

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

HEADWATER RESEARCH LLC,
Patent Owner.

Case IPR2023-01360
Patent 9,609,544 B2

PATENT OWNER'S RESPONSE TO THE PETITION

TABLE OF CONTENTS

I.	Introduction	1
II.	Overview of the '544 Patent	2
III.	Level of Ordinary Skill in the Art.....	3
IV.	Claim Construction	4
V.	The Petition Fails to Show Unpatentability of the Sole Independent Claim (Claim 1)	4
VI.	The Petition Additinoally Fails to Show Unpatentability of Dependent Claim 4.....	8
VII.	Conclusion	11

TABLE OF AUTHORITIES

Cases

<i>Belden Inc. v. Berk-Tek LLC</i> , 805 F.3d 1064 (Fed. Cir. 2015).....	8
<i>Nespresso USA, Inc. v. K-Fee Sys. GmbH</i> , IPR2022-01574, Paper No. 9 (PTAB Apr. 10, 2024).....	3

PATENT OWNER'S EXHIBIT LIST

No.	Description
Ex. 2001	Declaration of James Pickens in Support of Motion for <i>Pro Hac Vice</i> Admission
Ex. 2002	Declaration of Dr. Zygmunt J. Haas in Support of Patent Owner's Response
Ex. 2003	<i>Curriculum vitae</i> of Dr. Zygmunt J. Haas
Ex. 2004	June 27, 2024 deposition transcript of Kevin Butler, Ph.D.

I. INTRODUCTION

The Petition asserts that (*inter alia*) independent claim 1 and dependent claim 4 of the '544 Patent would have been obvious in view of two references: “Rao” and “Araujo.”

However, Petitioner and its expert largely fail to explain **how** these two references allegedly would have been combined to meet the requirements of claim 1. And when Petitioner’s expert **did** provide specificity regarding how he alleges the proposed combination **would have** operated (as opposed to how it “might” have operated), he failed to provide any **motivation** to combine the two references in the proposed manner.

Furthermore, the Petition fails to provide **any** motivation for how the two references would have been combined to meet the additional requirement of claim 4. The Petition largely incorporates by reference the analysis of its expert for this limitation, but he also fails to provide a motivation to arrive at his proposed combination of queuing network packets indefinitely. His failure to propose any motivation for such a solution is unsurprising, because as Patent Owner’s expert explains, such a combination would have wasted valuable device resources.

Accordingly, the Petition fails to show the unpatentability of claim 1 (and thus all other challenged claims, which each depend from claim 1) and fails to show the unpatentability of claim 4 for these additional reasons.

II. OVERVIEW OF THE '544 PATENT

At a high level, the '544 Patent is directed to using a network usage policy to control network activity based on whether an application is classified as interacting with the user in the foreground and a power control state. Ex. 2002 ¶¶30-32. More specifically, the only independent claim (Claim 1) recites:

[1pre] A wireless end-user device, comprising:

[1a] a wireless modem to communicate data for network service usage activities between the device and a wireless network;

[1b] a processor that executes instructions to associate network service usage activity, on behalf of a first device application, and that occurs when the first device application is not in the foreground of user interaction, with a network service usage control policy,

[1d] set an application state indicating whether the first device application, associated with a particular network service usage activity, is in the foreground of user interaction, and

[1f] dynamically determine whether to apply the network service usage control policy to the particular network service usage activity, based on the application state and based on a power control state; and

[1g] a memory coupled to the processor to provide the processor with the instructions.

For instance, the '544 Patent describes “dynamically” determining whether to

apply a “network service usage control policy” to a “network service usage activity” based on “a power state of device” and “an application behavior.” Ex. 1001 at 89:12-23.

III. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner’s expert Dr. Butler proposes that a POSITA in the field of the ’544 Patent “would have had (1) at least a bachelor’s degree in computer science, electrical engineering, or related field, and (2) three to five years of experience with networking, power consumption of networked computing devices, and/or wireless digital communications systems. More education, e.g., a doctorate in an academic area emphasizing electrical engineering, computer engineering, computer science, or a related technical field, would compensate for fewer years of work experience” Ex. 1003 ¶17.

Patent Owner believes that this stated level of skill is too vague. For example, it is unclear why Dr. Butler proposes “three to five years of experience,” when three years of experience plainly qualifies a person as a POSITA under Dr. Butler’s definition. And Dr. Butler’s proposal that “[m]ore education ... would compensate for fewer years of work experience” also lacks clarity. *See Nespresso USA, Inc. v. K-Fee Sys. GmbH*, IPR2022-01574, Paper 9 (PTAB Apr. 10, 2024) (“As for [the contention] that additional education might substitute for some of the experience,

and substantial experience might substitute for some of the educational background,’ we find that this characterization is too vague.”) (cleaned up).

For purposes of this response, Patent Owner agrees that a person having a bachelor’s degree in computer science, electrical engineering, or a related field, plus at least three years of experience with networking, power consumption of networked computing devices, and/or wireless digital communication systems qualifies as a POSITA. The three years of additional experience can be in either a professional setting or a research setting. *See* Ex. 2002 ¶28.

IV. CLAIM CONSTRUCTION

The Petition states that “no formal claim constructions are necessary.” Pet. at 2-3. For purposes of this response, Patent Owner agrees that no formal claim construction is necessary.

V. THE PETITION FAILS TO SHOW UNPATENTABILITY OF THE SOLE INDEPENDENT CLAIM (CLAIM 1)

Limitation [1.5] requires that the claimed “wireless end-user device” includes a processor executing instructions to “dynamically determine whether to apply the network service usage control policy to the particular network service usage activity, based on the application state and based on a power control state.”

The Petition relies on a combination of Rao with Araujo (the “Rao-Araujo Device,” or “RAD”) to satisfy this limitation. *See* Pet. at 25-27. However, the

Petition is non-specific about how the combined system would even allegedly operate to arrive at limitation [1.5], and further fails to provide a motivation for why a POSITA would have combined Rao with Araujo in any particular way that is alleged to satisfy limitation [1.5]. *See* Ex. 2002 ¶¶34-38.

The Petition’s analysis of limitation [1.5] provides almost no detail whatsoever as to how its combination of Rao with Araujo would operate to satisfy the requirements of limitation [1.5]. The Petition, in fact, asserts only that “policy enforcement in RAD *may* be based on application state (foreground/background) and device power state (battery/plugged in),” but provides no detail as to how exactly that high-level description of how the combined system “may” operate would actually work in practice to arrive at limitation [1.5]. Pet. at 26.¹

In support of its generic assertion of how the combined system “may” operate, the Petition cites to the declaration of Kevin Butler. *See id.* at 26-27 (citing Ex. 1003 ¶101). But Dr. Butler provides only two concrete statements about how his proposed combination of Rao with Araujo *would* operate in his analysis of limitation [1.5]. First, he states:

¹ All emphases in cited materials herein are added in this document, unless otherwise noted.

As one example, when a request to transmit network packets arrives, a POSITA would have recognized that RAD enforces a particular policy (i) when an application is in the foreground (per Rao) giving it “VIP” status (per Araujo and based on the foreground application state of Rao), and (ii) when the power state of the device indicates the battery is above a threshold charging level. SAMSUNG-1006, [0022]. In such cases, RAD would permit the transmission (since the battery is sufficiently charged) and place the packets in a high-priority queue (for the VIP application).

Ex. 1003 ¶101.

Second, Dr. Butler states:

In another example, [a] POSITA would have recognized that RAD enforces a different policy (i) when an application is in the background (per Rao) not giving it “VIP” status (per Araujo and based on the background application state of Rao), and (ii) when the power state of the device indicates the battery is above a threshold charging level. SAMSUNG-1006, [0022]. In such cases, RAD would permit the transmission (since the battery is sufficiently charged) and place the packets in a lower-priority queue (for the non-VIP application).

Id.

However, Dr. Butler provides *no* motivation to implement this *specific* combination of Rao and Araujo, other than a generic assertion that “[t]his technique would yield the expected behavior of prioritizing VIP packets over non-VIP packets.” *Id.* However, as explained by Patent Owner’s expert, a POSITA would

have recognized that Rao *already* prioritizes high-priority packets over lower-priority packets, and Dr. Butler thus does not explain why his proposed combination of Rao with Araujo in the alleged combination would have been seen as beneficial by a POSITA. Ex. 2002 ¶¶35-37.

Dr. Butler goes on to assert other ways in which his proposed combination of Rao with Araujo “might” be made:

Beyond these particular examples, a POSITA would have recognized and appreciated “the multitude of ways to define client-side application priorities.” SAMSUNG-1005, [0182]. For example, if the power level was somewhat lower, a policy *might* state that VIP packets can flow, but non-VIP packets are held. If the power level was still lower, no transmissions *might* occur, except *perhaps* for system-critical packets, such as updating anti-virus in response to an imminent threat.

Ex. 1003 ¶101. This generic reference to a “multitude of ways” his combination “might” operate is insufficient for me to determine what his proposed combination actually *is*. Ex. 2002 ¶38. Furthermore, he does not provide any reason why a POSITA would have been motivated to arrive at any of these potential ways the combined Rao-Araujo system “might” operate. *See generally* Ex. 1003 ¶101 (no alleged motivation regarding why a POSITA would have been motivated to implement what he specifies “might” be done); Ex. 2002 ¶38.

Indeed, by referencing “the multitude of ways” the combination could have been made (and providing no motivation to arrive at these undisclosed “multitude of ways”), Dr. Butler appears to be asserting that any manner in which Rao *could have been* combined with Araujo *would have been obvious*, contrary to controlling precedent. *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (“[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.”) (emphases in original).

Because the Petition does not specify how its proposed combination would operate to satisfy the requirements of limitation [1.5], and the Petition’s supporting expert declaration provides little clarity or motivation to arrive at any *specific* combination of Rao with Araujo, the Petition fails to show how the Rao in view of Araujo renders obvious the requirements of claim 1, the sole challenged independent claim.

VI. THE PETITION ADDITIONALLY FAILS TO SHOW UNPATENTABILITY OF DEPENDENT CLAIM 4

Claim 4 recites: “The wireless end-user device of claim 1, wherein when the network service usage control policy is applied it disallows the particular network service usage activity, and wherein the processor executes the instruction further to,

when it is determined that the particular network access request is disallowed, queue that particular network service usage activity until a power state change occurs.”

In support of the purported obviousness of this limitation, the Petition includes only a single conclusory assertion as to how its combination of Rao with Araujo would operate. *See* Pet. at 30 (alleging: “It would have been obvious to a POSITA that RAD adds to queues (as Rao and Araujo teach) requests to were [sic] disallowed until a power state change occurred (as Araujo teaches).”). In support of that conclusory assertion, the Petition cites to a single paragraph of Dr. Butler’s declaration. *See id.* (citing Ex. 1003 ¶110).

For his part, Dr. Butler asserts that it would have “been obvious to a POSITA that RAD adds to queues (as taught by Rao) requests to were [sic] disallowed until a power state change occurred (as taught by Araujo) since queuing requests until they can be serviced was common in the field as of the Critical Date.” Ex. 1003 ¶110.

However, Rao’s queues (to which Dr. Butler refers) are *packet* queues, whereas Araujo’s requests are “requests to use a device that is turned off.” *See id.* (referring queuing “network packets for an application” in Rao, but referencing queueing a “request[] to use a device that is turned off” in Araujo). For example, Araujo’s request to use a device that is turned off may refer to a request to open a network connection, but a POSITA would not understand that these requests would

be in the form of network packets (because network packets are typically only formed for transmission when a network device is actually turned on). *See* Ex. 2002 ¶¶40-41.

However, because Dr. Butler’s proposal clearly asserts that requests would be added to Rao’s *packet* queues (*see* Ex. 1003 ¶110), the Petition’s combination involves generating and placing network packets within a queue even though the network device is turned off. Neither the Petition nor Dr. Butler, however, provide any motivation to generate packets for transmission at some indefinite future period of time even though the network device is turned off. As explained by Patent Owner’s expert, such a solution is taught neither by Rao nor by Araujo, and Dr. Butler does not allege that such a solution would have been common. Ex. 2002 ¶42.

As further explained by Patent Owner’s expert, the Petition’s approach of generating and queuing network packets even through the network device is turned off would lead to uncertainty in application behavior, because the application would not know when its packets may eventually be transmitted (if ever). *Id.* ¶43. Furthermore, many packets are time-sensitive, and if they are not transmitted relatively quickly after being generated, there would be no benefit to transmitting them at all (and there may even be a detriment to transmitting them, because network resources would be consumed in order to transmit outdated or incorrect information and thus wasted). *Id.* Furthermore, such an implementation would waste device

resources, because it would require resources to manage and store the packets for later transmission, even though the packets may become stale before they are ultimately transmitted at some indefinite future period of time. *Id.* Because the Petition provides no motivation to pursue this approach, the Petition fails to show its obviousness. *See id.*

Accordingly, the Petition fails to show that claim 4 is unpatentable for these additional reasons.

VII. CONCLUSION

For at least the foregoing reasons, Patent Owner respectfully requests that all challenged claims be found not unpatentable.

Date: July 8, 2024

Respectfully submitted,

/James A. Milkey/

James A. Milkey, Reg. No. 79,503

Reza Mirzaie, Reg. No. 69,138

Marc A. Fenster, *pro hac vice* forthcoming

Dale Chang, Reg. No. 61,476

Amy E. Hayden, Reg. No. 64,817

Neil A. Rubin, Reg. No. 67,030

Philip X. Wang, Reg. No. 74,621

RUSS, AUGUST & KABAT

12424 Wilshire Blvd., 12th Floor

Los Angeles, CA 90025

Counsel for Patent Owner

CERTIFICATION REGARDING WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), Patent Owner certifies that there are 2,708 words in the paper excluding the portions exempted under 37 C.F.R. §42.24(a)(1).

Date: July 8, 2024

/James A. Milkey/
James A. Milkey, Reg. No. 79,503
Reza Mirzaie, Reg. No. 69,138
Marc A. Fenster, *pro hac vice* forthcoming
Dale Chang, Reg. No. 61,476
Amy E. Hayden, Reg. No. 64,817
Neil A. Rubin, Reg. No. 67,030
Philip X. Wang, Reg. No. 74,621
RUSS, AUGUST & KABAT
12424 Wilshire Blvd., 12th Floor
Los Angeles, CA 90025

Counsel for Patent Owner

CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e)(1))

The undersigned hereby certifies that the above document was served on July 8, 2024, by filing this document through the Patent Trial and Appeal Case Tracking System as well as delivering a copy via electronic mail upon the following attorneys of record for the Petitioner:

W. Karl Renner (Reg. No. 41,265)
Jeremy J. Monaldo (Reg. No. 58,680)
Jennifer J. Huang (Reg. No. 64,297)
Ryan Chowdhury (Reg. No. 74,466)
FISH & RICHARDSON P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
IPR39843-0160IP1@fr.com
PTABInbound@fr.com
axf-ptab@fr.com
jjm@fr.com
jjh@fr.com
rchowdhury@fr.com

Date: July 8, 2024

/James A. Milkey/
James A. Milkey, Reg. No. 79,503
Reza Mirzaie, Reg. No. 69,138
Marc A. Fenster, *pro hac vice* forthcoming
Dale Chang, Reg. No. 61,476
Amy E. Hayden, Reg. No. 64,817
Neil A. Rubin, Reg. No. 67,030
Philip X. Wang, Reg. No. 74,621
RUSS, AUGUST & KABAT
12424 Wilshire Blvd., 12th Floor
Los Angeles, CA 90025

Counsel for Patent Owner