

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO. LTD.,
Petitioner,

v.

HEADWATER RESEARCH LLC,
Patent Owner.

IPR2024-00010
Patent 9,615,192 B2

PATENT OWNER'S RESPONSE TO THE PETITION

TABLE OF CONTENTS

I.	Introduction	1
II.	Overview of the '192 Patent	3
III.	Level of Ordinary Skill in the Art.....	6
IV.	Claim Construction: “Periodic Timer”	7
V.	The Petition’s Grounds 1-4 fails to show unpatentability of any challenged claim.	10
	A. TS-23.140 does not disclose or render obvious “a plurality of message delivery triggers” as recited by limitations [1d3]/[15d2].	10
	B. TS-23.140 does not disclose or render obvious that “one of the message delivery triggers is the expiration of a periodic timer” as recited by claim 9.....	23
	1. The Petition’s “periodic polling” theory fails.....	23
	2. The Petition’s “earliest time of delivery” theory fails.	29
VI.	The Petition’s Grounds 5-8 fails to show unpatentability of any challenged claim.	33
	A. Houghton and Munson do not render obvious that “network element messages” that are “received” by “an interface” of the “message link server” would comprise “message content including data for, and an identification of, a responsive one of the authorized software components.”.....	33
	1. Overview of the Petition’s Ground 5 Theory	35
	2. The Petition’s Ground 5 theory fails because it at most shows what the messages sent by the push server indicate, not on what the messages received by the push server would indicate.....	39
	B. The Petition fails to show that Houghton/Munson renders obvious that “one of the message delivery triggers is the expiration of a periodic timer” as recited by claim 9.	43

VII. Conclusion	45
-----------------------	----

PATENT OWNER'S EXHIBIT LIST

No.	Description
Ex. 2001	Declaration of Dr. Michael C. Brogioli in Support of Patent Owner's Response
Ex. 2002	<i>Curriculum vitae</i> of Dr. Michael C. Brogioli
Ex. 2003	August 28, 2024 deposition transcript of Dr. Patrick Traynor
Ex. 2004	IEEE 100: The Authoritative Dictionary of IEEE Standards Terms (7th Ed. 2000) (excerpted)
Ex. 2005	United States Patent No. 10,931,348, assigned to Samsung Electronics Co., Ltd.
Ex. 2006	United States Patent No. 10,694,522, assigned to Samsung Electronics Co., Ltd.
Ex. 2007	<i>Samsung Electronics Co., Ltd. v. Headwater Research LLC</i> , IPR2024-00003, Paper No. 8 (May 22, 2024) (Decision Denying Institution of <i>Inter Partes</i> Review)

I. Introduction

The Petition presents only two grounds, Grounds 1 and 5, that challenge claims 1 and 15 of the '192 patent; all other challenged claims depend from claim 1. However, both of these grounds fail, and as a result all challenged claims should be found not unpatentable.

Ground 1 relies on a single reference, the TS-23.140 specification published by 3GPP. While all challenged claims of the '192 patent require “a plurality of message delivery triggers,” TS-23.140 discloses only a *single* message delivery trigger: a messaging server’s reception of a valid request to retrieve a message. And while Petition attempts to point to numerous other aspects of TS-23.140 as constituting a “message delivery trigger,” the Petition’s allegations in this regard fundamentally misunderstand or mischaracterize the operation of TS-23.140, in which the *only* trigger upon which a messaging server “shall deliver the MM to the recipient MMS User Agent” is the messaging server’s reception of a valid retrieval request. *See* Ex. 1004, 29 (“Upon retrieval request the recipient MMS Relay/Server *shall* deliver the MM to the recipient MMS User Agent.”).¹

Ground 5 relies on a combination of two references, “Houghton” and “Munson.” The Petition relies on Houghton alone for the obviousness of all claims’

¹ All emphases herein are added unless otherwise specified.

requirement that “network element messages” that are “*received*” by a “message link server” comprise content including “an identification of[] one of the authorized software components” (e.g., an identification of an authorized application residing on a mobile device). *See* Ex. 1001, claim 1 at limitation [1c2]; claim 15 at limitation [15c2].² However, the Petition relies *solely* on evidence that messages *sent by* Houghton’s push server (the alleged “message link server”) include such information, and provides no evidence that messages *received by* that server would include the requisite information as the Petition’s mapping would require. Furthermore, the Petition presents no explanation of why this requirement, missing from Houghton, would supposedly have been obvious.

This deficiency—the Petition’s failure to provide evidence regarding the content of messages *received by* Houghton’s push server (as opposed to messages *sent by* that server)—is the *same* deficiency the Board previously found fatal to a prior challenge to a related patent, and the logic of that decision applies equally here. *See* Ex. 2008 (*Samsung Electronics Co., Ltd. v. Headwater Research LLC*, IPR2024-00003, Paper No. 8 (May 22, 2024) (Decision Denying Institution of *Inter Partes* Review)) at 19 (“[E]ven if Petitioner is correct that Houghton discloses that the

² References to numbered claim limitations herein adopt the convention established by the Petition’s Appendix of Claims. *See* Pet. iii-vi.

*command messages pushed from push server 701 to push client 704 include IP port numbers ‘indicating a corresponding one of the mobile end-user devices and one of a plurality of applications,’ see Pet. 21, **this is not sufficient to satisfy limitation [1.3], which requires that requests received from “network application servers” (mapped to application server 702) include this information.**”).*

Thus, all challenged claims should be found not unpatentable. Claim 9 (which depends from claim 1 and additionally recites that one of the message delivery triggers is the “expiration of a periodic timer”) should be found not unpatentable for an additional reason: the Petition’s claim 9 theories fail because, *inter alia*, they ignore the plain meaning of “periodic” as something that repeats or recurs regularly in time, and in doing so would rewrite claim 9 as reciting “expiration of a *periodic* timer” such that it would extend to expiration of *any* timer.

II. Overview of the ’192 Patent

At a high level, the ’192 patent is directed to a message link server that receives messages from various network elements, which messages include data for, and an identification of, an authorized software component on a wireless end-user device, and which evaluates a plurality of message delivery triggers before delivery of the message to the appropriate software component. Ex. 2001 (declaration of Dr. Michael C. Brogioli), ¶29). Claim 1 is representative and recites:

[1pre] A message link server comprising:

[1a] a transport services stack to maintain a respective secure message link through an Internet network between the message link server and a respective device link agent on each of a plurality of wireless end-user devices,

[1b] each of the wireless end-user devices comprising multiple software components authorized to receive and process data from secure message link messages received via a device link agent on that device;

[1c1] an interface to a network to receive network element messages from a plurality of network elements,

[1c2] the received network element messages comprising respective message content and requests for delivery of the respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components; and

[1d1] a message buffer system including a memory and logic,

[1d2] the memory to buffer content from the received network element messages for which delivery is requested to a given one of the wireless end-user devices,

[1d3] the logic to determine when one of a plurality of message delivery triggers for the given one of the wireless end-user devices has occurred, wherein for at least some of the received network element messages, the receipt of such a message by the message buffer system is not a message delivery trigger, and for at least one of the message delivery triggers, the trigger is an occurrence of an asynchronous event with time-critical messaging needs, and

[1d4] upon determining that one of the message delivery triggers has occurred, the logic further to supply one or more messages comprising the buffered content to the transport services stack for delivery on the secure message link maintained between the transport services stack and a device link agent on the given one of the wireless end-user devices.

Ex. 1001, claim 1. Claim 15 is similar in many respects, but recites a “method of operating a message link server.” Ex. 1001, claim 15.

In the context of the '192 patent, message delivery triggers may include the reception of a server message, i.e., “transmit[ting] server messages asynchronously as they arrive.” Ex. 1001 70:1-3. Alternatively, the server “can determine when to transmit based potentially on several parameters, such as one or more of” a listed set of parameters. *Id.* 70:8-13. These parameters include “[a] periodic timer trigger, waiting until a certain amount of service usage or traffic usage has occurred, responding to a service agent message, responding to a service agent request, initiated by a verification error condition, and/or initiated by some other error condition.” A POSITA would understand that these constitute message delivery triggers because the specification refers to them as “transmission trigger[s].” *Id.* at 70:6-16. Transmission triggers further include “asynchronous messages or polling for messages, constant frequency transmission, transmission based on how much service usage or data usage has taken place, transmission in response to device side

control link message, service verification error events, other error events, and/or other message transmission trigger criteria.” *Id.* 70:16-30; Ex. 2001 ¶31.

III. Level of Ordinary Skill in the Art

The Petition proposes that a POSITA in the field of the ’192 Patent “would have had (1) at least a bachelor’s degree in computer science, electrical engineering, or a related field, and (2) 3-5 years of experience in services and application implementation in communication networks. Additional graduate education could substitute for professional experience, and vice versa.” Pet. 3 (citations omitted).

Patent Owner believes that this stated level of skill is too vague. For example, it is unclear why Petitioner proposes “3-5 years of experience,” when three years of experience already qualifies a person as a POSITA under the Petition’s definition. And the Petition’s proposal that “[a]dditional graduate education... could substitute for professional experience, and vice versa” also lacks clarity. *See Nespresso USA, Inc. v. K-Fee Sys. GmbH*, IPR2022-01574, Paper No. 9 (PTAB Apr. 10, 2024) (“As for [the contention] that ‘[a]dditional 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.””).

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 in services and application implementation in communication networks qualifies as a POSITA. The three years of additional experience can be in either a professional setting or a research setting. Ex. 2001, ¶¶32-34.

IV. Claim Construction: “Periodic Timer”

The Petition states that “no claim constructions are necessary.” Pet. at 2-3. Patent Owner agrees that no formal claim construction is necessary, because all terms carry their plain and ordinary meaning. However, as explained in this Section and in Sections V.B & VI.B below, certain of the Petition’s theories regarding the claim term “periodic timer” are inconsistent with that term’s plain and ordinary meaning. *See* Ex. 2001, ¶¶35-41.

The term “periodic timer” arises in the context of claim 9, which depends from claim 1 and further specifies that “one of the message delivery triggers is the expiration of a periodic timer.”

While the ’192 patent does not define “periodic timer,” a POSITA would understand it to refer to a timer that recurs in accordance with a given time period. Ex. 2001, ¶37. For example, The Authoritative Dictionary of IEEE Standards Terms (7th Ed. 2000) defines “periodic” as “[of] or pertaining to a series of specified waveforms or features which *repeat or recur regularly... in time*,” as opposed to

“aperiodic” in which the “waveforms or features repeat or recur... *irregularly* in time.” Ex. 2004, 13.

In the context of messaging systems, an excellent example of something that occurs *periodically* is an example Petitioner Samsung itself raises: “periodic polling.” *See* Pet. 31 (relying on periodic polling as satisfying the claim 9 requirements, and acknowledging that “periodic polling is akin to a periodic timer expiring because polling happens at periodic intervals”); *see also* Section V.B.1, *infra* (explaining why the Petition’s “periodic polling” theory fails for reasons *other than* the polling not satisfying the requirement of a “periodic timer”). A POSITA would understand that periodic polling is a scheme in which a system will “poll” (or inquire as to the status of some value) in a recurring manner at some defined frequency—the time between these recurring polls is the “period” of the periodic polling. Ex. 2001, ¶38.

This understanding of “periodic” is consistent with Samsung’s own usage of “periodic” in its own patents. *See, e.g.*, Ex. 2005, 13:42-43 (U.S. Patent No. 10,931,348, assigned to Samsung) (noting that “Step 2” should be performed “periodically with [set] period TP2”); Ex. 2006, 2:30-42 & FIG. 2 (U.S. Patent No. 10,694,522, assigned to Samsung) (“To avoid excessive PDCCH overhead, some... transmissions may be configured to occur periodically.... Such scheduling is

referred to as persistent. FIG. 2 illustrates the concept of persistent scheduling where an initial packet transmission 210 occurs periodically every assignment interval.”); Ex. 2001, ¶39.

As explained in further detail in Sections V.B & VI.B below, the Petition and Dr. Traynor apply a far broader understanding of what constitutes a “periodic timer.” For instance, the Petition contends that a timer “continu[ing] for a particular period” constitutes a “periodic timer,” regardless of whether it recurs at regular intervals. Pet. 31. And at his deposition, Dr. Traynor stated that “expiration of a periodic timer” might even be satisfied by a “user looking at the clock and waiting” until a particular time had passed before they sent a message. *See* Ex. 2003, 17:14-18:7.

The Petition’s application of a “periodic timer” is inconsistent with that term’s ordinary meaning discussed above, and would have the effect of rewriting claim 9 to remove the term “periodic” as follows: “The message link server of claim 1, wherein one of the message delivery triggers is the expiration of a *periodic* timer.” Ex. 2001, ¶¶40-41. The phrase “expiration of a... timer” alone implies that some time period is being measured. *See* Ex. 2004, 51 (“arm a timer: To start a timer measuring the passage of time, enabling the notification of a process when the specified time or time interval has passed.”). Thus, if all that were required for a “periodic timer” were a timer being “triggered and continu[ing] for a particular

period,” then *any* timer would be “periodic,” because all “timers” that can “expire” must necessarily expire after *some* period of time. But claim 9 specifically recites a *periodic* timer, and the Petition’s attempts to read “periodic” out of the claim language should be rejected. *See* Ex. 2001, ¶41.

V. The Petition’s Grounds 1-4 fails to show unpatentability of any challenged claim.

The Petition’s Grounds 1-4 all rely on TS-23.140 alone, and not in combination with any other references, for the Petition’s allegations of obviousness with respect to claims 1 and 15, which are the only two challenged independent claims. But as explained below, Grounds 1-4 fail to show that TS-23.140 renders obvious claims 1 or 15, and thus fails to show the obviousness of the other challenged claims as well (which all depend from claim 1). *See* Ex. 2001, ¶¶42-66.

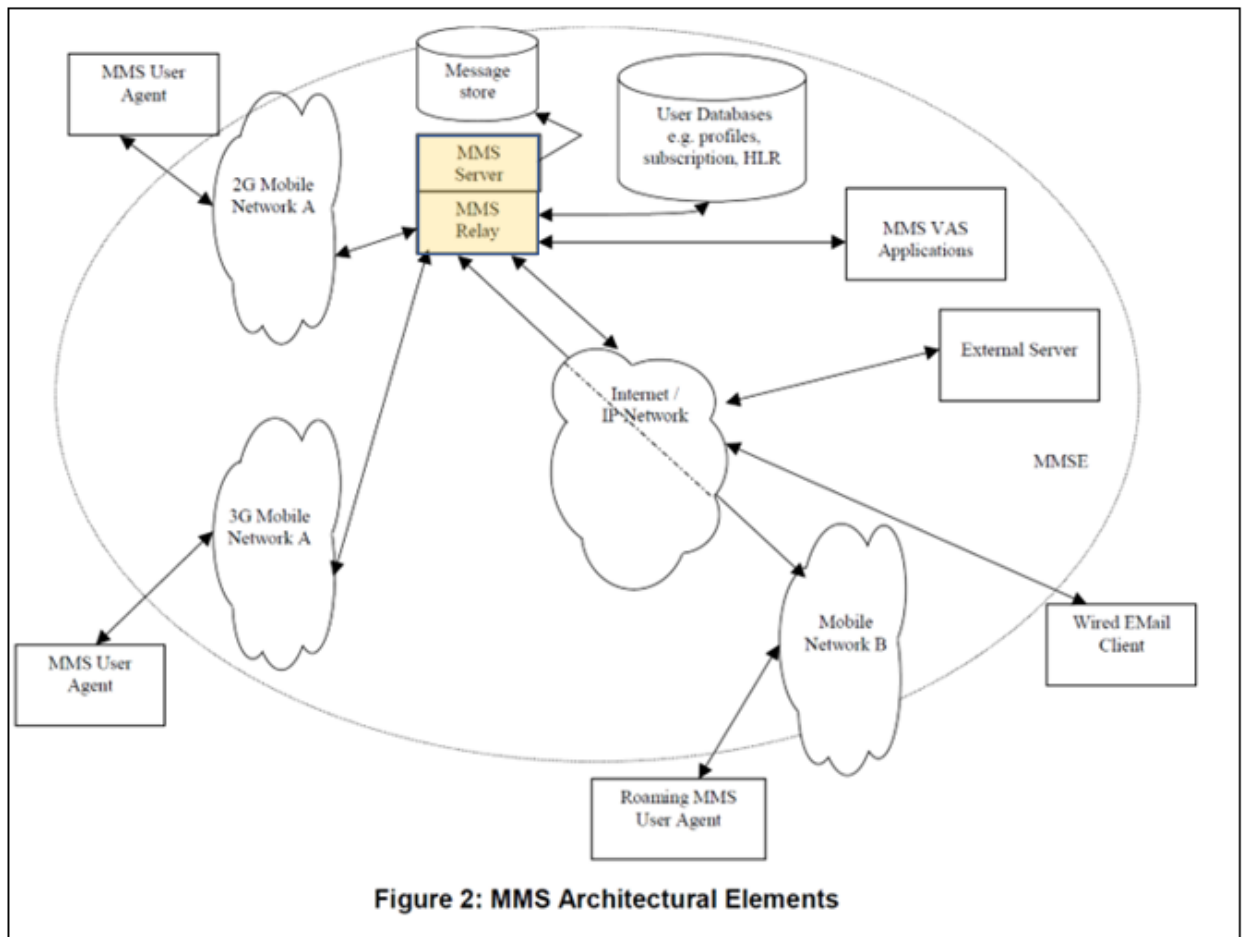
Grounds 1-4 also rely solely on TS-23.140 alone to allege obviousness of claim 9. As also explained below, the Petition fails to show that TS-23.140 renders obvious the additional requirement of claim 9. *See* Ex. 2001, ¶¶42, 67-85.

A. TS-23.140 does not disclose or render obvious “a plurality of message delivery triggers” as recited by limitations [1d3]/[15d2].

Claim 1 requires “logic to determine when one of a plurality of message delivery triggers... has occurred,” and claim 15 recites a similar requirement. Ex.

1001, cl. 15 (“determining when one of a plurality of message delivery triggers... has occurred”). However, as explained further below, TS-23.140 teaches the use of only a *single* message delivery trigger—the receipt of a valid retrieval request from the MMS User Agent. *See* Ex. 1004, 29 (“Upon retrieval request the recipient MMS Relay/Server *shall* deliver the MM to the recipient MMS User Agent.”). Ex. 2001, ¶¶43-66.

By way of background, the Petition specifically relies on the MMS Relay/Server as constituting the claimed “message link server.” Pet. 6-7. The Petition’s annotation of Fig. 2 (highlighting the MMS Relay/Server) of TS-23.140 is below.



Pet. 7 (Petition’s annotation of Ex. 1004 at 17, FIG. 2).

As shown in the above diagram, the MMS Relay/Server can receive messages from various entities, including MMS VAS Applications and an External Server. The MMS Relay/Server also sends and receives messages from various MMS User Agents, which as the Petition acknowledges, are agents operating on “wireless end-user devices (mobile phones/terminals/UEs).” Pet. 8; Ex. 2001, ¶¶45-46.

The TS-23.140 specification defines certain roles and responsibilities for certain of these components. Ex. 2001, ¶47. For example, the reference states that

the “MMS Relay/Server shall provide” specified functionalities including “receiving and sending MM [multimedia messages].”

The MMS Relay/Server shall provide the following functionalities:

- receiving and sending MM;
- conversion of messages arriving at the recipient MMS Relay/Server from legacy messaging systems to MM format (e.g. facsimile to MM) if interworking with legacy messaging systems (MM3) is supported;
- conversion of MMs leaving the originator MMS Relay/Server to legacy messaging systems to the appropriate message format (e.g. MM to internet email) if interworking with legacy messaging systems (MM3) is supported;
- message content retrieval;
- MM notification to the MMS User Agent;

Ex. 1004, 21.

Although as shown above the MMS Relay/Server is the entity responsible for physically “sending [the] MM” to the MMS User Agent, TS-23.140 elsewhere specifies that it is actually the MMS User Agent that is tasked with *initiating* “MM delivery to the MMS User Agent.” *Id.*, 19 (“The MMS User Agent *shall*³ provide the following application layer functionalities: the retrieval of MMs (*initiate MM delivery to the MMS User Agent*):”

³ A POSITA would understand the use of the word “shall” to disclose a mandatory requirement of an implementation of the specification, as opposed to “may,” which refers to something that may be optionally implemented. Ex. 2001, ¶48.

5.1.1 MMS User Agent operations

The MMS User Agent shall provide the following application layer functionalities:-

- the retrieval of MMs (initiate MM delivery to the MMS User Agent);
- terminal capability negotiation.

Id., 19; Ex. 2001, ¶48-49.

The TS-23.140 specification provides additional context regarding how the MMS User Agent initiates MM delivery to the MMS User Agent. Ex. 2001, ¶50. Specifically, it states that whenever an MMS Relay/Server receives a MM, it “shall generate a notification to the recipient MMS User Agent.” Ex. 1004, 28 (“Upon reception of an MM the recipient MMS Relay/Server.... Shall generate a notification to the recipient MMS User Agent.”). Then, “[i]n a response to the notification the MMS User Agent” has two options—either reject the MM, or retrieve the MM:

In a response to the notification the MMS User Agent shall be able to

- reject the MM or
- retrieve the MM, either immediately or at a later time (i.e. defer the MM retrieval), either manually or automatically, as possibly determined by the operator configuration and user profile.

Ex. 1004, 28.

TS-23.140 also makes clear that the retrieval occurs in specific response to a retrieval request from the MMS User Agent. *See* Ex. 1004, 29 (“The recipient MMS User Agent shall be able to request retrieval of an MM from the recipient MMS

Relay/Server based on the Message Reference received in a notification.”); Ex. 2001, ¶51.

When the MMS User Agent provides a valid retrieval request (i.e., a retrieval request conforming to the TS-23.140’s requirements, including being within the message expiry period and having an appropriate size restriction), the MMS Relay/Server must initiate delivery of the MM to the MMS User Agent:

7.1.3 Retrieval of a Multimedia Message in the recipient MMSE

The recipient MMS User Agent shall be able to request retrieval of an MM from the recipient MMS Relay/Server based on the Message Reference received in a notification. If MMBoxes are supported, the MMS User Agent shall be able to request retrieval of an MM from the user’s MMBox, based on a Message Reference received from a previous MMBox operation.

Within a retrieval request the recipient MMS User Agent may indicate a size restriction of the returned MM (i.e., maximum size) that the MMS Relay/Server is to use in processing the retrieval request.

Upon retrieval request the recipient MMS Relay/Server

- shall deliver the MM to the recipient MMS User Agent

Ex. 1004, 29 (annotated); Ex. 2001, ¶52. The only exception to this requirement—that the “MMS Relay/Server shall deliver the MM” “[u]pon [a received] retrieval request”—is that the “MMS Relay/Server... should *not* deliver the MM... to the recipient MMS User Agent unless the size restriction set by the MMS User Agent is met.” Ex. 1004, 29. In other words, so long as a retrieval request does not specify a size restriction inconsistent with the requested non-expired message, a retrieval request *shall* trigger delivery of the message by the MMS User Agent. Accordingly, because the valid retrieval request initiates message delivery, a POSITA would

understand that reception of the valid retrieval request constitutes the message delivery trigger in TS-23.140. Ex. 2001 ¶52.

And as further explained by Dr. Brogioli, TS-23.140 does not specify any *other* conditions as message delivery triggers. Ex. 2001 ¶¶53-54. For example, the *only* instance in which the MMS Relay/Server “shall deliver the MM to the recipient MMS User Agent” is “[u]pon retrieval request.” Ex. 1004, 29; Ex. 2003 at 9:21-10:23 (failing to identify “any instances in Exhibit 1004... in which the MMS relay server shall deliver the MM to the recipient MMS User Agent other than upon a retrieval request”). And the *only* exception to delivery “[u]pon retrieval request” is if “the size restriction set by the MMS User Agent is [not] met.” Ex. 1004, 29. In other words, reception of a valid retrieval request, and *only* reception of a valid retrieval request, is disclosed as initiating the delivery procedure of the MMS Relay/Server.

The Petition identifies several other scenarios as being alleged “message delivery triggers” in TS-23.140 (*see* Pet. 21-22), but provides no plausible explanation as to how these scenarios satisfy the plain meaning of a “message delivery trigger.” *See* Ex. 2001, ¶¶55-66. Each of these scenarios is addressed in turn:

First, the Petition contends one message delivery trigger occurs when the “MMS Relay/Server has sent a notification to the recipient User Agent.” Pet. 21 (first bullet point). But the Petition does not explain how sending the notification (as separate from receiving a valid retrieval request) constitutes a message delivery trigger. Ex. 2001, ¶56.

Second, the Petition asserts that when the “recipient MMS User Agent requests message retrieval upon MMS Relay/Server receiving the notification—e.g., within a message expiry period,” and when “the message retrieval request’s ‘size restriction’” is consistent with the message, message delivery is triggered. *See* Pet. 21-22 (Petition’s second and fifth bullet points). While the Petition attempts to separate these into two distinct message delivery triggers, a POSITA would understand that whenever a “valid” retrieval request is received (i.e., a retrieval request conforming to the TS-23.140’s requirements, including being within the message expiry period and having an appropriate size restriction), message delivery is triggered. The Petition provides no basis for separating reception of a message retrieval request and the contents of that message retrieval request into two separate “message delivery triggers,” and a POSITA would not understand these to be two distinct message delivery triggers. Ex. 2001, ¶57.

Third, the Petition identifies expiration of a “deferred delivery period (e.g., message expiry period” as constituting a “message delivery trigger.” Pet. 21-22 (third bullet point). But this represents a misunderstanding of how TS-23.140 works. Ex. 2001, ¶58. TS-23.140 provides no basis for an MMS User Agent to specify a “message expiry period” in a retrieval request, as the Petition implies. *Id.* For instance, TS-23.140 provides a lengthy table of elements that may be included within a retrieval request, none of which include a deferral timer. *See* Ex. 1004, 71-73 (“Table 11: Information elements in the MM1_retrieve.REQ”); Ex. 2001, ¶58.

Instead, “deferral” in TS-23.140 refers to the MMS User Agent itself waiting to issue the retrieval request. Ex. 2001, ¶59. Indeed, this is explicitly illustrated by TS-23.140, which shows that deferral of MMS involves a notification response to a notification request, but does ***not*** involve a retrieval request:

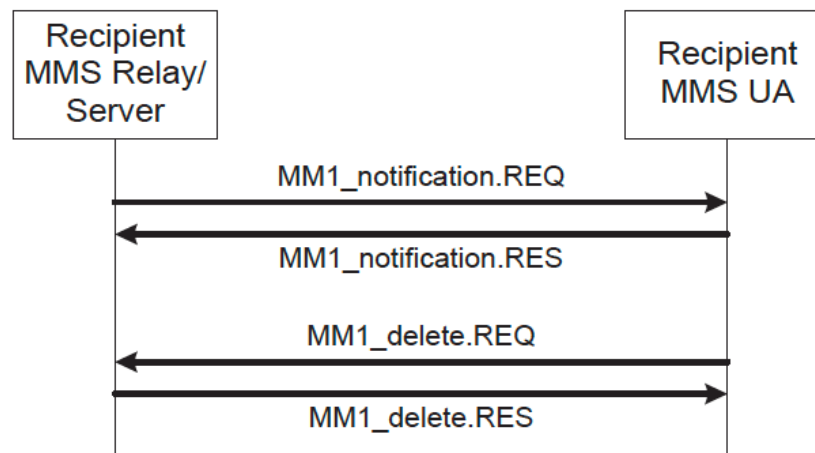
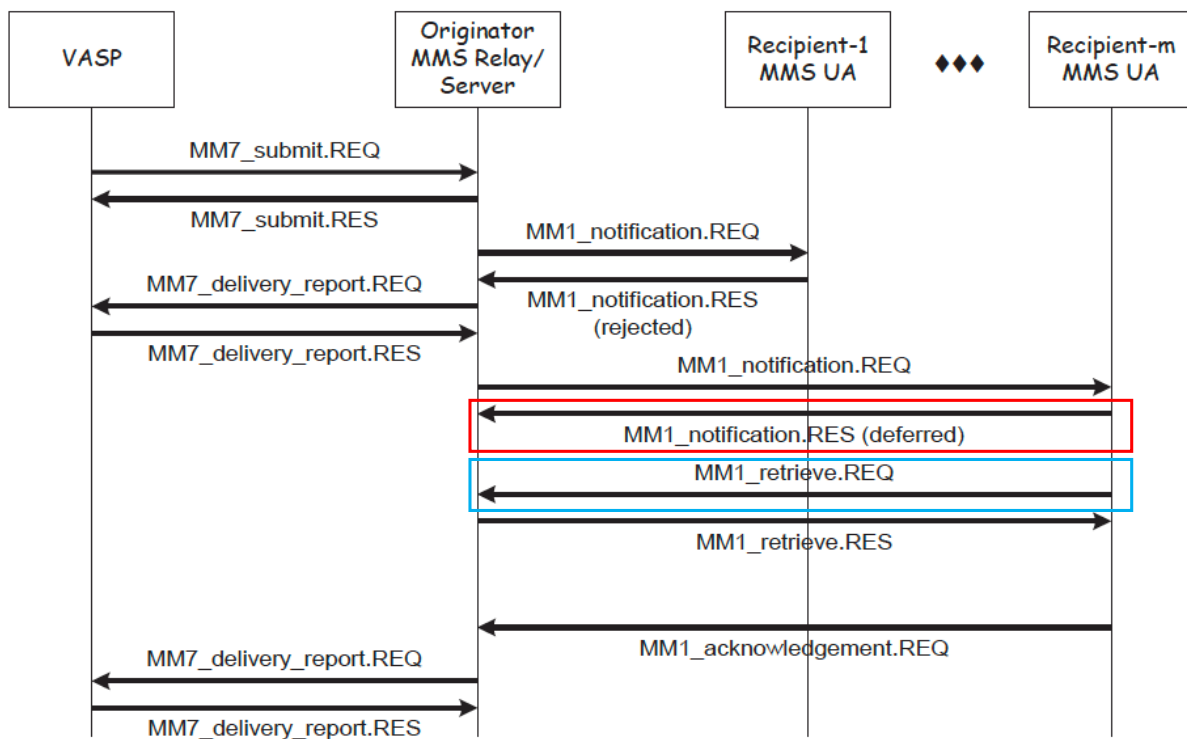


Figure 7A: Example Abstract Message Flow, for deletion of deferred MMs

Ex. 1004, 61; Ex. 2001, ¶59.

Furthermore, TS-23.140 makes clear that when retrieval is deferred (as indicated in a notification response), the MMS User Agent must *subsequently* issue a retrieval request to obtain the deferred message. For example, in the below diagram, a deferral notification (annotated in red) is first sent from the User Agent to the MMS Relay/Server, and *then* a retrieval request (annotated in blue) is sent from the User Agent prior to the retrieval response (i.e., message delivery).



Ex. 1004, 111 (annotated version of FIG. 8); Ex. 2001, ¶60.

Accordingly, the Petition is incorrect that “the recipient MMS User Agent requests deferred message delivery in the message retrieve request” (Pet. 22)—that

is simply not how TS-23.140 works, and the Petition’s unsupported assertion that a “deferred delivery period” specified in a retrieval request could be a message delivery trigger should be rejected as directly inconsistent with TS-23.140’s disclosure. Ex. 2001 ¶¶58-61.

Fourth, the Petition contends that the “recipient MMS User Agent becom[ing] available/reachable... or until message expires” constitutes a “message delivery trigger.” Pet. 21-22 (fourth bullet point). But TS-23.140 teaches that the User Agent becoming available is not a message delivery trigger—the message delivery is triggered “[u]pon retrieval request.” Ex. 1004, 29. TS-23.140 instead states that as part of message delivery, messages can be buffered (i.e., stored in the network) “until the recipient MMS User Agent becomes reachable... or until the MM expires.” Ex. 1004, 29. This is simply *how* message delivery (which is triggered “[u]pon [a valid] retrieval request”) functions; if message delivery is triggered, the outgoing message will be buffered until delivery is complete or until message expiration. Ex. 2001, ¶¶62-63.

The fact that the “MMS User Agent becom[ing] reachable... or until the MM expires” (Ex. 1004, 29) is not a message delivery trigger as alleged by the Petition (Pet. 22) is shown by the fact that these are simply conditions for the duration of message buffering. For example, as explained by Dr. Brogioli, message *expiration*

is not a message delivery trigger as the Petition contends; if anything, that would be a trigger to *cease* the message delivery that was triggered by reception of a valid retrieval request. Ex. 2001, ¶63. Thus, TS-23.140’s teachings about the scenarios in which messages should be buffered pending delivery completion or message expiration are simply an indication of *how* message delivery should be attempted, and are not themselves message delivery triggers. Ex. 2001, ¶63.

The Petition’s only explanation as to how any of the above scenarios (other than reception of a valid retrieval request) supposedly constitute a “message delivery trigger” is an explicit conflation of a “message delivery trigger” with a “condition[]” that must be met before a message can be delivered. Pet. 22 (“MMS Relay/Server does not deliver the message to the recipient MMS User Agent (for a particular user terminal) until the above *condition(s)/trigger(s)* are met....”). This theory cannot succeed. In any real-world system, countless “conditions” must be met before a message is delivered. As just one of numerous examples, the messaging server needs to be connected to a working power source so that it can physically send the packets that constitute the message. Of course, this does not mean that “connection to a working power source” is a “message delivery trigger,” and this would render the claims’ recitation of “a plurality of message delivery triggers” meaningless. Ex. 2003 ¶64. Accordingly, the Petition sets forth no plausible theory as to how these

scenarios (other than reception of a valid retrieval request itself) constitutes a “message delivery trigger.”

In light of TS-23.140’s explicit teaching that a valid retrieval request (and *only* a valid retrieval request) triggers the MMS Relay/Server to deliver a MM to the MMS User Agent, a POSITA would understand that TS-23.140 discloses only a *single* message delivery trigger, not “a plurality of message delivery triggers” as all challenged claims require. Ex. 2003, ¶65.

Furthermore, while the Petition’s analysis of limitations [1d3] and [15d2] asserts that TS-23.140 “*renders obvious* multiple message delivery triggers,” the Petition fails to set forth any plausible theory of obviousness beyond what TS-23.140 discloses. For example, the Petition sets forth no motivation to modify the disclosures of TS-23.140 to incorporate multiple message delivery triggers, and does not even explain what any modifications would have entailed. *See generally* Pet. 21-23. Indeed, as explained by Dr. Brogioli, a POSITA would have had a strong incentive to *not* deviate from TS-23.140’s requirements, because a major purpose of a 3GPP document such as TS-23.140 is to achieve standardization in implementation, and avoidance of inconsistent implementations that could create compatibility problems. Ex. 2003, ¶66. Accordingly, the Petition sets forth no plausible theory regarding how TS-23.140 renders obvious multiple message

delivery triggers, contrary to TS-23.140's disclosure that there is only a *single* message delivery trigger.

B. TS-23.140 does not disclose or render obvious that “one of the message delivery triggers is the expiration of a periodic timer” as recited by claim 9.

The Petition sets forth two separate theories as to how claim 9 is satisfied, both of which fail (and both of which present fundamental misunderstandings of TS-23.140's teachings). *See* Ex. 2001, ¶¶67-85.

1. The Petition's “periodic polling” theory fails.

The Petition contends that the requirement of claim 9 is satisfied because “MMS User Agent uses periodic polling to identify new messages on an external server, and subsequently retrieves those messages—which also demonstrates another example [of] a message delivery trigger that is the expiration of a periodic timer (as indicated by periodic polling).” Pet. 95. However, there is no teaching in TS-23.140 that the MMS User Agent engages in the alleged periodic polling, and that understanding would be inconsistent with TS-23.140's teachings. Ex. 2001, ¶68.

Specifically, the Petition relies upon Section 8.3.3 of TS-23.140, which states that “[f]or discovery of incoming messages from external messaging systems different mechanisms may be utilized, e.g.,... periodic polling for messages on

External Server, followed by retrieval by the MMS User Agent via the MMS Relay/Server.” Ex. 1004, 90-91.

Notably, the above teaching of TS-23.140 does **not** say (as the Petition asserts) that the ***MMS User Agent*** engages in periodic polling. Rather, it says that the periodic polling is used for “discovery of incoming messages from external messaging systems.” Ex. 1004, 90-91. A POSITA would understand that it is the MMS Relay/Server’s role (not the MMS User Agent’s role) to interact with external messaging systems (i.e., “External Servers”). See Ex. 1004, 22 (“*Convergence functionality between External Servers and MMS User Agents is provided by the MMS Relay/Server* which enables the integration of different server types across different networks.”).; Ex. 2001, ¶¶69-70.

The fact that it is the MMS Relay/Server, **not** the MMS User Agent, that coordinates with the external messaging system is further shown by FIGS. 2 and 4 of TS-23.140, both of which show the MMS User Agent separated from the external servers by MMS Relay/Server:

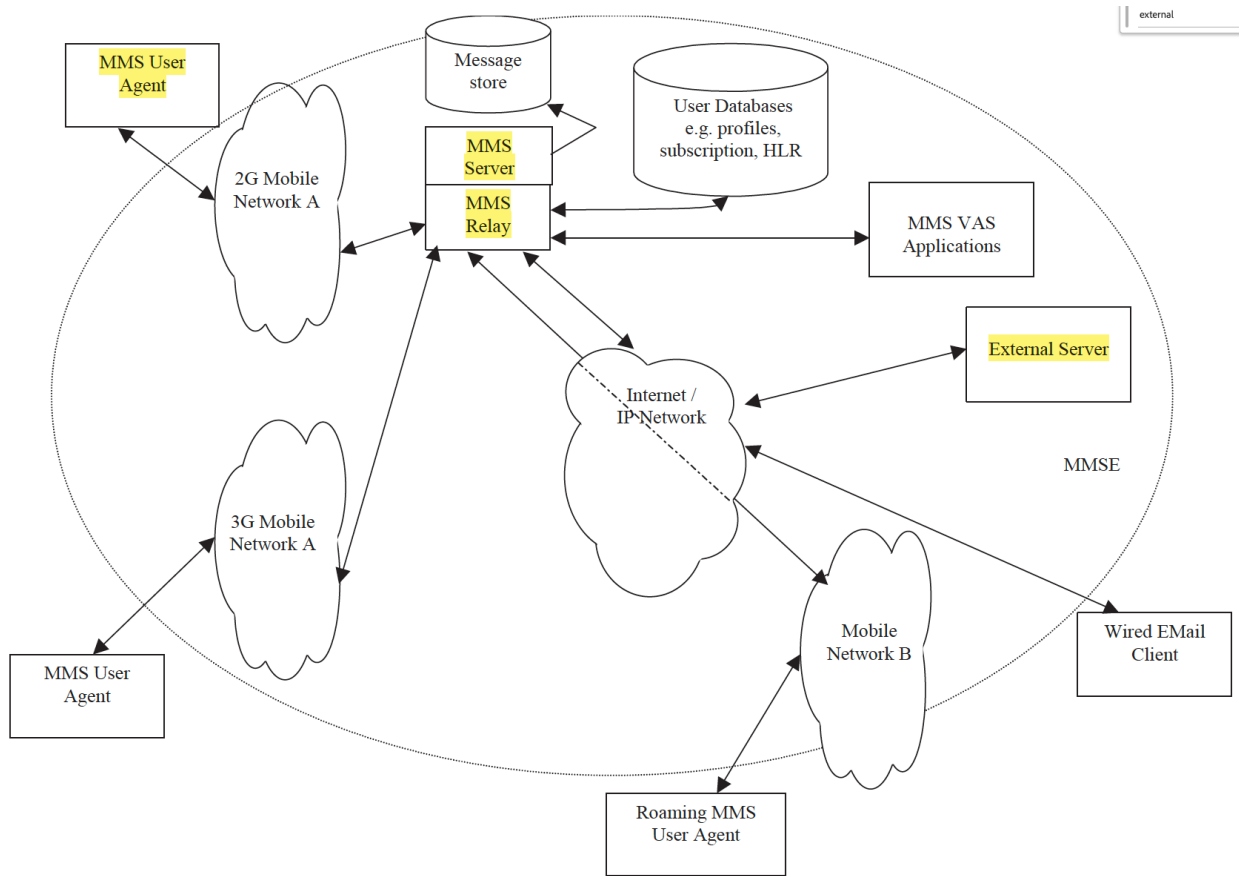


Figure 2: MMS Architectural Elements

Ex. 1004, 17 (annotated); Ex. 2001, ¶71.

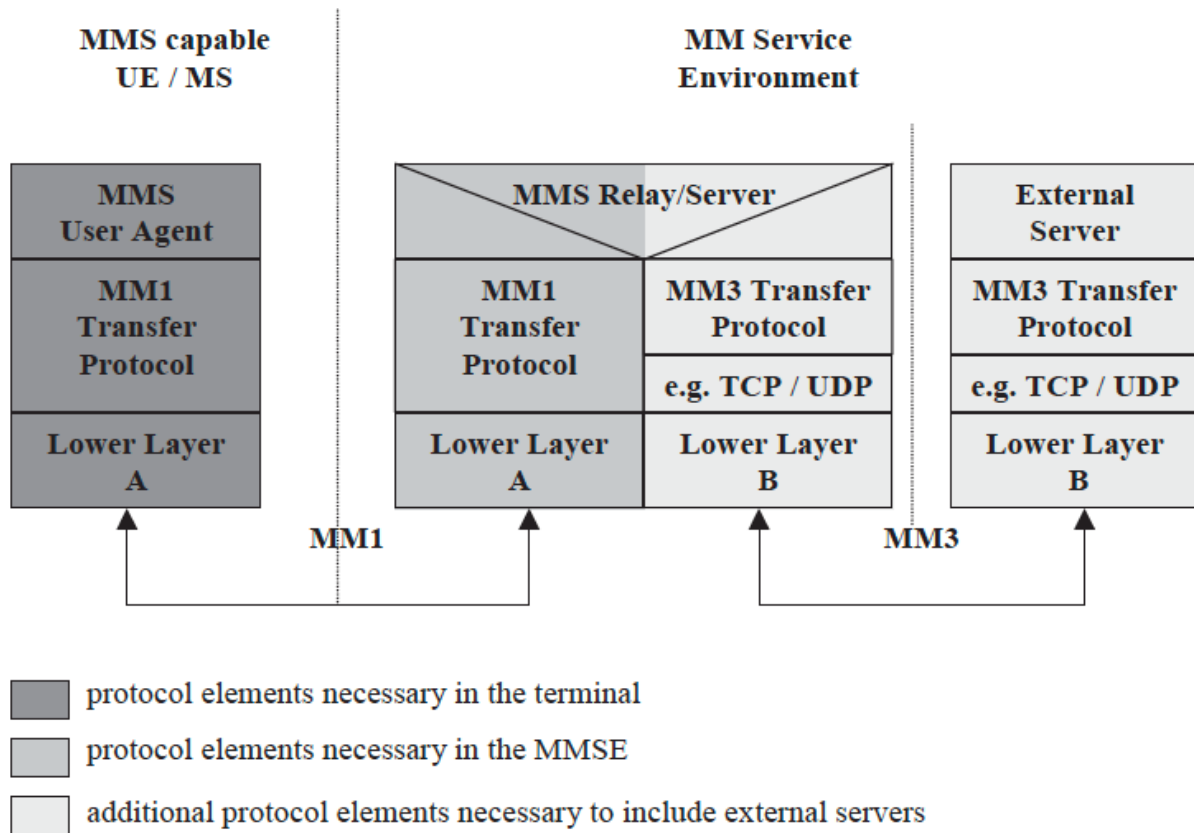


Figure 4: Protocol Framework to provide MMS

Ex. 1004, 24.

In fact, TS-23.140 gives a specific example of how periodic polling would work with an external messaging system (such as a “voice mailbox”). Specifically, where polling is used, “the *MMS Relay/Server* may poll the voice mailbox via POP3 or IMAP4 for new messages received.” Ex. 1004, 157-158. Nowhere does this example (or any other teaching of TS-23.140) indicate that the *MMS User Agent* would periodically poll an external server, as the Petition asserts. Ex. 2001, ¶72.

At his deposition, Petitioner's expert was unable to provide any support for his assertion that the *MMS User Agent* in TS-23.140 engaged in periodic polling, other than a conclusory allegation that "periodic polling" is just something that phones ("UEs") would perform. Ex. 2003, 13:12-16:9 (acknowledging that the evidence he relied on does not have "an explicit discussion" of "what component is performing the periodic polling," but asserting that "this is a regular function of UEs" and simply "how phones work").

These conclusory allegations cannot satisfy Petitioner's burden. *TQ Delta, LLC v. Cisco Sys.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019) ("This court's opinions have repeatedly recognized that conclusory expert testimony is inadequate to support an obviousness determination on substantial evidence review"). Even if phones might have engaged in periodic polling in certain contexts (something Dr. Traynor does not actually provide any evidence of), Dr. Traynor's assertion that the periodic polling (which he testified "would be retrieval requests"—Ex. 2003, 14:12-18) would be performed by the MMS User Agent makes no sense in the context of TS-23.140. See Ex. 2001, ¶¶73-74. Specifically, TS-23.140 makes clear that the purpose of "periodic polling" would be for "**discovery** of incoming messages." Ex. 1004, 90-91. But retrieval requests can only occur **after** the MMS User Agent is **aware of** an incoming message. Ex. 2001, ¶74. Specifically, a retrieval request message **must**

include a “Message Reference” value. *See* Ex. 1004, 71 (stating that “Message Reference” is a “Mandatory” component of “MM1-Retrieve.REQ”). TS-23.140 further teaches that “[t]his reference *was previously delivered to the MMS User Agent*” through any number of messages that, as Dr. Brogioli explains, would be sent by the MMS Relay/Server. Ex. 1004, 69.

In other words, without previously being *aware of* an incoming message, it would be *impossible* for an MMS User Agent to perform the polling that Dr. Traynor alleges would have occurred. Accordingly, it would be impossible for Dr. Traynor’s alleged “periodic polling” to be used for “discovery of incoming messages from external messaging systems” as the Petition alleges. *See* Ex. 1004, 90-91; Ex. 2001, ¶74.

Furthermore, the above discussion is entirely consistent with the stated purpose of Section 8.3 of TS 23.140. Specifically, TS 23.140 states that Section 8.3 “*defines the interworking between MMS Relay/Servers and External Messaging Servers.*” Ex. 1004, 90. This further confirms that Section 8.3’s disclosing of “periodic polling” would be performed by the MMS Relay/Server, *not* the MMS

User Agent as Petitioner and Dr. Traynor assert without any evidentiary support.⁴
Ex. 2001, ¶75.

2. The Petition’s “earliest time of delivery” theory fails.

As an alternative theory, the Petition notes that an “earliest desired time of delivery” can be specified by an originating MMS User Agent, and then contends that “[a] POSITA would have understood or found obvious that specifying the desired delivery time triggers a periodic timer upon message receipt that expires when the desired delivery time is reached, triggering message delivery.” Pet. 30-31.

However, this again represents a fundamental misunderstanding of how TS-23.140 operates. Specifically, as noted in Section V.A above, TS-23.140 makes clear that the *only* way a message can be delivered to an MMS User Agent is that the MMS User Agent first issues a valid retrieval request. Allowing expiration of a “desired delivery time” to trigger message delivery would be inconsistent with TS-

⁴ The Petition’s reliance on TS-23.140’s teaching of “polling for messages on [an] External Server” fails for an additional reason: “An External Server is connected to [an] MMS Service Provider via non-MMS-specific protocols,” (Ex. 1004, 14), and the Petition points to no evidence that a message received from an external server would meet the requirements of claim 1. Ex. 2001, ¶76.

23.140's framework, and would remove the receiving MMS User Agent's autonomy in initiating MM delivery, which is a mandatory part of TS-23.140. *See* Ex. 1004, 19 ("The MMS User Agent **shall** provide the following application layer functionalities [including] the retrieval of MMs (***initiate MM delivery to the MMS User Agent***)...."). Ex. 2001, ¶¶77-78.

The Petition may have attempted to argue, incorrectly, that when the "earliest desired time of delivery" expires, the MM will be "routed forward" to the intended MMS User Agent recipient. *Cf.* Ex. 1004, 27 ("Upon reception of an MM from an originator MMS User Agent the originator MMS Relay/Server... shall retain the MMS until the earliest time of delivery, if the optional feature... is supported by the originator MMS Relay/Server. If this feature is not supported then the MM is immediately routed forward...."). However, that misunderstanding of TS-23.140 is inconsistent with TS-23.140's actual disclosure. Specifically, this passage of TS-23.140 is referring to routing/forwarding an MM *between two different MMS Relay/Servers*. Ex. 2001 ¶79. This is made clear by TS-23.140's teaching later in the section, which states that "where the recipient MMS Relay/Server is **also** the originator MMS Relay/Server," then "the MM does not have to be routed forward" at all. Ex. 1004, 28.

In other words, “rout[ing]” a message forward is referring to routing the message between MMS Relays/Servers, not a reference to delivery of the message from an MMS Relay/Server to an MMS User Agent. Ex. 2001, ¶80. By having the *originating* MMS Relay/Server “retain the MM until the earliest time of delivery, if the optional feature of earliest time of delivery is supported by the originator MMS Relay/Server” (Ex. 1004, 27), the originating MMS Relay/Server *guarantees* that the recipient MMS Relay/Server (i.e., the MMS Relay/Server that will ultimately be responsible for delivering the MM to the recipient MMS User Agent) will not deliver the message before the earliest desired time of delivery. Ex. 2001, ¶80.

Accordingly, while an “earliest desired time of delivery” setting could potentially constitute a trigger for a first MMS Relay/Server to forward an MM *to another MMS Relay/Server*, there is no explanation of how that would constitute a trigger for the MMS Relay/Server to deliver a message *to an MMS User Agent* as the Petition’s theory would require. Ex. 2001 ¶81; *see, e.g.*, Ex. 1001 at limitation [1d4] (requiring that “upon determining that one of the message delivery triggers has occurred... supply[ing] one or more messages... *for delivery on the secure message link maintained between the transport services stack and a device link agent on the given one of the wireless end-user devices*”).

Furthermore, the reaching of an “earliest desired time of delivery” is not an “expiration of a *periodic* timer.” The Petition’s sole explanation as to why an earliest delivery time satisfies a “periodic timer” is because “whenever a message is received, the timer is triggered and continues for a particular period.” Pet. 31. But as discussed above in Section IV, a “periodic timer” is a timer that recurs at regular intervals, rather than just a timer “that continues for a particular period” as the Petition asserts. *See* Ex. 2001, ¶82.

The Petition sets forth no explanation why TS-23.140’s “earliest desired time of delivery” would be in accordance with “expiration of a *periodic* timer,” as opposed to just “a timer.” For instance, the Petition presents no evidence that any “earliest desired time of delivery” timer in TS-23.140 would recur at regular intervals. Ex. 2001, ¶83. Notably, this is in sharp contrast to the Petition’s analysis for TS-23.140’s “periodic polling” theory discussed above in Section V.B.1, where the Petition specifically alleged that “periodic polling is akin to a periodic timer expiring *because polling happens at periodic intervals.*” Pet. 31.

In sum, the Petition fails to establish that the “earliest desired time of delivery” is related to the expiration of a periodic timer (in addition to failing to establish that the earliest desired time of delivery is a “message delivery trigger” for delivery of a message to an MMS User Agent). Additionally, although the Petition alleges that a

“POSITA would have understood *or found obvious* that specifying the desired delivery time” meets the claim requirements, the Petition sets forth no plausible obviousness theory. *See* Pet. 30-31. For example, the Petition sets forth no motivation to modify the disclosures of TS-23.140 to satisfy the claim requirements, nor does it even explain what any modifications would have entailed. Ex. 2001, ¶¶84-85.

VI. The Petition’s Grounds 5-8 fails to show unpatentability of any challenged claim.

The Petition’s Grounds 5-8 all rely on a combination of just the Houghton and Munson references for the Petition’s allegations of obviousness with respect to claims 1 and 15, which are the only two challenged independent claims. Grounds 5-8 also rely on a combination of just Houghton and Munson to satisfy claim 9. However, as explained below, the Petition fails to show that Houghton in combination with Munson renders obvious those claims (or claims 2-8 and 10-14, each of which depend from claim 1). *See* Ex. 2001 ¶¶86-97, 99-104.

A. Houghton and Munson do not render obvious that “network element messages” that are “received” by “an interface” of the “message link server” would comprise “message content including

**data for, and an identification of, a responsive one of the
authorized software components.”**

Claim 1 recites a “*message link server comprising... an interface to a network to receive network element messages... the received network element messages comprising respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components.*” Claim 15’s “method of operating a message link server” has a similar requirement of “*receiving network element messages from a plurality of network elements, the received network element messages comprising respective message content and requests for delivery of the respective message content to respective wireless end-user devices, the respective message content including data for, and an identification of, a respective one of the authorized software components.*”

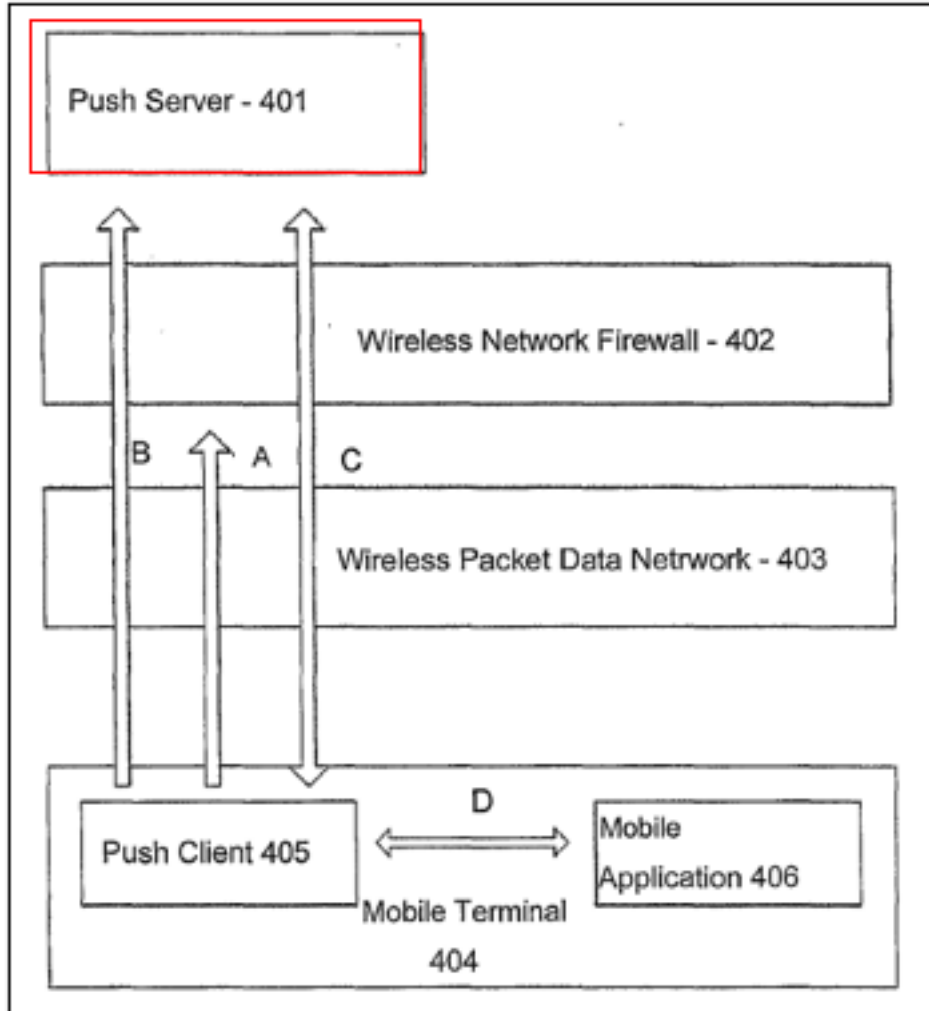
Accordingly, the plain language of both claims 1 and 15 requires that *messages received by the message link server* provide “an identification of a respective one of the authorized software components.” Ex. 2001, ¶¶87-88.

As shown below, the Petition fails to show that these claim requirements (which the Petition purports to address in limitations [1c2] and [15c2]) are disclosed or rendered obviousness under its Ground 5 theory. The Petition does not even allege

that in either of Houghton or Munson, the message content *received by the alleged message link server* includes “an identification of, a respective one of the authorized software components.” Instead, the Petition merely asserts that in Houghton, the message *sent from* the message link server to the wireless end-user device would include the claimed “identification of a respective one of the authorized software components.” And the Petition puts forth no plausible obviousness theory to remedy this deficiency; the Petition includes only a single conclusory assertion that a “POSITA would have therefore understood that Houghton discloses/suggests that the received network element messages... include message content with... an application identifier.” Pet. 70; *see* Ex. 2001 ¶89. And that conclusory assertion is itself is unsupported by any evidence other than an expert declaration that provides a near-verbatim restatement of that assertion. *See* Ex. 1003 ¶334.

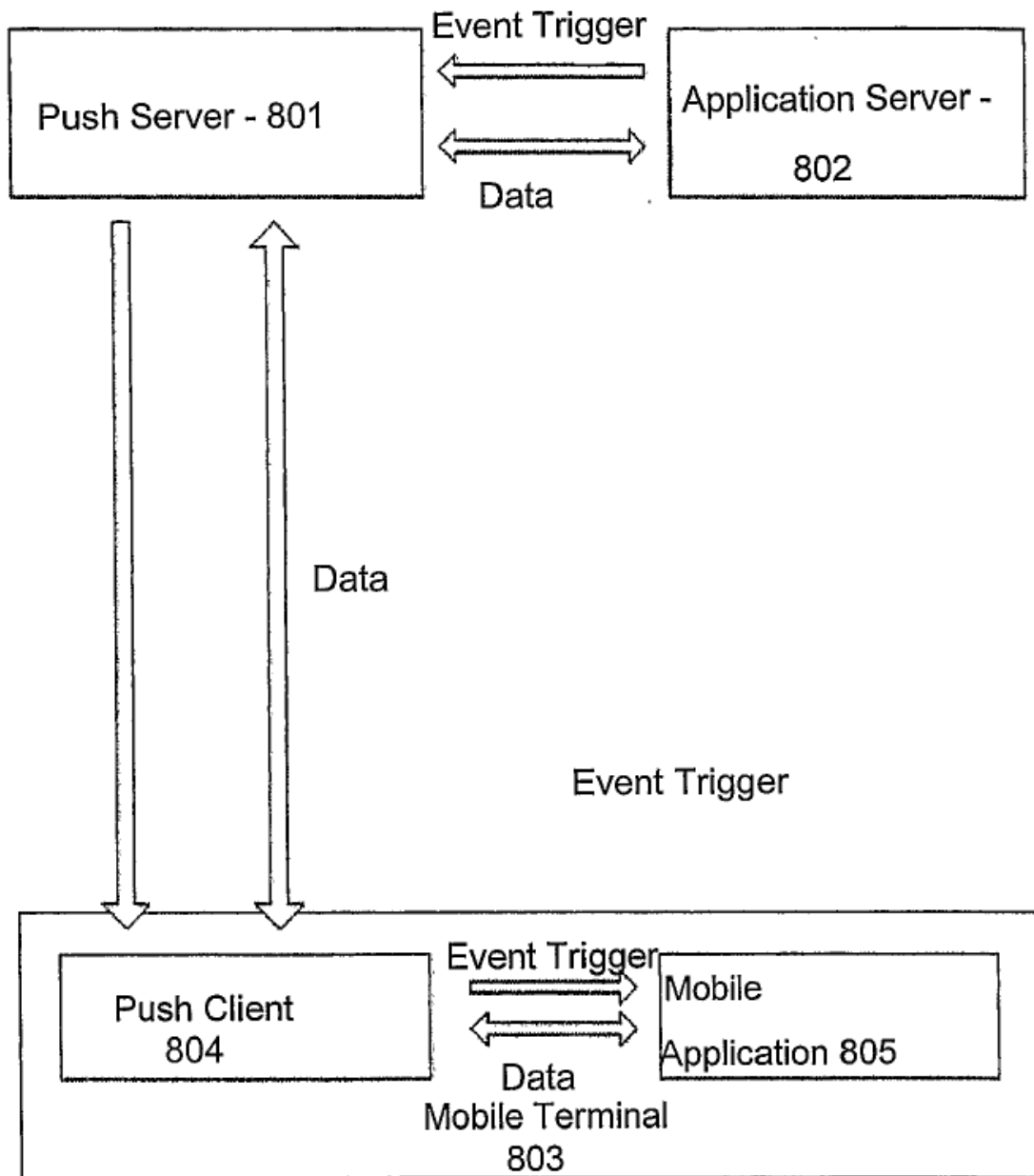
1. Overview of the Petition’s Ground 5 Theory

In its Ground 5 theory, the Petition maps the claimed “message link server” to Houghton’s “push server 401/801.” Pet. 55. The Petition’s annotation of Houghton’s Figure 4, annotating the “push server” as constituting the preamble’s requirement of the “message link server,” is reproduced below.



Pet. 56 (annotating Houghton's FIG. 4).

The "push server" relied upon by the Petition is also depicted as element 801 in Houghton's FIG. 8, reproduced below.

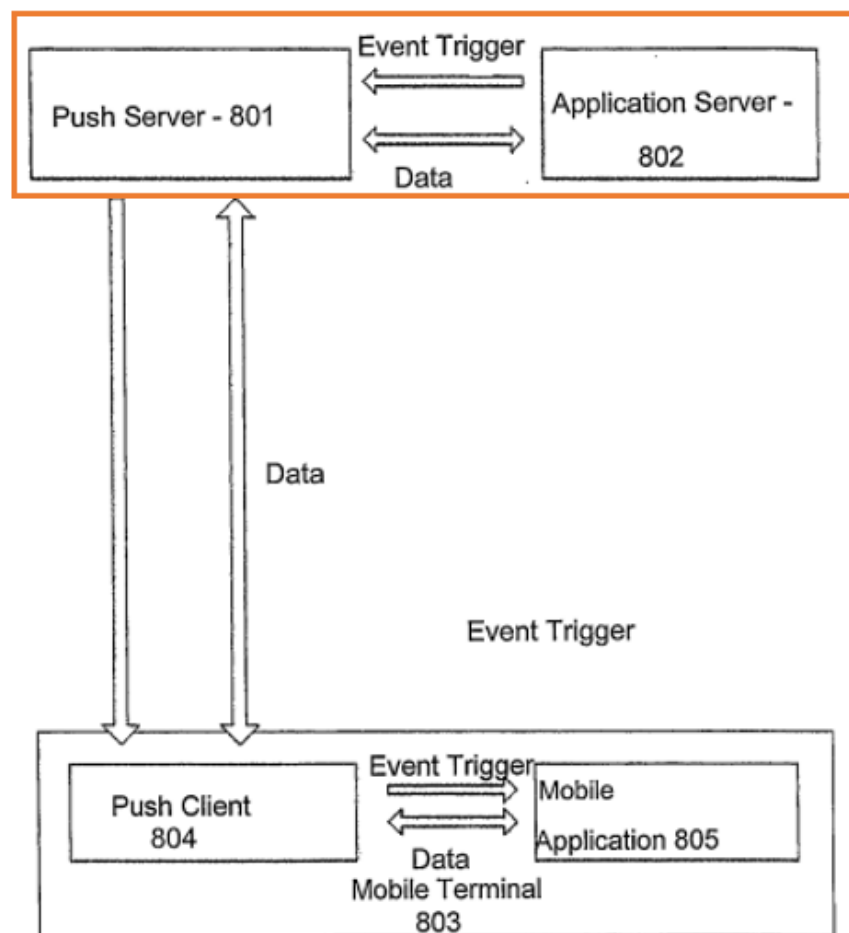


Ex. 1007, FIG. 8; Ex. 2001 ¶¶91-92.

The Petition further maps “application server(s) 702/802” to the claimed “plurality of network elements” (from which the claimed “network element messages” must be received by the message link server / push server). *See* Pet. 67

(identifying the “multiple network elements” as “application server(s) 702/802”). The Petition’s annotation of the claimed “interface to a network to receive network element messages from a plurality of network elements” is shown below, clearly identifying the communications between the push server and application server (and *not* communications between the push server and push client):

Figure 8



Pet. 68 (Petition’s annotation of Ex. 1007, FIG. 8); Ex. 2001 ¶93.

Regarding the requirement that the messages *received* by the message link server (allegedly Houghton’s push server) from the “network elements” (allegedly Houghton’s application server(s)) include “an identification of, a respective one of the authorized software components” as required by limitations [1c2] and [15c2], the Petition alleges that this is disclosed or suggested because in Houghton, “[t]he *message pushed from push server 401/801 to push client 404/804* includes a ‘data packet’” which includes “information specifying which mobile application” is the intended recipient of the message. Pet. 69-70; *see* Ex. 2001 ¶94.

2. The Petition’s Ground 5 theory fails because it at most shows what the messages sent by the push server indicate, not on what the messages received by the push server would indicate.

The Petition’s invalidity theory for limitations [1c2] and [15c2] described above (which relies on the contents of a “message pushed from push server 401/801 to push client 404/804”—Pet. 69-70) is deficient because it provides evidence of, at most, what the *messages sent from push server* to the push client indicate. Ex. 2001 ¶¶95-97, 99. It says nothing about what messages that are *received by push server* from the application server (i.e., “from a plurality of network elements”) indicate, which is what the Petition must show.

In particular, the Petition does not provide *any* evidence that the *messages received by the push server* (i.e., the “received network element messages”) would comprise message content including “an identification of a respective one of the authorized software components,” such as an identification of an application.

The sole allegation in this regard is a conclusory assertion, with no underlying reasoning or support, that it would be obvious for messages *received by* the push server to include an application identifier:

A POSITA would have therefore understood that Houghton discloses/suggests that the received network element messages (push messages from application server(s) 702/802) include message content with data for the destination mobile application and application identifier.

Pet. 70. But the Petition provides *no* reasoning or evidence supporting this assertion, other than the citation to a near-verbatim allegation in Dr. Traynor’s declaration. *See* Ex. 1003, ¶334. As explained by Dr. Brogioli, Dr. Traynor’s declaration (like the Petition) relies solely on evidence regarding what the message *sent from the push server to the push client* would include, not on any evidence of what any message *received by the push server from the application server* would include. Ex. 2001, ¶¶95-97. As such, the Petition fails to set forth even a *prima facie* case of obviousness in this regard. *See TQ Delta*, 942 F.3d at 1359 (“This court’s opinions

have repeatedly recognized that conclusory expert testimony is inadequate to support an obviousness determination on substantial evidence review”).

In sum, the Petition provides no reasoned analysis as to why the messages *received by* Houghton’s push server would include an application identifier. The Petition at most shows the obviousness of the messages *sent by* Houghton’s push server including an application identifier, which is not what the claims recite. Ex. 2001, ¶99.

The fact that the Petition fails to show that the message from the application server to the push server includes message content including an identification of an application is also consistent with the Board’s decision in IPR2024-00003, in which the Board found that Petitioner Samsung failed to “sufficient explain how Houghton teaches that the ... push server 701 or 801[] is configured to receive requests from... application servers 702 and 802... ‘*indicating a corresponding one of the mobile end-user devices and one of a plurality of applications.*’ Ex. 2007 (*Samsung Electronics Co., Ltd. v. Headwater Research LLC*, IPR2024-00003, Paper No. 8 (May 22, 2024) (Decision Denying Institution of *Inter Partes* Review)) at 17-20. Specifically, the Petition’s deficiency here (the improper focus on the content of messages *from the push server to the push client* rather than of messages *from the*

application server to the push server) is precisely the same deficiency the Board recognized in denying institution in IPR2024-00003:

Thus, *even if Petitioner is correct that Houghton discloses that the command messages pushed from push server 701 to push client 704 include IP port numbers “indicating a corresponding one of the mobile end-user devices and one of a plurality of applications,” see Pet. 21, this is not sufficient to satisfy limitation [1.3], which requires that requests received from “network application servers” (mapped to application server 702) include this information.* And, although application server 702 sends an event trigger to push server 701, Petitioner does not show that this event trigger includes information “indicating a corresponding one of the mobile end-user devices and one of a plurality of applications,” as limitation [1.3] requires.

Ex. 2007 at 19; *see also id.*, 20 (“Dr. Traynor’s declaration does not help Petitioner because Dr. Traynor merely repeats the Petition’s assertions... without providing additional detail or explanation.”).

The same reasoning applies here; the Petition cannot merely show what “messages pushed from push server... to push client... include,” but that is precisely (and exclusively) what the Petition relies on. Accordingly, the Petition’s Ground 5 theory should be rejected for similar reasons as in IPR2024-00003.

B. The Petition fails to show that Houghton/Munson renders obvious that “one of the message delivery triggers is the expiration of a periodic timer” as recited by claim 9.

The Petition’s sole theory as to how its Ground 5 theory satisfies claim 9 is a theory in which it would have been obvious to “implement[] Munson’s use of periodic timers for message delivery.” Pet. 82-83; *id.*, 83 (“A POSITA would have been motivated to use periodic timers as a message delivery trigger, *per Munson*....”). Notably, although the Petition states in passing that “Houghton... discloses a periodic message” (Pet. 82-83), the Petition does *not* allege that Houghton’s alleged “periodic message” constitutes a “message delivery trigger” either in Houghton or the proposed combination of Houghton with Munson. *See* Pet. 82-83. Accordingly, the Petition’s theory relies on the premise that Munson does, in fact “use periodic timers as a message delivery trigger.” *See* Pet. 83.

However, the Petition fails to show that Munson uses periodic timers as a message delivery trigger. *See* Ex. 2001 ¶¶100-101. The Petition’s only evidence for this assertion is a citation to paragraph [0044] of Munson, which is reproduced in its entirety below:

In one embodiment, a content can be pushed according to a schedule of time or event. For example, when used with a group push, an application service provider can use pushes (i.e., pushing contents)

for a system maintenance purpose during off-peak hours to take advantage of lower rates.

Ex. 1017, [0044] (cited by Pet. 82). This teaching fails to disclose the use of the “expiration of a periodic timer” as a “message delivery trigger” for at least two reasons. *See* Ex. 2001, ¶¶101-104.

First, the cited passage does not disclose the use of a *timer* at all. Ex. 2001, ¶102. Pushing content according to a “schedule of time or event” would encompass, e.g., an application service provider deciding that with Halloween approaching, they may want to push Halloween-related content. This would not relate to the expiration of any timer, but rather simply coincide with the schedule / event of Halloween approaching. Likewise, it would encompass sending system maintenance updates (to the extent they are needed) at some point after 9pm the day the update is ready to go. This would not need to be a “timer” at all—it would instead commonly involve an employee of the application service provider triggering the update. Ex. 2001, ¶102. Notably, the Petition sets forth *no* obviousness theory as to *why* pushing according to a “schedule or event” would involve a “timer.” Pet. 82-83.

Additionally, to the extent pushing content “according to a schedule of time or event” *would* constitute the use of a “timer,” there is no explanation whatsoever of why that “timer” would be implemented as a “*periodic timer*.” Ex. 2001, ¶¶103-104. In the sole example provided by Munson (“pushing contents[] for a system

maintenance purpose during off-peak hours”), there is no suggestion that “system maintenance” occurs on any pre-established schedule that would be understood to be “periodic,” nor that the push updates would operate pursuant to a “periodic timer” as a POSITA would understand claim 9 to require. *See generally* Section IV, *supra* (discussing claim interpretation for “periodic timer”).

VII. Conclusion

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

Date: September 7, 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 8,061 words in the paper excluding the portions exempted under 37 C.F.R. §42.24(a)(1).

Date: September 7, 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 September 7, 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)
Karan Jhurani (Reg. No. 71,777)
FISH & RICHARDSON P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
IPR39843-0166IP1@fr.com
PTABInbound@fr.com
axf-ptab@fr.com
jjm@fr.com
jjh@fr.com
jhurani@fr.com

Date: September 7, 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