

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DELL TECHNOLOGIES INC. AND DELL INC.,
Petitioners,

v.

CLOUD BYTE LLC
Patent Owner.

Case No. IPR2025-01288
U.S. Patent No. 9,651,320

PATENT OWNER'S PRELIMINARY RESPONSE

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EXHIBITS

EX2001	U.S. Pat. 6,987,370
EX2002	Dkt. 94 (Second Amended Scheduling Order)
EX2003	Docket Navigator Statistics
EX2004	U.S. Court's median time-to-trial statistics for the Eastern District of Texas
EX2005	Dkt. 119 (Order Setting Markman Hearing)
EX2006	Nakamura Invalidity Claim Chart for the '320 Patent (E8)
EX2007	Declaration of Dr. Kevin Almeroth
EX2008	CV of Dr. Kevin Almeroth

I. INTRODUCTION

For the reasons explained in Patent Owner's Request for Discretionary Denial, the Board should exercise its discretion to deny these petitions given the significant settled expectations and the impending trial in the parallel litigation.

However, there are also significant flaws with the merits of the Petition. The Petition relies on combining Sato with Nakamura to arrive at each of the challenged claims, but the Petition's motivation to combine is undermined by the very disclosures in Sato and Nakamura. Specifically, Sato and Nakamura make clear that (1) they are directed to different types of problems in different types of systems, and the teachings of Nakamura would not be beneficial in Sato's system; (2) Nakamura is inconsistent with Sato's teachings because it prioritizes noise and power consumption over avoiding system failure, whereas Sato prioritizes guaranteeing system functionality; and (3) Nakamura purports to solve a problem that will never be encountered in Sato's system, because Sato's system already avoids this problem.

Because the Petition relies on combining Sato and Nakamura for every claim, Petitioners cannot demonstrate a reasonable likelihood of prevailing as to any claim.

II. OVERVIEW

A. The '320 Patent (EX1001)

The '320 Patent relates to “ICT (Information and Communication Technology) equipment such as a server” with cooling equipment, *e.g.*, “a cooling fan, a control device thereof, a temperature controlling method thereof, and a program.” EX1001, 1:12-15. Specifically, the '320 Patent discloses and claims an improvement in cooling systems used where the ICT equipment is installed in a room “where outside air is taken in, which is used to cool the inside of ICT equipment,” instead of using a room equipped with air conditioning. *Id.*, 1:19-25. Because the temperature of the room may “var[y] wildly”, the ICT equipment includes functionality to regulate its own internal temperature. *Id.*, 1:26-30.

The '320 Patent explains that prior art ICT equipment risked “damage or malfunction of electronic components” if “the intake air temperature drops sharply.” *Id.*, 1:62-66. Because the electronic components are cooled using the intake air, if the temperature drops sharply, “there is a possibility that condensation occurs on the inner wall of the casing of the hard disk drive, which may induce rust so that damage or malfunction of the hard disk drive may be caused.” *Id.*, 1:66-24.

To solve this problem, the '320 Patent computes a “declination index value” that indicates “the degree of declination of a component temperature,” *i.e.*, a value indicative of the amount that the temperature of a particular component has changed over time. *Id.*, 5:9-29. If the declination index value for any component is above a certain threshold (*i.e.*, the temperature has changed by a sufficiently large amount), the cooling fans are slowed or stopped to avoid a sharp drop in temperature. *Id.*, 8:3-34.

B. Sato (EX1005)

Sato discloses a generic “cooling controlling apparatus” for a “server installation” or other electronic devices “which cool a plurality of heat generating parts by using a cooling device.” EX1005, [0002], [0012].

Sato's cooling system measures the intake air temperature and temperatures of individual electronic components to fine tune cooling fan control by gradually increasing or decreasing fan speed when component temperatures go above or below certain thresholds. When the intake air temperature is below or above predetermined thresholds, the fan speed is set to a different baseline rotation speed. *Id.*, [0051]. In this way, when the air temperature is higher, the fan rotates faster, increasing the air speed to more effectively cool the electronic components. *Id.*, [0052].

After the baseline fan speed is set, Sato measures the temperatures of different electronic components in the system and compares them to predetermined thresholds for each component. *Id.*, [0055]. When the temperature cross certain thresholds, Sato iteratively increases or decreases the fan speed by a certain percentage (depending on the threshold), thus gradually increasing or decreasing the fan speed to adjust for the measured component temperature. *Id.*, [0057]-[0059]. Sato's fan control is based entirely on the static temperature thresholds; Sato does not disclose any mechanism for controlling the fan speed based on temperature change over time, as claimed in the '320 Patent.

C. Nakamura (EX1007)

Unlike Sato and the '320 Patent, Nakamura discloses a technique for “for controlling *personal* computer cooling fan rotation” (*e.g.*, “notebook computers”), not server cooling techniques. EX1007, [0004]-[0005]. Nakamura explains that when cooling personal computers, “noise reduction has become an important issue” because in computer systems with “limited interior space,” “cooling fans require higher cooling capacity, resulting in higher rotational speeds and consequently louder operating sound.” *Id.*, [0004].

Nakamura purports to solve a noise-related problem associated that manifests when the internal enclosure of a personal computer system “approaches thermal equilibrium.” *Id.*, [0007]. Specifically, in Nakamura’s system, when the internal temperature is below a certain threshold, the cooling fan is turned off entirely. *Id.*, [0006]. At thermal equilibrium, however, “the heat generated in the interior of the enclosure becomes nearly equal to the amount of heat evacuated to the exterior,” so “the rate of temperature decrease stagnates.” *Id.* If the system approaches thermal equilibrium while the internal temperature is still above the lowest temperature threshold, the “cooling fan continues to rotate without stopping,” even “after [the user’s] work is finished,” causing an “unpleasant” “operating sound that accompanies the rotation of the cooling fan.” *Id.*, [0008].

Nakamura is directed to solving this problem by “prevent[ing] situations where the electronic device cooling fan continues to rotate when the interior temperature of the enclosure has been decreased.” *Id.* Specifically, Nakamura detects when “the rate of temperature decrease has stagnated before the interior temperature of the enclosure reaches the set temperature for transitioning from low speed rotation to stop, and can stop the rotation of the cooling fan.” *Id.*, [0009]. Thus, unlike the ’320 Patent, which detects a **large** temperature change over a predetermined period of time in a server and

stops the cooling fan to prevent component damage, Nakamura detects a *low* temperature change over time in a personal computer so that the fan can be turned off to reduce noise.

III. GROUND 1: SATO AND NAKAMURA DO NOT RENDER OBVIOUS ANY CHALLENGED CLAIM

A. The Petition Fails to Establish a Motivation to Combine Sato and Nakamura (All Claims)

The Petition relies on the combination Sato and Nakamura to disclose the limitation “calculat[ing] an index value indicating a degree of declination of [a] component temperature of [an] electronic component” and “control[ling] the number of rotations of [a] cooling fan based on the index value ... and the temperature of the intake air.” *See* Pet. 42-49 (1[e] and 1[f]), 66-67 (claim 7), 67-69 (claim 8). However, the Petition fails to establish a valid motivation to combine the references. EX2007, ¶¶66-67. Specifically, a POSITA would not be motivated to combine the references as proposed for three reasons: (1) Sato and Nakamura are directed to different types of problems in different types of systems, and the teachings of Nakamura would not be beneficial in Sato’s system; (2) Nakamura is inconsistent with Sato’s teachings because it prioritizes noise and power consumption over avoiding system failure, whereas Sato prioritizes guaranteeing system functionality; and (3) Nakamura purports to solve a problem that will never be encountered in Sato’s system,

because Sato's system already avoids this problem. None of the purported reasons to combine articulated in the Petition overcome these deficiencies.

The Petition acknowledges that Sato alone does not disclose this limitation, and does not rely on Nakamura for the remaining limitations. Accordingly, because Petitioner fails to establish a motivation to combine, none of the claims are rendered obvious.

1. Sato and Nakamura Are Directed to Different Types of Systems that Require Different Types of Cooling Systems

Nakamura discloses a technique for solving a problem that primarily concerns cooling systems in personal computers. EX2007, ¶¶68-69. For example, Nakamura discloses that its problem arises from computer systems that are “widely used in human living environments and office environments,” and in particular, “notebook computers” where “the limited interior space of the enclosure” requires fans with “higher rotational speeds and consequently louder operating sound.” EX1007, [0004]. In these systems, “noise reduction has become an important issue” because it “caus[es] discomfort to humans.” *Id.*, [0004]-[0005]. Thus, Nakamura's primary goal is to minimize instances when the fan continues to operate and create noise “even after [a user's] work is finished,” such as when the computer is in “a temporary standby state,”

because “users find the operating sound that accompanies the rotation of the cooling fan unpleasant.” *Id.*, [0008].

Sato, on the other hand, is directed to improving a “cooling controlling apparatus” for a “server installation” or other “types of electronic apparatuses which cool a plurality of heat generating parts.” EX1005, [0002], [0012]. Sato recognizes that different cooling techniques may be appropriate between personal computers and servers, including because servers (unlike personal computers) have “a lot of heat generating parts.” *Id.*, [0004]-[0005] (describing conventional cooling system for personal computers), [0006] (“In contrast, a server installation [is] an information apparatus in which a lot of heat generating parts are mounted on a circuit board...”), [0008]-[0009] (describing conventional cooling systems for servers). Cooling for servers is more complex than cooling a personal computer because the cooling system must ensure “that a temperature of each heat generating part will not exceed a limit value”—which becomes more complex as more heat generating parts are present. *Id.*, [0010]; EX2007, ¶70.

The Petition fails to establish that Nakamura’s cooling technique, designed with personal computers in mind, is appropriate for Sato’s cooling system, intended for servers and similar systems with many heat generating parts. EX2007, ¶71. The Petition argues that both references are “directed to

techniques for controlling the speed of cooling fans used to cool components in an electronic device,” Pet. 27, but fails to address the fact that Sato itself acknowledges differences between cooling personal computers and cooling servers and other systems with lots of heat generating parts. For the same reason, the mere fact that both Sato and Nakamura use similar types of components (*i.e.*, temperature sensors and fans), *see* Pet. 27, does not establish a motivation to combine when Sato recognizes that the way in which those components are configured and used differs between personal computers and servers. *See* EX1005, [0004]-[0010]; *see also* EX2007, ¶72. Indeed, as discussed in the following sections, Sato and Nakamura have different and inconsistent goals and priorities which preclude combining the references as proposed in the Petition.

The Petition argues that “Nakamura’s reference to a notebook computer would not have dissuaded a POSITA from implementing Nakamura’s cooling program in Sato’s server” because Nakamura “does not limit the invention to notebook computers.” Pet. 28-29 n.7. But the fact that Nakamura’s cooling system *can* be used in other types of electronic devices does not establish that there would be *motivation* to do so, particularly when Sato expressly distinguishes between techniques for cooling personal computers and techniques for cooling servers. *See* EX1005, [0004]-[0010]; EX2007, ¶73.

Petitioner's expert also argues that Sato is not limited to a server because it refers to "various types of electronic apparatuses which cool a plurality of heat generating parts by using a cooling device." EX1003, ¶140 (quoting EX1005, [0012]). But Sato expressly distinguishes between a personal computer and a server precisely because the server (and not the personal computer) has "a lot of heat generating parts [] mounted on a circuit board in high density." EX1005, [0006]. Thus, Sato's reference to "various types of electronic apparatuses which cool a plurality of heat generating parts" (*id.*, [0012]) is not intended to expand the scope of its disclosure to personal computers—it is intended to *distinguish* the disclosure from cooling systems used in personal computers. EX2007, ¶74.

2. Sato and Nakamura Have Inconsistent Priorities and Corresponding System Configurations

A POSITA would also not combine Sato and Nakamura because they disclose inconsistent goals and priorities, and use different and inconsistent system configurations as a result. EX2007, ¶75

As discussed above, Nakamura is primarily concerned with minimizing noise that may be unpleasant to users of personal computers. EX1007, [0004]-[0005], [0008]; EX2007, ¶76. As a result, even when the system temperature is not at the lowest temperature threshold, Nakamura is willing to turn off the fan to avoid "user discomfort." See EX1007, [0008]-[0009], [0017] ("[T]he

present invention makes it possible to provide a cooling system that can detect a state where the rate of temperature decrease has stagnated *before the interior temperature of the enclosure reaches the set temperature value for transitioning from low speed rotation to stop, and can stop the rotation of the cooling fan....*").

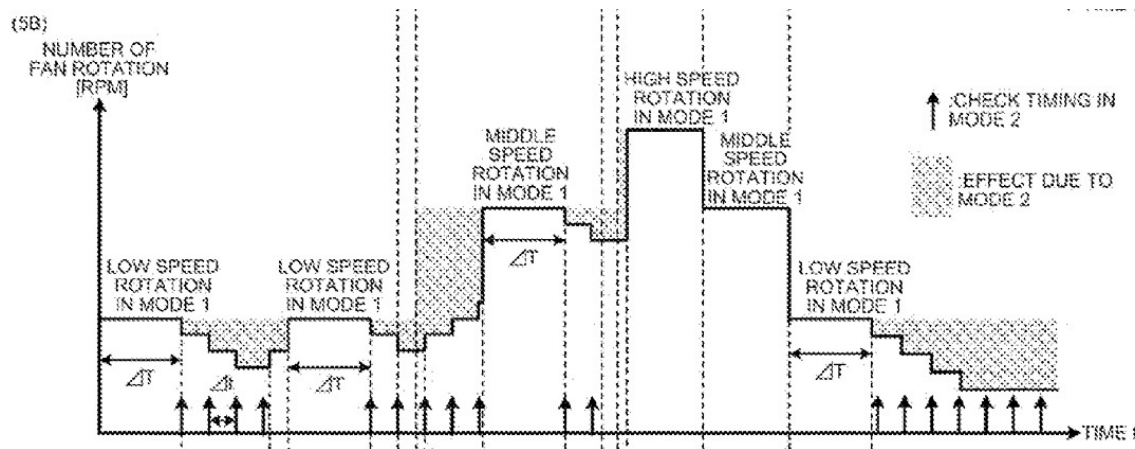
Although Sato also identifies noise and power consumption as undesirable, Sato prioritizes cooling to guarantee prevention of system failure over minimizing noise and power consumption. EX2007, ¶77. For example, when controlling the fan to increase or decrease rotation speed in response to measured component temperatures, Sato advises *increasing* the rotation speed at a higher rate than *decreasing* the rotation speed. EX1005, [0058]-[0060] (disclosing "decreas[ing] the number of rotation of the cooling fans ... by α " at low temperatures and "increase[ing] the number of rotation of the cooling fans ... by β " at high temperatures, where " $\alpha < \beta$ "). This is because "an increase in temperature ... directly leads to a stop of the electronic apparatus," so it is more important "that an electronic part can be cooled at high speed." *Id.*, [0060]. By contrast, "[a]n excessive cooling of an electronic part, though having a problem in noise and excessive electric power consumption associated with the rotation of the cooling device, does not cause a stop of the electronic apparatus." *Id.* Sato thus prioritizes increasing the fan speed over

decreasing the fan speed “so that a continuity of the operation of the electronic apparatus [] can further be enhanced.” *Id.*; *see also* EX2007, ¶77.

These competing priorities and design considerations manifest in how Sato's and Nakamura's cooling systems are configured. EX2007, ¶78. Nakamura's system is configured at the outset to stop the fan entirely when the internal temperature falls below a set threshold. EX1007, [0031] (describing “set temperature value Tb3 for transitioning from low speed rotation to stop”). Because Nakamura prioritizes noise reduction over guaranteed system performance, however, Nakamura is configured to stop the fan even when the lowest threshold is not reached, when the “rate of temperature decrease [] becomes more gradual” and the “interior temperature ... stagnates at a temperature value slightly above Tb3.” *Id.*, [0032].

Sato, on the other hand, does not disclose any setting where the fan is stopped while the system is operational—instead, depending on intake air temperature, Sato's fan always operates at a low speed, middle speed, or high speed. *See, e.g.*, EX1005, [0051], Fig. 5A-5C; *see also*, EX2007, ¶79. These speeds can be adjusted in small increments based on component temperatures, as shown in Figure 5B (reproduced below), but they never reduce to 0 (*i.e.*, a full stop). EX1005, [0054], Fig. 5B. Indeed, in one embodiment, Sato

expressly discloses setting a minimum rotation speed “so as not to fall below minimum number of cooling fan rotation[s].” *Id.*, [0117].



The Petition argues that Nakamura’s temperature control scheme “would have furthered Sato’s goal of reducing excess fan operation.” Pet. 29. Indeed, the Petition goes so far as to assert that a POSITA would be motivated to “[m]odify Sato to stop the fan when appropriate, as taught by Nakamura.” *Id.* And the Petition proposes not only adding a “stop” setting to Sato’s cooling system, but enabling the system to stop the fan “*even though the internal component temperature is above the lowest threshold.*” Pet. 29-30. But Sato expressly cautions *against* stopping the fan entirely, both because it expressly discloses setting a minimum fan speed, *see* EX1005, [0117], and also because it prioritizes cooling the system to avoid “a stop of the electronic apparatus,” even if that results in some “excessive cooling” that increases “noise and [] electric power consumption,” *id.*, [0060]. Modifying Sato to not

only stop its fan, but to do so when the temperature is not even at the lowest threshold runs directly contrary to Sato's express teachings. EX2007, ¶80.

Indeed, Sato teaches exactly the opposite of Nakamura and the proposed combination, which still reduces noise and power consumption without risking system failure: when component temperatures are *above* the lowest threshold, it incrementally reduces the fan speed down to a *non-zero* value. See EX1005, [0058], [0080], [0099], [0117], Fig. 4B (decreasing fan rotation speed when component temperatures are all "equal to or less than threshold value 2"), 6 (alternative embodiment with a predetermined minimum fan speed), 5B-5C (showing incremental fan speed reduction between first and second thresholds). Sato's approach, unlike Nakamura's, allows the fan speed to be "controlled carefully *without reducing the cooling efficiency*," while still "avoid[ing]" "a noise of a fan rotation of a cooling device and an excessive electric power consumption caused by an excessive cooling." *Id.*, [0064]. Modifying Sato to *stop* the fan at *higher* temperatures would undermine this expressly intended feature in Sato's design. EX2007, ¶81.

3. Nakamura Tries to Solve a Problem That Does Not Occur in Sato's System

Independent of the inconsistency between Sato's and Nakamura's design principles and goals, a POSITA would not be motivated to incorporate

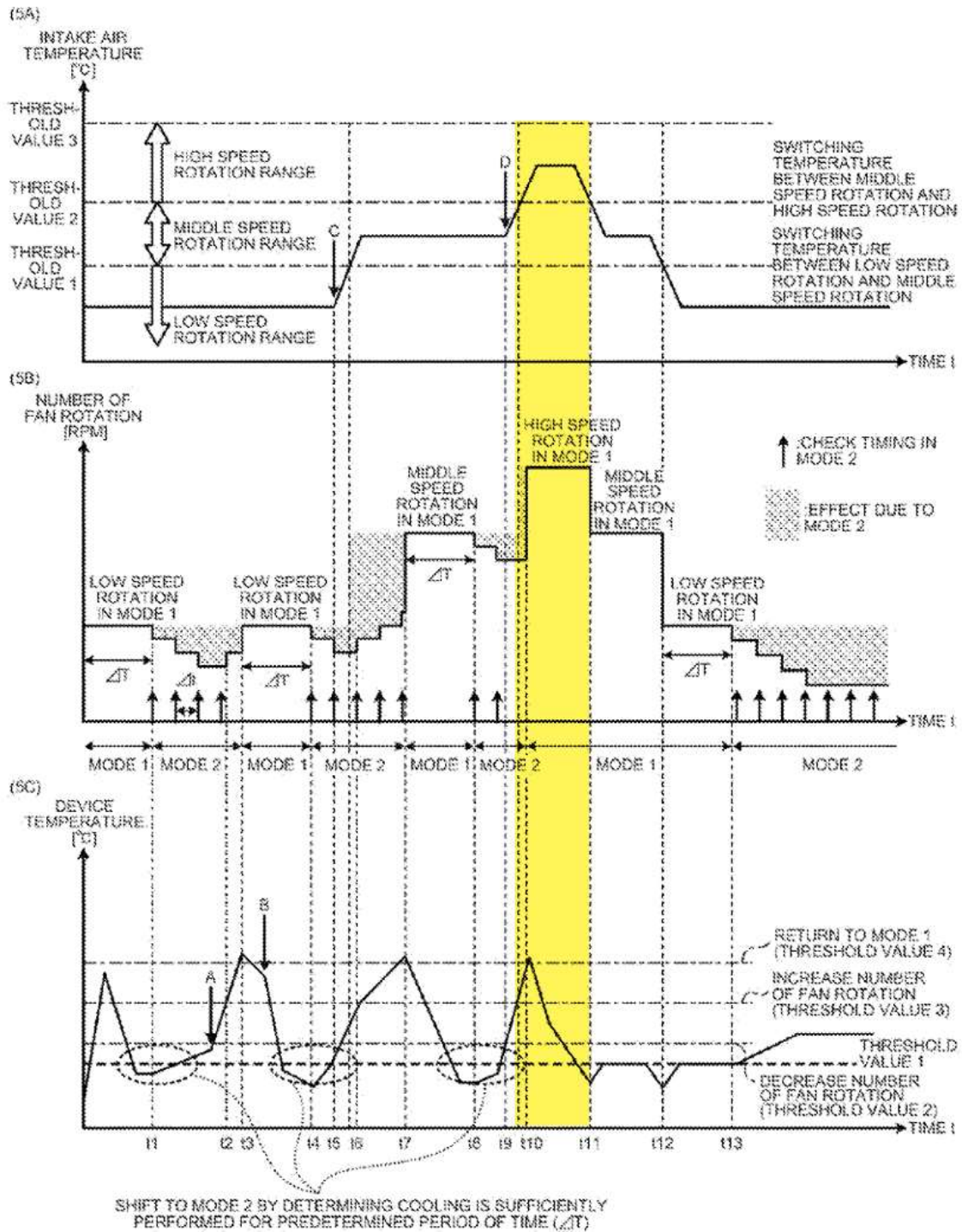
Nakamura's "stagnant" temperature detection (which is the very functionality in Nakamura that the Petition relies on to render obvious the claimed "declination index value calculation unit") in particular because it aims to solve a problem that will not occur in Sato's system. EX2007, ¶82.

Nakamura aims to solve a problem that arises when "the interior of the enclosure ... approaches thermal equilibrium" because "the amount of heat generated in the interior of the enclosure becomes nearly equal to the amount of heat evacuated to the exterior." EX1007, [0007]; EX2007, ¶83. Nakamura encounters this problem because it relies exclusively on temperature measurements of the interior of the enclosure to control the fan speed. EX1007, [0006], [0031]. However, the temperature where this thermal equilibrium will be reached will "var[y] depending on individual differences among computers related to heat generation and cooling, *differences in usage environment*, and the like." *Id.*, [0007]. Nakamura's system has no means for detecting these differences and modifying the fan speed accordingly—thus, if the system approaches thermal equilibrium before the fan stops, the "rate of decrease" of the temperature will "stagnate[]" and the lowest threshold will never be reached. *Id.*

Sato's cooling system is more sophisticated, however. EX2007, ¶84. Sato does not only measure the temperature of individual components, it also

measures the intake air temperature. EX1005, [0013]. Thus, unlike Nakamura—which cannot adjust the fan speed in response to environmental factors—Sato can *and does* control the fan speed based on the intake air temperature. *Id.*, [0050]-[0051]. By using the intake air temperature to set a baseline low, middle or high fan speed, Sato can achieve more effective cooling even when the intake air temperature is higher. *Id.*, [0052] (“[A] higher intake air temperature of the cooling air reduces a cooling efficiency of electronic parts However, the reduction of the cooling efficiency of the electronic parts can be suppressed by ... increasing the speed of the cooling air when the intake air temperature of the cooling air is high.”). As a result, Sato’s system will not “stagnate” at a higher temperature threshold when the system is idle and not generating heat: the intake air temperature measurement will ensure that even at higher intake air temperatures, the fan speed is sufficiently high to effectively cool the system. EX2007, ¶85. For example, this is illustrated in Figs. 5A-5C, reproduced below, where the intake air temperature approaches “threshold value 3,” causing the system to switch to “high speed rotation mode” and cooling the component temperatures to below the lowest threshold value. EX1005, Fig 5A-5C (annotated). Because Sato’s system will not “stagnate” at temperatures above the lowest threshold, Sato

cannot benefit from Nakamura's specific teaching of measuring the rate of temperature decrease to detect and avoid such a stagnation. EX2007, ¶86.



4. The Petition's Alternative Argument Is Improper Hindsight

The Petition alternatively argues that a POSITA would be motivated to combine Sato and Nakamura as proposed because “a POSITA would have recognized other benefits from determining the rate of temperature decline ... such as detecting and mitigating condensation in the device enclosure.” Pet. 30 n.8. The Petition then cites to a textbook that generally discusses “environmental stresses causing electronic component and system failures,” and lists any number of “failure mechanisms,” including “Corrosion,” “Distortion,” “Fatigue and fracture,” and “Wear.” EX1011, 21. Further, the statement the Petition references appears in a discussion of *humidity and moisture*, among numerous other factors that may negatively impact electronic devices generally, noting in passing that “[r]apid cooling of equipment can cause condensation.” *Id.* Only improper hindsight would allow one to use this isolated statement about fault mechanisms in electronic devices generally to combine Sato and Nakamura in a way neither reference even suggests (*i.e.*, to look for a *high* rate of temperature change, as opposed to the *stagnating* temperature change contemplated by Nakamura), to solve a problem neither reference considers, much less purports to solve (*i.e.*, avoiding sharp temperature changes based on intake temperature that may lead to condensation and rust). EX2007, ¶¶87-88.

IV. CONCLUSION

For the foregoing reasons, *inter partes* review should not be instituted.

Date: October 21, 2025

/s/James M. Glass

James M. Glass

Registration No. 46,729

Quinn Emanuel Urquhart & Sullivan LLP

295 5th Avenue, 9th Floor

New York, New York 10016

Tel: (212) 849-7000

Fax (212) 849-7100

jimglass@quinnemanuel.com

Counsel for Patent Owner

CERTIFICATION UNDER 37 C.F.R. § 42.24

Under the provisions of 37 C.F.R. § 42.24, the undersigned hereby certifies that the word count for the foregoing document totals 3,530 words, which is less than the 14,000 words allowed under 37 C.F.R. § 42.24(a)(i).

Date: October 21, 2025

/s/ James M. Glass

James M. Glass (Reg. No. 46,729)

CERTIFICATE OF SERVICE (37 C.F.R. §§ 42.6(E), 42.105(A))

The undersigned hereby certifies that the foregoing document was served in its entirety on October 21, 2025 upon the following parties via

Electronic Mail:

jday@fbm.com

dcallaway@fbm.com

wliaw@fbm.com

calendar@fbm.com

Date: October 21, 2025

/s/James M. Glass

James M. Glass

Registration No. 46,729

Quinn Emanuel Urquhart & Sullivan LLP

Counsel for Patent Owner