

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION
Petitioner,

v.

PACT XPP SCHWEIZ AG
Patent Owner

Case IPR2020-00541
U.S. Patent 9,075,605

PATENT OWNER'S SUR-REPLY

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Rules and Regulations

37 C.F.R. § 42.24(a)(1)	24
37 C.F.R. § 42.24(c)(4)	24

EXHIBIT LIST

Exhibit No.	Description
2001	Certified translation of Commercial Register showing the change of name of Scientia Sol Mentis AG to PACT XPP Schweiz AG
2002	Excerpts of the complaint in <i>PACT XPP Schweiz AG v. Intel Corporation</i> , No. 19-cv-267 (D. Del.).
2003	Proof of service of <i>PACT XPP Schweiz AG v. Intel Corporation</i> , No. 19-cv-267 (D. Del.).
2004	Notice of dismissal of <i>PACT XPP Schweiz AG v. Intel Corporation</i> , No. 19-cv-267 (D. Del.).
2005	The Scheduling Order in <i>PACT XPP Schweiz AG v. Intel Corporation</i> , No. 19-cv-1006 (D. Del.).
2006	Order Extending Time
2007	Docket summary of <i>PACT XPP Schweiz AG v. Intel Corporation</i> , No. 19-cv-1006 (D. Del.).
2008	PACT's Letter Regarding Claim Narrowing and Swapping
2009	Excerpts of Petitioner's invalidity contentions in the District Court case
2010	Petitioner's complaint in <i>Intel Corporation v. PACT XPP Schweiz AG</i> , No. 19-cv-2241 (N.D. Cal. April 25, 2019)
2011	power of attorney chain 9,075,605
2012	correspondence address 9,075,605
2013	IPR2012-00042 Synopsys Petition
2014	IPR2012-00042 Synopsys Motion for Rehearing
2015	IPR2012-00042 Synopsys Ex. 2005

Exhibit No.	Description
2016	2019.05.23 DN 19 Notice re Case Management
2017	PTAB-IPR2019-01228 Tela Sur-reply
2018	Li Declaration
2019	2019.05.30 DN 24 Stipulation To Dismiss
2020	DN 98 ORDER EXTENDING TIME
2021	2019-10-31 Intel's Patent Rule Disclosure
2022	Motion to Transfer
2023	Mark Tung Declaration ISO Mot for PHV
2024	Declaration in Support of Patent Owner's Response
2025	Curriculum vitae of William Henry Mangione-Smith, Ph.D.
2026	District Court Claim Construction Order
2027	Sechen's Deposition Transcript (Nov. 18, 2020)

I. INTRODUCTION¹

Petitioner's Reply (Paper 26) reveals a fundamental problem with its obviousness case: it ignores a critical difference between method claims and apparatus claims. As the Federal Circuit held:

While [the petitioner] was only required to identify a prior art reference that discloses an apparatus “**capable of**” performing the recited functions to prove that the apparatus claims would have been obvious, **more was required with respect to the method claims.** Specifically, [the petitioner] needed to present evidence and argument that **a person of ordinary skill would have been motivated to operate [the prior art] in a manner that satisfied the [claim] limitation.**

...

The fact that [the prior art] device will output [the claimed results] **only under certain conditions is critical** to the patentability of the method claims.

...

Here, [the petitioner] failed to put forth any argument or evidence in its petitions as to whether [the prior art] device, **even if capable of doing so, actually would output [the claimed results], or why a person of ordinary skill in the art would have been motivated to use the particular inputs that would result in such an output**

¹ Petitioner withdrew Grounds II and III. *See* Reply, 27. Corresponding arguments should not be considered. Thus, they are not discussed in the Sur-Reply.

We therefore affirm the Board’s determination that claims [at issue] were not proven unpatentable.

ParkerVision, Inc. v. Qualcomm Incorporated, 903 F.3d 1354, 1363 (Fed. Cir. 2018).

In the Reply, on the one hand, Petitioner admits that Kling’s over-temperature protection is triggered **only under certain conditions**: it is an “emergency braking [that] does not interfere with Nicol’s normal mode of operation as long as there is no risk of device failure **due to over-heating**.” Reply, 3-4 (emphasis added); *see also* Ex. 1055, ¶8. On the other hand, Petition admits that the alleged hysteresis is triggered under different conditions: “hysteresis is commonly implemented using a simple two-level threshold as illustrated in Kling’s Figure 2A,” and “Kling teaches reducing clock frequency when . . . the **power consumed** by a processor **reaches a threshold**.” Reply, 21, 22.

These admissions raise the question under *ParkerVision*, *i.e.*, “why a person of ordinary skill in the art would have been motivated to [create conditions] that would result in such [**reduction in clock frequency according to both** an operating temperature threshold and a hysteresis threshold]”? No evidence shows such a motivation.

II. *PARKERVISION*

The *ParkerVision* case arrived at the Federal Circuit by way of appeal from

an IPR proceeding between ParkerVision, the patent owner, and Qualcomm, the petitioner. The patent-at-issue includes a method claim comprising a step of “gating a reference signal . . . to create a periodic signal having **a plurality of** [integer multiple] harmonics.” *Id.* at 1357-58 (emphasis added).

In the IPR proceeding, ParkerVision argued that this gating step was not met because not “all input frequencies” in the prior art would result in the required “plurality” of harmonics. *See id.* at 1359. ParkerVision demonstrated that some inputs would only generate one harmonic. *Id.* Qualcomm did not dispute this statement, but argued that “for many input frequencies, [the prior art] will generate the required [plurality of] harmonics.” *Id.*

The Board agreed with ParkerVision: “while Qualcomm asserted in its petition ‘that [the prior art] **taught** a plurality of harmonics,’ it failed to provide any argument or evidence as to why a person of ordinary skill **would have selected operating conditions** that would cause [the prior art] to generate a plurality of integer-multiple harmonics.” *ParkerVision, Inc.*, 903 F.3d at 1363 (emphasis in original). Qualcomm appealed.

The Federal Circuit opened its method claim analysis with a clear statement: “The method claims present a different story [than the apparatus claims].” *Id.* at 1363. It found that “While Qualcomm was only required to identify a prior art reference that discloses an apparatus ‘capable of’ performing the recited functions

to prove that the apparatus claims would have been obvious, more was required with respect to the method claims. Specifically, Qualcomm needed to present evidence and argument that a person of ordinary skill would have been **motivated to operate [the prior art] in a manner** that satisfied the ‘plurality of harmonics’ limitation.” *Id.* (emphasis added).

The Federal Circuit upheld the Board’s finding that “Qualcomm provided no explanation or evidence in its petitions as to why a person of ordinary skill in the art would have been motivated to select inputs for [the prior art’s] circuit that would yield a periodic signal with a plurality of integer-multiple harmonics, rather than an input signal that does not produce integer-multiples of the fundamental frequency.” *Id.*

The Federal Circuit pointed to “[t]he fact that [the prior art’s] device will output a plurality of integer-multiple harmonics **only under certain conditions**” and found that this fact “[wa]s **critical** to the patentability of the method claims. *Id.* (emphasis added). The Federal Circuit found that “Qualcomm failed to put forth any argument or evidence in its petitions as to whether [the prior art’s] device, **even if capable of doing so, actually would output** a periodic signal with a plurality of integer-multiple harmonics, or why a person of ordinary skill in the art would have been motivated to use the particular inputs that would result in such an output.” *Id.* (emphasis added). Based on this critical difference between

method claims and apparatus claims, the Federal Circuit affirmed the Board's determination.

The Federal Circuit's *ParkerVision* rationale has been applied by the Board. For example, in *United Industries Corporation et al v. Susan McKnight, Inc. et al.*, the Board held that "to show the obviousness of the claimed method, Petitioner cannot merely show an apparatus capable of performing the method would have been obvious but must present evidence and argument that a person of ordinary skill would have been motivated to operate the prior art apparatus in a manner that satisfied the limitations of the challenged claims," citing to *ParkerVision*. Case IPR2017-01687, Paper 31 at 10, 27 (PTAB, Jan. 22, 2019).

III. PETITIONER FAILS TO ESTABLISH A MOTIVATION TO OPERATE THE PRIOR ART IN THE CLAIMED MANNER

A. "Subsequently Reducing The Clock Frequency . . . In Accordance With (a) An Operating Temperature Threshold Preventing Over-Temperature and (b) A Hysteresis Characteristic"²

Regarding the "operating temperature threshold," the Reply makes clear that the "if the temperature exceeds a critical temperature threshold, the controller should place an over-heating PE in a low power mode, reducing its frequency and

² As PO analyzed in its POR, the asserted prior art does not disclose all elements recited in the challenged claims. For the purposes of argument only, PO here adopts Petitioner's rationale, but this is not an admission of Petitioner's positions.

voltage to avoid catastrophic meltdown.” Reply, 20. Petitioner does not dispute that the claim element, “reducing [of] the clock frequency . . . in accordance with (a) an operating temperature threshold,” is triggered when the temperature “exceeds a critical temperature threshold.”

Regarding the hysteresis-based reduction, Petition alleges that it is triggered by the upper power consumption threshold in Kling’s Figure 2A. *See* Reply, 21 (“hysteresis is commonly implemented using a simple two-level threshold as illustrated in Kling’s Figure 2A.”), 22 (“Kling teaches reducing clock frequency when . . . the power consumed by a processor reaches a threshold”).

However, Petitioner acknowledges that Kling’s upper power consumption threshold is not necessarily triggered, which is the very reason Petitioner proposes to include a temperature sensor:

A POSITA would have understood that **temperature sensors are necessary** to quickly identify local “hot spots” that power measurements alone could miss. Ex. 1055, ¶10. This is because **the same amount of power consumed by the system** (*e.g.*, a chip) **may not be high enough to trigger a power measurement trip point, but still could cause a local temperature to rise to an unsafe level** if most of the power is consumed by one small circuit of the chip, creating a dangerous “hot spot.”

Reply, 5 (emphasis added); *see also* Ex. 1055, ¶11 (same). According to Petitioner’s analysis, the power consumption threshold is not reached under certain

conditions; moreover, Petitioner alleges that before the power consumption threshold is reached, the processor could already be operating at “an unsafe level” due to the “dangerous ‘hot spot,’” which, in Petitioner’s view, makes it necessary to add temperature sensors on the combined processor.³ Then, this raises the question in *ParkerVision*: “why a person of ordinary skill in the art would have been motivated to [further raise the power consumption when the processor already has “unsafe” hot spots so] that would result in [reaching the upper threshold to trigger a hysteresis reduction].” *ParkerVision, Inc.*, 903 F.3d at 1363. Petitioner is silent on this point.

Indeed, the whole purpose of Nicol is to “lower[] the clock frequency on the chip to **as low a level as possible**.” Ex. 1009, Abstract (emphasis added). As explained in the POR, Nicol’s is a need-based technique: “Nicol’s clock frequency is **minimized to the value necessary** to finish the tasks within the required

³ This allegation contradicts Kling’s explicit teaching: “[b]y directly monitoring power consumption, or a value proportional thereto, the response time between detecting a high power condition and reducing the power consumption of the computer system is greatly improved over the use of thermal sensors to detect the high power condition.” Ex. 1010, 2:55-62. However, PO assumes Petitioner is correct for argument purposes only.

completion time.” POR, 44. Given Nicol’s teaching, Petitioner fails to explain why a POSITA would do the opposite and drive the power consumption up after hot spots are detected to reach Kling’s upper threshold and trigger the reduction Petitioner relies for the “hysteresis” limitation.

The only logical conclusion is that the temperature threshold and the hysteresis threshold would not be triggered together. According to Petitioner’s analyses in the Reply, it is clear that both thresholds represent unwanted situations. Reaching the temperature threshold indicates a “risk of device failure due to overheating,” Reply, 3; reaching the power consumption threshold is against Nicol’s designed purpose to lower the clock frequency to “as low a level as possible.” Given the unwanted nature of both threshold conditions, Petitioner does not show why a POSITA would wait until both are triggered. In fact, combining Nicol and Kling as proposed by Petitioner to trigger both thresholds is not supported by any evidence in the record.

B. Petitioner’s Motivation To Combine Is Insufficient

The Federal Court in *ParkerVision* held that “capable of doing [the claimed method]” was not enough to render the method claim obvious. *See ParkerVision*, 903 F.3d at 1363. In the present case, Petitioner’s analyses fall short, and only attempt to show “capab[ility]-of-doing.”

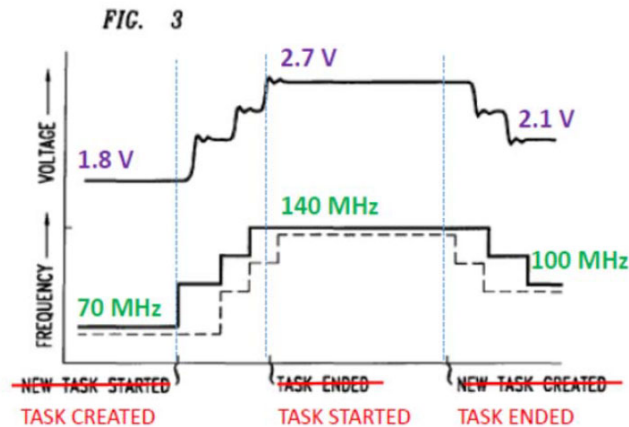
The Reply highlights Petitioner’s motivations to combine: “Nicol does not

discuss over-temperature protection and thus ‘a POSITA seeking to improve Nicol would have been motivated to consult Kling, which discusses well-known techniques of providing over-temperature protection, as well as additional improvements.’ . . . [A] POSITA would have been motivated to use temperature measurements both to improve voltage scaling (taught in Nicol) and for over-temperature protection (discussed in Kling). . . . Likewise, a POSITA would have been motivated to use power measurements both for over-temperature protection (detailed in Kling) and to detect excessive power consumption consistent with Nicol’s objective of minimizing power consumption.” Reply, 2-3.

The above analyses focus on the capability of combining Nicol and Kling and using certain temperature or power consumption measurements for certain purposes. However, using such measurements is different from operating the system in a way to reduce the frequency according to both thresholds.

Petitioner does not even attempt to address the motivation to perform the claimed methods. Indeed, as disclosed in Nicol’s Figure 3 below, after the voltage is set to the maximum, the processor keeps operating at the alleged maximum frequency⁴ until it finishes the task, and the clock frequency is reduced due to the “task ended” condition.

⁴ Petitioner alleges that the 140 MHz is a “maximum frequency.” *See* Reply, 15.



Paper 2 at 14 (Nicol Figure 3 as modified by Petitioner).

Petitioner fails to explain why a POSITA would be motivated to further operate the combined system to trigger both a temperature threshold and a power consumption threshold that would lead to a frequency reduction, which itself is not disclosed anywhere in the prior art. Petitioner's analyses stop short at the "capab[ility]-of-doing-so" level criticized by the Federal Circuit and cannot meet the *ParkerVision* standard.

IV. PETITIONER FAILS TO ESTABLISH A REASONABLE EXPECTATION OF SUCCESS IN COMBINING NICOL AND KLING

A. Legal Standard

It is well settled law that reasonable expectation of success is a separate element from motivation to combine and must be independently met for the obviousness analysis. *See In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (holding that the petitioner has the "burden to demonstrate both

that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, **and that the skilled artisan would have had a reasonable expectation of success in doing so.**”). Indeed, the Federal Circuit once held that “the Board conflated **two different legal concepts—reasonable expectation of success and motivation to combine.**” *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1368 (Fed. Cir. 2016) (emphasis added).

“In order to establish a reasonable expectation of success, the challenger must show ‘a reasonable expectation of achieving **what is claimed in the patent-at-issue.**’” *Samsung Electronics Co., Ltd. v. UUSI, LLC*, 775 Fed.Appx. 692, 696 (Fed. Cir. 2019) (citing *Intelligent Bio-Sys.*) (emphasis added).

B. Petitioner Fails to Establish a Reasonable Expectation of Achieving What is Claimed by Combining Nicol and Kling

The Reply defeats Petitioner’s reasonable expectation of success case. The Reply alleges that power consumption can be measured by voltage, and the voltage level is proportional to, and represents, the power consumption level. *See* Reply, 22 (“a voltage representing the power consumed by a processor.”), 23 (“the term ‘power’ includes either actual power or a value, such as current, **voltage**, duty cycle, or other measurement, that is proportional to power.”) (emphasis added in original by Petitioner). Accordingly, the alleged “maximum” voltage (2.7 V) in

Nicol (*see* Reply, 15) also represents a power consumption. Petitioner fails to put forth any evidence or arguments as to why power consumption already at the maximum voltage level should be further increased and trigger the upper limit power consumption threshold in Kling. Indeed, if the power consumption at Nicol's maximum voltage is above Kling's upper limitation, Nicol's maximum voltage would never be reached because of Kling's throttle, violating the claimed step "subsequently increasing the clock frequency . . . to a maximum." Ex. 1003, cl. 1. If the power consumption at Nicol's maximum voltage is below Kling's upper limitation, Kling's upper limitation will never be triggered, violating the claimed step "subsequently reducing the clock frequency . . . in accordance with . . . (b) a hysteresis characteristic." Ex. 1003, cl. 1. Even if Petitioner relies on the undiscussed corner case where the power consumption at Nicol's maximum voltage equals Kling's upper limit, it fails because the voltage would immediately be reduced after reaching the maximum voltage due to Kling's upper limit, and Petitioner fails to explain why such an immediate reduction would over-heat the processor and trigger a temperature based frequency reduction. Indeed, as explained by Kling, "**[b]y directly monitoring power consumption**, or a value proportional thereto, **the response time** between detecting a high power condition and reducing the power consumption of the computer system **is greatly improved over the use of thermal sensors** to detect the high power condition." Ex. 1010,

2:55-62 (emphasis added). This means Kling’s upper limit reacts faster than temperature sensors, and when the upper limit is triggered and throttles the clock frequency, the temperature has not reached a detectable level. Thus, even if Petitioner attempts to rely on the corner case where the power consumption at Nicol’s maximum voltage equals Kling’s alleged upper limit, it fails the claimed step “reducing the clock frequency . . . in accordance with (a) an operating temperature threshold preventing over-temperature.” Ex. 1003, cl. 1.

Petitioner only made a couple of conclusory statements related to the expectation of success issue. The Petition states that “Implementing this added functionality would not require undue experimentation, has a good likelihood of success, and would yield predictable results because the added functionality is primarily add-on software to Nicol’s existing controller software.” Pet., 25. The Reply states that “a POSITA would have found it obvious to program Nicol’s controller to handle the necessary over-temperature protection features taught by Kling, yielding predictable results as the implementation is primarily add-on software.” Reply, 6. These statements fail to address the specific barriers identified in the record, *i.e.*, the temperature and the power consumption thresholds would not both be reached when the processor operates at a constant maximum voltage level. This is similar to *Samsung Electronics Co., Ltd. v. Elm 3DS Innovations, LLC*, where the petitioners failed to provide specific reasonable-

expectation-of-success evidence for a complex technology, and both the Board and the Federal Circuit concluded that the “[p]etitioners’ evidence in support of that combination was insufficient” considering the proposed combination “**creates a problem** when attempting to implement [one reference’s teaching] into [another reference].” 925 F.3d 1373, 1382-83 (Fed. Cir. 2019) (emphasis added). Similarly, Petitioner’s reasonable expectation of success analysis in the present case fails to address the problems of the proposed combined system. *See also Raytheon Technologies Corp. v. General Electric Company*, 2021 WL 1432964 at *1, 4 (Fed. Cir. April 16, 2021) (“To render a claim obvious, the prior art, taken as a whole, must enable a skilled artisan to make and use the claimed invention.”) (reversing the Board’s obvious finding “[b]ecause the relied-upon prior art fails to enable a skilled artisan to make and use the claimed invention”).⁵

⁵ Petitioner attempts to justify its reliance on multiple, different embodiments of Nicol by pointing to Nicol’s disclosure of real-time operating system (“RTOS”) as a shared feature. *See Reply*, 6-8. However, commonality is insufficient for motivation to combine or reasonable expectation of success. Nicol discloses very little detail about how the RTOS works. To the extent there is any disclosure, it does not overcome the *ParkerVision* issue, *i.e.*, why a POSITA would operate the combined system in a manner set forth in the **method** claims.

V. PETITIONER FAILS TO ESTABLISH “SEQUENTIALLY PROCESSING DATA” IN CLAIM 1

Petitioner equates Nicol’s asynchronous communication network (ACN) with “sequentially processing data.” Reply, 8.⁶ It is premised on the assumption that the ACN must mean passing results for sequential processing. However, Petitioner provides no evidence to support this assumption.

The Reply alleges that PO’s expert admits Nicol’s ACN “would be used for the processing PEs to talk to each other.” Reply, 9. However, “talking” does not always imply “passing results for sequential processing.” As PO’s expert testified, the purposes of the communication could just be “know[ing] [whether] the other task [finished]” or “fir[ing] off” other tasks. Ex. 1052 at 95:3-6; 96:1-3.

The Reply also points to the testimony related to “dependency.” See Reply, 9-10. However, PO’s expert simply testified to a hypothetical possibility “in general” or an unspecified system. See Ex. 1052 at 95:11-15 (“But it certainly is possible, and was possible, to put two tasks with a dependency between them on two separate processing elements in a multiple PE system in general.”), 60:14-17 (“it’s an under-specified problem.”), 61:3-7 (“Only because in general if the two

⁶ Under Ground II, the only ground at issue, “sequentially processing data” is construed as “passing results onto one or more other data processing units which are subsequently processing data.” See Paper 2 at 11.

subtasks are completely separate they probably would have been their own separate tasks to begin with. That's my reasoning there.”), 110:20-25 (“a person of ordinary skill in the art would see that Nicol anticipates that figure 4 could be used to build a system”) (emphasis added).

Petitioner provides no evidence to show the system mentioned in the deposition is the combined system of Nicol and Kling proposed by Petitioner. In fact, when PO expert’s testified about Nicol specifically, he stated that “I think all of the discussion in [Nicol] figure 2 anticipates that with regards to scheduling that there is no communications between the tasks on PEs.” Ex. 1052, 60:6-10.

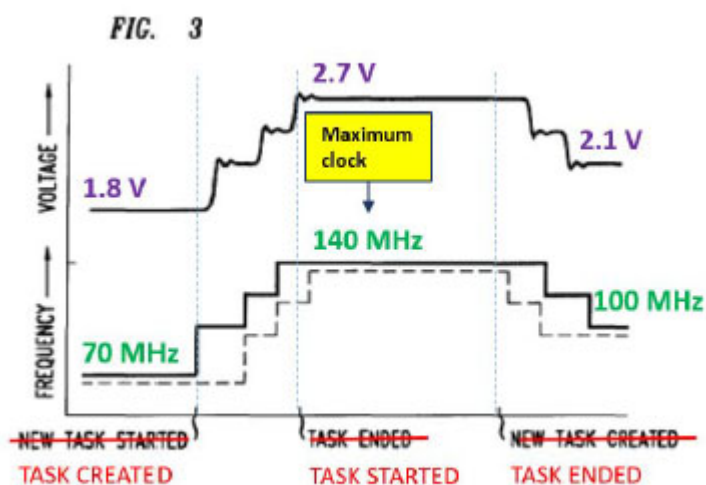
Petitioner appears to have abandoned its argument based on systolic architectures and cites various excerpts of deposition testimony without explanation. *See* Reply, 10, n.3. None of these excerpts admit that Nicol discloses a systolic architecture or that a POSITA would use Nicol with a systolic architecture, and some citations misleadingly omit portions that say exactly the opposite. *See, e.g.*, Ex. 1052 at 110:25-111:2 (“I don’t know that it actually discloses that on its own.”).

VI. PETITIONER FAILS TO ESTABLISH THE DEPENDENT CLAIMS ARE OBVIOUS

A. Claim 2 (“Said Clock Frequency Is Determined In Part By Processor Voltage”)

In the Reply, Petitioner argues that “Kling teaches reducing clock frequency

when a voltage representing the power consumed by a processor reaches a threshold,” and “the maximum power limit that triggers frequency reduction in Kling is a voltage limit.” Reply, 22, 23. However, even if Kling’s power limit can be represented by a voltage limit, such voltage limit does not determine the clock frequency. After all, if Kling’s voltage limit is above Nicol’s voltage at the alleged maximum frequency (*i.e.*, 2.7 V in Figure 3 below), such voltage limit would not be reached.



Pet., 41 (Nicol’s Figure 3 as annotated by Petitioner). If Kling’s voltage limit is below 2.7 V, the 140 MHz “maximum frequency” will not be reached. If Kling’s voltage limit equals 2.7 V, the power consumption will be dropped immediately after the “task started,” and Petitioner presents no evidence that the over-temperature threshold would be reached. Therefore, Petitioner fails to prove a reasonable expectation of success in achieving the claimed method by combining

Kling with Nicol.

B. Claim 3 (“Said Clock Frequency Is Determined In Part By Available Power”)

Petitioner argues that “[t]he upper limit in [Kling’s] Figure 2A is the available power to the processor.” Paper 2 at 48. In the Reply, Petitioner further argues that “Kling teaches an available power limit that, when exceeded, would trigger frequency reduction. . . . Nothing more is required to satisfy this claim element.” Reply, 24. This is wrong.

Petitioner alleges that the “minimum” clock frequency, either the “70 MHz in Figure 3 [of Nicol]” or the “gated” clock frequency, is determined by “few (or no) pending operations.” Pet., 37-38. Petitioner also alleges that the “maximum” clock frequency (the 140 MHz) is determined by “the most heavily loaded PE.” Pet., 40. Neither of these relates to the upper limit in Kling’s Figure 2A. In fact, for the “minimum” and the “maximum” elements, Petitioner does not rely on or refer to Kling at all. *See* Pet., 35-41. The clock frequency stays at 140 MHz when the voltage reaches the maximum level shown in Nicol’s Figure 3.

When the clock frequency is reduced according to Petitioner’s theory, the starting frequency is the maximum frequency set under Nicol operation, not Kling’s upper limit. Petitioner presents no evidence showing Kling’s upper limit would affect the clock frequency during the frequency reduction phase. Under

Petitioner's theory, 1) Kling's upper limit is irrelevant to the starting frequency (*i.e.*, the maximum frequency) because it is set by Nicol; and 2) there is no evidence that the Kling's upper limit would affect the frequency during the frequency reduction phase. In other words, Petitioner fails to prove Kling's upper limit would affect the clock frequency at any time during the process. Therefore, Petitioner fails to prove that Nicol in view of Kling discloses this claimed method.

C. Claim 4 (“Clock Frequency Is Determined In Part By A User Setting”)

Petitioner's argument for claim 4 is premised on the assumption that Kling's upper limit determines the clock frequency.⁷ Petitioner argues that the upper limit is one of the “[t]hresholds are determined by user settings.” Reply, 25. However, as analyzed above with respect to claim 3, the upper limit does not determine the clock frequency. Thus, even assuming the upper limit threshold could be set by the user, such setting does not determine the clock frequency under Petitioner's theory.

D. Claim 5 (“Said Clock Frequency Is Determined In Part By Available Power And A User Setting”)

As discussed in Sections VI.B and VI.C above, Petitioner's argument that

⁷ The Petition only relies on Kling's statement that “the **lower threshold** may be modifiable by a user.” Pet., 49 (emphasis added). The upper limit argument in the Reply is new and untimely.

Kling's upper limit set by the user determines the clock frequency fails.

E. Claim 6 (“Said Number Of Pending Operations Is Determined At By The Fill Level Of One Or More Buffers”)

In the Reply, Petitioner points to Nicol's disclosure of “the number of instructions” and alleges that “[n]othing more is required to render obvious this claim element.” Reply, 26. However, the “number of instructions” as disclosed in Nicol is the number of instructions before allocating tasks to each PE, and is not the number of instructions for each individual processor. *See* Ex. 1009, 3:12-18 (“If the number of instructions that need to be executed for each task is known and made available to the operating system, a scheduler within the operating system can use this information to determine the best way to allocate the tasks to the available processors in order to balance the computation.”) (emphasis added). Thus, the “number of instructions” cannot determine “said number of pending operations,” *i.e.*, the “number of pending operations of [each individual] processor.” Ex. 1009, cls. 1, 6.

VII. PETITIONER'S UNTIMELY NEW ARGUMENTS

The Reply introduces untimely new arguments that should not be considered. *See Hulu, LLC v. Sound View Innovations, LLC*, Case IPR2018-00582, Paper 34 at 30-31 (August 5, 2019) (refusing to consider new arguments in the reply).

A. The New “Minimum” Argument

The Reply argues that “[t]he Petition also discusses the use of the ACPI standards’ C3 state as a third independent way of satisfying the claimed ‘minimum.’” Reply, 14, n5 (emphasis added). However, the Petition never treated ACPI as an “independent” reference and ACPI was never asserted as part of the ground. *See* Paper 2 at 38-39. Petitioner is attempting to offer a new ground, and it should not be considered.

B. The New “Maximum” Argument

The “maximum” element requires that “increasing the clock frequency . . . in accordance with a number of pending operations of a second processor.” Ex. 1003, cl. 1. In the Petition, Petitioner argued that “the controller takes into account the number of pending instructions for each PE—including PE1 (‘first processor’) and PE2 (‘second processor’)—because it sets the clock frequency based on identifying the processing requirement of ‘the most heavily loaded PE,’” *i.e.*, when the tasks are not evenly divided. Pet., 40.

However, the Reply undermines this argument. For example, the Reply states that in “Figure 4, [] the controller can independently adjust the frequency and voltage of each PE when tasks cannot be evenly divided among PEs.” Reply, 17. Given this “independent adjustment” option when tasks are not evenly divided, Petitioner fails to explain why a POSITA would choose to operate one

processor at the maximum frequency rather than a lower frequency even when its own load does not require so.

In the Reply, Petitioner alleges that “[w]hen tasks can be **evenly divided**, the controller adjusts their frequency and supply voltage in unison (‘chip-wise’ scaling), taking into account all of the PE workloads” and PE1 and PE2 are both “‘most heavily loaded’ compared . . . to clock-gated PEs with no load.” Reply, 17-18. This allegation is new. It also fails because Petitioner does not explain why a POSITA would operate PE1 or PE2 at the maximum frequency rather than a lower frequency when there are clock-gated PEs with no load.

C. Other New Arguments

As pointed out in other sections of this brief, Petitioner introduced other untimely arguments in its reply brief that should not be considered. For example, it references Wiley (Ex. 1053), a book excerpt dated 2004 after the priority date of the ’605 patent. *See* Reply, 22, Pet., 7. Petitioner also untimely relies on the “upper limit” for claim 4. *See* Section VI.C *supra*.

VIII. CONCLUSION

Petitioner ignores a critical difference between method claims and apparatus claims. It fails to establish, among other things, a motivation to combine the prior art in the manner as recited in the **method** claims. It thus fails to establish that the challenged claims are unpatentable by a preponderance of the evidence.

Date: April 23, 2021

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CERTIFICATE OF COMPLIANCE

The undersigned attorney certifies that this Sur-Reply complies with the applicable type-volume limitations of 37 C.F.R. § 42.24(c)(4). Exclusive of the portions exempted by 37 C.F.R. § 42.24(a)(1), this Sur-Reply contains 4,766 words as counted by Microsoft Word.

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The undersigned hereby certify that Patent Owner's Sur-Reply, along with all the exhibits were served on April 23, 2021 by filing these documents through the Patent Review Processing System, as well as by e-mailing copies to:

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