

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ANALOG DEVICES, INC.
Requester

v.

KNOWLES ELECTRONICS LLC
Patent Owner and Appellant

Appeal 2015-004989
Reexamination Control 95/001,850
Technology Center 3900
Patent 8,018,049 B2

Before JOHN A. JEFFERY, MARC S. HOFF, and ERIC B. CHEN,
Administrative Patent Judges.

CHEN, *Administrative Patent Judge.*

DECISION ON REQUEST FOR REHEARING

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On September 29, 2015, Patent Owner, Knowles Electronics LLC (“Patent Owner”) requested rehearing under 37 C.F.R. § 41.79 (a) of the Decision on Appeal entered August 31, 2015 (“Decision” or “Dec.”), which affirmed the Examiner’s final rejection of claims 1, 2, 5, 6, 9, 11, 12, 15, 16, 19, 21–23, 25 and 26.

Third-Party Requester Analog Devices, Inc. did not file any comments under 37 C.P.R. § 41.79 (c) in opposition to Patent Owner’s request for rehearing.

The Request for Rehearing is *denied*.

ANALYSIS

Claim Construction

First, Patent Owner argues that “[t]he Decision rejects . . . Knowles’s proposed construction based on a determination that Minervini ’049 lacks ‘express language’ limiting the term ‘package’ in this manner.” (Req. for Reh’g 2.) However, Patent Owner argues, “the law does not require ‘express language’ in a specification to support requirements that are well-understood by a person skilled in the art.” (*Id.*)

However, the Federal Circuit has articulated that “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.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc). The ’049 patent contains thirty-one figures, illustrating multiple embodiments, in which only two figures illustrate a package connected to a printed circuit board. Furthermore, the ’049 patent does not expressly define a “package”

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as requiring a second level interconnect between the package and an external printed circuit board. Accordingly, the intrinsic evidence of record does not persuasively establish that the claim term “package” must be construed as requiring “a second level interconnect between the package and an external printed circuit board,” as advocated by Patent Owner.

Second, Patent Owner argues “the Board overlooks Knowles’s argument that the term ‘package’ is a well-known term of art in the microelectronics industry.” (Req. for Reh’g 2.) In particular, Patent Owner argues that “[t]he Board’s overly broad interpretation is simply not consistent with how one of ordinary skill would understand the term” and “Knowles submitted extensive evidence about the meaning of the term ‘package,’ and in particular how one of ordinary skill would understand the ‘second-level connection’ requirement for a ‘package.’” (*Id.* at 3.)

However, Patent Owner has not provided any persuasive extrinsic evidence that requires “a second level interconnect between the package and an external printed circuit board.” In particular, Patent Owner has not provided a single technical reference to support the construction that a “package” requires “a second level interconnect between the package and an external printed circuit board.” At best, extrinsic evidence submitted by Patent Owner illustrates that a secondary connection to a printed circuit board is a common practice, rather than an absolute requirement.¹

Third, Patent Owner argues “[t]he Board overlooked virtually all of this [extrinsic] evidence, and instead focused on an alleged flaw in one of

¹ In a related proceeding, the U.S. International Trade Commission reached a similar determination with respect to the claim construction of “package.”

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the references: Tummala Fundamentals.” (Req. for Reh’g 4.) In particular, Patent Owner argues “[w]hen read contextually, it is clear that the phrase [in general] was used in Tummala Fundamentals to describe two overarching categories or families of packages, while allowing for subcategories to exist within each of those ‘general’ families.” (*Id.* at 5.)

Although Patent Owner has offered an alternative interpretation of the modifier “in general” from the sentence “[i]n general, IC packages can be classified into two categories: 1) through-hole, and 2) surface mount” from a technical reference (FUNDAMENTALS OF MICROSYSTEMS PACKAGING 67 (Rao

In the Matter of Certain Silicon Microphone Packages and Products Containing the Same, No. 337-TA-695 (USITC Nov. 22, 2010). In particular, the Administrative Law Judge concluded that:

Based on the intrinsic and extrinsic evidence cited *supra*, I find that “package” means “a single, self-contained unit which fully encloses a device, and which provides: (1) protection for the device from the external environment, (2) an electrical connection between the device and the package, and (3) an electrical connection between the package and another circuit outside of the package.”

(Slip. Op. 25.)

Knowles argues that the second level connection can only be made in one of two ways: (1) “by inserting the leads of the first level package into plated holes in the board and soldering them into place” or (2) “by placing the first level package onto pads, which have been covered in solder paste, on the top surface of the printed circuit board.” I find that the evidence of record demonstrates that these are two ways of forming the second level connection, but they are not the *only* two ways, as Knowles asserts.

(*Id.* at 26 (citations omitted.))

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R. Tummala ed., McGraw-Hill 2001)), Patent Owner has not shown that our interpretation of the phrase “in general” as meaning, “in most instances, the second-level connections can either be a through-hole mount or a surface mount, but permits for possible exceptions” (Dec. 8) is unreasonable.

Fourth, Patent Owner argues “the Decision does not identify a single example of package mounting other than surface mounting or through-hole mounting” and “Requester’s expert, Dr. Michael Pecht, could not substantiate any other example of package mounting.” (Req. for Reh’g 5.)

However, the testimony of a single expert (e.g., Dr. Michael Pecht’s alleged inability to “substantiate any other example of package mounting”) does not persuasively rebut the express statement in the extrinsic evidence that “[i]n general, IC packages can be classified into two categories: 1) through-hole, and 2) surface mount” and accordingly, not all IC packages are required, without any exception, to have a second-level connections that is either a through-hole mount or a surface mount. Furthermore, because Patent Owner is advocating a claim construction that “package” should be narrowly interpreted to require a second level interconnect between the package and an external printed circuit board, it is Patent Owner’s burden to provide such evidence, rather than the Board’s burden to prove a negative (e.g., “the Decision does not identify a single example of package mounting other than surface mounting or through-hole mounting”).

Fifth, Patent Owner argues “although the Decision does not actually construe the term, it implicitly attempts to apply an interpretation of ‘package’ that it views as encompassing Halteren’s ‘flexible substrate transducer assembly’” and “Halteren’s failure to provide a way to

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mechanically attach the device to a circuit board further results in a corresponding failure to provide protection from mechanical and environmental stresses that is necessary for packages.” (Req. for Reh’g 6.)

Our Decision states the following:

In particular, one relevant definition of “package” which refers to a “second level interconnect” is as follows:

We can think of the package as a structure consisting of a semiconductor device, a first-level interconnect system, a wiring structure, a second-level interconnection platform, and an enclosure that protects the system and provides the mechanical platform for the sublevel.

(Dec. 7 (citing Ken Gilleo, ELECTRONIC PACKAGE & INTERCONNECTION HANDBOOK 1.22 (Charles A. Harper ed., McGraw-Hill 3rd ed. 2000).))

Accordingly, based upon this definition, we construed the claim term “package” as broad enough to encompass the transducer assembly 10 of Haltern. (Dec. 10.)

Sixth, Patent Owner argues “the Board overlooks a pertinent Federal Circuit decision [*MEMS Technology Berhad v. Int’l Trade Comm’n*, 447 Fed. Appx. 142, 157–59 (Fed. Cir. 2011)] about the meaning of the term ‘package’ in related patent claims” (Req. for Reh’g 6) and “the Federal Circuit affirmed the International Trade Commission’s determination that Mr. Minervini’s ‘package’ must ‘be capable of two levels of electrical connection—one from the device to the package, and one from the package to an external circuit or other system’” (*id.* at 7).

However, this Federal Circuit decision is not germane to the current appeal because the court did not adopted a claim construction that requires “a second level interconnect between the package and an external printed

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circuit board.” In fact, our Decision adopts a claim construction nearly identical to the construction adopted by the Federal Circuit in *MEMS Technology Berhad*. (Dec. 7 (citing Ken Gilleo, *ELECTRONIC PACKAGE & INTERCONNECTION HANDBOOK* 1.22 (Charles A. Harper ed., McGraw-Hill 3rd ed. 2000).))

Last, Patent Owner argues “[t]he Federal Circuit also held that the essence of Mr. Minervini’s invention was ‘the containment of the components in a “package,”’ and therefore held that the ‘components listed in the claim body come together to form a *mountable package*, — distinguishing asserted art [Baumhauer] on that basis.” (Req. for Reh’g 7 (citations omitted).)

However, the Federal Circuit held that “Baumhauer discloses a device, not a package” because Baumhauer lacks protection from the environment, rather than adopting a claim construction of “package” requiring a second level interconnect between the package and an external printed circuit board. *MEMS Technology Berhad*, 447 Fed. Appx. at 157–58 (“As the Commission found, Baumhauer Figure 6 discloses a microphone attached directly to a circuit board, not a unit with components that come together to form a mountable package.”). Furthermore, our Decision did not reach the rejection of claims 1, 9, 11, 12, 15, 16, and 19 under 35 U.S.C. § 102(b) as anticipated by Baumhauer. (Dec. 16.)

Combination of Une and Halteren

First, Patent Owner argues that “[t]he Decision does not defend the Examiner’s cursory obviousness assertion” but “[i]nstead, the Decision on

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Appeal articulates a new rationale for obviousness based on the Board's new finding that the microphones of Une and Halteren 'apply similar modes of operation by converting measured vibration into electrical signals.'" (Req. for Reh'g 9.)

However, it is not a new ground of rejection for the Board to respond to Patent Owner's arguments using different language, or restating the reasoning of the rejection in a different way, so long as the evidence relied upon is the same and the "basic thrust of the rejection" is the same. *See In re Kronig*, 539 F.2d 1300, 1303 (CCPA 1976). In particular, citing to a different portion of an applied reference, which "goes no farther than, and merely elaborates upon, what is taught by" the previously-cited portion of that reference relied upon by the Examiner, does not constitute a new ground of rejection. *See In re DBC*, 545 F.3d 1373, 1382 n.5 (Fed. Cir. 2008).

In the Right of Appeal Notice, which incorporates the original Request for *Inter Partes* Reexamination by reference, the Examiner states:

Regarding claim 21, Une (*e.g.* figs. 5 and 8) teaches a method of manufacturing a microphone package comprising: . . . attaching a plurality *condenser microphone units 4/8* to the plurality of package substrates

(RAN 34 (second emphasis added).)

Une does not disclose that the condenser microphone is a silicon condenser microphone. However, Halteren (fig. 2A) shows a package including a silicon condenser microphone 61 (col. 5/ll. 10-13). It would have been obvious to one of ordinary skills in the art at the time of the invention was made to use the *silicon condenser microphone of Halteren* in Une's invention because the substitution of one known element for another would have yield predictable results.

(RAN 34–35 (emphasis added).)

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Furthermore, the original Request for *Inter Partes* Reexamination states:

Fig. 8 further shows a package with *a single condenser microphone*. Accordingly, Une teaches attaching a single microphone to each of the substrates in the panel shown in Fig. 5. Une, however, does not expressly teach that each microphone is in the form of a silicon die.

Halteren teaches a condenser microphone in the form of a silicon die. Specifically, Halteren column 5, lines 37-39 describe the condenser microphone by stating that it requires a flexible membrane and a back plate—requirements for any *condenser* (i.e., capacitive) microphone.

(P. 33 (first emphases added).)

Accordingly, Patent Owner's arguments are inaccurate because both the Right of Appeal Notice and the Request for *Inter Partes* Reexamination presented evidence that both the microphone of Une and the condenser microphone of Halteren are capacitive microphones. In other words, as stated in our Decision, "because silicon microphone 61 of Halteren sends output signals to ASIC 62 and solid state device 8 of Une converts capacitance measured from electret capacitor microphone, both Halteren and Une apply similar modes of operation by converting measured vibration into electrical signals." (Dec. 13.)

Second, Patent Owner argues "[t]he Board's new finding further overlooks that electret microphones rely on a charged backplate whereas MEMS microphones rely on biasing voltage and therefore require additional circuitry within the package—i.e., a *different* mode of operation." (Req. for Reh'g 9–10.)

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However, Patent Owner improperly presents new arguments not raised in the Briefs before the Board. “Arguments not raised, and Evidence not previously relied upon, pursuant to §§41.37, 41.41, or 41.47 are not permitted in the request for rehearing except as permitted by paragraphs (a)(2) through (a)(4) of this section.” 37 C.F.R. § 41.52(a)(1). Patent Owner has not identified a reason for meeting one of these exceptions. Furthermore, other than providing a conclusory statement, Patent Owner has not presented any evidence to support the argument that such combination would not have predictable results. Arguments of counsel cannot take the place of factually supported objective evidence. *See, e.g., In re Huang*, 100 F.3d 135, 139–40 (Fed. Cir. 1996).

Third, Patent Owner argues that “the Board overlooked the objective evidence of unique difficulties associated with MEMS packages and especially packages for fragile MEMS microphones” (Req. for Reh’g 10) and “[t]he Decision overlooks all of this objective evidence, and therefore fails to establish that a person skilled in the art would expect predictable results from substituting the fragile MEMS silicon microphone die of Halteren for the non-MEMS microphone components of Une (*id.* at 11). Similarly, Patent Owner argues that “Halteren’s MEMS microphone would have predictable results [sic] because it overlooks the numerous additional variables identified by the extrinsic evidence as key to the performance of MEMS microphone packages, including geometric properties, heat dissipation, interference reduction, and thermal expandability.” (*Id.* at 9.)

However, as discussed on our Decision (Dec. 13), such evidence submitted by Patent Owner was used to support an argument of bodily

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incorporation and accordingly, is insufficient to rebut the Examiner's prima facie case of obviousness. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. . . . Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.”).

Fourth, Patent Owner argues “[t]he Decision also errs in discounting the testimony from Dr. Peter Loeppert that a MEMS transducer substituted into the Une apparatus would be unlikely to function properly” and “[t]he Board overlooks that Dr. Loeppert's sworn statements are the only evidence of record from an expert with experience in microphone design, manufacturing, and operation, and are corroborated by several disclosures Loeppert cites that were contemporaneous with the time of the invention as to why a MEMS die would be inoperable in Une,” pointing to paragraphs 2–5 of the Loeppert Declaration. (Req. for Reh'g 11 (citations omitted).)

However, as discussed in our Decision (Dec. 14), Dr. Loeppert's testimony, particularly paragraph 6, was based upon the erroneous legal principle that Figure 8 of Une is drawn to scale, when Une is silent with respect to scale. *See Hockerson-Halberstadt, Inc. v. Avia Group Int'l*, 222 F.3d 951, 956 (Fed. Cir. 2000) (“[I]t is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.”).

Last, Patent Owner argues that “the Board offers no record evidence or reasoning that substituting a MEMS microphone die for a

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multicomponent condenser microphone would be feasible, its obviousness finding is erroneous” with a citation to *Ex Parte Kang*, Appeal No. 2011-004083 (PTAB Aug. 1, 2013) (non-precedential). (Req. for Reh’g 11.)

Contrary to Patent Owner’s arguments, our Decision has provided an articulated reasoning with some rational underpinning by stating that “because silicon microphone 61 of Halteren sends output signals to ASIC 62 and solid state device 8 of Une converts capacitance measured from electret capacitor microphone, both Halteren and Une apply similar modes of operation by converting measured vibration into electrical signals.” (Dec. 13.) Furthermore, *Kang* has not been designated as precedential, and therefore is not binding on this panel.

CONCLUSION

The Request for Rehearing has been considered and *denied*.

REHEARING DENIED

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