IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SEMCON IP INC.,

   Plaintiff,

v.

HUAWEI DEVICE USA INC., ET AL.,

   Defendants.

Case No. 2:16-cv-00437-JRG-RSP
(Lead Case)

CLAIM CONSTRUCTION MEMORANDUM OPINION AND ORDER

Before the Court is the opening claim construction brief of Semcon IP Inc. ("Plaintiff") (Dkt. No. 120, filed on April 26, 2017),[1] the response of Texas Instruments Incorporated, Mediatek Inc., Mediatek USA Inc., STMicroelectronics, Inc., ZTE (USA) Inc., ZTE (TX), Inc., Huawei Device USA Inc., Huawei Technologies USA Inc., and Huawei Technologies Co., Ltd. (collectively "Defendants") (Dkt. No. 138, filed on May 17, 2017), and the reply of Plaintiff (Dkt. No. 145, filed on May 25, 2017). The Court held a hearing on the issues of claim construction and claim definiteness on June 30, 2017. Having considered the arguments and evidence presented by the parties at the hearing and in their briefing, the Court issues this Order.

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[1] Citations to the parties' filings are to the filing's number in the docket (Dkt. No.) and pin cites are to the page numbers assigned through ECF.

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I.   BACKGROUND

Plaintiff alleges infringement of five U.S. Patents: No. 5,978,876 (the "'876 Patent"), No. 7,100,061 (the "'061 Patent"), No. 7,596,708 (the "'708 Patent"), No. 8,566,627 (the "'627 Patent"), and 8,806,247 (the "'247 Patent") (collectively, the "Asserted Patents"). The Asserted Patents include patents from two patent families: The Power-Management Patents (the '061, '708, '627, and '247 Patents) and the Bus-Controller Patent (the '876 Patent).

A.   The Power-Management Patents

The Power-Management Patents are directed generally to technology for managing the amount of power consumed by a computer system by dynamically adjusting the processor's operating frequency and voltage. These patents are related through a series of continuation applications and all ultimately claim priority to the application that issued as the '061 Patent, which was filed on January 18, 2000. The '061 Patent was subject to an inter partes reexamination requested on June 13, 2007 and from which a certificate issued on August 4, 2009.

The abstracts of the Power-Management Patents are identical and provide as follows:

> A method for controlling the power used by a computer including the steps of measuring the operating characteristics of a central processor of the computer, determining when the operating characteristics of the central processor are significantly different than required by the operations being conducted, and changing the operating characteristics of the central processor to a level commensurate with the operations being conducted

Claims 1 and 17 of the '247 Patent, exemplary method and system claims respectively, provide:

> **1.** A method, comprising:
> determining a level of permitted power consumption by a processing device from a set of operating conditions of the processing device, with the determining the level of permitted power consumption not based upon instructions to be executed by the processing device;
> determining a highest allowable frequency of operation of the processing device that would result in power consumption not exceeding the level of permitted power consumption;

determining a lowest allowable level of voltage to apply to the processing device that would allow execution of the instructions by the processing device at the highest allowable frequency; and

changing power consumption of the processing device during execution of the instructions by reducing a magnitude of a difference between an operating frequency of the processing device and the highest allowable frequency of operation of the processing device and reducing a magnitude of a difference between a voltage applied to the processing device and the lowest allowable level of voltage.

17. An apparatus, comprising:

a frequency generator configured to generate a first clock signal at a first frequency; and

a processing device configured to receive the first clock signal and a first voltage provided by a voltage source, the processing device operable to monitor operating parameters of the processing device, the processing device operable to determine a second frequency of the first clock signal and a second voltage for operation of the processing device at lower power than operation at the first frequency and the first voltage, with the processing device operable to determine the second frequency and the second voltage not based on instructions to be executed by the processing device, the processing device operable to control the frequency generator to change from generating the first clock signal at the first frequency to generating the first clock signal at a second frequency, and the processing device operable to control the voltage source to change from providing the first voltage to providing the second voltage during execution of the instructions by the processing device.

B.   The Bus-Controller Patent

The '876 Patent is directed generally to technology for improving communications of subsystems of a computer system by dynamically managing communication-bus usage. The patent issued from an application filed on April 14, 1997.

The abstract of the '876 Patent provides:

A communication control system provides dynamic centralized control of subsystem communications. In a preferred embodiment, a dedicated subsystem communications coordinator is coupled to a main control bus which is utilized for subsystem communication. The coordinator is further coupled to each subsystem for enabling subsystem communication. The coordinator preferably assigns each pending communication a time-based transfer-window channel designation which, while asserted on the control lines of the main control bus, signals corresponding enabled subsystems to transfer data. The coordinator further preferably monitors all subsystem communications for limiting message length and for continuously

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determining the most effective main control bus utilization according to current system-wide communications needs.

Claims 2 and 15 of the '876 Patent, exemplary system and method claims respectively, provide:

> **2.** A system for coordinating and controlling communications over a plurality of subsystems, comprising:
>   a plurality of subsystems for sending and receiving communications; and
>   a communications controlling coordinator coupled to each of the subsystems for controlling said communications between said subsystems;
>   the communications controlling coordinator including a processor for determining a need for communication between a pair of the subsystems, assigning a channel for the communication, transmitting information regarding the asssigned channel to the pair of subsystems, and instructing the pair of subsystems to commence communication on the assigned channel.

> **15.** A method of dynamically controlling communications between a plurality of subsystems, comprising:
>   providing a plurality of subsystems;
>   assigning an address to each subsystem;
>   determining a need for communications between a pair of the subsystems;
>   assigning one of a plurality of communications channels to conduct the communication between the pair of subsystems;
>   transmitting a communications channel designation to the pair of subsystems to alert the subsystems of the assigned communications channel; and
>   exchanging said communications between said subsystems over the assigned communications channel.

II.   LEGAL PRINCIPLES

A.   Claim Construction

"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) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *Id.* at 1313; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the

specification, and the prosecution history. *Phillips*, 415 F.3d at 1314; *C.R. Bard, Inc.*, 388 F.3d at 861. The general rule—subject to certain specific exceptions discussed *infra*—is that each claim term is construed according to its ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003); *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014) ("There is a heavy presumption that claim terms carry their accustomed meaning in the relevant community at the relevant time.") (vacated on other grounds).

"The claim construction inquiry … begins and ends in all cases with the actual words of the claim." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). "[I]n all aspects of claim construction, 'the name of the game is the claim.'" *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) (quoting *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998)). First, a term's context in the asserted claim can be instructive. *Phillips*, 415 F.3d at 1314. Other asserted or unasserted claims can also aid in determining the claim's meaning, because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term's meaning. *Id*. For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id*. at 1314–15.

"[C]laims 'must be read in view of the specification, of which they are a part.'" *Id*. (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). "[T]he 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.'" *Id*. (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*,

299 F.3d 1313, 1325 (Fed. Cir. 2002). But, "'[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.'" *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1323. "[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

The prosecution history is another tool to supply the proper context for claim construction because, like the specification, the prosecution history provides evidence of how the U.S. Patent and Trademark Office ("PTO") and the inventor understood the patent. *Phillips*, 415 F.3d at 1317. However, "because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.* at 1318; *see also Athletic Alternatives, Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (ambiguous prosecution history may be "unhelpful as an interpretive resource").

Although extrinsic evidence can also be useful, it is "'less significant than the intrinsic record in determining the legally operative meaning of claim language.'" *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id*. at 1318. Similarly, expert

testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not helpful to a court. *Id*. Extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id*. The Supreme Court recently explained the role of extrinsic evidence in claim construction:

> In some cases, however, the district court will need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period. *See, e.g., Seymour v. Osborne*, 11 Wall. 516, 546 (1871) (a patent may be "so interspersed with technical terms and terms of art that the testimony of scientific witnesses is indispensable to a correct understanding of its meaning"). In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the "evidentiary underpinnings" of claim construction that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal.

Teva Pharm. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 841 (2015).

B.   Departing from the Ordinary Meaning of a Claim Term

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution."[2] *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the

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[2] Some cases have characterized other principles of claim construction as "exceptions" to the general rule, such as the statutory requirement that a means-plus-function term is construed to cover the corresponding structure disclosed in the specification. *See, e.g., CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002).

plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw*, 158 F.3d at 1249.

To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

C. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)[3]

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. A claim, when viewed in light of the intrinsic evidence, must "inform those skilled in the art about the scope of the invention with reasonable certainty." *Nautilus Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). If it does not, the claim fails § 112, ¶ 2 and is therefore invalid as indefinite. *Id.* at 2124. Whether a claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for

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[3] The Court refers to the pre-AIA version of § 112 but understands that there is no substantial difference between definiteness under the pre-AIA version and under the AIA version of the statute.

the patent was filed. *Id.* at 2130. As it is a challenge to the validity of a patent, the failure of any

claim in suit to comply with § 112 must be shown by clear and convincing evidence. *Id.* at 2130

n.10. "[I]ndefiniteness is a question of law and in effect part of claim construction." *ePlus, Inc. v.*

Lawson Software, Inc., 700 F.3d 509, 517 (Fed. Cir. 2012).

When a term of degree is used in a claim, "the court must determine whether the patent

provides some standard for measuring that degree." *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783

F.3d 1374, 1378 (Fed. Cir. 2015) (quotation marks omitted). Likewise, when a subjective term is

used in a claim, "the court must determine whether the patent's specification supplies some

standard for measuring the scope of the [term]." *Datamize, LLC v. Plumtree Software, Inc.*, 417

F.3d 1342, 1351 (Fed. Cir. 2005). The standard "must provide objective boundaries for those of

skill in the art." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014).

In the context of a claim governed by 35 U.S.C. § 112, ¶ 6, the claim is invalid as indefinite

if the claim fails to disclose adequate corresponding structure to perform the claimed functions.

Williamson, 792 F.3d at 1351–52. The disclosure is inadequate when one of ordinary skill in the

art "would be unable to recognize the structure in the specification and associate it with the

corresponding function in the claim." *Id*. at 1352.

III.   AGREED CONSTRUCTIONS

The parties agreed to the following construction set forth in their Joint Claim Construction

Chart (Dkt. No. 160).

Term[4]	Agreed Construction
host computer • '876 Patent Claims 1, 5	plain and ordinary meaning

[4] For all term charts in this order, the claims in which the term is found are listed with the term but: (1) only the highest-level claim in each dependency chain is listed, and (2) only asserted claims presented in the parties' Joint Claim Construction Chart (Dkt. No. 160) are listed. In their chart,

Having reviewed the intrinsic and extrinsic evidence of record, the Court agrees with and hereby adopts the parties' agreed construction.

IV.   CONSTRUCTION OF THE POWER-MANAGEMENT PATENTS

A.   "computer processor," "a processor," "processing unit," and "processing device"

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
computer processor • '061 Patent Claims 1, 15, 23, 30, 39 processor • '061 Patent Claims 8, 10, 11, 56[5] • '708 Patent Claims 1, 7, 20, 23, 26, 33, 36, 39, 51, 55, 59	plain and ordinary meaning	CPU, which does not include the operating system
processing unit • '061 Patent Claims 8, 11, 56 • '708 Patent Claims 20, 23, 26, 33, 36, 39, 55, 59 • '627 Patent Claims 1, 10, 16, 23 processing device • '247 Patent Claims 1, 10, 17	plain and ordinary meaning	computing portion of CPU, which does not include the operating system

the parties presented a list of claims for each set of terms but routinely listed the complete language of only a subset of the listed claims. The local patent rules require a claim chart "listing ***complete language of disputed claims with disputed terms in bold type***." P.R. 4-5(d)(1) (emphasis added). This is to "assist the Court and the parties in tracking and resolving disputed terms." P.R. 4-5(d)(3). Although the parties did not comply with P.R. 4-5(d), the Court understands that claims identified by number in the chart are disputed and include a term in dispute, even when the complete language for those claims—with disputed terms in bold—was not provided as required.

[5] Independent Claims 8, 10, 11, and 56 of the '061 Patent include the term "central processor." Though all these claims were listed in the parties P.R. 4-5(d) chart, only Claim 56 was quoted and that with "processor" of "central processor" in bold. The Court understands that the parties' arguments and proposed constructions of "processor" and "computer processor" apply to "central processor."

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: The intrinsic record does not support the negative "which does not include the operating system" limitation. Dkt. No. 120 at 11. First, the prosecution-history argument that a prior-art reference disclosed power management via an operating-system rather than via a processor is nonsensical because the processes of an operating system necessarily involve a processor. Id. at 11–12. The patent examiner noted this flaw in the applicant's argument, and rejected it. Id. at 12–13. Second, the applicant abandoned the operating-system-vs-processor argument and instead overcame the prior art by amending the claims to include limitations directed to executing instructions while the voltage is changed. Id. at 13. Third, the patentee expressly disavowed the operating-system-vs-processor argument in reexamination of the '061 Patent. Id. Thus, there is not a clear and unambiguous disclaimer of an operating system. Id. at 13–14.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '061 Patent File Wrapper July 7, 2003 Amendment and Response to Final Office Action (Plaintiff's Ex. F, Dkt. No. 120-7), September 9, 2003 Office Action (Plaintiff's Ex. G, Dkt. No. 120-8), February 13, 2004 Amendment and Response to Office Action (Plaintiff's Ex. H, Dkt. No. 120-9), April 27, 2004 Office Action (Plaintiff's Ex. I, Dkt. No. 120-10), July 16, 2004 Interview Summary (Plaintiff's Ex. J, Dkt. No. 120-11), August 27, 2007 Reply to Office Action in Inter Partes Reexamination (Plaintiff's Ex. K,

Dkt. No. 158-1); U.S. Patent No. 5,812,860 (Plaintiff's Ex. P, Dkt. No. 121-5). **Extrinsic evidence**: Rosing Decl.[6] ¶¶ 9–12 (Plaintiff's Ex. X, Dkt. No. 122-1 at 4).

Defendants respond: The patentee disclaimed an operating system from the scope of the processor claims during prosecution of the '061 Patent. Dkt. No. 138 at 8–11. This disclaimer is effective whether or not the patent examiner rejected the argument. Id. at 11. And the disclaimer is not nonsensical: the patentee distinguished the "operating system" from the processor's dedicated control software and the distinction is technologically sound. Id. at 12. In this circumstance, a negative limitation is appropriate. Id. at 12–13.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: '061 Patent File Wrapper July 7, 2003 Amendment and Response to Final Office Action (Defendants' Ex. H, Dkt. No. 138-8), February 13, 2004 Amendment and Response to Office Action (Defendants' Ex. G, Dkt. No. 138-7). **Extrinsic evidence**: Nazarian Decl.[7] ¶¶ 32–35 (Defendants' Ex. N, Dkt. No. 138-14 at 10–11); Thornton Decl.[8] ¶¶ 59–62[9] (Defendants' Ex. O, Dkt. No. 138-15).

Plaintiff replies: Taken in the context of the entire intrinsic record, which includes erroneous characterizations of the prior art and an express disavowal of the operating-system-vs-processor argument in reexamination of the '061 Patent, the operating-system-vs-processor argument is not a clear and unambiguous disclaimer. Dkt. No. 145 at 6–8.

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[6] Declaration of Tajana Šimunić Rosing in Support of Plaintiff Semcon IP Inc.'s Opening Claim Construction Brief (April 26, 2017).

[7] Declaration of Shahin Nazarian, Ph.D., in Support of Defendants' Responsive Claim Construction Brief (May 17, 2017).

[8] Declaration of Dr. Mitchell A. Thornton, Ph.D., P.E. (May 17, 2017).

[9] The Thornton declaration the Defendants submitted has only 57 paragraphs. The Court understands paragraphs 53 through 56 pertain to the relevant subject matter in dispute in these terms.

Plaintiff cites further **extrinsic evidence** to support its position: Nazarian Decl. ¶¶ 32–35 (Defendants' Ex. N, Dkt. No. 138-14 at 10–11).

<u>**Analysis**</u>

The issue here is whether the "processor," "processing unit," and "processing device" of the claims exclude an operating system. During prosecution of the '061 Patent, the patentee initially distinguished the claims of the '061 Patent from prior art on the grounds that the claims were directed to power-management by the processor without regard to an operating system. In the course of prosecution, however, the examiner rejected this argument, the patentee acquiesced to the examiner's rejection, and the patentee thereby rescinded the argument such that it does not constitute disclaimer. The claim terms here do not necessarily exclude an operating system.

During prosecution of the '061 Patent, the patentee argued that the pending claims were distinct from a prior-art reference (U.S. Patent No. 5,812,860, "Horden") because the reference taught power management with an operating system rather than directly by the processor. '061 Patent File Wrapper February 13, 2004 Amendment and Response to Office Action 15–18, 21–25, Dkt. No. 138-7 at 16–19, 22–26.

The operating-system-vs-processor argument is not "nonsensical" as Plaintiff contends. Rather, the patentee attempted to distinguish processor-specific systems from general-purpose operating systems. *See, e.g., id*. at 15 ("having the processor determine the frequency and voltage at which to operate the processor separates processor specific details from general-purpose operating system details"), 16 ("placing the determination in the processor allows the determination to be tailored to that specific processor or family of processors, thus relieving the operating system of this burden over many different classes of processors"), Dkt. No. 138-7 at 16–

17. As Defendants' experts explain, processor-specific operations may be handled by other than

an operating system:

> One of ordinary skill in the art would understand the applicants repeated prosecution arguments distinguishing operating system-specific prior art by emphasizing elements "internal" to the processor referred to software designed specifically for the processor, i.e., firmware. One of ordinary skill in the art would know that firmware is designed to control the operation of hardware and that firmware is capable of performing the claimed power management functions. More importantly, one of ordinary skill in the art would understand that firmware is different from an operating system. One of ordinary skill in the art would know that firmware is a special kind of software stored on user inaccessible storage embedded within hardware, unlike an operating system.

Nazarian Decl. ¶ 33, Dkt. No. 138-14 at 11.

> One of ordinary skill in the art would know that firmware is a special kind of software that is embedded within hardware, such as a system on chip, responsible for controlling or interacting directly with the operation of hardware. One of ordinary skill in the art would view an operating system as very distinct from firmware based on firmware being present in hardware whereas operating system software is portable meaning that it is designed to operate on any of a number of processors.

Thornton Decl. ¶ 54, Dkt. No. 138-15 at 18. Plaintiff's expert does address processor-specific

systems. Rather, she notes that an operating system runs on a processor:

> Operating systems run on processors. A large majority of processors in use run an Operating System. Operating System cannot execute if there is no processor that it can run on. For this reason, any statement made by the patentee during prosecution purportedly disclaiming the use of the processor in conjunction with an operating system would not have made sense to one of skill in the art.

Rosing Decl. ¶ 10, Dkt. No. 122-1 at 4. The patent examiner similarly noted that operating systems

run on processors:

> In regards to applicants argument that "Horden fails to teach or suggest a computer processor determining a frequency and voltage at which to operate a computer processor. Horden may disclose that an operating system determines what frequency and voltage at which to operate a processor": The first part of this argument expressly contradicts the second part. The operating system runs on the processor. Thus the processor determines the frequency and voltage at which to operate the processor.

'061 Patent File Wrapper April 27, 2004 Office Action 2, Dkt. No. 120-10 at 4. But rather than suggesting that the patentee's argument was nonsensical, this suggests that it was less-than-ideally articulated and captured in the claim language. Indeed, the examiner expressed the gist of the argument by noting "***the claim language does not require the processor determining to be performed without regards to the operating system, i.e. via processor hardware only***." Id. (emphasis added). Ultimately, the patentee's operating-system-vs-processor argument is not an erroneous statement that can simply be disregarded. *See Springs Window Fashions LP v. Novo Indus., L.P.*, 323 F.3d 989, 996 (Fed. Cir. 2003) (rejecting an argument that "detailed, consistent, and repeated" statements "simply constituted an error by the prosecuting attorney that should not be binding on the applicant").

While the operating-system-vs-processor argument constitutes a disclaimer, that disclaimer was rescinded during prosecution of the '061 Patent and does not attach to the issued claims.[10] Controlling precedent "allows applicants to rescind a disclaimer during prosecution." *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1366 (Fed. Cir. 2014) (citing *Hakim v. Cannon Avent Grp.*, 479 F.3d 1313, 1317–18 (Fed. Cir. 2007); *Springs Window Fashions*, 323 F.3d at 995). "[A] disclaimer made during prosecution can be rescinded, ***permitting recapture of the disclaimed scope***, [but] the prosecution history must be sufficiently clear to inform the

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[10] The parties did not submit argument regarding whether a patentee may properly rescind a disclaimer during reexamination. It is unclear whether such a rescission would be effective as it would effectively broaden the scope of the patent's claims but not by amending existing claims or adding new claims. 35 U.S.C. § 314 (in inter partes reexamination, "no proposed amended or new claim enlarging the scope of the claims of the patent shall be permitted"); *Marine Polymer Techs., Inc. v. HemCon, Inc.*, 672 F.3d 1350, 1362–63 (Fed. Cir. 2012) (en banc in relevant part) (overruling a panel holding that a statutory provision concerning reexamination claim scope that expressly required "amended or new" claims may be invoked by prosecution arguments). Further, there is no argument before the Court regarding what effect a rescission in reexamination has on later-issued patents in the family.

examiner that the previous disclaimer, and the prior art that it was made to avoid, may need to be re-visited." *Hakim*, 479 F.3d at 1318 (emphasis added). Here, the patentee acquiesced to the examiner's position and thereby rescinded the operating-system-vs-processor argument. *See Springs Window Fashions*, 323 F.3d at 995 (suggesting that "acquiesce[nce] in the examiner's comments regarding the overlapping scope of [the prior-art reference]" is sufficient to rescind a disclaimer of the overlapping scope). The patentee did not persist with the operating-system-vs-processor argument and the claims were not amended to address the examiner's concerns that "the claim language does not require the processor determining to be performed without regards to the operating system, i.e. via processor hardware only." Rather, the patentee overcame the Horden rejection by amending the claims to insert limitations directed to "executing instructions while changing voltage." '061 Patent File Wrapper April 27, 2004 Office Action 2, Dkt. No. 120-10 at 4; '061 Patent File Wrapper July 16, 2004 Interview Summary, Dkt. No. 120-11 at 3; '061 Patent File Wrapper August 3, 2004 Amendment and Response to Office Action 2–11 (amending every pending independent claim to include such an "executing instructions" limitation, except for pending Claim 16 which already included such a limitation), Dkt. No. 138-9 at 3–12. Thus, the patentee acquiesced to the examiner's rejection of the operating-system-vs-processor argument and thereby rescinded the disclaimer. *See, e.g.*, *S. Research Inst. & Genyzme Corp. v. Abon Pharm. LLC*, No. 12-cv-4709, 2013 U.S. Dist. LEXIS 119807, at *18–21 (D.N.J. Aug. 22, 2013). The patentee's prosecution-history statements distinguishing operating-system-based power management do not change the scope of the issued claims.

Accordingly, the Court construes the terms as follows:

- "computer processor" means "CPU";

- "processor" means "CPU";

- "processing unit" means "computing portion of CPU"; and

- "processing device" means "computing portion of CPU."

B.   "a counter"

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
a counter • '627 Patent Claims 1, 10, 16	plain and ordinary meaning	a device that counts to time the phase-lock-loop relock process

The Parties' Positions

Plaintiff submits: "A counter is simply something that counts." Dkt. No. 120 at 15. While certain embodiments and claims include a counter working with a phase-locked-loop ("PLL") circuit, that does not justify reading such a configuration into "counter" or into the claims. Id. Doing so would render some limitations superfluous and improperly import a PLL circuit into Claim 16 of the '627 Patent. Id.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '061 Patent col.5 ll.9–10, col.6 ll.63–66.

Defendants respond: The counter, as described in the claims and the exemplary embodiments, determines the length of time the processor-clocks are disabled during a change in clock frequency. Dkt. No. 138 at 13. This is the time it takes the PLL circuit to lock on the new frequency. Id. at 13–14.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '627 Patent col.5 ll.8–11, col.6 l.63 – col.7 l.2.

Plaintiff replies: The counter does not necessarily time a phase-lock-loop process. Dkt. No. 145 at 8. For example, Claim 10 of the '627 Patent recites both PLL circuitry and a counter, but does not link them as Defendants advocate. Id.

Analysis

The issue here is whether the "counter" of the claims is necessarily limited to a counter that "counts to time the phase-lock-loop relock process." It is not.

The Power-Management Patents describe using a counter to control how long the processor clock and any separate clocks for other components are disabled for a frequency-change operation. '061 Patent col.6 l.50 – col.7 l.5. These clocks are described as generated by a "programmable frequency generator" that comprises a PLL circuit. Id. at col.3 ll.18–26, col.4 ll.21–28. And the described counter "is utilized to measure the time allowed for the PLL circuitry to lock to the new frequency." Id. at col.6 ll.63–66. But the patents do not define the invention to necessarily include either PLL circuitry or restrict a counter to one that "counts to time the phase-lock-loop relock process." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (en banc) ("we have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment"); *Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012) ("It is likewise not enough that the only embodiments, or all of the embodiments, contain a particular limitation. We do not read limitations from the specification into claims; we do not redefine words. Only the patentee can do that."); *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc) ("The law does not require the impossible. Hence, it does not require that an applicant describe in his specification every conceivable and possible future embodiment of his invention.").

The claims describe that the counter is used to restart the clocks, and expressly reference the relock time in those claims where the counter counts to the relock time. Claims 1 and 10 of the '627 Patent, reproduced below and annotated by the Court, recite two different systems, one that expressly has a PLL circuit and a counter that counts to the PLL's relock time and one that

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expresses neither a PLL circuit nor a counter that counts to a PLL's relock time. This indicates that the "counter" does not necessarily count to a PLL's relock time. *See SRI Int'l,* 775 F.2d at 1122 ("It is settled law that when a patent claim does not contain a certain limitation and another claim does, that limitation cannot be read into the former claim in determining either validity or infringement."); *see also*, *Phillips*, 415 F.3d at 1314 (noting that the use of the term "steel baffles" "strongly implies that the term 'baffles' does not inherently mean objects made of steel"). Simply, it would be improper to read into the claims features of an exemplary embodiment that are expressly recited in some claims but not in others.

1. A computer system comprising: a processing unit operable at different voltages; a second component; and a frequency generator configured to receive a first clock signal from a clock generator and to adjust a frequency of said first clock signal to furnish clock signals at different frequencies to said processing unit and said second component, wherein said different frequencies are individually adjustable; wherein, in response to initiating a change in frequency for said processing unit, said processing unit is configured to start a *counter* and to shut down clocks to said processing unit and said second component; and wherein further, *in response to said counter reaching a specified value, said processing unit is configured to turn on said clocks*.	10. A computer system comprising: a processing unit operable at different voltages; a second component; a clock generator configured to generate a first clock signal at a frequency, said processing unit configured to register ***a value corresponding to an amount of*** <u>***time allowed for phase-locked-loop (PLL) circuitry to lock in response to a change in frequency***</u> of said first clock signal; and a frequency generator coupled to said clock generator and comprising said PLL circuitry, said frequency generator configured to adjust said frequency of said first clock signal to concurrently furnish clock signals at different frequencies to said processing unit and said second component, wherein said different frequencies are individually adjustable; wherein, in response to initiating said change in frequency, said processing unit is configured to start a *counter* and to shut down clocks to said processing unit and said second component; and wherein further, *in response to said counter reaching* <u>*said value*</u>*, said processing unit is configured to turn on said clocks*.

Accordingly, the Court rejects Defendants' proposed construction and determines that "counter" has its plain and ordinary meaning without the need for further construction.

C. "determining an allowable reduced power consumption level" and "determining a level of permitted power consumption"

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
determining an allowable reduced power consumption level • '061 Patent Claim 39	plain and ordinary meaning	indefinite
determining a level of permitted power consumption • '247 Patent Claim 1		

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: A processor's permitted power level can be determined by referring to the processor's specification. Dkt. No. 120 at 17.

In addition to the claims themselves, Plaintiff cites the following **extrinsic evidence** to support its position: Rosing Decl. ¶ 16 (Plaintiff's Ex. X, Dkt. No. 122-1 at 6).

Defendants respond: The power consumption "allowable" or "permitted" for a processor is a function of the processor's operating conditions but the Power-Management Patents provide no guidance as to how to determine what is allowable or permitted for a given set of conditions. Dkt. No. 138 at 16–17. While a certain power level may be within the processor's specified power consumption, the patents provide no way to determine whether that power level is allowable for a specific operating condition, such as a high-temperature operating state. Id. at 17.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: '061 Patent col.1 ll.42–47. **Extrinsic evidence**: Nazarian Decl. ¶¶ 47–49 (Defendants' Ex. N, Dkt. No. 138-14 at 15–16).

Plaintiff replies: The "allowable" or "permitted" power consumption can be determined from processor specifications as well as "the equation fmax=kV." Dkt. No. 145 at 9.

Plaintiff cites further **extrinsic evidence** to support its position: Nazarian Decl. ¶ 46 (Defendants' Ex. N, Dkt. No. 138-14 at 15–16).

<u>**Analysis**</u>

The issue here is whether the meanings of "allowable reduced power consumption" and "permitted power consumption" are reasonably certain. They are.

The Power-Management Patents describe that power consumption is modified by changing the processor frequency and voltage according to operating conditions. Operating conditions, such as processor voltage, clock frequency, temperature, and the relative time spent in sleep or halt states, are monitored and used to determine whether the frequency and voltage should be changed. '061 Patent at col.5 ll.21–67. The "correct" frequency is determined based on the set of conditions and the voltage is based on the frequency. Id. at col.5 ll.57–61, col.6 ll.1–5, col.7 ll.32–36. The patents also teach that the frequency and voltage may be changed under certain operating conditions when "a series of processor-intensive commands have been furnished to be executed by the processor." Id. at col.7 ll.39–60.

The "permitted" or "allowable" power-consumption level is further a function of user-setting and device-limit parameters. For example, the patents explain that voltage and frequency should be the lowest levels which "provide[] the computing power desired by the user at any given moment." '061 Patent col.1 ll.48–58. The patents also explain that whether a particular consumption level is "permitted" or "allowable" depends on whether the operating temperature is at or below some predetermined "safe" level. *See id*. at col.7 ll.40–53. These settings and limits may be subjective to the user. For example, one user may desire greater computing power than

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another or may be willing to risk a higher operating temperature. But whether a power-consumption level is determined based on these settings and limits is not subjective.

Ultimately, whether a power level is determined based on operating conditions, settings, and limits is objectively determinable.

Accordingly, the Court holds that Defendants have failed to prove that these terms render any claim indefinite.

D. Executing-Instructions-While-Changing-Voltage Terms

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
• See Term 10 in the parties' Joint Claim Construction Chart (Dkt. No. 160 at 37–48).	plain and ordinary meaning	the [processor/ processing unit] does not stop the clock and continues execution of instructions while the voltage is [changed/lowered]

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: These terms plainly mean the processor executes instructions while the voltage is changed. Dkt. No. 120 at 17. It would be improper to inject the "does not stop the clock" limitation that Defendants propose. Id.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '061 Patent col.6 ll.16–29.

Defendants respond: Continued operation of the processor's clock while the processor's voltage is changed is an inherent aspect of the invention and therefore is implicit in every claim. Dkt. No. 138 at 17–18. The Power-Management Patents describe that the clocks are enabled before

initiating the voltage change so that the processor may execute instructions while the voltage is changed. Id. at 18. And the patentee explained during prosecution that "while the processor voltage is being changed, the processor is not suspended from executing instructions through its processing circuitry" and the "processor cannot execute instructions while the processor clock is not running." Id. at 18–19 (quoting '061 Patent File Wrapper August 3, 2004 Amendment and Response to Office Action 16–17, Dkt. No. 138-9 at 17–18). In allowing the '061 Patent, the patent examiner noted in two separate notices of allowance that this continued-clocking aspect of the invention was not found in the prior art. Id. at 19.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '061 Patent fig.2, col.6 ll.27–29, col.6 ll.41–60, col.7 ll.26–36; '061 Patent File Wrapper August 3, 2004 Amendment and Response to Office Action (Defendants' Ex. I, Dkt. No. 138-9), September 15, 2005 Notice of Allowance (Defendants' Ex. J, Dkt. No. 138-10), March 6, 2006 Notice of Allowance (Defendants' Ex. T, Dkt. No. 138-20).

Plaintiff replies: The claim language and the prosecution-history statements allow that a processor may stop at some time during a voltage change so long as it could continue to execute instructions during the voltage change. Dkt. No. 145 at 9–10.

Plaintiff cites further **intrinsic evidence** to support its position: '061 Patent File Wrapper August 3, 2004 Amendment and Response to Office Action (Defendants' Ex. I, Dkt. No. 138-9), March 6, 2006 Notice of Allowance (Defendants' Ex. T, Dkt. No. 138-20).

<u>Analysis</u>

The issue here appears to be whether the clock must continue operating at all times during a recited voltage change. The claims plainly recite that instructions are executed during the voltage change or that the processor is enabled to execute instructions during the voltage change. This

means that the clock is necessarily operational at least at some point during the voltage change. But the terms in dispute here do not necessarily require that the clock is operational at all times during the voltage change.

The Power-Management Patents describe and claim execution of instructions, or the ability to execute instructions, during a voltage-change operation. For example, the patents explain that "future-voltage regulator circuitry" or changing the voltage in incremental steps allows the clock to remain stable which "offers the advantage that the processor may continue to execute commands during the period in which the voltage change is taking place." '061 Patent col.6 ll.16–29. In contrast, the processor clock is described as disabled when the frequency is being changed, which occurs either before the voltage is changed (for a frequency decrease) or after the voltage is changed (for a frequency increase). Id. at col.6 ll.1–5, col.6 l.30 – col.7 l.36. The claims recite executing instructions while the voltage is changed or changing the voltage while the processor is enabled to execute instructions. For example, Claim 1 of the '247 Patent recites "changing power consumption of the processing device during execution of the instructions." '247 Patent col.8 ll.16–17. Similarly, Claim 26 of the '708 Patent recites "changing the operating voltage from a first voltage to a second voltage while the processing unit is enabled to execute instructions." '708 Patent col.10 ll.28–30.

The advantage over the prior-art systems is not that the clock never stops during a voltage change but rather that it is not stopped for the entirety of a voltage change. For example, during prosecution of the '061 Patent, the patentee argued the prior art disabled the clock before changing the voltage and did not enable it until after the voltage change was complete. *See* '061 Patent File Wrapper August 3, 2004 Amendment and Response to Office Action 16–17 ("The voltage change represented by the 'SSMUXSEL' change and the foregoing timing interval occur when the

processor clock ('CPU CLK') is not running."), Dkt. No. 138-9 at 17–18; '061 Patent File Wrapper February 13, 2004 Amendment and Response to Office Action 18–20 (stating that in the prior art "instructions should not be executed while the processor's frequency is altered due to unexpected behavior of the processor" and "the processor is operated (e.g., instructions executed) at one of the discrete voltage/frequency pairs, not while moving between the voltage/frequency pairs"), Dkt. No. 120-9 at 19–21. The examiner understood that it was common in the prior art "to stop the clock of the processor just prior to changing the voltage" and the prior art of record did not teach otherwise. '061 Patent File Wrapper September 15, 2005 Notice of Allowance 2, Dkt. No. 138-10 at 6; *see also*, '061 Patent File Wrapper March 6, 2006 Notice of Allowance 2, Dkt. No. 138-20 at 6 (noting that a prior-art reference teaches "stop[ping] the execution of the instructions while varying the voltage"). From this, the Court understands that the distinction between the prior art and the claimed invention is not that the processor clock is never disabled during the voltage change in the invention, but rather that the processor clock is never enabled during the voltage change in the prior art.

There is a meaningful distinction between never enabling a clock during a voltage change and never disabling a clock during a voltage change. The claims require that the clock be enabled during the voltage change but do not necessarily specify that it can never be disabled during a voltage change. The prosecution history states that the prior art never enabled a clock during the voltage change. Given that the relevant claims include a "comprising" transition phrase, the claims do not exclude at some point changing the voltage while the clock is disabled (or stopped) so long as the voltage is changed at some point while the clock is enabled.

Accordingly, the Court rejects Defendants' proposed construction and determines that these terms have their plain and ordinary meanings without the need for further construction.

E. **"voltage source includes a programmable voltage supply," "a power supply furnishing selectable output voltages," "a selectable voltage," and "programmable power supply"**

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
voltage source includes a programmable voltage supply • '247 Patent Claims 16, 23	plain and ordinary meaning	power supply configured to provide one of a plurality of specific voltage levels in response to commands or requests
a power supply furnishing selectable output voltages • '061 Patent Claims 8, 11, 56		
a selectable voltage • '627 Patent Claim 5		
programmable power supply • '061 Patent Claim 10 • '627 Patent Claim 25		
programmable voltage supply[11] • '247 Patent Claim 5		

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: It would be improper to require the voltage levels be provided by a processing unit.[12] Dkt. No. 120 at 17–18.

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[11] The parties did not list "programmable voltage supply" separately for construction, but they did list Claim 5 of the '247 Patent in their P.R. 4-5(d) chart and provided the complete language of the claim with "a programmable voltage supply" in bold type. Dkt. No. 160 at 50.

[12] Defendants originally proposed "provides one of a plurality of specific voltage levels in response to commands from the processing unit." Dkt. No. 120 at 17; Dkt. No. 138 at 20.

Defendants respond: The fundamental aspect of the selectable-voltage power supply of the Power-Management Patents is that it provides a different voltage depending on the input that is used to select the voltage output. Dkt. No. 138 at 20. This is distinct from a power supply that "provides a single preset value within tolerances." Id.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '061 Patent col.2 ll.46–57, col.6 ll.2–15.

Plaintiff replies: It is unclear what constitutes a "specific" voltage level and therefore Defendants' proposed construction improperly injects ambiguity. Dkt. No. 145 at 10.

Analysis

The issue here appears to be whether a "programmable" or "selectable" voltage supply is a supply that provides one of several possible voltage outputs in response to an input. It is.

The Power-Management Patents describe and claim selecting a voltage level based on the clock frequency. *See, e.g.*, '061 Patent col.1 ll.45–47 ("The maximum allowable frequency is described by $f_{max} = kV$, where k is a constant."), col.6 ll.1–15 ("If the frequency is to be increased, it is first necessary that the voltage be increased to allow the processor to function at a higher frequency."), col.7 ll.32–34 ("If the operation was to decrease the frequency, the control software causes the voltage to be lowered to the calculated value …."). The appropriate voltage level is selected or programmed by setting the power supply output using an input. *See, e.g.*, *id.* at col.6 ll.9–12 ("the control software simply furnishes a correct value on the input pins of the power supply to cause the computed voltage to be furnished"). This is claimed, for example, in Claim 56 of the '061 Patent which recites "power supply furnishing selectable output voltages" and "processing unit operable … to cause the power supply … to furnish a voltage level." '061 Patent

Inter Partes Reexamination Certificate (0088ᵗʰ) col.3 l.45, col.3 l.50 – col.4 l.2. That is, an input is used to select or program the voltage output.

Accordingly, the Court construes these terms as follows:

- "voltage source includes a programmable voltage supply" means "voltage source includes a power supply configured to provide one of a plurality of distinct voltage levels specified by an input";

- "a power supply furnishing selectable output voltages" means "a power supply providing one of a plurality of distinct voltage levels corresponding to an input";

- "a selectable voltage" means "one of a plurality of distinct voltage levels specified by an input";

- "programmable power supply" means "power supply configured to provide one of a plurality of distinct voltage levels specified by an input"; and

- "programmable voltage supply" means "power supply configured to provide one of a plurality of distinct voltage levels specified by an input."

F. Change-the-Voltage Terms

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
causing a change in [its/the] voltage • '061 Patent Claim 1	plain and ordinary meaning	commanding the voltage generator to change the voltage furnished by the voltage generator to the determined voltage level
changes the first operating voltage to a second operating voltage[13] • '708 Patent Claims 33, 55		

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[13] The parties identified the term as "change[s] [a voltage supplied to the processing device from] the first [operating] voltage to [the/a] second [operating] voltage" but the Court finds only "the changes the first operating voltage to a second operating voltage" in the claims identified in the parties' 4-5(d) chart.

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
causing the voltage at which said computer processor is operated to change • '061 Patent Claims 15, 23, 30		
control the voltage source to change from providing the first voltage to providing the second voltage • '247 Patent Claim 17		
[changing/change/changes] [a/the/the operating/a level of] voltage • '061 Patent Claim 8 • '708 Patent Claims 1, 7, 20, 23, 26, 36, 39, 51, 59 • '627 Patent Claim 16 • '247 Patent Claim 10		

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: Neither "voltage generator" nor "commanding" should be read into the claims. Dkt. No. 120 at 18.

Defendants respond: The Power-Management Patents describe a power supply that is external to the processor and therefore the processor must command or request a voltage change, it "cannot simply change the voltage." Dkt. No. 138 at 21. Further, the voltage changes must be purposefully requested changes to a specific voltage level, not "random voltage fluctuations that commonly occur as the conditions of the chip vary." Id. at 21–22.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '061 Patent fig.1, col.2 ll.46–60, col.6 ll.2–15, col.6 ll.30–36, col.7 ll.32–34.

Plaintiff replies: Defendants' proposed construction is based on descriptions of exemplary embodiments that should not be imported into the claims. Dkt. No. 145 at 10.

<u>Analysis</u>

The issue here appears to be whether "commanding the voltage generator" should be read into the Change-the-Voltage terms. It should not.

The meanings of these claim terms are readily accessible without construction when read in the context of the claims. For example, Claim 1 of the '061 Patent recites "computer processor … causing a change in its voltage … to … the minimum voltage determined." '061 Patent Inter Partes Reexamination Certificate (0088th) col.1 ll.46–50. Notably, the claim recites neither a "voltage generator" nor a "command." Similarly, Claim 15 of the '061 Patent does not recite a "voltage generator" or a "command," it recites "computer processor implementing the determined … voltage, wherein said implementing comprises: … causing the voltage at which said computer processor is operated to change." Id. at col.2 ll.31–35. Defendants argument is premised on a description of "various hardware components of a computer system utilized in accordance with the present invention." '061 Patent col.2 ll.46–48. Even if Defendants' characterization of that computer system is correct—and the system includes a voltage generator separate from the processor that responds to commands from the processor—that is not sufficient to limit the claims to that system. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (en banc) ("we have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment"); *Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012) ("It is likewise not enough that the only embodiments, or all of the embodiments, contain a particular limitation. We do not read limitations from the specification into claims; we do not redefine words. Only the patentee can do

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that."); *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc) ("The law does not require the impossible. Hence, it does not require that an applicant describe in his specification every conceivable and possible future embodiment of his invention."). Further, it is not clear that Defendants' characterization is correct. For example, the Power-Management Patents describe selecting a voltage level from a power supply using multiple pins: "The typical power supplies offer a number of pins (often five) by which different operating voltages may be selected. … the control software simply furnishes a correct value on the input pins of the power supply to cause the computed voltage to be furnished." '061 Patent col.6 ll.6–12. Notably, the power supply output is described as a function of an input "value" without reference to a command.

Accordingly, the Court rejects Defendants' proposed construction and determines the Change-the-Voltage terms each have their plain and ordinary meaning without the need for further construction.

G. "idle time," "idle state," "sleep state," and "halt state"

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
idle time • '061 Patent Claim 23	plain and ordinary meaning	time spent in an idle state
idle state • '061 Patent Claims 28, 30, 44, 49	plain and ordinary meaning	a state in which power is furnished to the processor but the processor is not presently executing instructions
sleep state • '061 Patent Claims 31, 46, 51	plain and ordinary meaning	a state in which power is furnished only to the processor and to DRAM memory and where the processor is off and does not respond to interrupts

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
halt state • '061 Patent Claims 32, 33, 45, 47, 50, 52	plain and ordinary meaning	a state in which the core clock has been stopped but the processor responds to most interrupts

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: These terms are known to one of skill in the art and do not need to be construed. Dkt. No. 120 at 19.

In addition to the claims themselves, Plaintiff cites the following **extrinsic evidence** to support its position: Rosing Decl. ¶ 17 (Plaintiff's Ex. X, Dkt. No. 122-1 at 6).

Defendants respond: Claim construction is meant to aid the decision maker, not the person of skill in the art, and these terms do not have a plain meaning to the average juror; therefore, these terms should be construed. Dkt. No. 138 at 22. The Power-Management Patents provide definitions for "sleep state" and "halt state." Id. at 23 (citing '061 Patent col.5 ll.35–40). And these states are each described as an "idle state," evincing the meaning of "idle state" is the commonality between the "sleep state" and "halt state." Id.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '061 Patent col.5 ll.23–40.

Plaintiff replies: One of ordinary skill in the will readily understand these terms, therefore they do not need to be construed. Dkt. No. 145 at 10–11.

Analysis

The issue here appears to be whether these terms have been defined in the Power-Management Patents. The Court determines that the patents provide definitions of "idle time," "idle state," and "halt state" but do not define "sleep state."

To begin, the Power-Management Patents do not include a definition of "sleep state." Rather, they include a definition of "deep sleep state." "The ***deep sleep state*** is a state in which power is furnished only to the processor and to DRAM memory. In this state, the processor are [sic] all off and it does not respond to any interrupts." '061 Patent col.5 ll.35–38 (emphasis added). While this statement explains a "deep sleep state," it does not satisfy the "exacting standard" for a definition of "sleep state." *GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("The standards for finding lexicography and disavowal are exacting. To act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term, and clearly express an intent to define the term." (quotation marks omitted)). For example, what part of the definition is attributable to "sleep state" and what part to "deep"? Defendants suggest "deep sleep state" and "sleep state" are synonymous. The Court is not persuaded. *Phillips*, 415 F.3d at 1314 (noting that the use of the term "steel baffles" "strongly implies that the term 'baffles' does not inherently mean objects made of steel"). Plaintiff's expert opines the "sleep state" has an ordinary meaning in the art and that it used the way in the patents. Rosing Decl. ¶ 17, Dkt. No. 122-1 at 6. As Defendants have not established the contrary, the Court concludes that "sleep state" has its plain and ordinary meaning.

The patents provide a definition of "halt state." "The halt state is a state in which the core clock has been stopped but the processor responds to most interrupts." '061 Patent col.5 ll.38–40. The Court adopts this definition as the meaning of "halt state."

"Idle state" and "idle time" are explained in the patents. The patents describe monitoring "the amount of time the processor spends in one of what may be a number of idle states in which various components of the system are quiescent." Id. at col.5 ll.21–28. That is, an "idle state" is a state "in which various components of the system are quiescent." Defendants' proposed construction is improperly narrow. It is based on derived commonality between "deep sleep state" and "halt state" that ignores the expressly stated commonality that "various components of the system are quiescent." Further, Defendants' argument apparently presumes that idle states are limited to the exemplary halt states and deep sleep states. But there is no evidence that supports such a presumption. Finally, the "idle time" is the "time the processor spends in one of what may be a number of idle states"—i.e., the time spent in an idle state.

Accordingly, the Court rejects Defendants' contention that "sleep state" is defined in the patents and determines it has its plain and ordinary meaning without the need for further construction. The Court construes "idle time," "idle state," and "halt state" as follows:

- "idle time" means "time spent in an idle state";

- "idle state" means "state in which various components of the system are quiescent"; and

- "halt state" means "state in which the core clock has been stopped but the processor responds to most interrupts."

H. "reducing a magnitude of a difference …"

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
reducing a magnitude of a difference … • '247 Patent Claim 1	plain and ordinary meaning	indefinite

The Parties' Positions

Plaintiff submits: Under its plain meaning, a "magnitude" is a "numerical quantitative measure" usually expressed "as a multiple of a standard unit." Dkt. No. 120 at 19 (quoting *Merriam-Webster's Collegiate Dictionary* 700 (10th ed. 1994), Dkt. No. 121-6 at 4). And the Power-Management Patents describe how frequencies may be reduced using multipliers. Id. at 19–20. Thus, one of skill in the art would understand what it means to reduce a magnitude of difference between two frequencies of two voltages. Id. at 20.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '061 Patent col.3 ll.55–60, col.4 ll.51–54. **Extrinsic evidence**: *Merriam-Webster's Collegiate Dictionary* 700 (10th ed. 1994), "magnitude" (Plaintiff's Ex. Q, Dkt. No. 121-6).

Defendants respond: Plaintiff's argument regarding the plain meaning of "magnitude" improperly renders "magnitude" superfluous to "multiplier" and "dividers" and ultimately gives no effect to "magnitude" in the "magnitude of a difference." Dkt. No. 138 at 23. Plaintiff's dictionary definition evinces the indefiniteness of the term in that there is no indication as to what "numerical quantitative measure" or "standard unit" applies. Id.

In addition to the claims themselves, Defendants cite the following **extrinsic evidence** to support their position: *Merriam-Webster's Collegiate Dictionary* 700 (10th ed. 1994),

"magnitude" (Plaintiff's Ex. Q, Dkt. No. 121-6); Nazarian Decl. ¶ 50 (Defendants' Ex. N, Dkt. No. 138-14 at 16–17).

Plaintiff replies: The term "magnitude" is used in the claims because the difference in voltages may be a negative number and the claim is concerned with the absolute value of the difference. Dkt. No. 145 at 11.

Analysis

The issue distills to whether the meaning "magnitude of a difference" is reasonably certain. It is.

In the context of Claims 1, 7, and 8 of the '247 Patent, reproduced here and annotated by the Court, the meaning of "reducing a magnitude of a difference" is reasonably certain. The term refers to changing the operating frequency to be closer to the highest allowable frequency and changing the operating voltage to be closer to the lowest allowable voltage. See, e.g., '061 Patent

1. A method, comprising:
determining a level of permitted power consumption by a processing device from a set of operating conditions of the processing device, with the determining the level of permitted power consumption not based upon instructions to be executed by the processing device;
determining a highest allowable frequency of operation of the processing device that would result in power consumption not exceeding the level of permitted power consumption;
determining a lowest allowable level of voltage to apply to the processing device that would allow execution of the instructions by the processing device at the highest allowable frequency; and
changing power consumption of the processing device during execution of the instructions by *reducing a magnitude of a difference* between an operating frequency of the processing device and the highest allowable frequency of operation of the processing device and *reducing a magnitude of a difference* between a voltage applied to the processing device and the lowest allowable level of voltage.

7. The method as recited in claim 1, wherein:
the *magnitude of the difference* between the operating frequency of the processing device and the highest allowable frequency of operation of the processing device *is reduced* before *reducing the magnitude of the difference* between the voltage applied to the processing device and the lowest allowable level of voltage.

8. The method as recited in claim 1, wherein:
the *reducing the magnitude of the difference* between the voltage applied to the processing device and the lowest allowable level of the voltage includes changing the voltage applied in a plurality of decrements after the *magnitude of the difference* between the operating frequency of the processing device and the highest allowable frequency of operation of the processing device *is reduced*.

fig.2, col.5 l.15 – col.7 l.38 (describing when to increase the frequency/voltage to a target and when to decrease the frequency/voltage to a target). "Magnitude" is used to clarify that, for example, an operating frequency that is originally less than the highest allowable frequency is increased rather than decreased. Thus, even though subtracting the highest allowable frequency from the operating frequency would yield a negative difference (the "difference between an operating frequency of the processing device and the highest allowable frequency" of the claims), and "reducing" the negative difference would require decreasing, instead of increasing, the operating frequency, the operating frequency is instead increased to be closer to the highest allowable frequency. That is "magnitude" here refers to the absolute value of the difference.

Accordingly, Defendants have not proven the "reducing a magnitude of a difference" terms render any claims indefinite and construes "reducing a magnitude of a difference …" as follows:

- "reducing a magnitude of a difference …" means "reducing the absolute value of the difference …."

V. CONSTRUCTION OF THE BUS-CONTROLLER PATENT

A. "channel," "communication(s) channel(s)," and "channel for the communication"

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
channel	plain and ordinary meaning	time-based transfer-window
communication(s) channel(s) • '876 Patent Claims 1, 15, 20		
channel for the communication • '876 Patent Claim 2		

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: "Communications channel" is used in the Power-Management Patents as shorthand for "time-based transfer window" but was not redefined as "time-based transfer window." Dkt. No. 120 at 37–38.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '876 Patent, at [57] Abstract, col.5 ll.45–48.

Defendants respond: "Communications channel" is defined in the '876 Patent as "time-based transfer window." Dkt. No. 138 at 39 (quoting '876 Patent col.5 ll.46–48).

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '876 Patent col.3 ll.30–33, col.3 ll.46–47, col.5 ll.46–48.

Plaintiff replies: The '876 Patent provides that "[v]arious channel control structures other than a queue might be utilized," which evinces that channels other than time-based transfer windows may be used. Dkt. No. 145 at 16 (quoting '876 Patent col.8 ll.50–52).

Plaintiff cites further **intrinsic evidence** to support its position: '876 Patent col.3 ll.30–33, col.3 ll.46–47, col.8 ll.50–52.

Analysis

The issue here distills to whether "communication channel" was defined in the patent as "time-based transfer-window." It was.

The '876 Patent equates "communications channel" with "time-based transfer-window." The patent provides: "[p]rocessor 245a generates, as a result of communication-need evaluation, a time-based transfer-window ('communications channel') designation." '876 Patent col.5 ll.46–47. Further, the patent provides "[t]he coordinator assigns time-sharing communications 'channels' to selected subsystem pairs." Id. at col.2 ll.65–67. From this, the Court understands that the communications channels of the claims are defined as time-sharing channels, or "time-based transfer-windows."

The Court is not persuaded that mention of "channel control structures other than a queue" means channels of the claims may be other than time-sharing channels. This queue is the allocation queue used to allocate channels to subsystems as needed. Id. at col.5 ll.52–53, col.7 ll.6–32. Thus, the disclosure that "[v]arious channel control structures other than a queue might be utilized," id. at col.8 ll.50–52, suggests not that channels may take on different structures but rather that how the channels are allocated to subsystem pairs may be by other than a queue.

Accordingly, the Court determines that "channel" does not need to be construed apart from "communication(s) channel(s)" and "channel for the communication" and construes those terms as follows:

- "communication(s) channel(s)" means "time-based transfer-window" and

- "channel for the communication" means "time-based transfer-window."

B. **"transmitting information regarding the assigned channel to the pair of subsystems" and "transmitting a communications channel designation to the pair of subsystems"**

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
transmitting information regarding the assigned channel to the pair of subsystems • '876 Patent Claim 2	plain and ordinary meaning	transmitting information comprising at least the assigned channel number to the pair subsystems
transmitting a communications channel designation to the pair of subsystems • '876 Patent Claim 15		

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: The limitation "assigned channel number" should not be read into the claims.[14] Dkt. No. 120 at 40.

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[14] Defendants originally proposed "transmitting information comprising at least the addresses for the sending and receiving subsystems and the assigned channel number to the pair." *See* Dkt. No, 120 at 40. Plaintiff also opposed "addresses for the sending and receiving subsystems." *Id*.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '876 Patent col.5 ll.48–52.

Defendants respond: Transmission of the communications channel number to the subsystems is the essence of the invention, and what distinguishes the invention from the prior-art arbitration approach to communication. Dkt. No. 138 at 42–43.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '876 Patent col.1 ll.54–56, col.5 ll.46–61, col.7 ll.8–16, col.7 ll.33–37; '876 Patent File Wrapper January 25, 1999 Amendment (Defendants' Ex. L, Dkt. No. 138-12).

Plaintiff replies: Provision of the channel number to the subsystems is described in the '876 Patent as "preferable" and therefore should not be considered an essential feature of the invention. Dkt. No. 145 at 18.

Analysis

The issue distills to whether the "information regarding the assigned channel" and the "communications channel designation" necessarily include the channel number. They do not.

The '876 Patent describes and claims assigning a channel for a subsystem-to-subsystem communication and identifying the channel to the subsystems. For example, the patent describes that a processor "generates … a time-based transfer-window ('communications channel') designation [that] preferably includes subsystem addresses … as well as the number of a channel according to which data will be sent." '876 Patent col.5 ll.46–52. The controller sends this designation to the subsystems: "coordinator 240 sends the communications channel designation including the allocated channel number … to a first subsystem" and "coordinator 240 sends the communications channel designation including the allocated channel number … to a second subsystem." Id. at col.7 ll.6–16 (emphasis). Claim 2 recites "assigning a channel for the

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communication, transmitting information regarding the assigned channel to the pair of subsystems, and instructing the pair of subsystems to commence communication on the assigned channel." Id. at col.9 ll.17–21. Claim 15 recites "assigning one of a plurality of communications channels to conduct the communication between the pair of subsystems [and] transmitting a communications channel designation to the pair of subsystems … and exchanging said communications between said subsystems over the assigned communications channel." Id. at col.10 ll.16–24.

It is not clear, however, that the identification of the channel must include a "channel number" as Defendants posit. First, the patent states that the designation "preferably includes … the number of the channel." Id. at col.5 ll.48–52. That it is preferable counsels against it being necessary. Second, "[a] channel number is a re-assignable code that coordinator 240 stores in allocation queue 246b." Id. at col.5 ll.52–53. The queue is used to allocate channels to subsystems as needed. Id. at col.7 ll.6–32. But the patent provides that "[v]arious channel control structures other than a queue might be utilized." Id. at col.8 ll.50–52. That a queue is not necessary allows that channel numbers may not be necessary. Finally, Claim 8, which depends from Claim 2, recites "the coordinator stores a number associated with the assigned channel in an allocation queue." The Court understands that the "number" recited here is the channel number. That "*a* number" is used here suggests that the channel number is not inherently included in Claim 2's "information regarding the assigned channel." That is, if the "information regarding the assigned channel" inherently included the channel number, the Court would expect Claim 8 to recite "the coordinator stores *the* number associated with the assigned channel" as that number is inherently present in Claim 2. The evidence does not support importing a "channel" limitation into the claims as Defendants argue. *See Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012) ("It is likewise not enough that the only embodiments, or all of the embodiments, contain a

particular limitation. We do not read limitations from the specification into claims; we do not

redefine words. Only the patentee can do that.")

Accordingly, the Court rejects Defendants' proposed construction and determines the

terms have their plain and ordinary meaning without the need for further construction.

C. "instructing the pair of subsystems to commence communication on the assigned channel" and "exchanging said communications between said subsystems over the assigned communications channel"

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
instructing the pair of subsystems to commence communication on the assigned channel • '876 Patent Claim 2	plain and ordinary meaning	instructing the pair of subsystems to directly exchange data on the assigned channel2 without passing through a central controller
exchanging said communications between said subsystems over the assigned communications channel • '876 Patent Claim 15	plain and ordinary meaning	directly exchanging data between said subsystems over the assigned communications channel without passing through a central controller

Because the parties' arguments and proposed constructions with respect to these terms are

related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: It would be improper to inject "directly exchanging" and "without

passing through a central controller" limitations because there is no lexicography or disavowal to

support such limitations and because other claims express direct exchange. Dkt. No. 120 at 40–41.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic

evidence to support its position: **Intrinsic evidence**: '876 Patent File Wrapper January 25, 1999

Amendment (Plaintiff's Ex. N, Dkt. No. 121-3). **Extrinsic evidence**: Rosing Decl. ¶¶ 54–57 (Plaintiff's Ex. X, Dkt. No. 122-1 at 23).

Defendants respond: The requirement of "direct exchange" between subsystems is mandated by the patentee's arguments made in the course of prosecution. Dkt. No. 138 at 40–42.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '876 Patent File Wrapper September 21, 1998 Amendment (Defendants' Ex. K, Dkt. No. 138-11), January 25, 1999 Amendment (Defendants' Ex. L, Dkt. No. 138-12).

Plaintiff replies: The prosecution-history statements that Defendants rely on were directed to claims that expressly recited direct communications and cannot, therefore, be read to limit claims that do not expressly recite direct communications. Dkt. No. 145 at 16–18.

Plaintiff cites further **intrinsic evidence** to support its position: '876 Patent File Wrapper September 21, 1998 Amendment (Defendants' Ex. K, Dkt. No. 138-11), January 25, 1999 Amendment (Defendants' Ex. L, Dkt. No. 138-12).

<u>Analysis</u>

The issue is whether the claimed communication between the subsystems is necessarily direct communication between the subsystems. It is.

During prosecution, the patentee clarified the "present invention" is distinct from prior art in that it provided for communication between subsystems that is direct rather than routed through a central controller. Specifically, the

> *Cheng* relates to a system and method for managing communications between a central controller 10 and a plurality of remote terminals 14 along shared transmission media 12 (see FIG. 1). All communication signals between the central controller 10 and the remote terminals 14 are multiplexed on the shared transmission media 12. The ***Cheng configuration, therefore, enables direct communication between the controller 10 and the remote terminals 14***. Indeed, *Cheng* requires that all communications ***be sent directly to the central controller***.

The *Cheng* controller 10 also includes communication channels 16 for interfacing the controller 10 with wide area networks 18.

In contrast, Applicant endeavored to provide a system and method for controlling direct communications between multiple subsystems. ***The <u>present invention</u> differs from Cheng in that Cheng discloses a system for managing communications between a controller and multiple remote terminals instead of directly between multiple subsystems***. Indeed, *Cheng* does not teach or suggest controlling direct communications between multiple subsystems.

'876 Patent File Wrapper September 21, 1998 Amendment 8 (emphasis added), Dkt. No. 138-11 at 10. That is, the patentee represented that the ***present invention*** of the '876 Patent concerns direct communications between subsystems rather that communications that are routed through a central controller.

The patentee argued that this direct-communication feature was present in claim limitations that did not recite "direct":

Cheng does not teach or suggest the step of "dynamically and interruptably assigning a ***communications channel between pairs of subsystems***." In this regard, *Cheng* only discloses assigning a communications channel between the central controller and a remote terminal. Because ***Cheng does not teach or suggest communications or a communications channel between pairs of subsystems*** *Cheng* does not render the invention of claim 15 obvious.

Id. at 10 (emphasis added), Dkt. No. 138-11 at 12. That is, a communication channel is not ***between a pair of subsystems*** if communications are routed through the central controller. The patentee made a substantially identical argument for a claim reciting "direct":

Cheng does not teach or suggest such a communications controlling coordinator. Indeed, the *Cheng* system does not teach or suggest a communications channel for direct communication between a pair of subsystems. Instead, the various *Cheng* ***communication channels are not disposed directly between pairs of subsystems, but are disposed between the central controller and the subsystems***.

Id. at 9, Dkt. No. 138-11 at 10. That is, the patentee equated communications ***between subsystems*** with communications ***directly between subsystems***.

Later in prosecution, the patentee amended pending Claim 2 to remove the recitation of "direct"—but the patentee continued to distinguish the prior art on grounds that it did not disclose channels between subsystems. The patentee argued "as discussed above, the *Cheng* system does not control communications by assigning a specific channel for each communication between a pair of subsystems." '876 Patent File Wrapper January 25, 1999 Amendment 3, 7–8, Dkt. No. 121-3 at 5, 9–10. And the patentee argued "the *Cheng* reference, as discussed above, requires that the central controller 10 be positioned between the remote terminals 14 and the wide area networks 18 in series so that the communications between the remote terminals and the wide area networks must pass through the central controller." *Id*. at 7, Dkt. No. 121-3 at 9. The patentee further characterized the prior art as follows:

> The system disclosed in *Cheng* includes a central controller positioned in series between multiple remote terminals and multiple wide area networks, which configuration requires all communications to pass through the controller. Communication between the *Cheng* central controller and the remote terminals follows a multiple access scheme controlled by the central controller via a polling procedure on each of the forward signaling channels independently.

Id. at 6, Dkt. No. 121-3 at 8. The prior-art subsystem-to-subsystem communication necessarily involved subsystem-to-controller communications controlled by the controller. That is, the prior-art subsystem-to-subsystem communications were routed through the controller rather than being *between subsystems*. This is what the patentee argued was different about the prior art. This is what the patentee disclaimed.

Accordingly, the Court construes the terms as follows:

- "instructing the pair of subsystems to commence communication on the assigned channel" means "instructing the pair of subsystems to exchange data on the assigned channel without routing through a central controller" and

- "exchanging said communications between said subsystems over the assigned communications channel" means "exchanging data between said subsystems over the assigned communications channel without routing through a central controller."

D.   "relatively short messages"

Disputed Terms	Plaintiff's Proposed Construction	Defendants' Proposed Construction
relatively short messages • '876 Patent Claim 19	plain and ordinary meaning **alternative**: • a short message that in a conventional master-slave system might wait inordinately long	indefinite

The Parties' Positions

Plaintiff submits: The meaning of "relatively short messages" of Claim 19 is reasonably certain in the context of the '876 Patent's disclosure that a "pause might also be appropriate while another channel is utilized for … a short message that in conventional master-slave system might wait inordinately long." Dkt. No. 120 at 42 (quoting '876 Patent col.7 ll.56–61(modification by the Court)).

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '876 Patent col.7 ll.56–61; '876 Patent File Wrapper November 17, 1997 Preliminary Amendment A (Plaintiff's Ex. U, Dkt. No. 121-10), April 2, 1999 Office Action (Plaintiff's Ex. T, Dkt. No. 121-9), April 12, 1999 Amendment (Plaintiff's Ex. V, Dkt. No. 121-11). **Extrinsic evidence**: Rosing Decl. ¶¶ 58–62 (Plaintiff's Ex. X, Dkt. No. 122-1 at 24).

Defendants respond: "Relatively short" is a term of degree and the '876 Patent does not provide the requisite standard for measuring the degree. Dkt. No. 138 at 43–44. Attempting to define "relatively short" with "inordinately long" just replaces one indefinite term of degree with another. Id. at 44.

In addition to the claims themselves, Defendants cite the following **extrinsic evidence** to support their position: Thornton Decl. ¶¶ 54–58[15] (Defendants' Ex. O, Dkt. No. 138-15).

Plaintiff replies: The meaning of "inordinately long," and therefore "relatively short," is reasonably certain in the context provided by the '876 Patent, which is a conventional master-slave system. Dkt. No. 145 at 18.

Analysis

The issue is whether the meaning or "relatively short messages" is reasonably certain. It is not.

"Relatively short messages" is a term of degree and the '876 Patent does not provide an objective standard by which to determine if a message is "relatively short." The sole guidance the patent provides is the following passage:

> Communication on any assigned channel continues only while a corresponding channel-on code is present on main control bus 201 address and data lines and while the communicating subsystems are enabled. Thus, an ongoing communication can be paused while, for example, coordinator 240 transfers configuration data to another subsystem. *A pause might also be appropriate while another channel is utilized for* a higher priority transfer, a transfer upon which further tasks depend, or simply *a short message that in a conventional master-slave system might wait inordinately long*.

'876 Patent col.7 ll.51–61 (emphasis added). But defining "relatively short" by "inordinately long" just shifts the uncertainty, it does not resolve it. The patent provides no guidance regarding what

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[15] The Thornton declaration the Defendants submitted has only 57 paragraphs. The Court understands paragraphs 46 through 52 pertain to the relevant subject matter in dispute in these terms.

it means to "wait inordinately long" and there is no evidence that "wait inordinately long" is a term of art with a customary objective meaning. *See* Rosing Decl. ¶¶ 58–62, Dkt. No. 122-1 at 24. Simply, the term "relatively short messages" does not adequately "appris[e] the public of what is still open to them." *Nautilus, Inc. v. Biosig Instruments*, *Inc.*, 134 S. Ct. 2120, 2129 (2014).

Accordingly, Defendants have proven Claim 19 of the '876 Patent is indefinite by reason of the uncertainty in the meaning of "relatively short messages."

VI. CONCLUSION

The Court adopts the constructions above for the disputed and agreed terms of the Asserted Patents. The Court further finds that Claim 19 of the '876 Patent is invalid as indefinite. Furthermore, the parties should ensure that all testimony that relates to the terms addressed in this Order is constrained by the Court's reasoning. However, in the presence of the jury the parties should not expressly or implicitly refer to each other's claim construction positions and should not expressly refer to any portion of this Order that is not an actual construction adopted by the Court. The references to the claim construction process should be limited to informing the jury of the constructions adopted by the Court.

SIGNED this 12th day of July, 2017.

ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE