

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICRON TECHNOLOGY, INC.,
Petitioner,

v.

INNOVATIVE MEMORY SYSTEMS, INC.,
Patent Owner.

Case IPR2016-00324
Patent 7,886,212 B2

Before KARL D. EASTHOM, JAMES B. ARPIN, and
KEVIN W. CHERRY, *Administrative Patent Judges*.

EASTHOM, *Administrative Patent Judge*.

DECISION

Denying Institution of *Inter Partes* Review
35 U.S.C. § 314(a) and 37 C.F.R. § 42.108

I. INTRODUCTION

Micron Technology, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1, 2, 4, 5, 9–11, and 15–17 of U.S. Patent No. 7,866,212 B2 (Ex. 1001, “the ’212 patent”). Pet. 1. Innovative Memory Systems, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

For the reasons given below, we determine that the information presented does not show there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of claims 1, 2, 4, 5, 9–11, and 15–17 (“the challenged claims”) of the ’212 patent.

A. Related Matters

According to the parties, a co-pending lawsuit involves the ’212 patent and other patents owned by Patent Owner: *Innovative Memory Sys., Inc. v. Micron Tech., Inc.*, 14-cv-1480 (D. Del. 2014). See Pet. 2; Paper 6; Paper 7, 1. Petitioner filed petitions challenging the patentability of certain subsets of claims in the involved patents: (1) U.S. Patent No. 6,169,503 B1 (Case IPR2016-00320); (2) U.S. Patent No. 7,045,849 B1 (Case IPR2016-00322); (3) U.S. Patent No. 7,495,953 B2 (Case IPR2016-00323); (4) U.S. Patent No. 7,000,063 B2 (Case IPR2016-00325); (5) U.S. Patent No. 6,324,537 B1 (Case IPR2016-00326); (6) U.S. Patent No. 7,085,159 B2

(Case IPR2016-00327); and (7) U.S. Patent No. 6,901,498 B2 (Case IPR2016-00330). See Pet. 2–3; Paper 6, 4, Paper 7, 1.

B. The '212 Patent

The '212 patent disclose a NAND controller that interfaces between a host device and a flash memory device (e.g., a NAND flash memory device).¹ Ex. 1001, Abstract. The controller transfers read and write commands from the host device to various types of NAND flash memory devices, according to a NAND interface protocol. *Id.* at Abstract, Figs. 5A, 7–8, 6:38–39; 12:21–13:19. In addition to interfacing, the controller performs error correction using error correction codes (“ECC”) via ECC module 132 (*id.* at 4:61–63, 10:62–67) and performs additional functions, such as encryption or address mapping, using an additional “one or more modules 134” (*id.* at 11:6–12). Each of the ECC and additional module may include “hardware, software, firmware, or any combination thereof.” *Id.* at 10:60–61; 11:7–8.

Figure 5A, reproduced below, represents “a block diagram of a NAND controller” according to “exemplary embodiments of the invention.” *Id.* at 9:38–41.

¹ The parties and '212 patent do not discuss the meaning of the acronym NAND, although the '212 patent describes several differences between NAND and NOR type memory devices. See Ex. 1001, 2:58–3:14, 4:55–63. The acronym NAND may refer to a logical “not and” operation and the acronym NOR may refer to a logical “not or” operation.

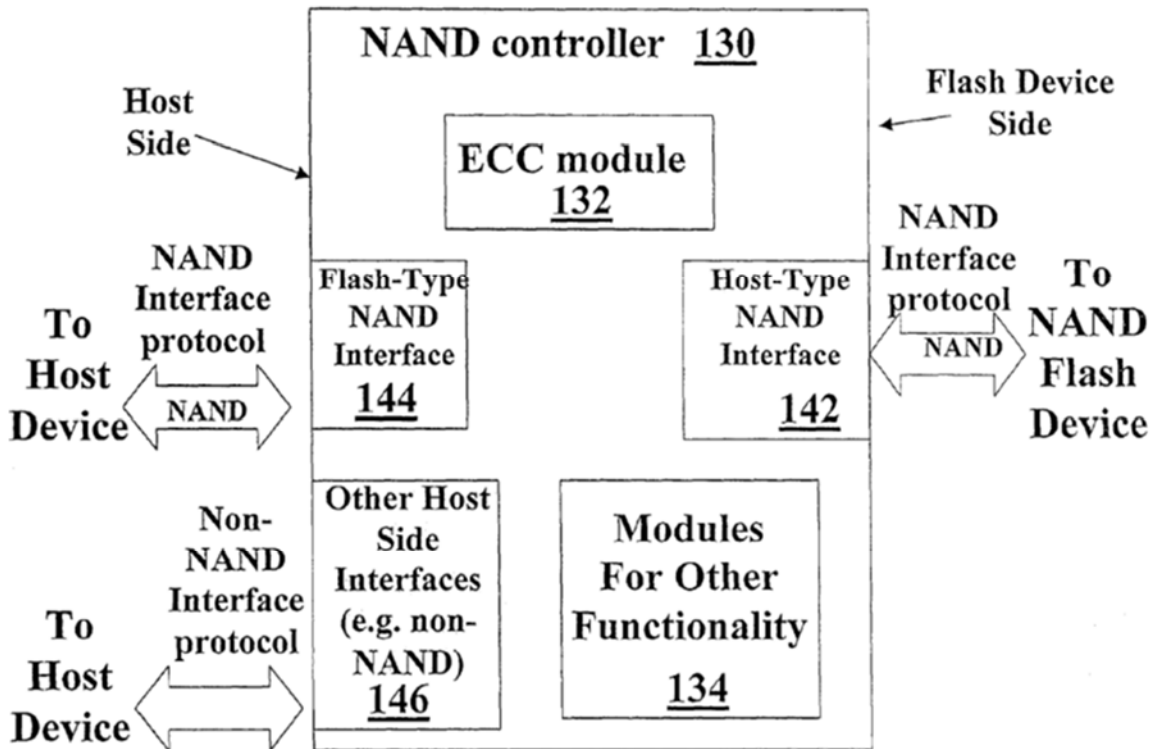


FIG.5A

Figure 5A depicts NAND controller 130 having NAND interface functionality on both the host and NAND flash device sides, ECC module 132 for error correction, and additional modules 134 for providing additional functionality.

C. Illustrative Claims

Of the challenged claims, claims 1, 16 and 17 are independent. Claims 1 and 16 are illustrative and are reproduced below.

1. A controller for interfacing between a host device and a flash memory device fabricated on a flash die, the controller comprising:
 - a) electronic circuitry fabricated on a controller die, said controller die being distinct from the flash die;

- b) a first interface for interfacing between said electronic circuitry and the flash memory device;
- c) a second interface for interfacing between the controller and the host device, wherein said second interface is a NAND interface;
- d) an *error correction module for providing error correction for data received through one of said first and second interface*; and
- e) an *additional functionality module*.

16. A method of writing data from a host device, the method comprising:

- a) providing a flash memory device fabricated on a flash die and a controller fabricated on a controller die, said flash die being distinct from said controller die;
- b) issuing a write command from the host device to the controller according to a NAND interface protocol;
- c) issuing a write command from the controller to the flash memory device according to a NAND interface protocol;
- d) calculating parity bits with the controller; and
- e) *performing a function with an additional functionality module of the controller*.

Ex. 1001, 13:39–52 (emphases added), 14:53–65 (emphasis added).

D. Asserted Grounds of Unpatentability

Petitioner challenges claims of the '212 patent based on the references under 35 U.S.C. § 103(a) as set forth in the following table:

Reference(s)	Claims Challenged
Sakaue (Ex. 1005) ²	1, 2, 4, 9, 10, and 15
Sakaue and Sakui (Ex. 1006) ³	5 and 11
Sakaue and Vainsencher (Ex. 1007) ⁴	16 and 17

² U.S. Patent No. 7,516,371 B2 (Apr. 7, 2009).

³ U.S. Patent No. 5,694,169 B2 (July 15, 2003).

⁴ U.S. Patent App. Pub. No. US 2004/0117688 A1 (June 17, 2004).

Pet. 3–4.

Petitioner also relies on the Declaration of Dr. Vivek Subramanian Pet. vi (designating Ex. 1003).

II. ANALYSIS

A. Patent Owner’s 35 U.S.C. § 325(d) Arguments

Patent Owner argues that the Petition should be denied under 35 U.S.C. § 325(d), because the Examiner previously considered Sakaue during prosecution as evidenced by an Information Disclosure Statement and a “List of References Cited by Applicant and Considered by Examiner.” See Prelim. Resp. 23–24. Although 35 U.S.C. § 325(d) permits the Board to reject a petition because the same or substantially the same prior art or arguments were considered previously in another proceeding before the Office, it does not require the Board to do so. We decline to reject the Petition merely because the Examiner previously considered Sakaue. The record here presents detailed arguments and evidence related to the scope of the challenged claims, and with respect to Sakaue, not before the Examiner, and we decline to institute for other reasons as discussed below. See Pet. 4–9, 17–19, 23–60.

B. Claim Interpretation

In an *inter partes* review, the Board construes claims by applying the broadest reasonable interpretation in light of the specification. 37 C.F.R. § 42.100(b); *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278–79 (Fed. Cir. 2015), *cert. granted sub nom. Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 890 (mem.) (2016). Under this standard, absent any special definitions, claim terms or phrases are given their ordinary and customary meaning, as

would be understood by one of ordinary skill in the art, in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

The '212 patent claims recite terms that Petitioner asserts fall under 35 U.S.C. § 112 ¶ 6.⁵ Pet. 11–15. Under the statute, “[a]n element in a claim for a combination may be expressed as a means . . . for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” 35 U.S.C. § 112 ¶ 6. Using the term “means” in a “means for” context creates a rebuttable presumption that 35 U.S.C. § 112 ¶ 6 applies. *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348, 1349 (Fed. Cir. 2015) (en banc) (“use of the word ‘means’ creates a presumption that § 112, ¶ 6 applies”). However, “merely because an element does not include the word ‘means’ does not automatically prevent that element from being construed as a means-plus-function element.” *Id.* at 1348 (quoting *Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531 (Fed. Cir. 1996)). “The standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.” *Id.* at 1349 (quoting *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996)). “When a claim term lacks the word ‘means,’ the presumption can be overcome and § 112, para. 6 will apply if the challenger

⁵ Statutory citations are to the pre-AIA version of 35 U.S.C. § 112, because the '212 patent's filing date antedates the effective date of Section 4(c) of the Leahy-Smith America Invents Act (AIA) (September 16, 2012) (re-designating 35 U.S.C. § 112 ¶ 6 as 35 U.S.C. § 112(f)).

demonstrates that the claim term fails to ‘recite sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function.’” *Id.* (quoting *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)).

Construing a means-plus-function limitation under 35 U.S.C. § 112 ¶ 6 involves two steps: (1) identifying the claimed function and (2) identifying in the specification the corresponding structure that performs the claimed function. *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1210 (Fed. Cir. 2003); *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1119 (Fed. Cir. 2002).

Our Rules require a petition to identify the corresponding structure in proposing a construction for a means-plus-function claim limitation: “Where the claim to be construed contains a means-plus-function or step-plus-function limitation, as permitted under 35 U.S.C. § 112 [¶ 6], the construction of the claim must identify the specific portions of the specification that describe the structure, material, or acts corresponding to each claimed function.” 37 C.F.R. § 42.104(b)(3).

If the scope and meaning of the claims cannot be determined without speculation, the differences between the challenged claims and the prior art cannot be ascertained. *BlackBerry Corp. v. MobileMedia Ideas, LLC*, Case IPR2013-00036, slip op. at 19–20 (PTAB Mar. 7, 2014) (Paper 65) (citing *In re Steele*, 305 F.2d 859, 862–63 (CCPA 1962) and reasoning that “the prior art grounds of unpatentability must fall, *pro forma*, because they are based on speculative assumption as to the meaning of the claims”). In other words, “[w]ithout ascertaining the proper claim scope, we cannot conduct a necessary factual inquiry for determining obviousness—ascertaining

differences between the claimed subject matter and the prior art.” *Id.* at 20 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)).

The Petition does not identify, and we are unable to determine, the scope and meaning of the two following claim phrases: (1) “an error correction module for providing error correction for data received through one of said first and second interface,” and (2) “an additional functionality module.”

1. “an error correction module for providing error correction for data received through one of said first and second interface”

Claim 1 recites the above-noted phrase. Challenged claims 2, 4, 5, 9, 10, 11, and 15 depend directly or indirectly from claim 1. Petitioner contends that the phrase is a means-plus-function phrase governed by 35 U.S.C. § 112 ¶ 6, because “the term ‘module’ is a nonce word and does not convey sufficient structure. Also, the prefix ‘error correction’ does not add any structural significance to the term ‘module.’” Pet. 13 (citing *Williamson*, 792 F.3d at 1348–49); see *Ex parte Rodriguez*, Appeal No. 2008-000693, slip op. at 14, 21–23 (BPAI Oct. 1, 2009) (precedential) (discussing § 112 ¶ 6 and nonce words).

Petitioner also submits that whether or not 35 U.S.C. § 112 ¶ 6 governs the phrase, the disclosed structure for the recited module is “hardware, software, firmware, or any combination thereof.” Pet. 12 (citing Ex. 1001, 10:57–61); Ex. 1001, 10:60–61 (“The ECC Module 132 may include hardware, software, firmware or any combination thereof.”). Patent Owner agrees to the latter construction, but only under the condition that 35 U.S.C. § 112 ¶ 6 does not apply. Prelim. Resp. 12.

Nevertheless, Petitioner also “believes that th[e phrase] is indefinite because th[ere] is insufficient structure for the function ‘providing error correction for data received through one of said first and second interface.’” Pet. 14 n.7. Without addressing indefiniteness under 35 U.S.C. 112 ¶ 2, in *inter partes* petitions, as noted above, if the scope and meaning of the claims cannot be determined without speculation, the differences between the claimed invention and the prior art cannot be ascertained. See *BlackBerry Corp.*, Paper 65, 19–20; *In re Steele*, 305 F.2d at 862–63.

Patent Owner disagrees with Petitioner’s means-plus-function contention and “submits that . . . when a claim term lacks the term ‘means’ there is a presumption that 35 U.S.C. § 112, Para. 6, does not apply.” Prelim. Resp. 11 (citing *Williamson*, 792 F.3d at 1349). Patent Owner also contends that

[t]he term ‘module’ on its own connotes a sufficiently definite meaning as the name for the structure. However, even if the term ‘module’ were determined to be a ‘nonce’ word, the express language of the claim includes the adjectival prefix ‘error correction.’ As noted above, when a “nonce” word has an adjectival prefix such as “detent,” “connector,” or “maintenance,” the Federal Circuit generally views the term as sufficiently structural even if it is defined in functional terms. Prelim. Resp. 11–12 (citing *Greenberg*, 91 F.3d at 1583–84 (Fed. Cir. 1996); *Kegal Co. v. AMF Bowling, Inc.*, 127 F.3d 1420, 1427–28 (Fed. Cir. 1997)).

Petitioner’s contention that 35 U.S.C. § 112 ¶ 6 governs the term “error correction module” is persuasive. Contrary to Patent Owner’s arguments, nothing in the claims or the ’212 patent Specification indicates that a skilled artisan would recognize “error correction” or “error correction

module” as a name for structure. *See Rodriguez*, slip op. at 22–23. The term “error correction” signifies the function of correcting errors, as performed by some type of hardware or algorithm working with a special computer processor. *See Ex. 1001*, 10:34–38, 10:62–11:5 (briefly describing functionality involving flexible error correction codes depending on the host’s capability and the NAND memory device’s reliability). The ’212 patent Specification also indicates that the claimed controller and ECC module applies to “future . . . NAND devices . . . expected to be less reliable than current . . . devices and to require a much stronger ECC capability.” *Ex. 1001*, 6:57–59; *see also id.* at 7:30–39 (describing “ongoing need . . . [to] provide compatibility between a host device . . . and successive generations of NAND flash memory devices”). According further to the Specification, the acronym “ECC” stands for “Error Correction Codes”—indicating that error correction requires some type of coding (via ECC module 132). *See Ex. 1001*, 4:61–63; Fig. 5A.

According to *Williamson*, “[g]eneric terms such as ‘mechanism,’ ‘element,’ ‘device,’ and other nonce words that reflect nothing more than verbal constructs may be used in a claim in a manner that is tantamount to using the word “means” because they ‘typically do not connote sufficiently definite structure’ and therefore may invoke § 112, para. 6.” *Williamson*, 792 F.3d at 1350 (quoting *Mass. Inst. of Tech. & Elecs. for Imaging, Inc. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006)). As stated above, *Williamson* informs that “[t]he standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.” *Id.* at 1349 (citing *Greenberg*, 91 F.3d at 1583).

As described above, the ECC functionality in the '212 patent indicates flexible error correction coding functionality without any description of a circuit or special processor algorithm as corresponding structure. See Ex. 1001, 10:34–38, 10:62–11:5 (flexible ECC), Fig. 5A (black box for ECC module 132); Ex. 1003 ¶¶ 49–51. The only disclosed structure identified in the Specification by the parties is the generic structure noted above: “The ECC Module 132 may include hardware, software, firmware, or any combination thereof.” Ex. 1001, 10:60–61, Pet. 11 (citing Ex. 1001, 10:57–61); see Prelim. Resp. 12 (agreeing to this structure if § 112 ¶ 6 does not apply). Based on the lack of cognizable corresponding structure for the “error correction module,” under *Williamson*, Petitioner rebuts the presumption that the phrase is not in means-plus-function format.

Williamson dictates that under § 112 ¶ 6, “the patentee must disclose adequate corresponding structure to perform all of the claimed functions.” *Id.* at 1351–52. The '212 patent Specification does not disclose any hardware or algorithmic structure for performing the function of “providing error correction for data received through one of said first and second interface.” It discloses “ECC module 132” that performs error correction. Ex. 1001, 13:10. Figure 5A simply shows a black box for ECC module 132. The Specification states that “[i]n step 550 the external NAND controller 130 uses the parity bits for correcting errors in the data bytes (e.g., with the ECC module 132).” *Id.* at 13:8–10. The Specification does not describe sufficiently, if at all, how ECC module 132 corrects errors indicated by the parity bits.

The Specification does not state or imply that ECC module 132 corrects errors by using known “off-the-shelf” error correction techniques.

As described above, the Specification indicates to the contrary, by disclosing flexible error correction functionality to accommodate different hosts and NAND memory devices, including existing and future NAND memory devices. See Ex. 1001, Abstract, 6:57–59, 10:34–38, 10:62–11:5; cf. *EON Corp. IP Holdings, LLC v. AT & T Mobility LLC*, 785 F.3d 616, 623, 621–22 (Fed. Cir. 2015) (“[The district court erred in holding that ‘special programming’ does not encompass commercially available off-the-shelf software. To the contrary, and as originally described in *Katz*, ‘special programming’ includes any functionality that is not ‘coextensive’ with a microprocessor or general purpose computer.”) (citing in *In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1316 (Fed. Cir. 2011)). “A microprocessor or general purpose computer lends sufficient structure only to basic functions of a microprocessor. All other computer-implemented functions require disclosure of an algorithm.” *EON Corp.*, 785 F.3d at 621–22 (“As we stated in *Katz*, a microprocessor can serve as a structure for a computer-implemented function only where the claimed function is ‘coextensive’ with a microprocessor itself. . . . Examples of such coextensive functions are ‘receiving’ data, ‘storing’ data, and ‘processing’ data.”) (citing in *Katz*, 639 F.3d at 1316); *Noah Systems, Inc., v. Intuit Inc.*, 675 F.3d 1302, 1316–17 & n.9 (Fed. Cir. 2012) (“off-the-shelf accounting software” for *personal computers* cannot fill the gaps for an algorithm required in *processor* claims (emphases added)).⁶

⁶ *EON* and *Noah* do not foreclose or address squarely the situation in which a patent discloses and identifies corresponding structure as known, or “off-the-shelf,” hardware and/or software clearly linked to a claimed function at issue. In *Atmel Corp. v. Information Storage Devices, Inc.*, 198 F.3d 1374,

Based on the foregoing discussion, it is not clear what error correction techniques or algorithms the challenged claims encompass. As indicated above, the Specification only describes error correction in terms of generalized functionality. *See* Ex. 1001, 6:57–59, 7:30–39, 10:34–39, 10:57–11:12, 13:8–10 (ECC module 134 may correct some or all of the errors, depending on devices, by reading parity bits). “That various methods might exist to perform a function is ‘precisely why’ the disclosure of specific programming is required.” *Noah Systems*, 675 F.3d at 1317 (patentee cannot avoid disclosing specific structure by “find[ing] structure . . . in the common ken of a skilled computer artisan”). Absent sufficient hardware structure sufficiently linked to the claimed function, a patentee must disclose a special purpose computer (i.e., an algorithm). *See Williamson*, 792 F.3d at 1352–53; *Rodriguez*, slip op. at 15–16. The ’212 patent Specification fails to disclose any algorithm for error correction.

Based on the foregoing discussion, Petitioner has not identified, and we are unable to determine, the scope and meaning of “an error correction module for providing error correction for data received through one of said

1381 (Fed. Cir. 1999), the patentee claimed an apparatus that included a “high voltage generating means” limitation, thereby invoking 35 U.S.C. 112 ¶ 6. The specification incorporated by reference a non-patent document from a technical journal, which described a particular high voltage generating circuit. The Federal Circuit concluded that the title of the article in the specification may, by itself, be sufficient to indicate to one skilled in the art the precise structure of the means for performing the recited function, and it remanded the case to the district court “to consider the knowledge of one skilled in the art that indicated, based on unrefuted testimony, that the specification disclosed sufficient structure corresponding to the high-voltage means limitation.” *Id.* at 1382.

first and second interface,” as recited in challenged claims 1, 2, 4, 5, 9, 10, 11, and 15.

2. “additional functionality module” and “performing a function with an additional functionality module of the controller”

Claim 1 recites “the controller comprising . . . an additional functionality module.” Claims 2, 4, 5, 9–11, and 15 depend directly or indirectly from claim 1. Claims 16 and 17 recite “performing a function with an additional functionality module of the controller.” For reasons similar to those discussed above, Petitioner contends that “module” is a nonce word and that the term an “additional functionality module” constitutes a means-plus-function limitation governed by 35 U.S.C. § 112 ¶ 6. Pet. 12 (citing *Williamson*, 792 F.3d at 1360).

Petitioner contends that “the prefix ‘additional functionality’ does not add any structural significance to the term ‘module.’ . . . [and] the remainder of the claim language does nothing to inform a person of ordinary skill in the art as to the structure of the limitation.” *Id.* at 12. Petitioner also contends that the term “additional functionality module” is “indefinite because this is insufficient structure for the function “performing additional functionality.” Pet. 13 n.6.

In similar arguments presented as to the word “module” addressed in the “error correction module” discussion above, Patent Owner disagrees and responds as follows:

[W]hen a claim term lacks the word “means,” there is a presumption that 35 U.S.C. § 112, Para. 6 does not apply. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015). That is the case here in that “means” does not exist in the express language of the claim. The claim term “module,” on its

own, connotes a sufficiently definite meaning as the name for the structure. Moreover, the claim includes an adjectival prefix “functionality.” So even if “module” is viewed as a “nonce” word, it should still be construed as having sufficient structure to avoid falling within 35 U.S.C. § 112, Para. 6, because when a ‘nonce’ word has an adjectival prefix such as “detent,” “connector,” or “maintenance,” the Federal Circuit generally views the term as sufficiently structural even if it is defined in functional terms. See *Greenberg v. Ethicon Engo-Surgery, Inc.*, 91 F.3d 1580, 1583-88 (Fed. Cir. 1996); *Kegal Co. v. AMF Bowling, Inc.*, 127 F.3d 1420, 1427-28 (Fed. Cir. 1997). The adjectival prefix “functionality” provides the same amount of structure as “detent,” “connector,” or “maintenance.” Therefore, even if the term ‘module’ on its own does not connote a sufficiently definite meaning as the name for a structure, the adjectival prefix “functionality” is sufficient for these claim terms to not be construed as means plus function under 35 U.S.C. § 112, Para. 6.

Prelim. Resp. 7–8.

Patent Owner’s argument is not persuasive. For reasons similar to those explained above, following *Williamson*, the term “module” constitutes a nonce word in the term “additional functionality module.” Contrary to Patent Owner’s argument, the term “functionality” here does not provide the same amount of structure as “detent,” “connector,” or “maintenance.” The term “additional functionality module” simply means the module can provide another function. The ’212 Specification identifies “other *functionality*, such as encryption *functionality* or address mapping” (Ex. 1001, 11:9–10 (emphases added)), and Patent Owner specifically quotes this disclosure as providing examples of “additional functionality” (in attempting to distinguish over the prior art). Prelim. Resp. 32 (citing Ex. 1001, 11:6–12).

The only disclosed structure identified in the Specification by Petitioner is the following generic structure: “NAND controller 130 may optionally also include one or more modules 134 (e.g. *hardware, software, firmware or any combination thereof*) for providing other functionality, such as encryption functionality or address mapping that maps logical flash addresses received from the host into physical flash addresses sent to the flash device.” Ex. 1001, 11:6–12 (emphasis added); Pet. 12 (citing Ex. 1001, 11:6–12).⁷

Under the circumstances presented, the phrase “additional functionality module” is equivalent to the phrase “means for additional functionality.” *See Mass. Inst. of Tech.*, 462 F.3d at 1354, (“colorant selection mechanism” constitutes a means-plus-function phrase, the term “colorant selection” was not defined in the specification, had no dictionary definition or generally understood meaning in the art, and does not connote sufficient structure to a person of ordinary skill in the art to avoid 35 U.S.C. 112 ¶ 6 treatment); *Signtech USA, Ltd. v. Vutek, Inc.*, 174 F.3d 1352, 1356 (Fed. Cir. 1999) (“ink delivery means positioned on” invokes 35 U.S.C. 112 ¶ 6, because the phrase “ink delivery means” is equivalent to “means for ink delivery”). Accordingly, Petitioner rebuts the presumption that an “additional functionality module” is not a means-plus-function term.

⁷ Based on this disclosure, and similar to its proposed construction of “error correction module,” Petitioner contends that whether or not 35 U.S.C. § 112 ¶ 6 governs the “module” term, it would mean “hardware, software, firmware, or any combination thereof for providing error correction for data received through one of said first and second interface.” Pet. 12–13 (citing Ex. 1001, 11:6–12). Patent Owner does not respond explicitly to this contention. *See* Prelim. Resp. 7–11.

As indicated above, the Specification does not convey any algorithmic structure, or sufficient hardware structure, for performing the function of providing an “additional functionality.” Patent Owner contends that “additional functionality” means “a module that provides a functionality different from, and in addition to, functionality relating to interfacing and error correction.” Prelim. Resp. 9, *see also* Prelim. Resp. 29–32 (arguing that Sakaue fails to disclose or teach an “additional functionality module”). As indicated above, the Specification provides two examples provided by “one or more modules 134 (e.g., including hardware, software, firmware or any combination thereof) for providing other functionality, such as encryption functionality or address mapping that maps logical flash addresses received from the host into physical flash addresses sent to the flash device.” Ex. 1001, 11:6–11.

Notwithstanding Patent Owner’s arguments and proffered claim construction, the disclosed “additional functionality” examples of address mapping and encryption necessarily must be related in some fashion to interfacing, because the controller somehow must access the interfaced data going to and from the NAND memory to encrypt it, and it also must interact with data addresses to perform address mapping. *See, e.g.*, Ex. 1001, 11:10–11 (“other functionality, such as encryption functionality or address mapping”), 12:64–65 (“NAND interface protocol” uses “address bytes”). In any event, some type of algorithm must be employed to handle whatever “additional functionality” the claims encompass. Furthermore, neither Petitioner, nor Patent Owner, identifies a disclosed example of “additional functionality” that does not require an algorithm (i.e., falling under the limited *Katz* exception, *see Katz*, 639 F.3d at 1316).

Based on the Specification and Patent Owner's arguments, "additional functionality" may encompass a number of unspecified functions. See Prelim. Resp. 9 (discussed above); Ex. 1001, 11:6–12. The Specification does not provide corresponding hardware or algorithmic structure for providing unspecified additional functionality, much less an algorithm or hardware for the two example functions provided. Even if the Specification sufficiently outlines the scope of the generically claimed "additional functionality," "[i]n exchange for being able to draft a claim limitation in purely functional language, '[t]he applicant must describe in the patent specification some structure which performs the specified function.'" *Noah Systems*, 675 F.3d at 1318 (quoting *Valmont Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1042 (Fed. Cir. 1993)). "Requiring the disclosure of a corresponding structure, thus, 'confines the breadth of protection otherwise permitted by' purely functional claiming." *Id.* (citing *Valmont*, 983 F.2d at 1042). "Without disclosing any corresponding structure, 'one of skill simply cannot perceive the bounds of the invention.'" *Id.* at 1318 (quoting *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1341 (Fed. Cir. 2008)).

By neither disclosing clearly what the claimed function encompasses nor its corresponding structure, the Specification also does not clearly link corresponding structure "to the function recited in the claim." See *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1334 (Fed. Cir. 2004) (citations and quotation marks omitted) ("[S]tructure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim."); *Cardiac Pacemakers*, 296 F.3d at 1113 ("the

structure must not only perform the claimed function, but the specification must clearly associate the structure with the performance of the function”).

Based on the foregoing discussion, Petitioner has not identified, and we are unable to determine, the scope and meaning of an “additional functionality module,” as recited in the challenged claims.

III. CONCLUSION

As explained above, determining if the prior art renders the claims obvious necessarily requires resolving facts and determining the scope of the claims. *See BlackBerry*, Paper 65, 19–20. We are unable to determine the scope and meaning of “an error correction module for providing error correction for data received through one of said first and second interface,” as recited in claims 1, 2, 4, 5, 9, 10, 11, and 15. We also are unable to determine the scope and meaning of an “additional functionality module,” as recited in the challenged claims. Accordingly, “the prior art grounds of unpatentability must fall, *pro forma*, because they [would be] based on speculative assumption as to the meaning of the claims.” *See id.* at 20 (citing *In re Steele*, 305 F.2d at 862–63). Therefore, we decline to institute an *inter partes* review of claims 1, 2, 4, 5, 9–11, and 15–17.

IV. ORDER

In consideration of the foregoing, it is ORDERED that the Petition is *denied*, and no *inter partes* review is instituted.

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