97 recites:
>
> 97. The capacitive responsive electronic switching circuit as defined in claim 94, wherein each signal output frequency selectively provided to each row of the closely spaced array . . . is selected from *a plurality of Hertz values*.

'183 patent claim 97 (emphasis added); J.A. 239.

II

Apple petitioned for inter partes review challenging, in relevant part, claims 28, 32, 36–39, 83–88, 90–94, 96–99, 101–09, and 115–16 as obvious. The Board determined that Apple proved claims 28, 32, 36, 83–85, 90–94, 96, 101–106, and 115–116 were obvious but failed to prove claims 37–39, 86–88, 97–99, and 107–09 were obvious. Apple appeals with respect to claims 37–39, 86–88, 97–99, and 107–09. Appellant's Br. 15–16. Nartron cross-appeals with respect to claims 83–85, 90–94, 96, and 101–106. Appellee's Br. 56–57, 74.[2] For simplicity, we discuss the issues on appeal and cross-appeal in terms of representative claims 37, 94, and 97.

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[2] Nartron appears to cross-appeal with respect to claims that the Board upheld. *See, e.g.*, Appellee's Br. 74 (asking for this court to determine that claims "83–88, 90–94, 96–99, and 101–104" were nonobvious). For claims on which Nartron prevailed, a cross-appeal is improper. We therefore do not consider Nartron's arguments with respect to such claims.

We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

I

Apple's appeal challenges: (A) the Board's refusal to consider an argument that the combination of Chiu and Schwarzbach taught "an oscillator voltage . . . greater than a supply voltage" for claim 37; and (B) the Board's determination that Apple failed to prove a motivation to combine and reasonable expectation of success in combining Chiu, Schwarzbach, and Meadows for claim 97.[3] We review the Board's determination that Apple failed to raise an argument in its Petition for abuse of discretion. *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016). We review the Board's motivation-to-combine and reasonable-expectation-of-success findings for substantial evidence, *id.* at 1366, which is "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion," *Novartis AG v. Torrent Pharms. Ltd.*, 853 F.3d 1316, 1324 (Fed. Cir. 2017).

A

Apple, in relevant part, challenged claim 37 as obvious in view of Chiu and Schwarzbach. *See* J.A. 264. In its Final Written Decision, the Board determined that Apple's Petition argued *only* that Schwarzbach alone taught the limitation of claim 37 requiring "an oscillator voltage . . . greater than a supply voltage." *Final Written Decision*, 2020 WL 4546916, at *32–34. For the reasons outlined below, this reading of Apple's Petition was not an abuse of discretion, so we affirm the Board's determination that Apple failed to prove that claim 37 was unpatentable.

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[3] U.S. Patent No. 4,561,002 ("Chiu"); U.S. Patent No. 4,418,333 ("Schwarzbach"); U.S. Patent No. 4,922,061 ("Meadows").

Apple asserts that the Board improperly failed to recognize that its Petition presented two theories that the prior art taught "an oscillator voltage . . . greater than a supply voltage": (1) that Schwarzbach alone taught this limitation;[4] and (2) that Chiu and Schwarzbach in combination taught this limitation. Appellant's Br. 29–34; *see* J.A. 3885–88 (citing J.A. 265–69, 276–78). As support, Apple points to one particular paragraph in its Petition as raising a Chiu-Schwarzbach-combination argument. *See* Oral Arg. at 19:57–20:55 (Apple counsel stating that Apple relied on a particular paragraph as raising the Chiu-Schwarzbach-combination and the preceding paragraph as raising the Schwarzbach-alone theory).[5] That paragraph, in its entirety, reads:

> As previously discussed, a [person of ordinary skill in the art] would have understood that the TMS 1670 microprocessor of Chiu would be operated at the supply voltage of the identical microprocessor described in Schwarzbach, such that the output voltage of the signal generator circuitry of the "microprocessor 90" ("*oscillator*") is greater than its supply voltage. *See* Section III.A.4, *supra* . . . .

J.A. 278 (italics in original). Section III.A.4 of Apple's Petition, in turn, refers to part of the overview section about Apple's allegations that the combination of Chiu and Schwarzbach renders both claims 37 and 94 obvious. *See* J.A. 264–69. Section III.A.4 specifically argues that an ordinarily skilled artisan would have been motivated to combine Chiu and Schwarzbach "to operate at the supply

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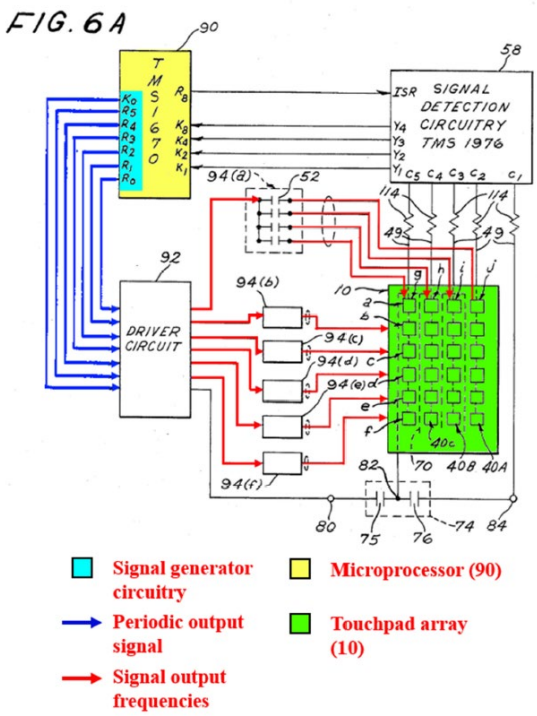
[4] The Board determined that Schwarzbach alone did not teach "an oscillator voltage . . . greater than a supply voltage," and Apple does not challenge that finding on appeal. *See* Appellee's Br. 28.

[5] No. 21-1035, https://oralarguments.cafc.uscourts.gov/default.aspx?fl=21-1035_03082023.mp3.

voltage [of 16 volts] described in Schwarzbach, such that the output voltage of the signal generator circuitry of [Chiu's] 'microprocessor 90' is greater than its supply voltage." J.A. 267; *see* J.A. 277. And, previously, the Petition describes Chiu's "signal generat[or] circuitry" as "generat[ing] a scan signal with *a peak voltage of 30 volts*" in its "overview of Chiu" section. J.A. 264 (emphasis added) (cleaned up).

On appeal, Apple contends that it so clearly related Chiu's "peak voltage of 30 volts" to claim 37's "oscillator voltage" that the Board's refusal to consider its Chiu-Schwarzbach-combination argument was an abuse of discretion. We disagree. Sure, the Petition invokes Chiu in its discussion of "an oscillator voltage . . . greater than a supply voltage," but it doesn't invoke Chiu's "peak voltage of 30 volts" teaching. Rather, Apple's Petition invokes Chiu's "output voltage of the signal generator circuitry of the 'microprocessor 90.'" J.A. 278. And herein lies Apple's problem: the "output voltage of [Chiu's] signal generator circuitry" is not 30 volts.

Apple's color-coded version of Chiu's Figure 6A is illustrative:



J.A. 282 (annotations in original). Apple identifies the "signal generator circuitry" in light-blue highlight (inside 90) as the "oscillator" and the "periodic output signal" represented by darker-blue lines (flowing from 90) as the "output" of the oscillator. *See* J.A. 274–75. But the red lines (flowing from 92)? Apple's Petition (and color-coding) tells us that those are different. Apple's Petition explains that Chiu's "'driver circuit 92' *amplifies* the pulse signals from the signal generator circuitry ('*oscillator*')"—i.e., the "oscillator voltage"—"to produce the claimed 'signal output frequencies'" shown in red. J.A. 298–99 (first italics added; second italics in original). And it's the output of Chiu's driver circuit 92 that's 30 volts. Chiu at col. 9, ll. 20–23. Chiu doesn't tell us what the output voltage of its microprocessor 90 is, and Apple doesn't tell us either. *See* Appellant's Reply Br. 10 (admitting that Chiu's 30-volt teaching

is not the "direct[]" output of the oscillator but instead the voltage of those signals after they are amplified "through driver circuitry 92").

The Board thus did not abuse its discretion in determining that Apple's reference to "the output voltage of the signal generator circuitry of [Chiu's] 'microprocessor 90' ('*oscillator*')" did not invoke the downstream 30-volt output voltage of Chiu's driver circuit 92. *See* Oral Arg. at 3:37–4:15 (Apple's counsel stating that Chiu's signal generator circuitry does not include driver circuit 92). In other words, while Apple may have made a general argument that Chiu discloses an oscillator voltage greater than the supply voltage, the evidence upon which it relied did not support such an argument. Under such circumstances, the Board did not err in concluding that Apple failed to make a coherent argument in support of its position.

Our conclusion is further supported by Apple's Petition regarding the obviousness of claim 94, which requires "a peak voltage . . . greater than a supply voltage." For that claim, Apple explicitly relied on Chiu's 30-volt teaching to demonstrate the "peak voltage" limitation. J.A. 299–301. Perhaps what Apple meant to argue in its Petition was that claim 37's "oscillator voltage" should be construed to encompass the meaning of claim 94's "peak voltage," *see* Appellant's Reply Br. 10–12, but we can't fault the Board for failing to make that connection when Apple admits that neither its Petition nor Reply explained that connection, *see id.* at 10 (describing this connection as an "implicit claim construction argument" that Nartron "raised for the first time in its Sur-Reply before the Board").

B

Apple, in relevant part, challenged claim 97 as obvious in view of Chiu, Schwarzbach, and Meadows. *See* J.A. 315. The Board determined that Apple failed to prove an artisan of ordinary skill would have been motivated to combine or reasonably expected success in combining the prior art in

the way that Apple suggested. *Final Written Decision*, 2020 WL 4546916, at *37. Apple argued that an ordinarily skilled artisan would have "modified" Chiu's microprocessor to include a voltage-controlled oscillator like that in Meadows to teach the "plurality of Hertz values" limitation. *See id.* at *36, *40. Apple claimed that a person of ordinary skill would have been motivated to make this modification to "reduce the susceptibility of the . . . circuit to electromagnetic noise" and to "generate reduced amounts of electromagnetic noise," *id.* at *36 (cleaned up), and that the results of such a modification "would have been predictable because Meadows describes the use of its techniques in a touch circuit like the one described in . . . Chiu," *id.* (cleaned up). But Nartron countered that Apple's suggested modification "would have involved unduly complex redesign." *See id.* at *36–37. The Board agreed with Nartron and determined that the required redesign mitigated both a motivation to combine and a reasonable expectation of success.

On appeal, Apple primarily asserts that the Board's motivation-to-combine and reasonable-expectation-of-success findings are premised on an improper bodily-incorporation theory. Appellant's Br. 37. We disagree. Although the Board does use the word "replace" in parts of its analysis, the context of that analysis shows that the Board was simply more persuaded by Nartron's expert that incorporating a voltage-controlled oscillator like that in Meadows into a microprocessor like that in Chiu would have been so complex that an artisan of ordinary skill would not have been motivated to make that combination or had a reasonable expectation that that combination would be successful. The Board's findings are supported by substantial evidence from Nartron's expert as cited in the Board's five-page analysis on this point. *See Final Written Decision*, 2020 WL 4546916, at *35–40.

II

Nartron's cross-appeal challenges the Board's claim construction of: (A) the "selectively providing" limitation as seen in claim 37; (B) the "closely spaced array" limitation as seen in claim 37; and (C) the "peak voltage" limitation as seen in claim 94. We review questions of claim construction de novo "to the extent that [they are] decided only on the intrinsic evidence," as are all three of Nartron's disputed claim constructions. *Data Engine Techs. LLC v. Google LLC*, 10 F.4th 1375, 1380 (Fed. Cir. 2021).

A

Nartron primarily argues that the Board misconstrued the "selectively providing" limitation present in claim 37 because the Board's construction improperly limits "selectively providing" "to a selection of rows, not frequencies" and that such a construction conflicts with this court's decision in *Samsung*. Appellee's Br. 56–66 (citing *Samsung Elecs. Co. v. UUSI, LLC*, 775 F. App'x 692 (Fed. Cir. 2019) (construing claim 40 of the '183 patent, which also includes a "selectively providing" limitation and does so in a similar context)). The Board construed "the microcontroller selectively providing signal output frequencies to a closely spaced array" as: (1) "*not* requir[ing] the microcontroller to select signal output frequencies from multiple available frequencies;" (2) "encompass[ing] the microcontroller selecting a row or a portion of the array . . . to provide signal output frequencies to;" and (3) "encompass[ing] selection of frequencies by the human designer during the design or construction of the . . . circuit." *Final Written Decision*, 2020 WL 4546916, at *15 (emphasis in original) (cleaned up); *see also id.* at *7–18 (construing this limitation after looking at the claim language, patent specification, prosecution history, and the *Samsung* decision).

Nartron's argument that the Board improperly limited "selectively providing" "to a selection of rows, not frequencies" fails because the Board did no such thing. The Board

merely said that the limitation "encompass[ed]" a selection of rows. That a limitation "encompass[es]" a particular circumstance does not mean that it is limited to that circumstance. We therefore also reject Nartron's argument that the Board's construction in this case runs afoul of our *Samsung* decision. In *Samsung*, we vacated and remanded the Board's finding that there would have been no reasonable expectation of success because we determined that it was based on an incorrect implicit claim construction of the "selectively providing" limitation as used in claim 40. 775 F. App'x at 696. In that case, the Board had assumed that this limitation "require[d] . . . the microcontroller [to] provide different frequencies to different rows." *Id.* We said that construction was wrong: the "selectively providing" limitation was "not limited to situations in which different frequencies are provided to different rows." *Id.* at 697. We explained that the only requirement was "that different frequencies be provided to the entire pad." *Id.* We see no conflict between a requirement "that different frequencies be provided," *id.*, and the Board's determination here that the thing selecting those frequencies need not be the microcontroller, *Final Written Decision*, 2020 WL 4546916, at *17 ("[T]his language does not specify who or what 'selects' a frequency 'from multiple possible frequencies' . . . ." (cleaned up)). We accordingly affirm the Board's claim construction of the "selectively providing" limitation.

B

Nartron asserts that the Board misconstrued "a closely spaced array" as seen in claim 37 since the Board rejected Nartron's argument that such an array is required to be "sufficiently closely-spaced that, if high frequencies were not used, surface contamination would cause significant crosstalk between adjacent terminals." *Id.* at *18; *see* Appellee's Br. 68–71. There is no basis in either the claims or the specification of the '183 patent to conclude that the term "closely spaced array" is limited in the way Nartron

suggests, and we therefore affirm the Board's construction of that term.

C

Nartron also contends that the Board misconstrued "peak voltage" in claim 94. The Board construed "peak voltage" as "the peak voltage of the signal provided to the array of touch terminals." *Final Written Decision*, 2020 WL 4546916, at *20. According to Nartron, this construction is wrong because it defines "peak voltage" as the "input" to the array of touch terminals when the claim relates "peak voltage" to the signal "output" frequencies of the microcontroller. *See* Appellee's Br. 72. Nartron's argument appears to be that an "output" of one thing cannot be an "input" for something else. *See id.* at 72–74. However, as the Board observed, "signal output frequencies" are signals that flow between the microcontroller and the array of touch terminals. *Final Written Decision*, 2020 WL 4546916, at *10–11. An arrangement in which such a signal has its highest voltage, i.e., a "peak voltage," at the input to the array of touch terminals is entirely consistent with the language of claim 94. We therefore affirm the Board's claim construction.

CONCLUSION

We have considered the parties' remaining arguments and find them unpersuasive. For the foregoing reasons, we affirm.

AFFIRMED

COSTS

Each party shall bear its own costs.