

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

ST. CLAIR INTELLECTUAL PROPERTY
CONSULTANTS, INC.,

Plaintiff,

v.

APPLE, INC., HIGH TECH COMPUTER CORP., a/k/a/
HTC CORP., HTC (B.V.I.), HTC AMERICA, INC.,
EXEDEA, INC., RESEARCH IN MOTION, LTD., and
RESEARCH IN MOTION CORPORATION

Defendants.

C.A. No. 10-982-LPS

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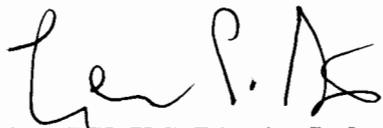
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MEMORANDUM OPINION

August 7, 2012
Wilmington, Delaware



STARK, U.S. District Judge:

Pending before the Court is the issue of claim construction of various disputed terms found in U.S. Patent Nos. 5,710,929 (the “’929 patent”); 6,079,025 (the “’025 patent”); 5,758,175 (the “’175 patent”); 5,892,959 (the “’959 patent”); 5,630,163 (the “’163 patent”); and 5,822,610 (the “’610 patent”) (collectively, the “patents-in-suit”).

I. BACKGROUND

Plaintiff St. Clair Intellectual Property Consultants, Inc. (“St. Clair”) filed this patent infringement action against Defendants Apple, Inc., High Tech Computer Corp., HTC America, Inc., HTC (B.V.I.), Exedea, Inc., Research in Motion Ltd., and Research in Motion Corporation (collectively, “Defendants”) on November 16, 2010. (D.I. 1)¹ It is the most recent lawsuit brought by St. Clair in a series of cases involving the patents-in-suit.² The patents-in-suit relate to ways in which a computer system can utilize various techniques to achieve improved power conservation. The details of the patents-in-suit are set forth more fully in the Court’s prior Memorandum Opinion in a related case. (See C.A. No. 09-354 (“*St. Clair I*”), D.I. 747)

The parties completed briefing on claim construction on November 4, 2011. (D.I. 70) The Court held a *Markman* hearing on December 16, 2011. See Claim Construction Hr’g Tr., Dec. 16, 2011 (D.I. 88) (hereinafter “Tr.”). This Memorandum Opinion will address the construction of terms that were not previously construed by the Court.³

¹Unless otherwise indicated, all citations to the docket refer to C.A. No. 10-982-LPS.

²Only the ’610 patent was not at issue in the earlier cases.

³The Court previously held a *Markman* hearing and issued a claim construction order in *St. Clair I*, which addressed thirteen of the terms in dispute in the present action. See C.A. No. 09-354, D.I. 747. The parties do not propose new constructions for twelve of the thirteen

II. LEGAL STANDARDS

“It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (internal quotation marks omitted). Construing the claims of a patent presents a question of law. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977-78 (Fed. Cir. 1995), *aff’d*, 517 U.S. 370, 388-90 (1996). “[T]here is no magic formula or catechism for conducting claim construction.” *Phillips*, 415 F.3d at 1324. Instead, the court is free to attach the appropriate weight to appropriate sources “in light of the statutes and policies that inform patent law.” *Id.*

“[T]he words of a claim are generally given their ordinary and customary meaning . . . [which is] the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Id.* at 1312-13 (internal citations and quotation marks omitted). “[T]he ordinary meaning of a claim term is its meaning to the ordinary artisan after reading the entire patent.” *Id.* at 1321 (internal quotation marks omitted). The patent 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. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

While “the claims themselves provide substantial guidance as to the meaning of particular claim terms,” the context of the surrounding words of the claim also must be considered.

Phillips, 415 F.3d at 1314. Furthermore, “[o]ther claims of the patent in question, both asserted

previously construed terms. (*See* D.I. 60 at 1) Defendants propose a new construction for the term “idle threads.” (*See id.* at 3) However, the Court declines to re-construct the term “idle threads.”

and unasserted, can also be valuable sources of enlightenment . . . [b]ecause claim terms are normally used consistently throughout the patent . . .” *Id.* (internal citation omitted).

It is likewise true that “[d]ifferences among claims can also be a useful guide For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.” *Id.* at 1314-15 (internal citation omitted). This “presumption is especially strong when the limitation in dispute is the only meaningful difference between an independent and dependent claim, and one party is urging that the limitation in the dependent claim should be read into the independent claim.” *SunRace Roots Enter. Co., Ltd. v. SRAM Corp.*, 336 F.3d 1298, 1303 (Fed. Cir. 2003).

It is also possible that “the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s lexicography governs.” *Phillips*, 415 F.3d at 1316. It bears emphasis that “[e]ven when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (internal quotation marks omitted), *aff’d*, 481 F.3d 1371 (Fed. Cir. 2007).

In addition to the specification, a court “should also consider the patent’s prosecution history, if it is in evidence.” *Markman*, 52 F.3d at 980. The prosecution history, which is “intrinsic evidence,” “consists of the complete record of the proceedings before the PTO [Patent and Trademark Office] and includes the prior art cited during the examination of the patent.”

Phillips, 415 F.3d at 1317. “[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Id.*

A court also may rely on “extrinsic evidence,” which “consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *Markman*, 52 F.3d at 980. For instance, technical dictionaries can assist the court in determining the meaning of a term to those of skill in the relevant art because such dictionaries “endeavor to collect the accepted meanings of terms used in various fields of science and technology.” *Phillips*, 415 F.3d at 1318. In addition, expert testimony can be useful “to ensure that the court’s understanding of the technical aspects of the patent is consistent with that of a person of ordinary skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field.” *Id.* Nonetheless, courts must not lose sight of the fact that “expert reports and testimony [are] generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence.” *Id.* Overall, while extrinsic evidence “may be useful” to the court, it is “less reliable” than intrinsic evidence, and its consideration “is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.” *Id.* at 1318-19.

Finally, “[t]he construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows

that “a claim interpretation that would exclude the inventor’s device is rarely the correct interpretation.” *Osram GmbH v. Int’l Trade Comm’n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007).

III. CONSTRUCTION OF DISPUTED TERMS

A. “accumulating”⁴

Plaintiff’s Proposed Construction: “Numerically accumulating.”

Defendants’ Proposed Construction: “Adding to or generating a sum.”

Court’s Construction: “Adding to or generating a total.”⁵

The claim language and specification support the Court’s construction. Together they indicate that numeric values are combined in an ongoing fashion. (*See* ’959 patent col.3 ll.11-16 (“The power management software monitor forms an activity measurement as a running total of the function call numbers as the function calls are made. Whenever a function call is made (either active or conservation), the power management software monitor algebraically adds the function call number to the accumulated value”); *id.* at col.51 ll.64-67 (claiming “an activity count accumulator for accumulating an activity count upon the occurrence of each of said plurality of activities including: means for adding to a stored activity count, upon the occurrence

⁴This disputed term appears in claims 2 and 7 of the ’959 patent and claim 20 of the ’175 patent. The parties acknowledge that their dispute regarding construction of the term “accumulating” mirrors the dispute raised in *St. Clair I* regarding construction of the term “activity count.” (*See* D.I. 60 at 13; D.I. 59 at 5) The parties have also requested that the Court construe related claim terms involving the disputed term “accumulating.” (*See* D.I. 59, Ex. 2 (displaying parties’ competing constructions for various related terms)) The Court will adopt Defendants’ proposed constructions for these related terms; however, consistent with its construction of the word “accumulating,” the Court will substitute the word “total” for the word “sum.”

⁵The Court’s construction uses the word “total” instead of sum, consistent with the Court’s prior construction of the term “activity count” in *St. Clair I*.

of any one of said plurality of activities”); ’175 patent col.90 ll.41-44 (“accumulating an activity count as the sum of said activity values for each activity occurring during a predetermined monitoring period”))

Further, the Court’s construction is consistent with the Standard Dictionary of Electrical and Electronics Terms definition of the term “accumulator.” See IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONICS TERMS (3d ed. 1984) at 17 (defining “accumulator” as device that “retains a number (the augend) adds to it another number (the addend) and replaces the augend with the sum”). By contrast, St. Clair’s proposed construction is too broad and does not comport with the way the term accumulating is used in the art.

B. “execution of a predefined code thread”⁶

Plaintiff’s Proposed Construction: “Execution of a predefined code thread, which is a small or elemental code segment.”

Defendants’ Proposed Construction: “CPU execution of a predefined, smallest or most elemental code segment that receives function calls made by applications to the operation system.”

Court’s Construction: “Execution of a predefined code thread, which is the smallest or most elemental executable code segment.”

The Court’s construction is supported by the claim language and specification. (See ’959 patent col.3 ll.1-49; *id.* at col.8 l.15-col.10 l.4; *see also* ’025 patent col.55 l.46-col.56 l.17; ’175 patent col.93 ll.29-61) Additionally, the Court’s construction is supported by the prosecution

⁶This disputed term appears in claim 1 of the ’025 patent. The parties also request that the Court construe various related terms. (See D.I. 59, Ex. 2 at 3) In light of the fact that the Court did not adopt either party’s proposed construction for the term “execution of a predefined code thread,” the Court declines to construe additional related claim language at this time. The parties will need to advise the Court whether a dispute as to the proper construction of these related terms remains.

history of the '959 patent. (See D.I. 288, Ex. 19 at 17 (wherein patentee explained that “thread” is “smallest or most elemental executable code segment”))

The Court’s construction also properly applies the doctrine of claim differentiation. Specifically, claim 39 of the '025 patent depends upon claim 38, and claim 39 explicitly requires an “idle process [that] makes at least one function call.” ('025 patent col.56 ll.18-19) Similarly, claim 41 of the '025 patent depends upon claim 38 and requires a “statistical evaluation [that] comprises statistical evaluation of active and idle function calls.” (*Id.* at col.56 ll.20-21) Thus, under the doctrine of claim differentiation, the Court presumes that claim 38 of the '025 patent does not require at least one function call because the dependent claims contain this limitation. See *Libel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004) (“As this court has frequently stated, the presence of a dependent claim that adds a particular limitation raises a presumption that the limitation in question is not found in the independent claim.”).

Defendants’ construction improperly attempts to graft limitations from the written description onto the claims. See *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1340 (Fed. Cir. 2001) (stating that “one of the cardinal sins of patent law [is] reading a limitation from the written description into the claims”); see also *Kara Tech. Inc. v. Stamps.com.*, 582 F.3d 1341, 1348 (Fed. Cir. 2009) (“The patentee is entitled to the full scope of his claims, and we will not limit him to his preferred embodiment or import a limitation from the specification into the claims.”). The Court rejects Defendants’ attempt to import a CPU limitation into the construction because the plain language of the claim itself does not mandate such a limitation, and there is no evidence of a “clear and unmistakable disavowal” to narrow the

claim term “execution” to CPU execution.

Accordingly, the Court declines to adopt Defendants’ proposed construction. However, the Court will modify St. Clair’s proposed construction to include the proper construction of the term “thread.” (See C.A. No. 09-354, D.I. 747 at 22 (construing thread as “smallest or most elemental executable code segment”))

C. “single common system bus which directly connects the CPU device with the input/output devices”⁷ and related terms⁸

Plaintiff’s Proposed Construction: “A communications bus that connects the CPU with input/output devices so that the CPU and input/output devices can communicate with each other.”

Defendants’ Proposed Construction: “A set of one or more shared conductors that connect the CPU to the I/O devices [and memory] with no intervening buses.”⁹

Court’s Construction: “A set of one or more shared conductors that connect the CPU to the I/O devices [and memory] with no intervening buses.”

The Court’s constructions of this disputed term and its related terms are supported by the plain language of the claims (*see* ’929 patent col.41 l.37- col.42 l.12; *id.* at col.42 l.61-col.44 l.26; ’175 patent col.89 l.32- col.90 l.20; *id.* at col.91 l.31-col.92 l.30) and the intrinsic evidence

⁷This disputed term appears in claims 9 and 11 of the ’929 patent and claim 17 of the ’175 patent.

⁸The related terms are: “system bus which directly connects the CPU device with said input/output circuit” (’175 patent claims 12, 16); “common system bus which connects said CPU with . . . said input/output circuits” (’929 patent claim 10); and “system bus which connects the CPU device with the input/output device” (’175 patent claim 20). Consistent with its construction of the main disputed term, the Court will adopt Defendants’ proposed constructions for each of these related disputed terms.

⁹This proposed construction is a compromise, which Defendants proposed in their responsive claim construction brief. (*See* D.I. 70 at 12 n.10)

(see '929 patent Fig. 1; *id.* at col.4 ll.36-48). Construing “bus” as a “set of shared conductors” will assist the jury in understanding the technical meaning of this term. *See Funai Electric Co., Ltd. v. Daewoo Elecs. Corp.*, 616 F.3d 1357, 1366 (Fed. Cir. 2010) (“The criterion is whether the explanation aids the court and the jury in understanding the term as it is used in the claimed invention.”). For four of the claims at issue, the claim language plainly requires that the bus be “directly connect[ed]” to the CPU and the I/O devices. (*See* '929 patent col.41 l.37- col.42 l.12; *id.* at col.42 l.61-col.44 l.26; '175 patent col.89 l.32-col.90 l.20; *id.* at col.91 l.31-col.92 l.30) For the two claims that do not explicitly contain the “directly connected” limitation, this limitation is implicit in the written description and prosecution history. (*See* '929 patent Fig. 1; D.I. 55, Ex. 2 at 15-16; *id.*, Ex. 5 at 2, 16 (stating that claims relate to systems in which I/O devices are “directly connected” to same “single common bus”)) During prosecution of the '929 patent, the patentee amended his claims to include the “directly connects” limitation, in order to distinguish the patented invention from a prior art distributed computing system claimed in a previous patent – the Engle patent. (*See id.*, Ex. 2 at 15-16 (“Engle is not directed to a non-distributed computer system in which each of the individual input/output devices . . . are ‘directly connected’ to the same ‘single common bus’ as claimed.”)) The Court’s construction clarifies that direct connection is achieved when there are no intervening buses. (*See* '929 patent Fig. 1 (illustrating that bus directly connects CPU and I/O device without any intervening buses); *see also id.* at col.4 ll.36-48; *see generally* D.I. 70, Ex. 2 (defining “directly” to mean “without any intervening . . . instrumentality” (quoting WEBSTER’S THIRD NEW INT’L DICTIONARY (1986) at 641)))

D. “generating [or generates] a first inactivity indicator after a first predetermined period of inactivity and a second inactivity indicator a second predetermined period of inactivity after generating the first inactivity indicator”¹⁰

Plaintiff’s Proposed Construction: No claim construction is required.¹¹ However, if the Court chooses to construe this claim, it should be construed as: “Generating a first inactivity indicator if/after the system is inactive for a first predetermined time period and generating a second inactivity indicator if/after the system is inactive for a second predetermined time period after generating the first inactivity indicator.”

Defendants’ Proposed Construction: “Generating a first inactivity indicator in response to the system being inactive for a first predetermined time period and generating a second inactivity indicator in response to the system being inactive for a second predetermined time period following the first inactivity indicator.”

Court’s Construction: “Generating a first inactivity indicator in response to the system being inactive for a first predetermined time period and generating a second inactivity indicator in response to the system being inactive for a second predetermined time period following the first inactivity indicator.”

As an initial matter, the Court concludes that it must construe this term as the parties dispute its meaning and their dispute appears to be material. *See O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co., Ltd.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008) (stating sometimes “the ‘ordinary’ meaning of a term does not resolve the parties’ dispute, and claim construction requires the court to determine what claim scope is appropriate in the context of the patents-in-suit”); *see also* Tr. at 58-59 (wherein counsel for Plaintiff responds to various disputes that Defendants have raised with regard to this term)

The parties largely agree on the construction of this term; they dispute only whether there

¹⁰This disputed term appears in claims 9-11 of the ’929 patent.

¹¹*See* Tr. at 58 (“[T]here is really no claim construction required.”).

is a causal connection or trigger between states or events. (See D.I. 59 at 11; D.I. 60 at 11; Tr. at 58-60) The Court’s construction, which clarifies that there is a causal connection, is supported by the plain language of the claims. (See ’929 patent col.42 ll.10-12; *id.* at col.42 ll.57-60; *id.* at col.44 ll.24-26) (containing limitation that power consumption is controlled “in response to” activity level); *see also id.* at col.41 ll.56-61; *id.* at col.42 ll.31-36, *id.* at col.43 ll.12-16 (reciting transitions “in response to” inactivity indicators)) The Court’s construction is also supported by the specification (*see id.* at col.7 ll.21-23 (stating that “power management unit responsively switches power consumption states”)) The claims require generation of inactivity indicators in response to a specified event (e.g., expiration of a timer). (See *id.* Fig 4; *id.* at col.7 ll.28-31 (“the timeouts of timer unit 24 generally control the transitions between states”); D.I. 55, Ex. 4 at 2, 10 (amendment replacing “TIMEOUT-ONE indicator” with “first inactivity indicator”)) The Court’s construction makes clear that the power being supplied to the devices occurs due to a causal connection between the state of the device and the power supply.

E. “[couples device operating power/coupling said circuit operating power] . . . when the [state controller/computer system] is in said [first/second/third] state”¹²

Plaintiff’s Proposed Construction: “Supplies power to a first group of devices in a first state, a second group of devices in a second state comprising fewer devices than the first state and a third group in a third state comprising fewer computer devices than the second state.”

Defendants’ Proposed Construction: “Supplying power to the claimed device or devices in response to the computer being in a specified state.”

Court’s Construction: “Supplying power to the claimed device or devices in response to the computer being in a specified state.”

¹²This disputed term appears in claims 9-11 of the ’929 patent.

The parties' dispute over this term mirrors their dispute relating to the previous term: namely, does there need to be a cause and effect relationship between the state of the devices and the power supply? The intrinsic evidence supports the Court's conclusion that a cause and effect relationship is required. (*See* '929 patent col.3 ll.50-58; *id.* at col.5 l.64-col.6 l.11; *id.* at col.42 ll.10-12 (claim 9); *id.* at col.42 ll.57-60 (claim 10); *id.* at col.44 ll.24-26 (claim 11); D.I. 55, Ex. 4 at 2, 10 (prosecution history))

F. "polarity control bit"¹³

Plaintiff's Proposed Construction: "A bit that allows a power control output to be configured as active high or active low."

Defendant's Proposed Construction: "Register bit specifying the logic level required to turn on a switch supplying power to an I/O device as either high or low."

Court's Construction: "A bit that allows a power control output to be configured as active high or active low."

The Court's construction is supported by the intrinsic evidence. (*See* '175 patent Fig. 3, element 61; *id.* at col.7 l.62-col.8 l.9; *id.* at col.15 ll.55-61; *id.* at col.89 ll.33-40 (claim 12); *id.* at col.91 ll.31-39 (claim 16); D.I. 55, Ex. 23 at 11-12 (prosecution history)) Although the specification discloses a specific embodiment involving I/O circuits, the plain language of claims 12 and 16 indicates that the patentee claimed a power management system and method for operating a computer system that consisted of "a plurality of computer system circuits including a CPU Circuit, an input/output circuit and said memory circuit." (*See* '175 patent col.89 ll.33-39; *id.* at col.91 ll.31-34) Thus, there is no evidence of a "clear and unmistakable disavowal"

¹³This disputed term appears in claims 12 and 16 of the '175 patent.

compelling the Court to construe the term polarity control bit restrictively. *See i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 842-44 (Fed. Cir. 2010) (determining that in absence of “clear intent to limit the claim scope” to embodiment disclosed in specification, Court should not limit invention’s scope).

G. “polarity circuit”¹⁴

Plaintiff’s Proposed Construction: “A circuit that allows the power control outputs to be selected as active high or active low depending upon the need of the devices.”

Defendants’ Proposed Construction: “A circuit including an I/O device, a power control switch for the I/O device, and a polarity control bit, in which the polarity control bit specifies the logic level required to turn on the switch as either high or low.”

Court’s Construction: “A circuit that allows the power control outputs to be selected as active high or active low depending upon the need of the devices.”

The Court’s construction is support by the specification, claim language, and prosecution history. (*See* ’175 patent Fig. 3, element 61; *id.* at col.7 l.62- col.8 l.9; *id.* at col.15 ll.55-61; *id.* at col.90 ll.10-19; D.I. 55, Ex. 23 at 11-12) The prosecution history indicates that the polarity circuit “allows the power control outputs to be selected as active high or active low depending on the needs of the external circuits.” (D.I. 55, Ex. 23 at 12) However, neither the prosecution history nor the plain language of the claims provide any indication that the polarity circuit must include an I/O device or a “power control switch for the I/O device” as Defendants contend. Although the patent specification mentions I/O devices, there is no basis to interpret the claims as requiring an I/O device to be part of the polarity circuit.

¹⁴This disputed term appears in claim 12 of the ’175 patent.

H. “idle thread execution completion detection means”¹⁵

Plaintiff’s Proposed Construction:

Function: “Monitoring said computer system to detect completion of execution of all idle threads executing on said system while operating in said first mode.”

Structure: “A software monitor, comprising software code to detect completion of execution of idle threads.”

Defendants’ Construction: Invalid under 35 U.S.C. § 112 ¶ 1.

Court’s Construction:

Function: “Monitoring said computer system to detect completion of execution of all idle threads executing on said system while operating in said first mode.”

Structure: “A software monitor, comprising software code to detect completion of execution of idle threads.”

The parties agree that claim 48 of the ’025 patent should be construed as a means-plus-function term pursuant to 35 U.S.C. § 112 and agree on the function; however, the parties dispute whether the specification discloses a corresponding structure. (*See* D.I. 60 at 5) The Court concludes that the specification does disclose a corresponding structure – namely, “a software monitor, comprising software code to detect completion of execution of idle threads.” The specification provides:

The power management software monitor forms an activity measurement as a running total of the function call numbers as the function calls are made. Whenever a function call is made (either active or conservation), the power management software algebraically adds the function call number to the accumulated value and determines whether the system is to remain in the active mode or be switched to the conservation mode by comparing the magnitude of the accumulated value with a function call threshold.

¹⁵This disputed term appears in claim 48 of the ’025 patent.

(’025 patent col.3 ll.11-20; *see also id.*, abstract (noting that invention’s detection of “completion of idle threads executing on the system” occurs without regard to claimed function of computer system)) Thus, Defendants have failed to meet their heavy burden¹⁶ of demonstrating that the specification lacks disclosure of a corresponding structure able to perform the recited function.¹⁷

I. “processor clock speed control means”¹⁸

Plaintiff’s Proposed Construction:

Function: “Slowing or stopping said processor clock signal in response to said idle thread execution completion detection.”

Structure: “Clock control unit.”

Defendants’ Proposed Construction: Claim is invalid under 35 U.S.C. § 112.¹⁹ However, the specification does disclose a structure to slow or stop a processor clock signal. This structure comprises at least CPU Clock Control block 49 and control register 53, which stores a clock frequency divisor CCLK, a SLOW bit, and a STATIC_CPU bit.

¹⁶*See Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1379 (Fed. Cir. 2001) (“A challenge to a claim containing a means-plus-function limitation as lacking structural support requires a finding, by clear and convincing evidence, that the specification lacks disclosure of structure sufficient to be understood by one skilled in the art as being adequate to perform the recited function.”).

¹⁷Defendants argue that “assuming that the disclosed software monitor can detect completion of execution of idle threads, it does not detect completion of *all* idle threads.” (D.I. 60 at 6) However, this argument is premised on an incorrect understanding of the term “all” as it is used in the patent. Specifically, the word “all” in the context of the function means that the software monitor can detect completion of all types of idle threads relevant to the monitoring activity, such as the subset of the DOS function calls classified as “idle” as discussed in the preferred embodiment in the ’025 patent. (*See* ’025 patent col.11 ll.6-13; D.I. 69 at 13)

¹⁸This disputed term appears in claim 48 of the ’025 patent.

¹⁹To the extent that the Court does not find claim 48 of the ’025 patent to be invalid, Defendants agree with St. Clair’s proposed function.

Court's Construction:

Function: "Slowing or stopping said processor clock signal in response to said idle thread execution completion detection."

Structure: "A clock control unit consisting of CPU Clock Control block 49 and control register 53, which stores a clock frequency divisor CCLK, a SLOW bit, and a STATIC_CPU bit."

The Court's construction is supported by the specification. (*See* '025 patent col.6 ll.30-35; *id.* at col.6 ll.44-48; *id.* at col.7 ll.66-col.8 ll.6; *id.* at col.13 ll.64-col.14 ll.9; *id.* at col.15 ll.61-67; *id.* at col.16 ll.7-9; *id.* Fig. 3) The parties dispute what structure performs the operative part of the claimed function – "slowing or stopping said processor clock signal." The "structure 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." *B. Braun Medical, Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997). Here, the specification states that control register 53 "slow[s]" the clock down by its SLOW bit and frequency divisor CCLK and "stop[s]" the clock by its STATIC_CPU bit. ('025 patent col.8 ll.4-7 ("The CLKOUT clock can be stopped for static CPU's, or reduced automatically by a divisor specified in the CLOCK field of control register 53 during DOZE and SLEEP states."); *see also id.* at col.14 ll.12-14; *id.* at col.16 ll.24-26)) Contrary to St. Clair's assertion, the specification attributes these functions to individual structures within block 18, including control register 53 and CPU Clock Control 49. Although a black box may be used to "disclose a generic [component] that [is] well-known in the art," "[w]here circuit diagrams are provided that describe 'black box' elements those diagrams should be examined." *Intel Corp. v. Broadcom Corp.*, 172 F. Supp. 2d 516, 534, 541 (D. Del. 2001). Accordingly, the Court's construction

includes the disclosed components that are necessary to perform the corresponding function of claim 48 of the '025 patent.

J. “selectable connector”²⁰

Plaintiff’s Proposed Construction: No construction is necessary.²¹ However, if the Court decides to construe this term it should be construed as: “An electrical device or circuit where each device/circuit has at least two inputs and one output and responds to one or more selection signals by either disabling the output or by electrically connecting one of the inputs to the output.”²²

Defendants’ Proposed Construction: “An electronic circuit that allows a selected one of two or more functional circuits to be electrically connected to a selected one of two or more I/O pins.”

Court’s Construction: “An electronic circuit that allows a selected one of two or more functional circuits to be electrically connected to a selected one of two or more I/O pins.”

As an initial matter, the Court concludes that it must construe this term because the parties do not agree on its meaning and their dispute appears to be material. *See O2 Micro*, 521 F.3d at 1361. Also, in light of the complex technology involved here, claim construction is appropriate to assist the jury in understanding the meaning of the patent claims it will be asked to consider. *See Funai*, 616 F.3d at 1366; *Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1348 (Fed. Cir. 2010) (“The terms, as construed by the court, must ensure the jury fully understands the court’s claim construction rulings and what the patentee covered by the claims.”)

²⁰This disputed term appears in claim 1 of the '610 patent.

²¹*See* Tr. at 66 (“Our position is, of course, that no claim construction is required.”).

²²This construction is a compromise construction that St. Clair proposed in its briefing in order to respond to Defendants’ argument that the claim language requires additional flexibility in view of the specification. (*See* D.I. 69 at 16)

(internal quotation marks omitted). The Court’s construction is supported by the specification and claim language. (See ’610 patent col.5 ll.11-14; *id.* at col.11 ll.56-58; *id.* at col.12 l.49-col.13 l.15; *id.* at col.19 ll.27-35; *id.* at col.19 ll.43-57; *id.* at col.20 l.65-col.21 l.5; *see also id.* at col.21 ll.17-20 (claim 1)) Claim 1 of the ’610 patent indicates that the selectable connector is “internal to [the] chip” and that it “connect[s] selected [connectors] of the functional circuits . . . to selected [connectors] of the Input/Output pins.” (See ’610 patent col.21 ll.17-20) Claim 1 further describes the relationship between functional circuits and pins in which the selectable connectors provide alternative connections between pins and functional circuits, depending on the mode. (See *id.* at col.21 ll.21-25) Similarly, the specification describes circuitry that creates alternative connections between pins and functional circuits. (See *id.* Fig. 4 (illustrating series of multiplexers (MUX), all of which provide selectable connections))

St. Clair’s construction does not comport with the specification or the language of claim 1; neither gives any indication that the selectable connector can disable an output. Further, St. Clair’s construction improperly reads an express limitation out of the claim – namely that the selectable connectors can connect functional circuits with I/O pins. *See generally Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (holding it is improper to construe claims in manner that would read out express limitation); *Tex. Instruments Inc. v. U.S. Trade Comm’n*, 988 F.2d 1165, 1171 (Fed. Cir. 1993) (same).

K. “selection device”²³

Plaintiff’s Proposed Construction: “An electrical device or circuit that provides selection signals to one or more selectable connectors, so that different sets of functional circuits are functionally accessible at the I/O pins.”

Defendants’ Proposed Construction: Indefinite under 35 U.S.C. ¶ 2.

Court’s Construction: “An electrical device or circuit that provides selection signals to one or more selectable connectors, so that different sets of functional circuits are functionally accessible at the I/O pins.”

The Court’s construction is supported by the claim language and the specification. (*See* ’610 patent col.2 ll.15-17, *id.* at col.2 ll.25-28; *id.* at col.2 ll.41-50, *id.* at col.2 ll.56-67; *id.* at col.4 ll.3-9; *id.* at col.4 ll.30-38; *id.* at col.5 ll.11-19; *id.* at col.5 l.34-col.6 l.13; *id.* at col.11 l.55-col.13 l.23; *id.* at col.13 ll.32-61; *id.* at col.19 l.22-col.20 l.53; *id.* Fig. 3; *id.* Fig. 4; *id.* at col.21 ll.18-30; *id.* at col.21 l.40-col.22 l.2; *id.* at col.22 ll.11-13; *id.* at col.22 ll.22-25) Claim 1 of the ’610 patent states that the patent claims “a selection device configured to select said selectable connectors” and the Court’s construction clarifies that the selection device determines what functions should be connected to which I/O pins.

Defendants’ contention that “selection device” is indefinite is unavailing. Even assuming the Court should consider indefiniteness as part of the claim construction process, *see generally Personalized User Model LLP v. Google, Inc.*, 2012 WL 295048, at *22 (D. Del. Jan. 25, 2012) (“[T]he Court does not permit summary judgment arguments, including indefiniteness arguments during the claim construction phase of the litigation.”), proof of indefiniteness is an “exacting standard” that requires a determination that the claim term is “insolubly ambiguous,” *see*

²³This disputed term is found in claim 1 of the ’610 patent.

Halliburton Energy Servs. v. M-I LLC, 514 F.3d 1244, 1249-50 (Fed. Cir. 2008). At this stage of the proceeding, Defendants fall short of demonstrating by clear and convincing evidence that the term “selection device” is insolubly ambiguous, such that it is incapable of construction.²⁴

L. “controller”²⁵

Plaintiff’s Proposed Construction: “A controller that signals through electrical connections that have been established by selectable connectors in response to selection signals received from the selection device.”

Defendants’ Proposed Construction: Indefinite under 35 U.S.C. ¶ 2.

Court’s Construction: “A controller that signals through electrical connections that have been established by selectable connectors in response to selection signals received from the selection device.”

The Court’s construction is supported by the specification and the claim language. (*See* ’610 patent col.5 ll.11-14; *id.* at col.11 l.55–col.13 l.23; *id.* at col.13 ll.31-61; *id.* at col.21 ll.31-33; *id.* at col.22 ll.3-9; *id.* at col.22 ll.30-37) The controller, like the selection device, contributes to effectuating proper electrical connections and signals between functional circuits and the I/O pins. After the selection device has determined which functional circuits should be connected to which I/O pins, the controller effectuates that selection by controlling signals via electrical connections. (*See id.* at col.5 ll.11-14 (“In order to make the normally internal signals available on output pins, the mappers 121 and 121’ in the engines 10 and 10’, respectively, are controlled to

²⁴With respect to this disputed term, the Court finds it is able to provide a construction, to the extent necessary. *See generally Pharmastem Therapeutics, Inc. v. Viacell, Inc.*, 2003 WL 124149, at *1 n.1 (D. Del. Jan 13, 2003) (stating that when court chooses to construe term that is alleged to be indefinite, “the court is merely holding that the claim is sufficiently definite to survive claim construction”).

²⁵This disputed term is found in claim 1 of the ’610 patent.

remap the signals to the output pins for each chip”)) Thus, at this stage of the proceeding, Defendants fall short of demonstrating by clear and convincing evidence that the term “controller” is insolubly ambiguous, such that it is incapable of construction.²⁶

M. “bus processing means”²⁷

Plaintiff’s Proposed Construction:

Function: “Controlling the bus bandwidth of the common bus to correspond to the bus bandwidth associated with the external bus device that is communicating with the processor at one of a plurality of different times.”

Structure: “Bus processing unit.”

Defendants’ Proposed Construction:

Function: “Controlling the bus bandwidth of the common bus to correspond to the bus bandwidth associated with the external bus device that is communicating with the processor at one of a plurality of different times.”²⁸

Structure: “Electronic circuitry that ‘decodes the bus CYCLE TYPE and MEM TYPE indicators to generate control signals used to select the internal address bus and speed classification for the current operation of common bus 9’ including bus processing unit 31 (see FIG. 3) operating in conjunction with Bus Data Unit 39, Bus Control Unit 38 (see FIG. 4), and Bus Address Unit 40.”

²⁶With respect to this disputed term, the Court finds it is able to provide a construction, to the extent necessary. *See generally Pharmastem*, 2003 WL 124149, at *1 n.1.

²⁷This disputed term appears in claims 1 and 13 of the ’163 patent.

²⁸In their briefing, Defendants initially indicated that the parties agreed upon the function, citing St. Clair’s proposed construction of the function. (*See* D.I. 60 at 14) In their reply claim construction brief, Defendants responded to arguments St. Clair raised about Defendants’ initial proposed function. (*See* D.I. 70 at 16) At the *Markman* hearing, however, Defendants indicated that they agreed with St. Clair on the proper function. (*See* Tr. at 36) Consequently, the Court believes the parties agree on the function for this term.

Court's Construction:

Function: "Controlling the bus bandwidth of the common bus to correspond to the bus bandwidth associated with the external bus device that is communicating with the processor at one of a plurality of different times."

Structure: "Electronic circuitry that 'decodes the bus CYCLE TYPE and MEM TYPE indicators to generate control signals used to select the internal address bus and speed classification for the current operation of common bus 9' including bus processing unit 31 operating in conjunction with Bus Data Unit 39, Bus Control Unit 38, and Bus Address Unit 40."

The parties agree that "bus processing means" is a means-plus-function limitation and on the function. (*See* '163 patent col.22 ll.42-46 (claim 1); *id.* at col.26 ll.15-19 (claim 27))

Additionally, the parties agree, in part, as to the corresponding structure: it includes bus processing unit 31. (D.I. 60 at 14) Thus, the only dispute is whether the corresponding structure also includes common bus connection unit 33 and the specific circuitry within bus processing unit 31. (*Id.*) The Court concludes that the corresponding structure does include the specific circuitry.

The Court's construction is supported by the claim language and the specification. (*See* '163 patent Fig 2; *id.* Fig. 3; *id.* at col.6 ll.34-50; *id.* at col.12 ll.6-67; *id.* at col.21 ll.19-58; *id.* at col.22 ll.42-46; *id.* at col.26 ll.15-19) The '163 patent explains that the bus processing unit 31 receives and decodes signals which indicate the bus speed of the external bus device using several decoders and state machines and a latch. (*See id.* at col.6 ll.30-50; *id.* at col.9 l.37- col.12 l.67; *id.* Figs. 2, 3, 4, & 8) The patent explains that bus processing unit 31 then outputs control signals to common bus unit 33 – which consists of bus data unit 39, bus control unit 38, and bus address unit 40. (*See id.*) Then, bus connection unit 33 responds to signals by controlling the bandwidth of the common bus. (*See id.*) Thus, the Court's structure discloses all components

necessary to perform the agreed function.

St. Clair's proposed structure does not disclose all of the components necessary to perform the function and, therefore, is inadequate. *See Default Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1298 (Fed. Cir. 2005) ("While corresponding structure need not include all things necessary to enable the claimed invention to work, it must include all structure that actually performs the recited function."). Here, the internal circuitry of bus processing unit 31 and common bus connection unit 33 are necessary components of the structure that enable the invention to performed the claim function.

Although the Court finds Defendants' prosecution history disavowal argument (*see* Tr. at 37-39) to be unpersuasive, the prosecution history itself sheds light on the meaning of the patent and supports the Court's construction of the structure. (*See* '163 patent Mar. 21, 1996 Amend., at 8 ("[A] bus processing means is provided comprising a bus processing unit 31 operating in conjunction with Bus Data Unit 39, Bus Control Unit 38, and Bus Address Unit 40."); *id.* at 10 ("the bus processing means, corresponding to the bus processing unit 31 operating in cooperation with Unites 39, 38, and 40")) During prosecution of the '163 patent, the inventor provided the PTO with a color-coded figure to illustrate what components perform the claimed function. In describing this figure, the inventor stated "[t]he units 31, 39, 38, and 40 are indicated . . . on Attachment A and allow the bandwidth of the bus 9 to be adjusted." (*See id.* at 8; *see also* Tr. at 38) While this statement does not rise to level of clear, unmistakable disavowal of claim scope, it does shed light on the corresponding structure and demonstrates the inventor's belief as to which components were necessary to perform the recited function.

N. **“power director means which in response to the mode of operation of the mode controller selectively couples each of the plurality of power control lines to said memory cell associated with that power control line such that a signal is generated on the power control line that is dependent upon the state of the memory cell to which it is coupled”²⁹**

Plaintiff’s Proposed Construction:

Function: “Selectively couples power control lines to a memory cell.”

Structure: “Multiplexer.”

Defendants’ Proposed Construction:

Function: “In response to the mode of operation of the mode controller, selectively coupling each of the plurality of power control lines to said memory cell associated with that power control line such that a signal is generated on the power control line that is dependent upon the state of the memory cell to which it is coupled.”

Structure: “At least power control multiplexer 76, which selects eight outputs from one of the registers 57-60 corresponding to the current state as provided by unit 23 on STATE lines 34. And, at least AND gates 41 and 42, which signals VP0 and VP1 corresponding to LCD and EL power, respectively as well as LCD and EL timeout signals from timers 66 and 67.”

Court’s Construction:

Function: “In response to the mode of operation of the mode controller, selectively coupling each of the plurality of power control lines to said memory cell associated with that power control line such that a signal is generated on the power control line that is dependent upon the state of the memory cell to which it is coupled.”

Structure: “Power control multiplexer 76, which selects eight outputs from one of the registers 57-60 corresponding to the current state as provided by unit 23 on STATE lines 34 and AND gates 41 and 42, which signals VP0 and VP1 corresponding to LCD and EL power, respectively as well as LCD and EL timeout signals from timers 66 and 67.”

²⁹This disputed term appears in claim 12 of the ’175 patent.

The Court's construction is supported by the specification and the claim language. (*See* '175 patent col.7 ll.54-59; *id.* at col.15 ll.41-45; *id.* at col.89 l.33-col.90 l.20) The adopted function is the function expressly recited in claim 12 of the '175 patent, and, thus, avoids improperly limiting the claim. *See Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999) ("The statute does not permit limitation of a means-plus-function claim by adopting a function different from that explicitly recited in the claim."). The multiplexer – as described in detail in the specification and as represented by the block labeled PWR CTL MUX 76 in Figure 3 – and AND gates 41 and 42 are the structures linked to the function. (*See* '175 patent col.7 ll.54-59 ("A power control multiplexer 76 selects the eight outputs from one of the registers 57 through 60 corresponding to the current state on STATE lines 34 from unit 23, and these eight outputs drive the VP [0 . . . 7] power control outputs from EXOR unit 35."); *id.* at col.15 ll.41-45 ("These outputs are AND'ed in AND gates 41 and 42 with the LCD and EL timer outputs prior to driving the lines 33.)) Each of these structural components is necessary to perform the claimed function; accordingly, these structural components comprise the Court's function for this claim.

IV. CONCLUSION

For the foregoing reasons, the Court will construe the disputed terms in the patents-in-suit consistent with this Memorandum Opinion. An appropriate Order follows.

CPU.”

4. The term “execution of a predefined code thread” is construed to mean “execution of a predefined code thread, which is the smallest or most elemental executable code segment.”
5. The terms “single common system bus which directly connects the CPU device with the input/output devices,” “system bus which directly connects the CPU device with said input/output circuit,” “common system bus which connects said CPU with . . . said input/output circuits,” and “system bus which connects the CPU device with the input/output device” are construed to mean “a set of one or more shared conductors that connect the CPU to the I/O devices [and memory] with no intervening buses.”
6. The term “generating [or generates] a first inactivity indicator after a first predetermined period of inactivity and a second inactivity indicator a second predetermined period of inactivity after generating the first inactivity indicator” is construed to mean “generating a first inactivity indicator in response to the system being inactive for a first predetermined time period and generating a second inactivity indicator in response to the system being inactive for a second predetermined time period following the first inactivity indicator.”
7. The term [couples device operating power/coupling said circuit operating power] . . . when the [state controller/computer system] is in said [first/second/third] state” is construed to mean “supplying power to the claimed device or devices in response to the computer being in a specified state.”

8. The term “polarity control bit” is construed to mean “a bit that allows a power control output to be configured as active high or active low.”
9. The term “polarity circuit” is construed to mean “a circuit that allows the power control outputs to be selected as active high or active low depending upon the need of the devices.”
10. The term “idle thread execution completion detection means” is construed to have the function of “monitoring said computer system to detect completion of execution of all idle threads executing on said system while operating in said first mode” and the structure of “a software monitor, comprising software code to detect completion of execution of idle threads.”
11. The term “processor clock speed control means” is construed to have the function of “slowing or stopping said processor clock signal in response to said idle thread execution completion detection” and the structure of “a clock control unit consisting of CPU Clock Control block 49 and control register 53, which stores a clock frequency divisor CCLK, a SLOW bit, and a STATIC_CPU bit.”
12. The term “selectable connector” is construed to mean “an electronic circuit that allows a selected one of two or more functional circuits to be electrically connected to a selected one of two or more I/O pins.”
13. The term “selection device” is construed to mean “an electrical device or circuit that provides selection signals to one or more selectable connectors, so that different sets of functional circuits are functionally accessible at the I/O pins.”

14. The term “controller” is construed to mean “a controller that signals through electrical connections that have been established by selectable connectors in response to selection signals received from the selection device.”
15. The term “bus processing means” is construed to have the function of “controlling the bus bandwidth of the common bus to correspond to the bus bandwidth associated with the external bus device that is communicating with the processor at one of a plurality of different times” and the structure of “electronic circuitry that ‘decodes the bus CYCLE TYPE and MEM TYPE indicators to generate control signals used to select the internal address bus and speed classification for the current operation of common bus 9’ including bus processing unit 31 operating in conjunction with Bus Data Unit 39, Bus Control Unit 38, and Bus Address Unit 40.”
16. The term “power director means which in response to the mode of operation of the mode controller selectively couples each of the plurality of power control lines to said memory cell associated with that power control line such that a signal is generated on the power control line that is dependent upon the state of the memory cell to which it is coupled” is construed to have the function of “in response to the mode of operation of the mode controller, selectively coupling each of the plurality of power control lines to said memory cell associated with that power control line such that a signal is generated on the power control line that is dependent upon the state of the memory cell to which it is coupled” and the structure of “power control multiplexer 76, which selects eight outputs from one

of the registers 57-60 corresponding to the current state as provided by unit 23 on STATE lines 34 and AND gates 41 and 42, which signals VP0 and VP1 corresponding to LCD and EL power, respectively as well as LCD and EL timeout signals from timers 66 and 67.”


UNITED STATES DISTRICT JUDGE