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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

MICROCHIP TECHNOLOGY
INCORPORATED,

Plaintiff,

v.

NUVOTON TECHNOLOGY
CORPORATION AMERICA, et al.,

Defendants.

Case No. 19-cv-01690-SI

ORDER RE: CLAIM CONSTRUCTION

On February 13, 2020, the Court heard argument on the parties’ proposed claim constructions. Having considered the arguments and the papers submitted, the Court construes the disputed terms as follows.

BACKGROUND

Plaintiff Microchip Technology Inc. (“Microchip”) filed this patent infringement action against defendants Nuvoton Technology Corporation and Nuvoton Technology Corporation America (“Nuvoton”) on October 10, 2018 in the District of Delaware. *See* Dkt. No. 1 (Complaint). The complaint alleges infringement of six patents: U.S. Patent Nos. 7,075,261 (“the ’261 patent”); 7,126,515 (“the ’515 patent”); 7,353,417 (“the ’417 patent”); 7,930,576 (“the ’576 patent”); 9,442,873 (“the ’873 patent”); and 9,772,970 (“the ’970 patent”)¹ (collectively, “the asserted patents”). *Id.* On January 7, 2019, Microchip filed a first amended complaint, alleging infringement

¹ The Court notes that the complaint and the parties’ claim construction briefing all address the patents in different order. For ease of reference, the Court addresses the patents with disputed terms first, in numerical order, then addresses the patents argued to be indefinite.

1 of the same six patents. Dkt. No. 5 (Amended Complaint). The parties stipulated to a transfer of
2 the action from Delaware to the Northern District of California in late March 2019. Dkt. No. 10
3 (Stipulation Transferring Action). Nuvoton denies infringement and argues the asserted patents are
4 invalid. Dkts. Nos. 14, 15 (Defendants’ Answers).

5
6 **LEGAL STANDARD**

7 Claim construction is a matter of law. *Markman v. Westview Instr., Inc.*, 517 U.S. 370, 372
8 (1996). Terms contained in patent claims are “generally given their ordinary and customary
9 meaning.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005). “[T]he ordinary and
10 customary meaning of a claim term is the meaning that the term would have to a person of ordinary
11 skill in the art in question at the time of the invention[.]” *Id.* at 1313. In determining the proper
12 construction of a claim, a court begins with the intrinsic evidence of record, consisting of the claim
13 language, the patent specification, and, if in evidence, the prosecution history. *Id.* at 1314; *see also*
14 *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). “The appropriate
15 starting point . . . is always with the language of the asserted claim itself.” *Comark Communications,*
16 *Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998); *see also Abtox, Inc. v. Exitron Corp.*,
17 122 F.3d 1019, 1023 (Fed. Cir. 1997).

18 Accordingly, although claims speak to those skilled in the art, claim terms are construed in
19 light of their ordinary and accustomed meaning, unless examination of the specification, prosecution
20 history, and other claims indicates that the inventor intended otherwise. *See Electro Medical*
21 *Systems, S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994). The written
22 description can provide guidance as to the meaning of the claims, thereby dictating the manner in
23 which the claims are to be construed, even if the guidance is not provided in explicit definitional
24 format. *SciMed Life Systems, Inc. v. Advanced Cardiovascular Systems, Inc.*, 242 F.3d 1337, 1344
25 (Fed. Cir. 2001). In other words, the specification may define claim terms “by implication” such
26 that the meaning may be “found in or ascertained by a reading of the patent documents.” *Vitronics,*
27 90 F.3d at 1584 n.6.

28 In addition, the claims must be read in view of the specification. *Markman*, 52 F.3d at 979.

1 Although claims are interpreted in light of the specification, this “does not mean that everything
2 expressed in the specification must be read into all the claims.” *Raytheon Co. v. Roper Corp.*, 724
3 F.2d 951, 957 (Fed. Cir. 1983). For instance, limitations from a preferred embodiment described in
4 the specification generally should not be read into the claim language. *See Comark*, 156 F.3d at
5 1187. However, it is a fundamental rule that “claims must be construed so as to be consistent with
6 the specification[.]” *Phillips*, 415 F.3d at 1316 (citations omitted). Therefore, if the specification
7 reveals an intentional disclaimer or disavowal of claim scope, the claims must be read consistently
8 with that limitation. *Id.*

9 Finally, the Court may consider the prosecution history of the patent, if in evidence.
10 *Markman*, 52 F.3d at 980. The prosecution history limits the interpretation of claim terms so as to
11 exclude any interpretation that was disclaimed during prosecution. *See Southwall Technologies,*
12 *Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576 (Fed. Cir. 1995). In most situations, analysis of this
13 intrinsic evidence alone will resolve claim construction disputes. *See Vitronics*, 90 F.3d at 1583.
14 Courts should not rely on extrinsic evidence in claim construction to contradict the meaning of
15 claims discernable from examination of the claims, the written description, and the prosecution
16 history. *See Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308 (Fed. Cir. 1999)
17 (citing *Vitronics*, 90 F.3d at 1583). However, it is entirely appropriate “for a court to consult
18 trustworthy extrinsic evidence to ensure that the claim construction it is tending to from the patent
19 file is not inconsistent with clearly expressed, plainly apposite, and widely held understandings in
20 the pertinent technical field.” *Id.* at 1309. Extrinsic evidence “consists of all evidence external to
21 the patent and prosecution history, including expert and inventor testimony, dictionaries, and
22 learned treatises.” *Phillips*, 415 F.3d at 1317 (citation omitted). All extrinsic evidence should be
23 evaluated in light of the intrinsic evidence. *Id.* at 1319.

24 **DISCUSSION**

25
26 Pursuant to Patent Local Rule 4-3(c), parties are required to identify up to ten terms whose
27 construction will be most significant to the resolution of the case. Patent L. R. 4-3(c). The parties
28 identified ten terms for construction in their initial joint claim construction statement. Dkt. No. 59

1 (Joint Claim Construction Statement). At oral argument, the parties agreed to constructions for two
2 of the ten claim terms: “responsive to” and “a plurality of trigger selection circuits, for selectively
3 coupling selected ones of the plurality of analog inputs to a respective one of the sample and hold
4 circuits.” Hearing Transcript at 68:17-70:5, 70:10-71:10. The Court hereby construes these terms
5 in accordance with the parties’ agreements, reflected in their Supplemental Joint Claim Construction
6 Statement. Dkt. No. 84.

7 Following the parties’ agreement, the parties dispute the construction of eight claim terms
8 from four of the asserted patents. The Court addresses each of the disputed terms in turn.

9
10 **I. ’576 Patent - “switching access”**

11 The ’576 patent, entitled “Sharing Non-Sharable Devices Between an Embedded Controller
12 and a Processor in a Computer System”, discloses and claims systems and methods for sharing a
13 device between a host processor and a microcontroller. Dkt. No. 5 ¶ 24 (Amended Complaint).

14 Claim 6 reads:

15 6. A method for sharing a non-volatile memory between a processor and a
16 microcontroller in a system, comprising:

17 in response to a change in system state to a first state wherein the
18 microcontroller is assured safe access to the non-volatile memory, holding
the system in the first state and **switching access** to the non-volatile memory
from the processor to the microcontroller;

19 while the system is held in the first state, fetching program instructions or
20 data from the non-volatile memory and loading the program instructions or
data into a memory of the microcontroller; and

21 after the program instructions or data have been loaded, **switching access** to
22 the non-volatile memory from the microcontroller to the processor, and
releasing the system from the first state.

23 ’576 patent, 16:32-46.

24 The term “switching access” appears in independent claim 6 of the ’576 patent. Microchip
25 asks the Court to construe the term in accordance with its plain and ordinary meaning. Dkt. No. 59-
26 1 at 14 (Joint Claim Construction Statement).² Nuvoton proposes this term be construed as

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28 ² For ease of reference, page citations to docket entries will refer to the ECF assigned page
number in the upper right hand corner of each page.

1 “changing the state of a switch that controls access to the memory by one of the processor or the
2 microcontroller.” *Id.* Microchip primarily disputes the requirement that “switching access” be
3 performed by a switch. Dkt. No. 62 at 5-7 (Plaintiff’s Opening Brief).

4 Nuvoton asserts that the ’576 patent discloses two different techniques for sharing a non-
5 volatile memory between processors in a computer system. Dkt. No. 63 at 8-9 (Defendants’
6 Responsive Brief). In the first, the microcontroller prevents the processor from accessing the
7 memory by generating a signal. *Id.* at 9. Nuvoton argues that claims without the “switching access”
8 term cover this technique through language like “holding a system reset signal in a reset state.” *Id.*
9 (citing claim 17). Nuvoton claims the second technique, encompassed by the “switching access”
10 term, uses a switch. *Id.*

11 Microchip argues that claim 6, which includes the term “switching access”, does not recite
12 a “switch” and therefore covers any method of switching. Dkt. No. 62 at 5 (Plaintiff’s Opening
13 Brief). In support, Microchip points to claims 125, 126, and 127, which recite “wherein **switching**
14 **access** to the non-volatile memory from the processor to the microcontroller and from the
15 microcontroller to the processor is performed via software [126,] hardware [127, or] a combination
16 of software and hardware [127].” ’576 Reexam Cert., 8:19-30. Microchip also argues that
17 Nuvoton’s construction conflicts with claim 137, which recites “wherein switching access to the
18 non-volatile memory from the microcontroller to the processor comprises reconfiguring the access
19 to the non-volatile memory via the switch.” *Id.* at 9:1-4.

20 Microchip asserts that the specification also discloses examples of “switching access”
21 without a switch. Dkt. No. 66 at 5 (Reply Brief). In particular, Microchip refers to Figure 2, shown
22 below, which describes how “the microcontroller sets control signals to cause access to the shared
23 device to be with the microcontroller.” Dkt. No. 66 at 5 (Reply Brief).

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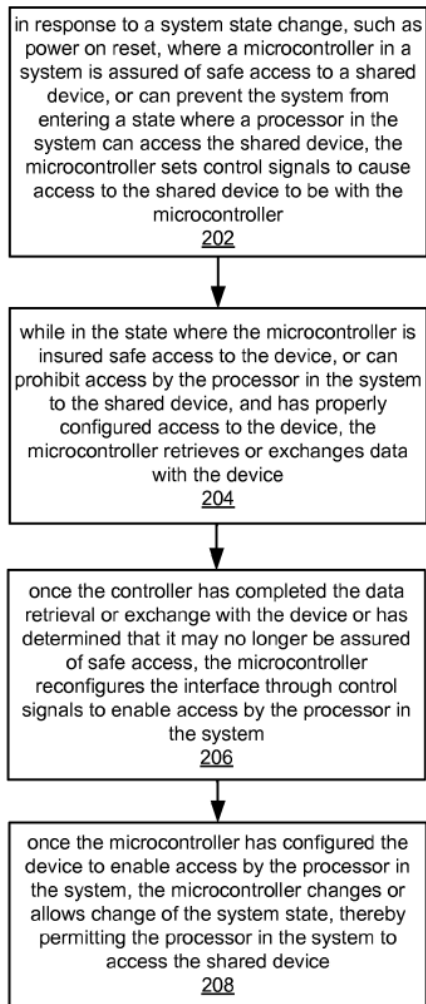


Figure 2

'576 patent, Fig. 2.

Microchip also argues that the intrinsic record does not support Nuvoton's assertion that the patent discloses two different techniques for sharing a non-volatile memory between processors in a computer system. Dkt. No. 66 at 5-6 (Reply Brief). Microchip cites to claim 6 in support, stating that the recited "switching access" and "holding/releasing" steps are all part of one method of sharing a memory. *Id.* at 6.

The Court concludes the term "switching access" does not require a switch. The Court agrees with plaintiff that the intrinsic record does not support defendant's segmentation of two different techniques for sharing a non-volatile memory between processors in a computer system. Further, dependent claim 137 limits "switching access" to "reconfiguring the access to the non-volatile memory via the switch." '576 Reexam Cert., 9:1-4. Thus the "switching access" of

1 independent claim 6 must be broader than “reconfiguring the access to the non-volatile memory via
2 the switch” or claim 137 would be superfluous. “Under the doctrine of claim differentiation,
3 dependent claims are presumed to be of narrower scope than the independent claims from which
4 they depend.” *AK Steel Corp. v. Sollac*, 344 F.3d 1234, 1242 (Fed. Cir. 2003). This “presumption
5 is especially strong when the limitation in dispute is the only meaningful difference between an
6 independent and dependent claim, and one party is urging that the limitation in the dependent claim
7 should be read into the independent claim.” *SunRace Roots Enter. Co. v. SRAM Corp.*, 336 F.3d
8 1298, 1303 (Fed. Cir. 2003). Therefore, the Court adopts the plain and ordinary meaning for the
9 term “switching access.”

10
11 **II. '873 Patent**

12 The '873 patent, entitled “Direct Memory Access Controller”, discloses and claims systems
13 and methods for direct memory access. Dkt. No. 5 at ¶ 22 (Amended Complaint). Claim 1 of the
14 '873 patent reads:

15 1. A DMA controller comprising:

16 a **channel arbiter** configured to select an enabled DMA channel as an active
17 DMA channel for a data transfer and to arbitrate among enabled DMA
18 channels **after a beat of data is transferred in the data transfer**; and

19 a channel buffer coupled to the **channel arbiter** and configured to receive a
20 transfer descriptor of the active DMA channel, the data transfer being
performable using the active DMA channel and the transfer descriptor,
wherein the DMA controller is configured to enable a DMA channel by
storing a fetched transfer descriptor in a portion of memory.

21 '873 patent, 10:58-11:03. The parties dispute the construction of two terms, both of which are part
22 of claim 1 of the '873 patent.

23
24 **A. “after a beat of data is transferred in the data transfer”**

25 The parties dispute the meaning of the phrase “a beat of data” within the term “after a beat
26 of data is transferred in the data transfer” from claims 1, 16, and 24 of the '873 patent. Microchip
27 argues that a “beat of data” is the “data transferred in a single bus access.” Dkt. No. 59-1 at 7 (Joint
28

1 Claim Construction Statement). Nuvoton, relying on the prosecution history, asserts that “beat of
2 data” should be construed as “each clock cycle of data.” *Id.*

3 In support of its argument, Nuvoton notes that, during prosecution, the applicant traversed
4 the PTO’s rejection of the application as obvious over U.S. Patent Publication No. 2004/0123013
5 (“Clayton”) in view of U.S. Patent No. 7,912,997 (“Murray”). Dkt. 62-4 at 9 (Plaintiff’s Opening
6 Brief). In seeking to overcome the objection, the applicant stated “as acknowledged in the Office
7 Action, ‘Murray does disclose ‘**a beat**’ (see Colum 26, Lines 53-57) is a [sic] **merely a clock**
8 **cycle.**” *Id.* at 10-11 (emphasis in original). The applicant then argued that “the cited portions of
9 Murray fail to disclose or suggest ‘a channel arbiter configured to select an enabled DMA channel
10 as an active DMA channel for a data transfer and to **arbitrate** among enabled DMA channels **after**
11 **a beat of data is transferred in the data transfer**’ as recited in amended claim 2[.]” *Id.* (emphasis
12 in original). Nuvoton argues that by failing to object to the PTO examiner’s definition of “a beat”,
13 the applicant (now patentee) accepted it. Dkt. No. 63 at 16 (Defendants’ Responsive Brief).

14 Microchip argues that its proposed construction hails from the specification. Dkt. No. 62 at
15 11 (Plaintiff’s Opening Brief). In support, Microchip relies on a passage describing how “[d]ata
16 transfers can be characterized as either single beat or burst” and “a beat access includes a single bus
17 access.” *Id.* (citing ’873 patent, 3:35-40). The ’873 patent describes how “[t]he beat size can vary
18 depending on the architecture of the system, and can be configured to support, for example, sizes of
19 a byte, a half-word, or a word. A burst may be defined as N beats where N can be an integer, such
20 as 1, 4, 8, or 16 in some configurations.” ’873 patent, 3:38-42. Microchip argues that because the
21 term “clock” and phrase “clock cycle” do not appear in the ’873 patent, Nuvoton’s construction
22 improperly imports a limitation from an unrelated patent into the claims.³ Dkt. No. 62 at 11-12
23 (Plaintiff’s Opening Brief). Finally, Microchip argues that Nuvoton has not met the standard to
24 show a clear and unmistakable disclaimer of claim scope. *Id.* at 12-13.

25 The Court agrees that defendant’s construction is too narrow. While the Court may consider
26 the prosecution history of the patent, in this instance, it is not instructive. *Markman*, 52 F.3d at 980.

27
28 ³ Microchip stated at oral argument that its construction does not “exclude a beat of data
being a clock cycle. It just doesn’t require it.” Hearing Transcript at 87:3-6.

1 Considering the specification’s reference to “beat access” as “single bus access” (’873 patent, 3:37),
2 the Court construes “a beat of data” as “data transferred in a single bus access.”
3

4 **B. “channel arbiter”**

5 The parties dispute the construction of the term “channel arbiter.” Microchip asks the Court
6 to construe the term in accordance with its plain and ordinary meaning. Dkt. No. 59-1 at 6 (Joint
7 Claim Construction Statement). Nuvoton proposes that the term “channel arbiter” be construed as
8 “a device that selects one of the enabled DMA channels as an active DMA channel for a data transfer
9 based on those channel’s priority levels.” *Id.* Microchip primarily disputes the requirement that a
10 “channel arbiter” select a channel based on priority level. Dkt. No. 62 at 13 (Plaintiff’s Opening
11 Brief). In the alternative, Microchip proposes the term be construed as “channel coordinator” or “a
12 device or circuit that selects a channel based on one or more criteria.” Dkt. No. 59-1 at 6 (Joint
13 Claim Construction Statement).

14 In support of its arguments, Microchip relies on portions of the ’873 patent’s specification
15 that describe “a channel arbiter that selects one of the enabled DMA channels as an active SMA
16 channel for data transfer based on one or more criteria.” Dkt. No. 62 at 14 (Plaintiff’s Opening
17 Brief) (citing ’873 patent, 1:45-50, ’873 patent, 1:58-59 (describing “arbitrating, based on one or
18 more criteria”)). Microchip also notes that the ’873 patent discloses arbitration using a “scheduling
19 scheme” as opposed to an assigned priority level. *Id.* (citing ’873 patent, 7:53-57).

20 Nuvoton cites to many of the same portions of the specification to support its argument that
21 arbitration must be based on channel priority level. Dkt. No. 63 at 17 (Defendants’ Responsive
22 Brief) (citing ’873 patent, 4:8-11, 7:53-57, 8:16-27, 9:22-27, and 10:33-41). Nuvoton asserts that
23 even in embodiments involving a “scheduling scheme,” the channel arbiter examines channel
24 priorities. *Id.* at 18.

25 The Court finds that both the claims and the specification demonstrate that channel
26 arbitration must be based on one or more criteria, including but not limited to priority level. Indeed,
27 the ’873 patent discloses arbitration based on channel priority level as simply one embodiment.
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The arbitration can be performed based on DMA channel priority level wherein each channel has an assigned priority level. In some implementations, the arbitration can use scheduling scheme to ensure all DMA channel requests are serviced.

'873 patent, 7:53-57. The specification also describes “arbitrating, based on one or more criteria” (*id.* at 1:58-59) and “a channel arbiter that selects one of the enabled DMA channels as an active DMA channel for data transfer based on one or more criteria[.]” *Id.* at 1:46-48. Therefore, the Court adopts plaintiff’s construction and construes a “channel arbitrator” as “a device or circuit that selects a channel based on one or more criteria.”

III. '417 Patent – “receiving data and a first command to transfer said data from said control unit”

The '417 patent, entitled “Microcontroller with Synchronised Analog to Digital Converter”, discloses and claims systems and methods for synchronizing a digital to analog converter. Dkt. No. 5 at ¶ 21 (Amended Complaint).

Claim 1 reads:

1. A microcontroller comprising:

a control unit (UC),

at least one digital to analog converter (DAC) as a peripheral of said control unit,

a buffer register located between said control unit and said converter, **receiving data and a first command to transfer said data from said control unit**, and

means of synchronization of said converter including a register inserted between said buffer register and said converter, said register receiving a second transfer command independent of said control unit when a transition in a synchronization signal, corresponding to a hardware interrupt, is detected.

'417 patent, 8:57-9:02.

The term “receiving data and a first command to transfer said data from said control unit” appears in independent claims 1 and 10 of the '417 patent. The parties dispute whether the term is indefinite for failing to comply with 35 U.S.C. § 112, ¶ 2.⁴ Dkt. No. 59-1 at 6 (Joint Claim

⁴ Because the '417 patent was filed before the Leahy-Smith America Invents Act, Pub. L.

1 Construction Statement). Pursuant to this statute, a patent specification must “conclude with one or
2 more claims particularly pointing out and distinctly claiming the subject matter which the applicant
3 regards as his invention.” 35 U.S.C. § 112. The Supreme Court has found that “a patent is invalid
4 for indefiniteness if its claims, read in light of the specification delineating the patent, and the
5 prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope
6 of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014).

7 Microchip proposes this term be construed as “receiving (1) data and (2) a first command to
8 transfer said data from the control unit.” Dkt. No. 59-1 at 6 (Joint Claim Construction Statement).
9 Nuvoton argues the term renders the ’417 patent indefinite because “it is not clear when
10 infringement of [the] claim would occur.” Dkt. No. 63 at 19 (Defendants’ Responsive Brief). In
11 making this argument, Nuvoton relies on *Rembrandt Data Technologies, LP v. AOL, LLC*, 641 F.3d
12 1331 (Fed. Cir. 2011), a case decided before *Nautilus*. *Id.* In particular, Nuvoton argues that claims
13 of the ’417 patent with this term are similar to a claim found indefinite in *Rembrandt* that recited
14 both an apparatus and a method of using that apparatus. *Id.* The claim in *Rembrandt* recited “a data
15 transmitting device . . . comprising: first buffer means . . . ; fractional encoding means . . . ; second
16 buffer means . . . ; trellis encoding means . . . ; and **transmitting** the trellis encoded frames.”
17 *Rembrandt*, 641 F. 3d at 1339 (emphasis added). The Federal Circuit found that because the first
18 four elements recite apparatus elements and the final element is a method, the claim and its
19 dependent claims were indefinite. *Id.*

20 In rebuttal, Microchip relies on *MasterMine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307
21 (Fed. Cir. 2017). Dkt. No. 66 at 8 (Reply Brief). In *MasterMine*, the Federal Circuit reversed a
22 district court’s finding of indefiniteness because the claims at issue used “permissible functional
23 language to describe the capabilities of the claimed system.” *Id.* at 1316. Microchip argues the ’417
24 patent’s claims are similar to those in *MasterMine*, not *Rembrandt*. Dkt. No. 66 at 8-9 (Reply Brief).
25 For comparison, the claim at issue in *MasterMine* recited “a reporting module installed within the
26 CRM software application . . . wherein the reporting module installed within the CRM software
27

28 No. 112-29, § 4(e), 125 Stat. 284, 296-97 (2011), the pre-AIA version of § 112 governs. *MasterMine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307, 1313 n.3 (Fed. Cir. 2017).

1 application *presents* a set of user-selectable database fields as a function of the selected report
2 template, *receives from the user a selection* of one or more of the user-selectable database fields,
3 and *generates* a database query as a function of the user selected database fields.” *MasterMine*, 874
4 F.3d at 1315 (emphasis in original). The Federal Circuit found that, though the claim included
5 “active verbs—presents, received, and generates—these verbs represent permissible functional
6 language used to describe capabilities of the ‘reporting module.’” *Id.* In addition, *MasterMine*
7 distinguished *Rembrandt*, stating, “the functional language here does not appear in isolation, but
8 rather, is specifically tied to structure: the reporting module installed within the CRM software
9 application.” *Id.* at 1316.

10 Microchip argues that the ’417 patent’s claims including the “receiving data . . .” term are
11 substantially similar to the claim in *MasterMine* because the functional language of “receiving” is
12 specifically tied to a structure, a buffer register. Dkt. No. 66 at 8-9 (Reply Brief). The Court agrees.
13 Although claim 1 of the ’417 patent does not explicitly tie the “buffer register” structure to the
14 function of “receiving data and a first command to transfer said data from said control unit,” the
15 Court finds linking language in the specification. ’417 patent, 5:9-11 (“the buffer register R_T
16 **32** receives data **38** and a command **39** to transfer these data called the first transfer command **39**,
17 from the control unit **31**”). Accordingly, the Court concludes, because claims with the “receiving
18 data . . .” term inform those skilled in the art with reasonable certainty about the scope of the ’417
19 patented invention, they are sufficiently definite.

20 Therefore, the Court adopts plaintiff’s construction and construes “receiving data and a first
21 command to transfer said data from said control unit” as “receiving (1) data and (2) a first command
22 to transfer said data from the control unit.”

23

24 **IV. ’970 Patent**

25 The ’970 patent, entitled “Multi-Protocol Serial Communication Interface”, discloses and
26 claims systems and methods for multi-protocol serial communication interfaces. Dkt. No. 5 at ¶ 23
27 (Amended Complaint). Claim 1 of the ’970 patent reads:

- 28 1. A system comprising:

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an **interface module** including a buffer or register for storing a protocol selection;

a **protocol module** coupled to the **interface module** and configured for providing configuration data for one of two or more serial communication protocols based on the protocol selection;

a **serial engine module** coupled to the **interface module** and the **protocol module**, the **serial engine module** configured for:

determining from the protocol selection that data or commands are to be transmitted and received on a serial communication bus using synchronous communication;

determining that a **port control module** coupled to the serial communication bus is configured for asynchronous communication on the serial communication bus;

reconfiguring the **port control module** from asynchronous serial communication to synchronous serial communication on the serial communication bus, including selecting one of an internal or an external clock signal for synchronous communication on the serial communication bus; and

transmitting and receiving data or commands over the serial communication bus synchronously using the clock signal.

'970 patent, 7:54-8:12. Defendant submitted the expert declaration of Dr. Michael C. Brogioli in support of its arguments regarding the four disputed terms from the '970 patent. *See* Dkt. No. 63-7 (Brogioli Declaration).

The parties dispute whether four terms from claim 1 of the '970 patent contain means-plus-function terms subject to § 112(f). The burden of proof that a disputed claim is subject to § 112(f) rests with the party asserting the means-plus-function construction. *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1372 (Fed. Cir. 2003). While the use of the word “means” creates a presumption of a means-plus-function term, it is not by itself sufficient. *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1347 (Fed. Cir. 2002) (the “mere use of the word ‘means’ after a limitation, without more, does not suffice to make that limitation a means-plus-function limitation.”). The presumption is rebutted if the claim recites sufficient structure to perform the claimed function. *Id.*; *Cole v. Kimberly–Clark Corp.*, 102 F.3d 524, 531 (Fed. Cir. 1996).

Conversely, “the failure to use the word ‘means’ also creates a rebuttable presumption—this time that § 112, para. 6 does not apply.” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348

1 (Fed. Cir. 2015). In *Williamson*, the Federal Circuit overruled prior case law and held that the
2 rebuttable presumption that § 112(f) does not apply is not strong, and held that “[w]hen a claim term
3 lacks the word ‘means,’ the presumption can be overcome and § 112, para. 6 will apply if the
4 challenger demonstrates that the claim term fails to ‘recite sufficiently definite structure’ or else
5 recites ‘function without reciting sufficient structure for performing that function.’” *Id.* at 1348
6 (quoting *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)). The claim term recites definite
7 structure if “the words of the claim are understood by persons of ordinary skill in the art to have a
8 sufficiently definite meaning as the name for structure.” *Id.* (citing *Greenberg v. Ethicon Endo-*
9 *Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996)). Because none of the disputed means-plus-
10 function terms contain the word “means,” the defendant must overcome the rebuttable presumption
11 that § 112(f) does not apply by showing that the claim term does not recite definite structure
12 understood by a person of ordinary skill in the art.

13
14 **A. “interface module”**

15 The parties dispute the construction of the term “interface module.” Microchip asks the
16 Court to construe the term in accordance with its plain and ordinary meaning. Dkt. No. 59-1 at 8-
17 9 (Joint Claim Construction Statement). Alternatively, if 35 U.S.C. § 112(f) applies, Microchip
18 proposes the term’s function be construed as “storing a protocol selection,” and the term’s structure
19 be construed as “a buffer or register.” *Id.* Nuvoton asserts that 35 U.S.C. § 112(f) applies. *Id.*
20 Nuvoton proposes the term’s function be construed as “storing a protocol selection,” and the
21 structures associated with the claimed function are “control & status registers, transmit & receive
22 registers, and at least one baud register.” *Id.* Nuvoton asserts that, because these structures do not
23 perform the claimed functions, the term is indefinite. *Id.*

24 Microchip argues the term “interface module” is not subject to § 112(f) because it recites a
25 specific structure (a buffer or register) that performs the claimed function (storing a protocol
26 selection). Dkt. No. 62 at 19 (Plaintiff’s Opening Brief). Nuvoton counters that “buffer” and
27 “register” are generic terms that fail to avoid application of § 112(f) because an ordinarily skilled
28 artisan would not know what kind of buffer or register can perform the claimed function of storing

1 a protocol selection. Dkt. No. 63 at 28-29 (Defendants’ Responsive Brief). Nuvoton argues that
2 the specification describes the term “interface module” as a collection of black boxes—a buffer,
3 control and status registers, a baud register, and transmit and receive registers—that are each in turn
4 described in purely functional terms. *Id.* at 28.

5 The Court finds the ’970 patent claims and specification disclose adequate structure to
6 sustain the presumption that § 112(f) does not apply to the term “interface module.” The relevant
7 language from claim 1 reads “an interface module *including a buffer or register* for storing a
8 protocol selection.” ’970 patent, 7:55-56 (emphasis added). The specification further describes
9 how “the interface module **210** may include the control and status registers **212**” and “one or more
10 settings related to the selected serial communication protocol may be stored in the control and status
11 registers **212**.” *Id.* at 4:45-46, 4:51-54. These disclosures are sufficient to connote structure.
12 Accordingly, the Court adopts the plain and ordinary meaning for the term “interface module.”

13
14 **B. “protocol module”**

15 The parties agree that the term “protocol module” is subject to 35 U.S.C. § 112(f), but
16 disagree as to whether the ’970 patent discloses structure corresponding to the claimed function of
17 “providing configuration data for one of two or more serial communication protocols based on the
18 protocol selection.” Dkt. No. 59-1 at 9 (Joint Claim Construction Statement). Microchip proposes
19 the term’s structure be construed as “a lookup table of configuration settings.” *Id.* Nuvoton asserts
20 that the term is indefinite because the specification does not disclose any structure for performing
21 the claimed function. *Id.*

22 Nuvoton argues that the ’970 patent specification provides no corresponding structure and
23 its expert disclaims that the patent discloses a “lookup table.” Dkt. No. 63 at 27 (Defendants’
24 Responsive Brief). In the alternative, Nuvoton asserts that even if module 220 were a lookup table,
25 it is insufficient structure to perform the claimed function of “providing configuration data for one
26 of two or more serial communication protocols based on the protocol selection.” *Id.* In support of
27 this argument, Nuvoton’s expert describes how the ’970 patent claims an interface for switching
28 between different protocols but does not describe any associated circuitry. Dkt. No. 63-7 at 24

(Brogioli Declaration). Dr. Brogioli concludes that a POSA would not have known with reasonable certainty how to design a “protocol module” that would provide configuration data to enable said unknown circuitry to work. *Id.* Relying on this conclusion, Nuvoton argues a “lookup table” cannot perform the claimed function of a “protocol module.”

Microchip argues that Dr. Brogioli’s conclusions contradict the ’970 patent specification. Dkt. No. 66 at 15 (Reply Brief). In support, Microchip cites to Figure 2, shown below with annotations, and its corresponding description of a protocol module **220** that includes one or more protocol configuration settings **224**.

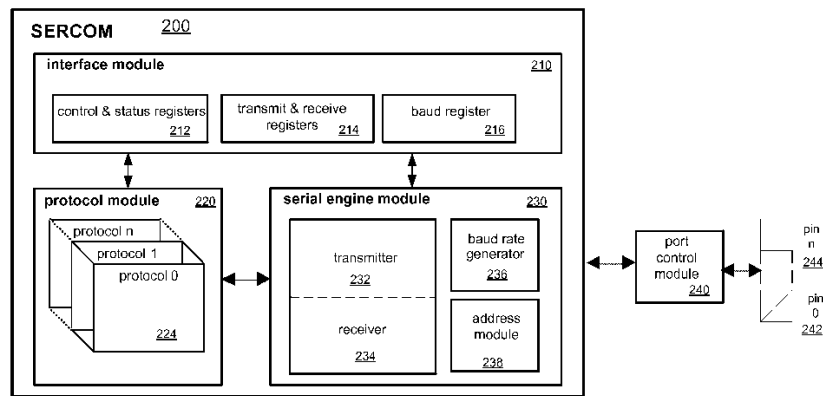


FIG. 2

Microchip also argues that it is not required that the ’970 patent disclose the “laundry list of specific data elements” required by Nuvoton’s expert. Dkt. No. 66 at 15 (Reply Brief).

The Court agrees with the parties and finds the term “protocol module” is subject to 35 U.S.C. § 112(f). The Court also adopts the agreed-upon function of “providing configuration data for one of two or more serial communication protocols based on the protocol selection.” Considering the record, the Court concludes that the ’970 patent fails to disclose structure corresponding to the claimed function of “providing configuration data for one of two or more serial communication protocols based on the protocol selection.” The Court agrees with plaintiff that the specification describes and depicts how a “protocol module **220** may include one or more protocol configuration settings **224**.” ’970 patent, 4:36-37, Fig. 2. The specification also discusses how the “protocol module **220** may be coupled to the interface module **210** and may receive a protocol

1 setting from the interface module. Based on the received protocol setting, one of the protocol
2 configurations of the protocol module 220 may be selected.” *Id.* at 4:40-44; *see also id.* at 6:26-30
3 (describing how “the protocol module **220** may receive the selected protocol from one of the control
4 and status registers **212** and based on the received selection may select one of the protocol
5 configuration settings **224**”). Thus, the ’970 patent discloses how the protocol module receives
6 protocol settings and selects one of the protocol selection settings, but does not set forth how the
7 protocol module “provid[es] configuration data for one of two or more serial communication
8 protocols based on the protocol selection.” ’970 patent, 7:58-60. While Figure 2 may illustrate a
9 “lookup table⁵ of configuration settings” as Microchip argues, the ’970 patent does not associate
10 it with the claimed function. *Williamson*, 792 F.3d at 1352 (noting that “structure disclosed in the
11 specification qualifies as ‘corresponding structure’ if the intrinsic evidence clearly links or
12 associates that structure to the function recited in the claim”).

13 Accordingly, the Court finds that claim 1 is indefinite.

14
15 **C. “serial engine module”**

16 Microchip argues that 35 U.S.C. § 112(f) does not apply to the term “serial engine module”
17 because it does not recite the term “means” and connotes structure for transmitting and receiving
18 serial communications. Dkt. No. 62 at 23 (Plaintiff’s Opening Brief). Alternatively, if 35 U.S.C.
19 § 112(f) applies, Microchip proposes the term’s structure be construed as a “microcontroller
20 performing disclosed algorithm” and its function be construed in accordance with Nuvoton’s
21 proposal. Hearing Transcript at 136:23-137:18. Nuvoton asserts that 35 U.S.C. § 112(f) applies
22 and proposes the term’s function be construed to include (1) determining from the protocol selection
23 that data or commands are to be transmitted and received on a serial communication bus using
24 synchronous communication; (2) determining that a port control module coupled to the serial
25 communication bus is configured for asynchronous communication on the serial communication
26 bus; (3) reconfiguring the port control module from asynchronous serial communication to
27

28 ⁵ The Court draws no conclusion about whether the “protocol configuration settings **224**”
illustrated in Figure 2 of the ’970 patent constitute a “lookup table.”

1 synchronous serial communication on the serial communication bus; (4) selecting one of an internal
2 or an external clock signal for synchronous communication on the serial communication bus; (5)
3 transmitting and receiving data or commands over the serial communication bus synchronously
4 using the clock signal; and (6) configuring the port control module for communicating through
5 communication pins. Dkt. No. 63 at 23 (Defendants' Responsive Brief). Nuvoton argues the '970
6 patent is indefinite because it fails to disclose corresponding structure(s) that perform the claimed
7 functions. *Id.*

8 In arguing that the term "serial engine module" connotes structure, Microchip asserts that
9 the term equates with the phrase "serial interface engine" or "SIE" and is a term of art in the industry.
10 Dkt. No. 62 at 23-24 (Plaintiff's Opening Brief); Hearing Transcript at 138:16-140:8. In support,
11 Microchip refers to technical documents and related patents describing an embedded SIE and the
12 USB standard, which includes a serial interface engine. *Id.* Nuvoton counters that Microchip's
13 position fails for lack of evidence and cites to its expert opinion that the term "serial engine module"
14 does not connote structure but merely refers to "a generic black box" that performs functions
15 unrelated to the claimed functions. Dkt. No. 63 at 24-25 (Defendants' Responsive Brief).

16 In the alternative, Microchip argues that, if § 112(f) applies, the structure corresponding to
17 a "serial engine module" is "circuitry, such as SERCOM 162 within microcontroller 130,
18 performing a serial communication algorithm." Dkt. No. 62 at 25 (Plaintiff's Opening Brief).
19 Microchip states that the '970 patent specification discloses multiple serial communication
20 algorithms, including at Figures 3 and 4 and their corresponding descriptions. *Id.*

21 Nuvoton argues that Figures 3 and 4 and their corresponding descriptions do not describe
22 how to perform all the claimed functions. Dkt. No. 63 at 26 (Defendants' Responsive Brief).
23 Microchip argues that the '970 patent need not recite detailed descriptions of the claimed functions
24 because a person of ordinary skill would understand how to perform them. Dkt. No. 66 at 17 (Reply
25 Brief). Microchip also relies on *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339 (Fed. Cir.
26 1999) to argue that the '970 claims survive because they recite an algorithm to configure circuitry
27 to create a special purpose machine for carrying out the particular algorithm. *Id.*

28 The Court finds that defendant has not rebutted the presumption that § 112(f) does not apply

1 to the term “serial engine module.” While the rebuttable presumption that § 112(f) does not apply
2 is not strong when a claim term lacks the word “means,” the presumption can only be overcome “if
3 the challenger demonstrates that the claim term fails to ‘recite sufficiently definite structure’ or else
4 recites ‘function without reciting sufficient structure for performing that function.’” *Williamson*,
5 792 F.3d at 1349. “When evaluating whether a claim limitation invokes § 112, ¶ 6, the essential
6 inquiry remains ‘whether the words of the claim are understood by persons of ordinary skill in the
7 art to have a sufficiently definite meaning as the name for structure.’” *Zeroclick, LLC v. Apple Inc.*,
8 891 F.3d 1003, 1007 (Fed. Cir. 2018) (quoting *Williamson*, 792 F.3d at 1348). This determination
9 is “made under the traditional claim construction principles, on an element-by-element basis, and in
10 light of evidence intrinsic and extrinsic to the asserted patents.” *Id.* (citations omitted). While
11 Nuvoton argues that the term must be construed under § 112(f), Nuvoton provides little to no
12 evidentiary support, aside from its expert’s opinion that the term “serial engine module” does not
13 connote structure but merely refers to “a generic black box” that performs functions unrelated to the
14 claimed functions. Dkt. No. 63 at 25 (Defendants’ Responsive Brief) (citing to Dkt. No. 63-7 ¶ 61
15 (Brogioli Declaration)). Microchip, in contrast, cites to numerous technical documents and patents
16 to show that a person of ordinary skill in the art would understand the words “serial engine” to
17 connote structure. Dkt. No. 62 at 24 (Plaintiff’s Opening Brief) (citing Dkt. Nos. 62-14 (U.S. Patent
18 No. 7,475,174), 62-15 (U.S. Patent No. 6,618,385), 62-16 (U.S. Patent No. 6,990,549), 62-17
19 (Nuvoton NCU501 User’s Manual), 62-18 (Programming 32-bit Microcontrollers in C). This is
20 sufficient. Accordingly, Nuvoton failed to carry its burden and the presumption against the
21 application of § 112(f) remains un rebutted with respect to the term “serial engine module.”

22 Thus, the Court adopts the plain and ordinary meaning for the term “serial engine module.”

23
24 **D. “port control module”**

25 The parties dispute the construction of the term “port control module.” Microchip asserts
26 that 35 U.S.C. § 112(f) does not apply and asks the Court to construe the term in accordance with
27 its plain and ordinary meaning. Dkt. No. 59-1 at 11-12 (Joint Claim Construction Statement).
28 Nuvoton asserts that 35 U.S.C. § 112(f) applies. *Id.* Nuvoton proposes the term’s function be

1 construed as “providing port configurations that allow serial communication over the pins of a serial
2 communication bus via synchronous and asynchronous serial protocols.” *Id.* Nuvoton asserts that
3 the term is indefinite because the specification does not disclose any structure for performing the
4 claimed function. *Id.*

5 Microchip argues that, because the ’970 patent’s claims do not recite a function for the term
6 “port control module,” 35 U.S.C. § 112 does not apply. Dkt. No. 62 at 26 (Plaintiff’s Opening Brief)
7 (citing *York Prods. Inc. v. Cent. Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1574 (Fed. Cir. 1996)).
8 Nuvoton argues that *York* does not apply because the term “port control module” is functional, not
9 structural. Dkt. No. 63 at 22 (Defendants’ Responsive Brief). Nuvoton analogizes the instant term
10 to “ink delivery means”, a phrase the Federal Circuit found equivalent to “means for ink delivery”
11 because “ink delivery” is functional language. *Id.* (citing *Signtech USA Ltd. v. Vutek, Inc.*, 174 F.3d
12 1352, 1356 (Fed. Cir. 1999)). Nuvoton then points to the claims which disclose how the “port
13 control module” can be “configured for asynchronous communication” and reconfigured “from
14 asynchronous serial communication to synchronous serial communication.” *Id.* Microchip argues
15 that these claimed functions of the port control module are actually performed by the serial engine
16 module. Dkt. No. 66 at 18-19 (Reply Brief). Microchip also distinguishes *Signtech*, stating that the
17 term “ink delivery means” recited both the word “means” and a function (“fluidly communicating
18 with an ink source”). *Id.* at 19. Finally, Microchip notes that Nuvoton’s expert cites to several
19 known port control circuit examples, evidencing the well-understood structure of a “port control
20 module.” *Id.*

21 The Court finds that defendant has not rebutted the presumption that § 112(f) does not apply.
22 The rebuttable presumption that § 112(f) does not apply can only be overcome “if the challenger
23 demonstrates that the claim term fails to ‘recite sufficiently definite structure’ or else recites
24 ‘function without reciting sufficient structure for performing that function.’” *Williamson*, 792 F.3d
25 at 1349. The Court agrees with plaintiff that claims 1 and 10 do not recite a function for the “port
26 control module.” *York*, 99 F.3d at 1574. (“Without an identified function, the term ‘means in [a]
27 claim cannot invoke 35 U.S.C. § 112[f]. Without a ‘means’ sufficiently connected to a recited
28 function, the presumption in use of the word ‘means’ does not operate.”); *see also O.I. Corp. v.*

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Tekmar Co., 115 F.3d 1576, 1583 (Fed. Cir. 1997) (finding § 112(f) “implicated only when means *plus function* without definite structure are present”) (emphasis in original).

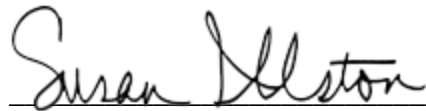
Accordingly, the Court adopts the plain and ordinary meaning for the term “port control module.”

CONCLUSION

For the foregoing reasons and for good cause shown, the Court hereby adopts the constructions set forth in this order.

IT IS SO ORDERED.

Dated: February 28, 2020



SUSAN ILLSTON
United States District Judge