

NOTE: This disposition is nonprecedential.

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

SAMSUNG ELECTRONICS CO., LTD.,
Appellant

v.

UUSI, LLC, DBA NARTRON,
Appellee

2018-1310

Appeal from the United States Patent and Trademark
Office, Patent Trial and Appeal Board in No. IPR2016-
00908.

Decided: June 18, 2019

NAVEEN MODI, Paul Hastings LLP, Washington, DC,
argued for appellant. Also represented by CHETAN BANSAL,
STEPHEN BLAKE KINNAIRD, JOSEPH PALYS, MICHAEL
WOLFE.

LAWRENCE MILTON HADLEY, Glaser Weil Fink Howard
Avchen & Shapiro LLP, Los Angeles, CA, argued for appel-
lee. Also represented by JOEL LANCE THOLLANDER, McKool
Smith, PC, Austin, TX.

Before NEWMAN, LOURIE, and DYK, *Circuit Judges*.

DYK, *Circuit Judge*.

Samsung Electronics Co., Ltd. appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board's ("Board's") final written decision in an inter partes review ("IPR") proceeding. The Board concluded that Samsung had failed to establish that the challenged patent claims were unpatentable as obvious. We *vacate* the Board's decision and *remand* for further proceedings.

BACKGROUND

UUSI, L.L.C. owns U.S. Patent No. 5,796,183 ('183 patent), which is directed to "a capacitive responsive electronic switching circuit." '183 patent, col. 1, ll. 7–8. In general terms, the patent relates to a device with a multi input touchpad that detects the location of a user's touch by measuring capacitance change.

Samsung filed a petition for IPR with respect to claims 37–41, 43, 45, 47, 48, 61–67, 69, 83–86, 88, 90, 91, 94, 96, 97, 99, 101, and 102 of the '183 patent. Claim 40, representative for the issues on appeal, recites:

40. A capacitive responsive electronic switching circuit comprising:

an oscillator providing a periodic output signal having a predefined frequency;

a microcontroller using the periodic output signal from the oscillator, the microcontroller selectively providing signal output frequencies to a plurality of small sized input touch terminals of a keypad, wherein the selectively providing comprises the microcontroller selectively providing a signal output frequency to each row of the plurality of small sized input touch terminals of the keypad;

the plurality of small sized input touch terminals defining adjacent areas on a dielectric substrate for an operator to provide inputs 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 input touch terminals, said detector circuit being responsive to signals from said oscillator via said microcontroller and a presence of an operator's body capacitance to ground coupled to said touch terminals when proximal or touched by the operator to provide a control output signal,

wherein said predefined frequency of said oscillator and said signal output frequencies are selected to decrease a first impedance of said dielectric substrate relative to a second impedance of any contaminate that may create an electrical path on said dielectric substrate between said adjacent areas defined by the plurality of small sized input touch terminals, and wherein said detector circuit compares a sensed body capacitance change to ground proximate an input touch terminal to a threshold level to prevent inadvertent generation of the control output signal.

J.A. 69, col. 1, ll. 23–56 (emphasis added).

Samsung argued that the claims were unpatentable as obvious in light of two separate combinations of prior art, each of which included U.S. Patent Nos. 5,565,658 (Gerpheide), 5,087,825 (Ingraham), and 5,594,222 (Caldwell). The combination of Ingraham/Caldwell was alleged to teach all claim limitations except the limitation of “providing signal frequencies” to the touchpads. The limitation was alleged to require multiple frequencies (not taught by Ingraham/Caldwell). This limitation was alleged to have been taught by Gerpheide.

The Board instituted IPR on all of the challenged claims except for claims 37, 38, and 39. In its final written decision, the Board concluded that Samsung had failed to show that the claims were unpatentable as obvious by a preponderance of the evidence on two grounds: The Board held that Samsung had failed to show (1) a motivation to combine Gerpheide with Ingraham/Caldwell and (2) a reasonable expectation of success in achieving the claimed limitation of “providing signal frequencies.”

Samsung appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

The ultimate determination of whether a patent claim would have been obvious is a question of law that we review *de novo*. Underlying factual findings are reviewed for substantial evidence.

I. Motivation to Combine

The Board concluded that Samsung failed to show that there would have been a motivation to combine Gerpheide with Ingraham/Caldwell. The Board concluded that Ingraham disclosed a keyboard responsive to capacitance changes caused by a user’s touch and Caldwell disclosed a touch pad system that senses user touch by providing a signal frequency to a row of keys and monitoring output via sensor electrodes. Samsung alleged that the combination of Ingraham and Caldwell disclosed all of the claim limitations, except for “providing signal output frequencies,” because together they disclosed a capacitive touch responsive device with a multi input keypad that would provide a single signal output frequency to the touchpad. Gerpheide was alleged to have taught “providing signal output frequencies” based on its teachings of testing electrical interference at different frequencies and then using the frequency with the lowest measured interference.

The Board found that Gerpheide taught reducing electrical interference in single point capacitive touchpads. The concern identified in Gerpheide was that “a capacitance-based detection device may suffer from electrical background interference . . . [which] interferes with position detection. These spurious signals cause troublesome interference with the detection of finger positioning.” Gerpheide, col. 2, ll. 37–42. Gerpheide’s solution was to sequentially send different frequencies to the touchpad and measure electrical interference. The frequency with the lowest measured electrical interference was then selected, which had the effect of mitigating the interference without expensive nulling equipment.

The Board found that the ’183 patent was directed to a different problem, namely unintended actuation of multi input capacitive touch pads placed in a close array, such as in a keyboard. Surface contamination (e.g., water) on such a device can cause unintended actuation. The Board found that Gerpheide was not directed to this problem because Gerpheide disclosed only a single input touchpad, which would not suffer from unintended actuation of proximal keys, unlike the multi input touchpad discussed in *Ingraham*, *Caldwell*, and the ’183 patent.

The Board concluded that because Gerpheide’s teachings were made in the context of a single point input capacitive touch device, a person of skill in the art would not have looked to its teachings when dealing with a multi point input device such as the multi touch pad devices in *Ingraham*, *Caldwell*, and the ’183 patent. The Board reasoned that “[t]he considerations described in the ’183 patent, *Ingraham I*, and *Caldwell* related to the close proximity of touch circuits in a keypad are wholly absent from Gerpheide.” J.A. 19. The Board also noted that the teachings of a different reference, U.S. Patent No. 4,639,720 (*Rympalski*), reinforced its conclusion that there was a difference between single and multi point touch capacitive responsive systems. The Board noted that

Rympalski taught that single point touch pads “suffer from a lack of versatility (they are capable of locating only one coordinate point at a time) and consume considerable power and involve complex hardware, thereby reducing their cost effectiveness and practical utility.” J.A. 17.

In support of the Board’s decision, UUSI first argues that Gerpheide was non-analogous art because it was directed to a single point capacitive touch pad, in contrast to the multi point capacitive touch pads disclosed in Ingraham, Caldwell, and the ’183 patent. The Board made no finding that Gerpheide was not analogous art, and there is no support for UUSI’s argument on appeal that it is not analogous. Gerpheide, Ingraham, Caldwell, and the ’183 patent claims are all generally directed to capacitive touch devices, even if they are to different permutations of such devices (i.e., single versus multi point touch input). Gerpheide is analogous art as it is directed to the same field of endeavor (i.e., capacitive touch device design) as the ’183 patent. *See Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1000–01 (Fed. Cir. 2016).

UUSI next argues that the Board was correct in finding that Gerpheide was addressed to a different problem, referring us to its expert’s testimony regarding the fact that Gerpheide and the ’183 patent were directed to different problems and solved those problems in different ways. Samsung argues that under *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), the Board’s decision was legally erroneous because it required the proffered motivation to combine Gerpheide with Ingraham/Caldwell to be the same as the one that animated the patentee in arriving at the claimed invention. We agree with Samsung. The Board’s categorical rejection of the teachings from a single input device to those of a multi input device is not supportable. “[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same

way, using the technique is obvious unless its actual application is beyond his or her skill.” *Id.* at 417.

Samsung presented uncontested evidence that the combination of Ingraham and Caldwell would experience electrical interference, and Gerpheide taught a way to address electrical interference in capacitive touch devices. The fact that Gerpheide and Ingraham/Caldwell involved different types of capacitive touch devices (single versus multi input) does not undermine the motivation to combine the teachings of Gerpheide with Ingraham/Caldwell since both devices can experience electrical interference.¹ Gerpheide recognized this as a problem and provided a solution to reduce such interference. Thus, a person of skill in the art would have been motivated to include such a feature from analogous prior art in a multi input capacitive touch pad device (i.e., the device of the Ingraham/Caldwell combination). The Board’s contrary conclusion is not supportable.

II. Reasonable Expectation of Success

The Board also found that Samsung had failed to show there was a reasonable expectation of success in combining Gerpheide with Ingraham/Caldwell.

In order to establish a reasonable expectation of success, the challenger must show “a reasonable expectation of achieving what is claimed in the patent-at-issue.” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016) (emphasis added). Reasonable expectation of success constitutes a question of law where, as here, it rests on claim construction and there is no extrinsic evidence offered in connection with claim

¹ Rympalski’s criticism of certain issues with single input touch devices does not suggest that multi input touchpads, such as Ingraham/Caldwell, would not benefit from features of Gerpheide.

construction. *See Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952, 966 (Fed. Cir. 2014). For an expired patent, such as the '183 patent, the claims are construed using the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

The basis of the Board's decision as to reasonable expectation of success is not clear, but it appears to rest on an implicit claim construction of the limitation "the microcontroller selectively providing signal output frequencies to a plurality of small sized input touch terminals of a keypad, wherein the selectively providing comprises the microcontroller selectively providing a signal output frequency to each row of the plurality of small sized input touch terminals of the keypad." J.A. 69, col. 1, ll. 28–34. UUSI argues that the Board properly concluded that the claims require that the microcontroller provide different frequencies to different rows of touch pads, and that in the proposed combination of Gerpheide with Ingraham/Caldwell, "it would not be possible to sequence through each touch pad . . . using multiple frequencies to differentiate between neighboring touch pads as disclosed in the '183 Patent." UUSI Response Br. at 44 (internal quotation marks omitted).

We conclude that the Board's implicit claim construction was erroneous. This is not a question of which expert to credit, contrary to the Board's approach, but rather a legal determination regarding claim construction. The claim language itself is unclear as to whether the same frequency (selected from multiple possible frequencies) or different frequencies are to be sent to the different rows of the touchpad. The discussion in the specification to which UUSI directs our attention only addresses using higher frequencies to avoid unintended actuation of proximal keys, not whether different frequencies are separately provided to each row "to differentiate between neighboring touch pads." UUSI Response Br. 44. Dependent claim 45, which Samsung also challenges, requires "[t]he capacitive responsive electronic switching circuit as defined in claim 40,

wherein each signal output frequency selectively provided to each row of the plurality of small sized input touch terminals of the keypad has a same [frequency] value.” J.A. 69, col. 2, ll. 4–7 (emphasis added). Given that the dependent claim recites sending the same frequency to all of the rows of the device, we interpret the necessarily broader independent claim 40 as also covering such a situation (even though it may also cover a situation where different frequencies are provided to different rows). In other words, the claims are not limited to situations in which different frequencies are provided to different rows. A reasonable expectation of success thus only requires that different frequencies be provided to the entire pad.²

Based on the proper claim construction, we *vacate* and *remand* for the Board to consider whether Samsung has shown that there would have been a reasonable expectation of success in combining the teaching of Gerpheide with the teachings of Ingraham/Caldwell to arrive at the claimed invention. The question is whether there would have been a reasonable expectation of success in modifying the Ingraham/Caldwell combination to “provide frequencies” to the touch pad in light of the teachings of Gerpheide (i.e., whether there was a reasonable expectation that the combination could have been modified to “provide” a

² On appeal, UUSI argues that there are other limitations required by the claims that are not taught by Samsung’s proposed combination, including the use of front-end testing for selection of the frequencies and the use of higher frequencies. The claims do not impose such requirements. The claim language does not support a requirement of front-end testing, and independent claim 40 does not limit the range of claimed “frequencies” to only higher value ones. Indeed, other dependent claims recite numerical frequency values, which indicates that independent claim 40 is not so limited.

frequency, selected from multiple possible frequencies, to the entire touch pad).

III. Additional Claims

Samsung argues that the proceeding must be remanded back to the Board to consider the patentability of challenged claims 37, 38, and 39, on which the Board declined to institute IPR. *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). UUSI argues that Samsung has waived this argument by failing to present it to the Board. We conclude that Samsung did not waive its *SAS* argument as Samsung timely raised the issue in its opening brief filed less than a month after *SAS* was decided, *see BioDelivery Sci. Int'l, Inc. v. Aquestive Therapeutics, Inc.*, 898 F.3d 1205, 1209 (Fed. Cir. 2018), and in light of the disposition of the above issues UUSI has not shown that the Board's error in instituting IPR on less than all challenged claims was harmless, *see PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1362 (Fed. Cir. 2018). We *remand* with instructions for the Board to also consider the patentability of claims 37, 38, and 39.

CONCLUSION

We conclude that Samsung has established a motivation to combine Gerpheide with Ingraham/Caldwell. We *vacate* the Board's decision and *remand* for further proceedings consistent with this opinion.

VACATED AND REMANDED

COSTS

No costs.