

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

R-PAC INTERNATIONAL CORPORATION,
Petitioner

v.

ADASA INC,
Patent Owner.

IPR2024-01416
U.S. Patent No. 9,798,967

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,798,967**

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1008	Adasa Opening Claim Construction Brief from <i>Adasa Inc. v. Avery Dennison Corp.</i> , 6:17-cv-01685 (Dkt. 57)
1009	Patrick J. Sweeney II, RFID for Dummies (2005) (“Dummies”)
1010	U.S. Patent 8,373,545 (“Traub”)
1011	EPC Tag Data Standards Version 1.1 Rev.1.24 (April 1, 2004) (“TDS-2004”)
1012	<i>Adasa Inc. v. Avery Dennison Corp.</i> , 55 F.4th 900 (Fed. Cir. 2022)
1013	U.S. Patent No. 5,420,757 (“Eberhardt”)
1014	David L. Brock, White Paper: The Electronic Product Code™ (EPCTM) as a Meta Code, Auto-ID Center, Massachusetts Institute of Technology (June 1, 2003) (“2003 MIT White Paper”)
1015	U.S. Patent 7,201,309 (“Oakes”)
1016	Bill Glover, et al., RFID Essentials (February 28, 2006)

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1017	U.S. Patent 7,425,888 (“Powell”)
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1034	Jury Verdict, <i>Adasa Inc. v. Avery Dennison Corp.</i> , 6:17-cv-01685 (Dkt. 577)
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1036	Plaintiff's Response in Opposition to Defendant's Motion for Summary Judgment of Invalidity and Cross Motion for Partial Summary Judgment of No Invalidity, <i>Adasa Inc. v. Avery Dennison Corp.</i> , 6:17-cv-01685 (Dkt. 130)

LISTING OF CHALLENGED CLAIMS

Element	Claim Limitations
Claim 1	
1[pre]	An RFID transponder comprising:
1[a]	a substrate;
1[b]	an antenna structure formed on the substrate; and
1[c]	an RFID integrated circuit chip which is electrically coupled to the antenna structure,
1[d]	wherein the RFID integrated circuit chip is encoded with a unique object number, the unique object number comprising an object class information space and a unique serial number space,
1[e]	wherein the unique serial number space is encoded with one serial number instance from an allocated block of serial numbers, the allocated block being assigned a limited number of most significant bits,
1[f]	wherein the unique serial number space comprises the limited number of most significant bits uniquely corresponding to the limited number of most significant bits of the allocated block and of remaining bits of lesser significance that together comprise the one serial number instance.
Claim 2	
2	The RFID transponder of claim 1, wherein the object class information space is encoded with information comprising a company prefix, an item reference, a partition value, and a filter value.
Claim 3	
3	The RFID transponder of claim 1, wherein the unique object number is a portion of a serialized global trade item number.

Claim 4	
4	The RFID transponder of claim 3, wherein the serialized global trade item number is an EPC SGTIN-96 encoding.
Claim 5	
5	The RFID transponder of claim 1, wherein the unique serial number space is at least 38 bits.
Claim 6	
6	The RFID transponder of claim 1, wherein the allocated block is defined by at least 3 most significant bits.
Claim 7	
7	The RFID transponder of claim 1, wherein the allocated block is one of a plurality of allocations intermittently received by an encoder.
Claim 8	
8	The RFID transponder of claim 1, wherein the RFID integrated circuit chip is comprised of silicon.
Claim 9	
9	The RFID transponder of claim 1, wherein the RFID integrated circuit chip is comprised of polymer.
Claim 10	
10	The RFID transponder of claim 1, wherein the substrate, antenna structure, and RFID integrated circuit chip are covered by a face stock material.
Claim 11	
11	The RFID transponder of claim 1, wherein the RFID integrated circuit chip is disposed on the substrate.

Claim 12	
12	The RFID transponder of claim 1, wherein the limited number of most significant bits that correspond to the allocated block further correspond to an encoder that encodes the RFID transponder.
Claim 13	
13[pre]	A RFID transponder comprising:
13[a]	a substrate;
13[b]	an antenna structure formed on the substrate; and
13[c]	an RFID integrated circuit chip which is electrically coupled to the antenna structure,
13[d]	wherein the RFID integrated circuit chip is encoded with a global trade item number including a unique object number, the unique object number comprising an object class information space including a block of at least 50 bits and a unique serial number space including a block of at least 38 bits,
13[e]	wherein the unique serial number space has one serial number instance from an allocated block of serial numbers, the allocated block being assigned a limited number of most significant bits, and
13[f]	wherein the unique serial number space comprises at least 3 most significant bits uniquely corresponding to the limited number of most significant bits of the allocated block.
Claim 14	
14	The RFID transponder of claim 13, wherein the unique serial number space further comprises remaining bits of lesser significance that together with the at least 3 most significant bits comprise the one serial number instance.

Claim 15	
15	The RFID transponder of claim 13, wherein the at least 3 most significant bits that correspond to the allocated block further correspond to an encoder that encodes the RFID transponder.
Claim 16	
16[pre]	An integrated circuit, comprising:
16[a]	a radio frequency circuit configured to backscatter a return link signal for processing by an RFID interrogator;
16[b]	control logic; and
16[c]	a memory,
16[d]	wherein the memory is configured with a unique object number space, the unique object number space comprising an object class information space and a unique serial number space,
16[e]	wherein the unique serial number space is encoded with one serial number instance from an allocated block of serial numbers, the allocated block being assigned a limited number of most significant bits, and
16[f]	wherein the unique serial number space comprises the limited number of most significant bits uniquely corresponding to the limited number of most significant bits of the allocated block and remaining bits of lesser significance that together comprise the one serial number instance.
Claim 17	
17	The integrated circuit of claim 16, wherein the object class information space is encoded with information comprising a company prefix, an item reference, a partition value, and a filter value.
Claim 18	

18	The integrated circuit of claim 16, wherein the unique object number is a portion of a serialized global trade item number.
Claim 19	
19	The integrated circuit of claim 18, wherein the serialized global trade item number is an EPC SGTIN-96 encoding.
Claim 20	
20	The integrated circuit of claim 16, wherein the limited number of most significant bits that correspond to the allocated block further correspond to an encoder that encodes the memory of the integrated circuit.

I. INTRODUCTION

Petitioner r-pac International Corporation (“r-pac”), requests *inter partes* review (“IPR”) of claims 1-20 (“Challenged Claims”) of U.S. Patent 9,798,967 (EX-1001). Petitioner submits the declaration of Thomas J. Clare (EX-1005), an expert in the field of radio frequency identification (“RFID”) technology, in support of this Petition.

II. GROUNDS FOR STANDING

Petitioner certifies the ’967 patent is available for IPR and Petitioner is not barred or estopped from requesting IPR on the grounds herein. The ’967 patent issued on October 24, 2017. The ’967 patent is subject to a pending litigation filed by Patent Owner (“PO”) against r-pac in *ADASA Inc. v. R-Pac International LLC*, No. 1:24-cv-06102 (SDNY) (“r-pac Lawsuit”). The r-pac Lawsuit was filed on August 12, 2024, and counsel for r-pac accepted service on August 15, 2024. EX-1033.

III. STATEMENT OF PRECISE RELIEF REQUESTED

Petitioner respectfully requests review and cancellation under 35 U.S.C. §311 of the Challenged Claims in view of the following references and grounds:

Prior Art
RFID for Dummies , published 2005; prior art under at least §§102(a), 102(b) (EX-1009; “ <i>Dummies</i> ”)

Prior Art
U.S. Patent No. 8,373,545 , filed on January 29, 2007, issued on February 12, 2013; prior art at least under §102(e)(2) (EX-1010; “ <i>Traub</i> ”)
EPC Tag Data Standards Version 1.1 Rev.1.24 , published April 1, 2004; prior art under at least §§102(a), 102(b) (EX-1011; “ <i>TDS-2004</i> ”)

Grounds (35 U.S.C. §103)	Claims	Prior Art References
1	1, 6-12, 16, 20	<i>Dummies, Traub</i>
2	2-5, 13-15, 17-19	<i>Dummies, Traub, TDS-2004</i>

IV. OVERVIEW OF THE '967 PATENT

A. The Patent Disclosure

The '967 patent generally relates to radio frequency identification (“RFID”) transponders, also referred to as “tags,” and a system “for commissioning RFID transponders with unique object class instance numbers.” EX-1001, Abstract. Specifically, such tags have memory encoded with data uniquely identifying the item to which the tag is attached. For example, the tag memory has designated fields to identify the nature (“object class”) of the item (e.g., men’s pants), the maker of the item (e.g., Levi’s) and a serial number uniquely identifying the item. The '967 patent claims as an invention partitioning the serial number space or field, such that, before the serial number, there are “Most Significant Bits” (MSBs) that can distinguish

identical serial numbers, analogous to how an area code distinguishes the same seven-digit phone number in different areas.

As discussed in more detail below, the '967 patent was involved in a lawsuit in the U.S. District of Oregon—a case that did not involve Petitioner—that was subject to a Federal Circuit appeal. The Federal Circuit summarized the '967 patent disclosure as follows:

The '967 patent relates, in part, to methods and systems for commissioning radio-frequency identification (RFID) transponders. '967 patent at 3:27-32. RFID transponders, also known as RFID tags, are used, like barcodes, to identify and track objects by encoding data electronically in a compact label. *Id.* at 1:32-34....

To facilitate identifying and tracking an object in the stream of commerce, RFID tags are encoded with information associated with the object through a process known as “commissioning.” *Id.* at 1:40–53. The encoded data may include various categories of information, “for example, data representing an object identifier, the date-code, batch, customer name, origin, destination, quantity,” etc. *Id.* at 1:45–50. Regardless of the specific categories included, to ensure accurate tracking, it is critical that the data uniquely identify the tagged object. *Id.* at 2:21–22, 2:48–50.

In the RFID industry, uniqueness is ensured by assigning RFID tags an Electronic Product Code (EPC or EPCglobal) in accordance with certain global formatting standards. An EPC is a serialized object

number comprising object class information and a serial number that together uniquely identify the associated object. *See id.* at 9:7–15. For example, the EPC may be a Serialized Global Trade Item Number (SGTIN), which consists of a Global Trade Item Number identifying the brand and class of the item (i.e., object class information) followed by a serial number uniquely identifying the tagged item within the brand and class. *Id.* Since objects from the same brand and class will share the same object class information, ensuring the uniqueness of the overall EPC amounts to ensuring uniqueness of the serial number.

Ensuring uniqueness, however, is not necessarily straightforward. *Id.* at 2:49–50. Serialization generally “requires a central issuing authority of numbers for manufacturers, products, and items to guarantee uniqueness and to avoid duplication of numbers.” *Id.* at 2:23–25. The issuing authority assigns blocks of numbers to remote locations, wherein each remote location receives the numbers one by one or where the numbering space is partitioned in some manner. *Id.* at 2:25–29. But, in either case, the encoded numbers must generally be reconciled by comparison to a central database “either one or several numbers at a time.” *Id.* at 2:30–32.

In the case of EPCglobal numbers, the central issuing authority is known as GS1. *Id.* at 7:61–65, 9:7–15. GS1 distributes blocks of numbers to member companies in a hierarchical manner, wherein each company is authorized to then “further allocate numbers from its upper level database to as many lower database levels as it deems necessary to distribute number authority throughout its enterprise.” *Id.* at 7:61–

8:3. Using central databases to distribute the allocated numbers has certain drawbacks. It generally requires encoders to maintain a continuous network connection with the database so that new serial numbers can be retrieved when an RFID tag is commissioned. *See id.* at 3:27–4:4. But a continuous connection is not always possible and, even when it is, may be plagued by network delays that slow down the commissioning process. *See id.* at 3:64–4:4. This in turn may delay or impair downstream activity, including manual steps in the commissioning or distribution process. *Id.*

The '967 patent seeks to “overcome[] these shortcomings” using systems and methods for commissioning RFID tags “on-demand” and “with no external authorizations or queries required on a transponder-by-transponder basis,” enabling commissioning to proceed without the need for continuous connectivity to a central database. *Id.* at 3:27–35, 3:64–67. In one embodiment, pre-authorized ranges of serial numbers for specific object classes are allocated to lower levels in the hierarchy, for example, individual encoders. *Id.* at 8:4–11. In this embodiment, the object class serial number space is subdivided into sectors defined by a series of fixed “Most Significant Bits” (MSBs), wherein the number of allocatable sectors is determined by the number of MSBs. *Id.* at 8:11–15. For example, according to the SGTIN-96 standard, the serial number space consists of 38 bits which can encode 2^{38} distinct serial numbers. If the first 14 of these bits are designated as MSBs, then the serial number space is correspondingly subdivided into 2^{14} sectors or “blocks” which can be allocated to as many as 2^{14} different encoders.

See id. at 8:21–29. The remaining 24 bits can then be used to encode a unique serial number space within a given block. *Id.*

EX-1012, 904-05.

When PO described the “inventions claimed” to the district court during claim construction, it indicated a serial number space was partitioned into a most significant bits portion and a serial number portion of lesser significant bits—the most significant bits (i.e., the bits that identify the sector) could correspond to each “product line” or “operation of the brand owner,” and databases or encoders corresponding to the “product line or operation” could then generate the serialized numbers for the lesser bits:

This hardware-based solution utilizes *a partitioned serial number space* comprising *a first portion of most significant bits* and *a second portion comprising serially assigned bits of lesser significance*. ‘967 Patent at 8:4-15, 8:21-32, 33:20-23.... Through use of this partitioned serial number structure, a brand owner can ensure uniqueness across its many operations through, for example, allocation of a block of serial numbers comprising *a unique sequence of most significant bits to each product line or operation of the brand owner*. Lower level assigning *databases or encoders corresponding to each product line or operation can then freely generate and assign serial numbers* comprising the assigned most significant bits combined with on-demand generated bits of lesser significance with no risk of

inadvertently assigning a duplicate serial number. '967 Patent at 8:32-37....

EX-1008, 2¹.

This concept of having a subdivided/partitioned serial number space is reflected in the claims of the '967 patent, which are all directed to RFID transponders or an integrated circuit (IC) for such transponders. EX-1002, 1:21, 2:1, 2:19-24. The claims all generally recite the transponder/IC has a “serial number space” that stores (“is encoded with”) a serial number; the stored serial number comes from an allocated block of serial numbers with the block “assigned a limited number of most significant bits”; and the serial number space also includes those “most significant bits.” For example, the following recitations of claim 1 reflect these limitations:

[1[e]] wherein the *unique serial number space* is *encoded with one serial number instance from an allocated block* of serial numbers, the *allocated block being assigned a limited number of most significant bits*,

[1[f]] wherein *the unique serial number space comprises the limited number of most significant bits uniquely corresponding to the limited number of most significant bits of the allocated block* and of remaining

¹ All emphasis added unless otherwise noted.

bits of lesser significance that together comprise the one serial number instance.

EX-1002, 1:30-39; *see id.*, 2:11-18, 2:29-38.

B. Prosecution History

The '967 patent issued from Application 15/042,993 (“’993 application”) filed February 12, 2016 which claimed priority to a series of continuation and continuation-in-part applications. EX-1001, (63).

The claims of the '993 application were not rejected based on prior art during original prosecution. After a double-patenting rejection (EX-1003, 151) and a terminal disclaimer (EX-1003, 86), the Examiner issued a Notice of Allowance (“NOA”) on June 7, 2017. EX-1003, 73.

After the first NOA, on July 19, 2017, applicant submitted an IDS identifying five pages of RFID for Dummies and eight pages of the EPC Tag Data Standards Vers. 1.1, Rev 1.23, an earlier version of TDS-2004. EX-1003, 221.

Two days later, on July 21, the examiner issued a second NOA and signed the July 19 IDS. EX-1003, 42.

On August 10, 2017, applicant submitted a request for continued examination to amend the independent claims into their originally-issued form, which applicant purported would “more accurately recite the claimed subject matter.” EX-1003, 28.

After that, a third and final NOA was issued on September 8, 2017, and the '967 patent issued on October 24, 2017.

C. Ex Parte Reexamination History

The '967 patent has been subject to one *Ex Parte* Reexamination filed by Avery Dennison. The '967 patent has not been the subject of an IPR. Avery Dennison is unrelated to r-pac, and r-pac was not involved in the reexamination. The reexamination request was filed on November 29, 2017, identifying the following references that were not considered during the original prosecution of the '967 patent:

- U.S. 2007/0040684 A1 (“McAllister”)
- U.S. Pat. No. 7,827,200 (“Rowe”)
- U.S. Pat. No. 8,373,545 (“Traub”)
- EPCglobal Tag Data Standards Vers. 1.3 (“EPCglobal”)

EX-1004, 328-451.

The Office ordered reexamination on December 20, 2017, noting “[d]uring the prosecution of [the '993 application] and parent application 13/526,520, Examiner did not cite or discuss any prior art on the record and did not explicitly state reasons for allowance.” EX-1004, 185-6. The proceedings were assigned Reexam Control 90/014,052.

An office action issued on February 1, 2018, rejecting every claim of the '967 Patent as obvious over one or more of McAllister in view of Rowe, McAllister in

view of Rowe and EPCglobal, McAllister in view of Traub, and McAllister in view of Traub and EPCglobal. EX-1004, 149. Applicant responded by filing a request for reconsideration after non-final rejection and Declaration of Charles B. Williams that sought to explain the differences between the numbering scheme taught by the cited prior art references and the '967 Patent. EX-1004, 91.

A second office action dated May 14, 2018, rejected over the same combinations. EX-1004, 52. The examiner noted a block of serial numbers from “one to a million,” expressed in 25-bit binary, would have the same five leading binary digits. EX-1004, 56. PO responded by amending the independent claims to each recite “wherein the unique serial number space comprises the limited number of most significant bits uniquely corresponding to the limited number of most significant bits of the allocated block and of remaining bits of lesser significance that together comprise the one serial number instance.” EX-1004, 25. PO explained, in its view, its claimed method of assigning serial numbers based on a limited number of most significant bits is distinct from selecting a range of decimal serial numbers, which are subsequently encoded in binary on RFID tags. EX-1004, 29.

On June 12, 2018, PO had an interview with the examiner. EX-1004, 21-22. In the interview agenda, PO argued the decimal serial number ranges the examiner referenced in rejections do not create blocks of serial numbers with the same most significant bits. EX-1004, 21. On July 5, 2018, the examiner issued a Notice of

Intent to Issue Ex Parte Reexamination Certificate. Reexamination certificate US 9,798,967 C1 issued on July 30, 2018, reflecting PO's amendments to the claims in response to the examiner's May 14, 2018 rejection.

D. Litigation History and Federal Circuit

The '967 patent was the subject of completed litigation with Avery Dennison in *ADASA Inc. v. Avery Dennison Corp.*, No. 6:17-cv-01685-MK (D. Or.) ("*Avery Dennison* case"). The '967 patent is also subject to two currently pending litigations filed on August 12, 2024, the r-pac Litigation in the Southern District of New York and *ADASA Inc. v. CCL Industries, Inc. d/b/a Checkpoint Systems, Inc.*, No. 3:24-cv-08409 in the District of New Jersey.

In the *Avery Dennison* case, the district court initially granted summary judgment dismissing Avery Dennison's invalidity defense based on one of the references—RFID for Dummies—presented in this Petition. EX-1012, 906. The Federal Circuit vacated the summary judgment order and remanded for trial. *Id.*, 911. In doing so, the Federal Circuit concluded a reasonable juror could find that RFID for Dummies disclosed all elements of claim 1 of the '967 patent. *Id.*, 910-911.

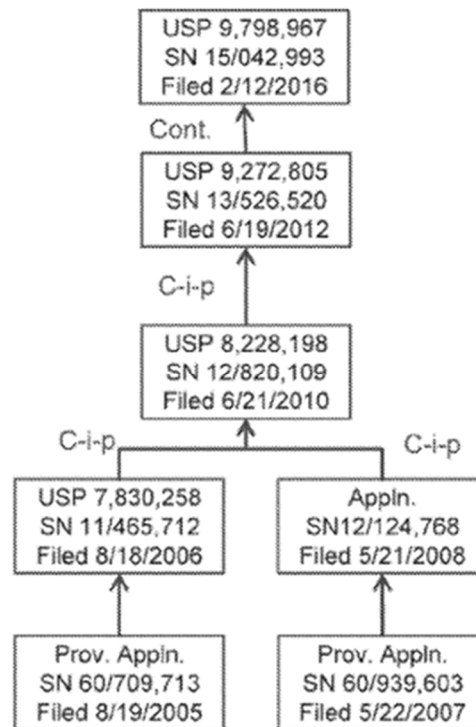
On remand, a jury trial was held, addressing invalidity, specifically whether the '967 patent was anticipated by U.S. Patent 7,857,221 ("Kuhno") or *Dummies*; or obvious over *Dummies* alone. EX-1025, 1. Before the trial began, the judge

excluded Avery Dennison's invalidity expert and precluded him from opining on whether *Dummies* or Kuhno anticipate or render obvious the '967 patent. EX-1026, 15. Applying the higher district court patent invalidity standard—clear and convincing evidence—the jury returned a verdict of no invalidity. EX-1034. The case ultimately settled. EX-1035.

As previously noted, r-pac is not related to Avery Dennison. r-pac was not a party or privy to the litigation or the previously-discussed reexamination of the '967 patent.

V. PRIORITY DATE OF THE '967 PATENT

As previously discussed, the '967 Patent issued from an application that claimed priority under 35 U.S.C. §120 to a number of provisional and non-provisional parent applications. A graphical depiction of the '967 Patent's priority chain is shown below:



For a claim to receive the benefit of a parent application filing date under §120, the parent application must meet the requirements of 35 U.S.C. §112. *Eiselstein v. Frank*, 52 F.3d 1035, 1038 (Fed. Cir. 1995). The specifications of the '967 patent parent applications do not satisfy the §112 written description requirement any earlier than May 21, 2008, and thus the claims of the '967 patent are not entitled to a priority date earlier than May 21, 2008. Furthermore, as discussed below, PO has implicitly admitted and explicitly argued before federal tribunals that claims 1-20 of the '967 patent are entitled to a priority date no earlier than May 21, 2008.

All '967 claims recite “the allocated block being assigned a limited number of most significant bits.” Reviewing the '967 Patent’s parent applications reveals

the earliest possible disclosure of this limitation is in Application 12/124,768, filed May 21, 2008, at 15:3-14. *Clare*, ¶¶47-52. This limitation is not disclosed in any earlier applications in the priority chain, i.e., Application 11/465,712 (EX-1029) or the provisional applications 60/709,713 (EX-1030), or 60/939,603 (EX-1031). *Clare*, ¶¶49-51. Thus, the earliest possible priority date of claims 1-20 of the '967 Patent is May 21, 2008.

The priority date for the '967 patent claims was raised in both the reexamination and the *Avery Dennison* case. In the reexamination, PO submitted an expert declaration explaining that the “priority date of the subject matter of claims 1-20 of the '967 Patent is May 21, 2008.” EX-1004, 117. In the *Avery Dennison* case, PO advocated for a priority date of May 21, 2008. EX-1036. Accordingly, the Board should find that the earliest effective filing date of claims 1-20 of the '967 Patent is May 21, 2008.

Accordingly, all references on which this Petition relies qualify as prior art.

VI. LEVEL OF ORDINARY SKILL

As of 2008, a person of ordinary skill in the art (“POSITA”) for the technology of the '967 patent would have had at least a bachelor’s degree in electrical engineering and 2-3 years of work experience in the RFID industry. *Clare*, ¶¶34-38. Such an individual would have a good understanding of the basic organization of and use of digital data, including binary communications protocols, binary numbers

and related bit mathematics, as well as an understanding of the Electronic Product Code (“EPC”) and commissioning RFID tags. *Id.*, ¶36.

Adasa previously asserted a different level of skill in its litigation against Avery Dennison:

[A]t least a bachelor’s degree in electrical engineering, computer science, or computer engineering, or a related discipline, and at least five years of experience which could consist of, A, designing, developing, evaluating and/or using RFID and other AIDC technologies in inventory management, unique object identification, and/or security; or B, studying and conducting research related to RFID technologies and using RFID and other AIDC technologies in inventory management, unique object identification, and/or security.

EX-1032, 707:3-15.

Although there are differences between these standards, such as the amount of work experience, they are insignificant with respect to the invalidity analysis of the ’967 patent, and the claims of the ’967 patent are not patentable under either level. *Clare*, ¶¶37-38.

VII. CLAIM CONSTRUCTION

The Board construes claims in an IPR in accordance with the standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005), under which the “words of a claim are generally given their ordinary and customary meaning.” *Id.*, 1312-13 (internal quotation marks and citation omitted).

The U.S. District Court for the District of Oregon issued a claim construction order in the *Avery Dennison* case on January 22, 2019 (EX-1007):

- “Object class information space” means “data field within the memory of the RFID integrated circuit chip for information identifying the class of an object, such as a company prefix, item reference code, partition value, and/or filter value.” *Id.*, 3.
- “Unique serial number space” means “data field within the memory of the RFID integrated circuit for information identifying a unique serial number.” *Id.*
- “Being assigned a limited number of most significant bits” means “includes a limited, predefined sequence of higher order bits at the leading end.” *Id.*
- “Remaining bits of lesser significance” means “the remaining lower order bits at the trailing end.” *Id.*
- “Is encoded with one serial number instance” was construed to mean “has stored within it one serial number instance.” *Id.*, 4 (“this court ultimately construes the terms with disputed constructions in accordance the language proposed by plaintiff Adasa”).
- “An allocated block of serial numbers” means “a pre-authorized range of serial numbers.” *Id.*, 4, 9.

The district court construed the term “uniquely corresponding” as having its “plain and ordinary meaning as Plaintiff Adasa suggests.” *Id.*, 9. In briefing, Adasa indicated: “Patentee added this term as a clarifying amendment to make clear that the serial number encoded within the claimed RFID transponder utilizes the same most significant bits of the allocated block.” EX-1008, 18.

Petitioner applies the meaning of the terms set forth above. The remaining terms of the Challenged Claims should be accorded their plain and ordinary meaning.

VIII. TECHNOLOGY BACKGROUND

RFID systems and tags storing an identifier uniquely identifying an object were well known before the '967 patent. *Clare*, ¶¶53-69. In general, a tag included memory storing a unique identifier, which could be transmitted to a reader in response to a request. For example, U.S. Patent 5,420,757, filed in 1993, described such a system: “[A] radio frequency transponder of the type which generally includes a coil connected to an integrated circuit and which is responsive to a received radio frequency interrogating signal to produce a radio frequency identifying signal.” EX-1013, 1:15-22. *Clare*, ¶54. A typical application for such transponders was inventory tracking, i.e., “to identify a particular object to which the transponder or tag is attached. *Id.*, 1:26-31. One application of RFID technology was inventory tracking. *Clare*, ¶¶55-56. According to *Dummies*, Walmart “spent

millions of dollars since the late 1990s researching the efficacy of RFID systems to replace bar codes.” *Dummies*, 10.

A standard identifier used in tags before the '967 patent was the EPC, which was developed at the MIT Auto-ID Center in 2000 to replace the Universal Product Code barcode. *Id.*, 10, 44. EPCs were designed to be flexible and uniquely identify the object to which the tag was attached. *Id.*, 45. An EPC is comprised of a fixed number of bits which are partitioned (i.e., subdivided) into several distinct fixed-length fields, with each field being allocated a specific amount of the EPC's overall bits. *Clare*, ¶57. For example, as shown below, *Dummies* discloses a 96-bit-long EPC, partitioned into four fields (header, EPC Manager, Object Class and Serial Number), each occupying a subset of the EPC:



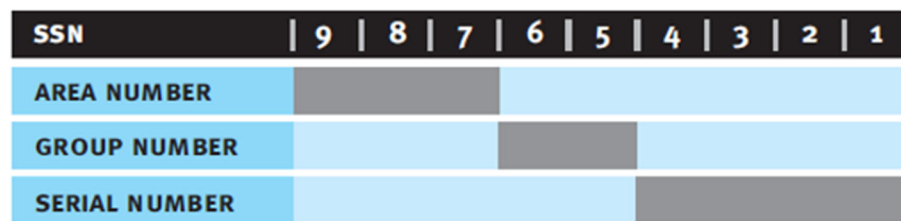
Dummies, 46-47. The EPC “header” indicates it is an EPC, as opposed to some other type of data. The “EPC manager” identifies the company that manufactures the product identified by the object class. The “object class” identifies the class/type of

product. The “serial number” corresponds to a specific instance of the product identified by the object class. *Id.*, 46-47.

Like other numbering schemes, the EPC is hierarchical, and the combination of its fields guarantees its uniqueness. *Id.*, 238-239; *Clare*, ¶58. The higher order information defines a sector for the lower order information that follows, such that the lower order information is distinct within that sector. *Clare*, ¶58. For example, the EPC manager is unique to each manufacturer—it is assigned by a global issuing authority. Each EPC manager may then specify its own lower order object class identifiers each identifying one of the manufacturer’s products. Then, the lower order serial numbers following the object class correspond to individual instances of the product identified by the object class. Within this hierarchy, the serial number alone is not necessarily unique—it is only unique within its particular product sector. The combination of object class and serial number will uniquely identify one product instance from an instance of a different product from the same manufacturer; and the combination of EPC manager, object class and serial number, uniquely distinguishes a specific product instance from a specific instance of a product from another manufacturer. *Id.*, ¶¶58-59.

The concept of partitioning a fixed-length identifier into hierarchical fields or subdivisions was thus well-known to POSITAs before the ’967 patent. *Clare*, ¶¶60-64. Indeed, the concept was well-known generally. This same concept is reflected

in many common applications, including Social Security Numbers, Vehicle Identification Numbers, telephone numbers and zip codes. *Id.* For example, Social Security Numbers, in existence since the 1930s, use a hierarchical 9-digit number which is partitioned into three sections, with the highest order digits, the first three, corresponding to a geographical area, the following two digits corresponding to a group within that area, and the following final four digits being a serial number within that group:



EX-1014, 14; *Clare*, ¶61. Similarly, the area code of a telephone number distinguishes duplicates of the same seven-digit phone number in different locales.

Thus, a POSITA understood the fields included in a hierarchical identifier occupy their own partitioned space within that identifier. For an RFID tag, which stores an identifier comprised of a fixed number of bits which are split into multiple partitions, such as an EPC, it was understood those partitions occupied their own fixed-length portions of the identifier. *Clare*, ¶64. For example, as discussed in U.S. Patent 7,425,888 (EX-1017), an RFID identifier could also include information, such

as lot number, within its hierarchy, and that information, too, occupied its own bits within the larger identifier:

In an embodiment, tag identification bit sequences are hierarchical. That is, for a tag population, a subset of the tag identification bit sequence is identical for all tags in a tag population....For example, a tag identification sequence may consist of a manufacturer bit string, a lot number bit string, and tag ID bit string. In this example, all tags in a tag population 120 may have the same manufacturer bit string and a subset of all tags in tag population 120 will have the same lot number bit string. The tag ID bit string is then the uniqueness element for each tag in the tag population.

EX-1017, 4:29-40; *Clare*, ¶64.

The concept of preauthorizing ranges of EPC serial numbers was also known before the '967 patent. *Clare*, ¶¶65-69. For example, U.S. Patent 7,201,309, filed in 2004, describes allocating blocks of EPC serial numbers to multiple sites: “When the serial number allocation system 14 provides a block of serial numbers to the packaging site 12, the packaging site 12 assigns the unique serial numbers to each item until each unique serial number in the block of serial numbers has been assigned.” EX-1015, 4:14-19. And, as is discussed in more detail below in the overview of the prior art, Dummies and Traub similarly described assigning ranges of serial numbers to commission RFID tags. *E.g.*, *Dummies*, 240 (“A range of serial numbers for each product is allocated to each manufacturing facility.”); *Traub*, 3:40-

41 (“In one embodiment, the EPC server can create pools of EPC codes.”); *Clare*, ¶65.

POSITAs were also aware of the purported problems with using a central authority to assign EPCs. For example, *Dummies* recognized:

When multiple manufacturing lines are used to manufacture the same product, a centralized numbering authority is more difficult to manage. The centralized authority must be consulted every time an item is produced, requiring that it be accessible over the network whenever production runs are in process....

An always-accessible central numbering authority isn't practical for many companies.

Dummies, 239; *Clare*, ¶65-69, 81.

POSITAs also recognized adding a prefix unique to a manufacturer to the beginning of identifiers accomplished the same task as centrally assigning a group of unique identifiers. For example, *RFID Essentials*, published in 2006, described:

In any track and trace system, each identity must be unique across all producers and for as long a period as the information must be maintained. This can be accomplished in several ways, but the simplest method is either to assign a prefix to each producer to put at the beginning of their identities or to assign blocks of identities to each producer from a central authority (which accomplishes the same thing).

EX-1016, 15; *Clare*, ¶66.

IX. THE ASSERTED PRIOR ART

A. RFID for Dummies (“Dummies”) (EX-1009)

RFID for Dummies was published and available to the public by February 1, 2005. EX-1024, ¶¶7-10.

Dummies discloses the components of an RFID system include a “transponder (more commonly just called a tag)” and a “transceiver (more commonly called a reader).” *Dummies*, 78; *see id.*, 19-20. “The tag has a small computer chip (or memory area) that is programmed with information that uniquely identifies the tag.” *Id.*, 79. An RFID tag communicates with a reader using a technique called “backscatter,” where a “reader sends out an electromagnetic wave,” and “the tag then ‘scatters back’ a wave...with the chip’s information encoded in those backscatter waves.” *Id.*, 20.

Dummies discloses a tag “consists of three components”:

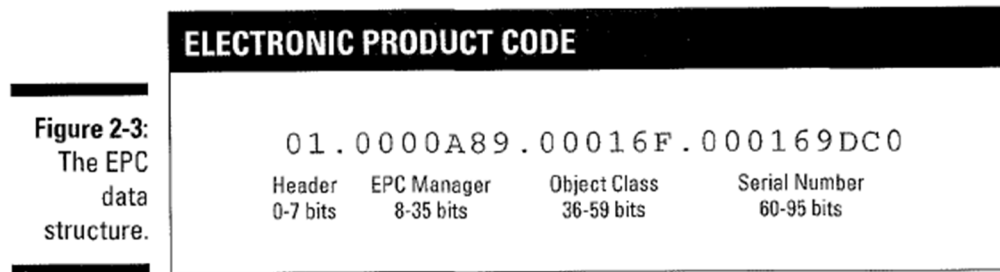
An integrated circuit or chip: This chip stores data and executes specific commands. Most of the passive tags today carry 96 bits of memory, although some can carry as little as 2 bits or as much as 1,000 bits....

An antenna (or coupling element): The antenna’s function is to absorb RF waves and then broadcast a signal back out....

The substrate (or material that holds it all together): This is most often a Mylar or plastic film. Both the antenna and chip are attached to it.

Id., 89.

The unique information stored on the tag may be an EPC (*id.*, 10 (“The EPC is the individual number associated with an RFID tag or chip.”)), which “can be from 32 to 256 bits long” and is generally structured as follows:



Id., 46-47. The “Header” indicates “what type of number follows,” the “EPC Manager Number...identifies the company or company entity,” the “object class [is] similar to a stock-keeping unit, or SKU,” and the “serial number...is the specific instance of the object class being tagged.” *Id.*

Dummies explains an EPC, like “[a]ll numbering schemes,” relies on a “numbering hierarchy.” *Id.*, 238. For an EPC, the combination of three of its numbers “uniquely identifies an item”: (1) the manufacturer number (i.e., EPC Manager), (2) the product number (i.e., object class), and (3) the serial number. *Id.*, 239. The EPCGlobal organization assigns a unique manufacturer number, while the

manufacturer itself is free to choose the object class for the product and assign a unique serial number for each product of that class manufactured. *Id.* The EPC is encoded in a tag's memory using "an RFID label printer" or "reader" to write the data to the tag. *Id.*, 238.

Before the '967 patent, Dummies also recognized the problem with using a centralized issuing authority to assign unique EPCs when multiple lines or locations are encoding tags for the same product. "Because all products of the same type receive the same product number," Dummies indicates "serial numbers must be maintained in order to enable unique item identification." *Id.*, 239. If a product is manufactured on a single product line in a single location, "assigning unique serial numbers to every item manufactured is straightforward" and a "central numbering allocation authority may be used." *Id.* However, "[d]ifficulties arise when multiple lines, potentially at multiple locations, are used to manufacture the same product." *Id.* An "always-accessible central numbering authority" may not be practical. *Id.*

Dummies suggests "companies can use an intelligent hierarchy imposed on the serial number allocation to decentralize and make feasible the allocation of unique serial numbers across all manufacturing lines." *Id.* As one suggestion, Dummies provides a "simple example of a decentralized, hierarchical approach to allocating serial numbers" that "allocates" ranges of serial numbers to each

manufacturing facility, suggesting the serial number field be partitioned into a “facility number, line number and subserial number”:

A range of serial numbers for each product is allocated to each manufacturing facility. Within a facility, a range of numbers from those allocated to the facility is allocated to each line producing a particular product. In this way, the serial number is effectively subdivided into a facility number, line number, and subserial number, in which the allocation hierarchy is maintained between facility number and line number.

Id., 240.

B. U.S. Patent 8,373,545 (“Traub”) (EX-1010)

Traub is entitled “EPC provisioning system using business rules.” Like Dummies, Traub discloses RFID systems include RFID tags and readers, and tags “can include a unique” EPC. *Traub*, 1:25-26. Traub similarly discloses an EPC includes “sections that indicate the product and manufacturer of a given item as well as a section to uniquely identify an object,” including a header, company identifier and object class. *Id.*, 1:30-38.

Traub further discloses a system for assigning blocks (also referred to as “pools”) of EPCs to multiple different manufacturer locations, specifically using “business rules.” *E.g., id.*, Abstract (“The EPC server can use business rules to determine the EPC codes for the multiple client sites”), 1:67, 3:48-50, 4:2-4, 4:12-

19, Figs. 4A, 4B. As to Figure 4A, below, Traub discloses “[a]n EPC provisioning system 400” with “EPC server 402 adapted to dynamically provide EPC code blocks 404 and 406 for one product to multiple client sites” (*id.*, 3:66-4:2):

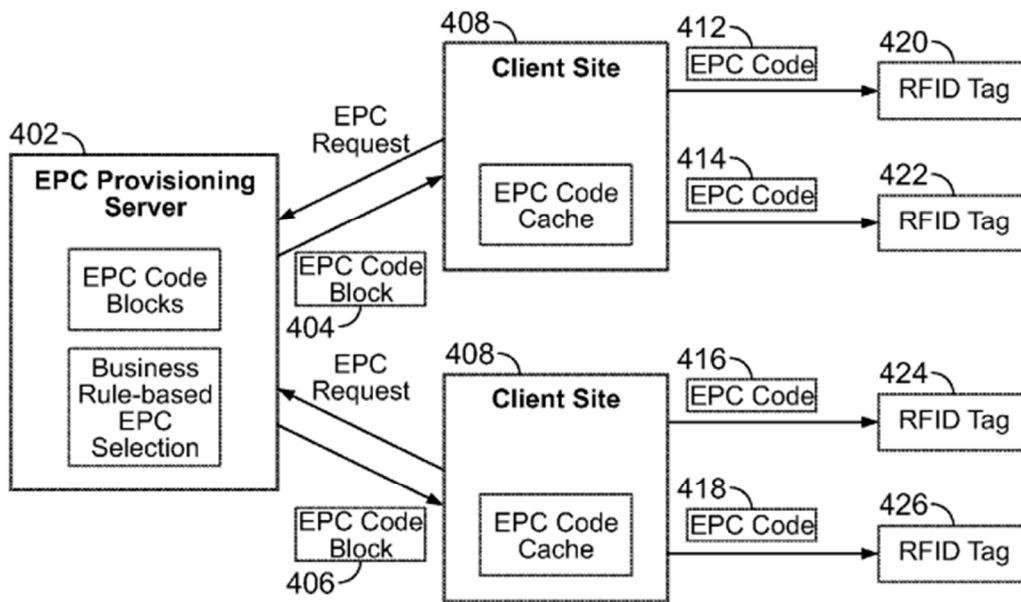


FIG. 4A

Id., Fig. 4A.

As part of using business rules to determine the EPC block for each client site, Traub discloses encoding business information *directly into* the EPCs:

[T]he EPC server can *create pools of EPC codes*. The *EPC codes can be created based on business policies that* can be used to *indicate business information in the EPC code*. The RFID edge servers can obtain EPC codes from the pool, store these EPC codes into a local

cache and then *use these EPC codes in the construction of RFID tags*,
such as with an RFID tag printer.

Id., 3:40-47. The business information encoded into the EPC can include, for example, a “lot number” for the product and/or the “location” where the product was manufactured. *Id.*, 3:49-52 (“The EPC code blocks can be assigned so as to indicate business information such as lot number and/or location.”), 4:7-9 (“The EPC code blocks can be assigned to [sic] as to indicate lot number. The EPC code blocks can be assigned as to indicate location.”).

Traub describes an EPC, which can have “either a 64- or 96-bit code numbering scheme” (*id.*, 1:28-30), with an EPC serial number space further partitioned to include the business information encoded as the leading bits of the serial number space, as shown below in Figure 4B, with the serial number highlighted in yellow, the location in orange, and lot in green:

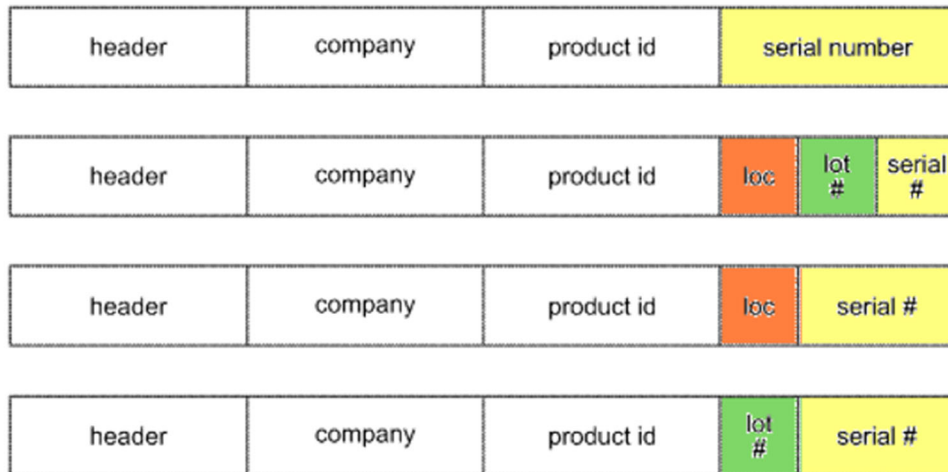


FIG. 4B

Id., Fig. 4B (highlighting added).

C. EPC Tag Data Standards Version 1.1 Rev.1.24 (April 1, 2004) (“TDS-2004”) (EX-1011)

TDS-2004 was published by EPCGlobal and was available to the public no later than June 2004. EX-1024, ¶¶11-15. TDS-2004 “defines the EPC Tag Data Standards” and discloses the SGTIN-96 format for EPCs. *TDS-2004*, 3, 23. The ’967 patent acknowledges SGTIN-96 is prior art, noting it “is defined in a corresponding specification such as the GS1 EPCglobal EPC Tag Data Standard.” EX-1001, 8:16-21. SGTIN stands for “serialized global trade identification number,” which is a global trade identification number (“GTIN”) “augmented with a serial number.” *TDS-2004*, 12. The 96-bit version of SGTIN is “SGTIN-96.” *Id.*, 20.

SGTIN-96 includes the fields filter value, partition, company prefix, and item reference:

3.4.2 SGTIN-96

In addition to a Header, the SGTIN-96 is composed of five fields: the *Filter Value*, *Partition*, *Company Prefix*, *Item Reference*, and *Serial Number*, as shown in Table 6.

	Header	Filter Value	Partition	Company Prefix	Item Reference	Serial Number
SGTIN-96	8	3	3	20-40	24-4	38
	0011 0000 (Binary value)	8 (Decimal capacity)	8 (Decimal capacity)	999,999 – 999,999,999,999 (Decimal capacity*)	9,999,999 – 9 (Decimal capacity*)	274,877,906,943 (Decimal capacity)

*Capacity of Company Prefix and Item Reference fields vary according to the contents of the Partition field.

Table 6. The EPC SGTIN-96 bit allocation, header, and decimal capacity.

Id., 23-24.

X. DETAILED EXPLANATION OF GROUNDS

A. Ground 1: Obviousness Based on Dummies and Traub (Claims 1, 6-12, 16, 20)

1. Motivation To Combine

A POSITA would have been motivated to combine the teachings of Traub with Dummies. *Clare*, ¶¶88-96.

Dummies and Traub are in the same technical field. As discussed above in the overview of the asserted prior art, both Dummies and Traub relate to RFID technology and the use of EPCs as unique identifiers for RFID tags. *Dummies*, 10 (“The EPC is the individual number associated with an RFID tag or chip.”); *Traub*, 1:25-26 (“The RFID tag can include a unique electronic product code (EPC)”); *Clare*,

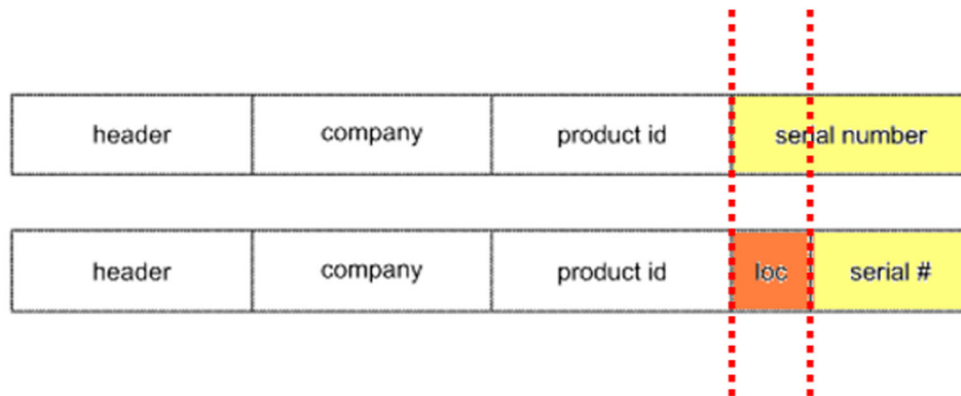
¶89. Both also relate to and describe systems for allocating ranges of EPCs to manufacturers with multiple locations. For example, Dummies describes a system for “allocating unique numbers across many lines and locations” as a range of serial numbers. *Dummies*, 239. Similarly, Traub describes “using an EPC server 402 to dynamically provide EPC code blocks 404 and 406 for one product to multiple client sites.” *Traub*, 3:34-36; *Clare*, ¶90.

Dummies explains each manufacturer is responsible for assigning the unique serial numbers for its products, including assigning a product number (i.e., object class) and the serialized value, but managing serialized numbers can become impractical in situations where there are multiple manufacturing facilities for the same product. *Dummies*, 239. To this end, Dummies suggests “a simple example” solution that is “a decentralized, hierarchical approach to allocating serial numbers.” *Id.*, 240. The example includes allocating a “range of serial numbers for each product...to each manufacturing facility” where “the serial number is effectively subdivided into a facility number, line number, and subserial number, in which the allocation hierarchy is maintained between facility number and line number.” *Id.*, 240.

Dummies, however, does not provide a detailed explanation for how that allocation is done, which leaves the implementation details to the skill and knowledge of the POSITA. *Clare*, ¶¶91-92. Moreover, because Dummies provides

only one “simple example,” a POSITA would have understood there were likely other ways to solve the problem. Thus, a POSITA would have been motivated to look to other sources for solutions, such as Traub’s. *Clare*, ¶92.

Traub teaches a solution using “business rules” to allocate blocks of EPCs to multiple facilities manufacturing the same product. *Traub*, 3:40-47. A POSITA would have recognized Traub’s business rules approach satisfies Dummies’ criteria of providing a “a decentralized, hierarchical approach to allocating serial numbers.” *Clare*, ¶93. In particular, Traub’s solution is “decentralized” because it uses “edge servers” located at multiple “client sites” to assign EPCs to tags. *Traub*, 3:48-49 (“the client sites...can be, or can include, RFID edge servers”); *Clare*, ¶93. A POSITA also would have recognized Traub’s approach is “hierarchical,” because it uses an EPC. *E.g.*, *Dummies*, 238-39; *Clare*, ¶93. Further, Traub discloses encoding the business information, such as location or lot, directly into the beginning of the EPC serial number portion. *Traub*, Fig. 4B. Traub’s Figure 4B would have made this apparent to a POSITA because it shows, for example, location information encoded at the leading end of the EPC serial number portion:



Id, Fig. 4B (excerpted; highlighting and dotted line added); *Clare*, ¶93. A POSITA would have recognized encoding business information into the beginning of a serial number indicates the serialized number following pertains specifically to that business information, because it is hierarchical. *Clare*, ¶¶94. As discussed in the Technology Background above, a POSITA would have been familiar with the ubiquitous concept of partitioning and organizing unique serialized identifiers hierarchically. *Clare*, ¶94; *supra* §VIII.

A POSITA would have had more than a reasonable expectation of success in applying Traub's teachings to address the EPC allocation suggested in Dummies. *Clare*, ¶95-96. Both Dummies and Traub use EPCs in RFID tags, which is an identification code well-known to and understood by POSITAs, and Traub discloses a simple technique to encode business information into the serial number portion (i.e., space) of the known EPC by merely partitioning the leading bits of the serial

number space to indicate the location. Implementing such a solution was well within the engineering skillset of POSITAs. *Id.*

Thus, POSITAs would have been motivated to combine Dummies and Traub and would have had a reasonable expectation of success in doing so. *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1381 (Fed. Cir. 2023) (“It’s enough...to show that there was a known problem...in the art, that [the secondary reference] helped address that issue, and that combining the teachings...wasn’t beyond the skill of an ordinary artisan. Nothing more is required to show a motivation to combine under *KSR*....”); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416-17 (2007) (obvious to combine familiar elements according to known methods to yield predictable results and to improve similar devices in the same way); *id.*, 421. (“A person of ordinary skill is also a person of ordinary creativity, not an automaton”).

2. Independent Claim 1

a. 1[pre]: An RFID transponder comprising:

Dummies discloses or suggests 1[pre]. *Clare*, ¶98. Dummies discloses an “RFID transponder (or tag)” (*Dummies*, 37) and that “[a]n RFID tag is a classic example of a transponder” (*id.*, 372).

b. 1[a]: a substrate;

Dummies discloses or suggests 1[a]. *Clare*, ¶99. Dummies discloses an RFID tag “consists of three components,” including “[t]he *substrate* (or material that holds it all together).” *Dummies*, 89 (emphasis in original).

**c. 1[b]: an antenna structure formed on the substrate;
and**

Dummies discloses or suggests 1[b]. *Clare*, ¶¶100-101. Dummies discloses one of the RFID tag’s “three components” is “[a]n *antenna*,” and “the *antenna* and chip *are attached to* [the substrate].” *Dummies*, 89. POSITAs would have understood, and found it obvious, that antennas in RFID tags are typically formed on the substrate. For example, Dummies discloses a tag including an “antenna substrate.” *Id.*, 95 (“The current for the antenna is strongest at the midpoint of the antenna; accordingly, the strongest radiation occurs at the center of the antenna substrate, along the upper strip.”); *Clare*, ¶101.

**d. 1[c]: an RFID integrated circuit chip which is
electrically coupled to the antenna structure,**

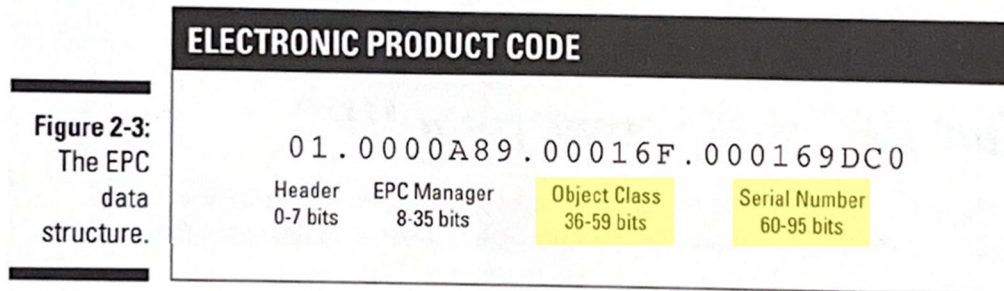
Dummies discloses or suggests 1[c]. *Clare*, ¶102. Dummies discloses one of the RFID tag’s “three components” is “[a]n *integrated circuit or chip*.” *Dummies*, 89. Because the “integrated circuit or chip” is part of an RFID tag, Dummies discloses “an RFID integrated circuit chip.” *Clare*, ¶102. The chip is electrically coupled to the antenna: “The antenna powers up the tag by collecting the energy

from the RF field and exciting the onboard chip into action.” *Dummies*, 89; *Clare*, ¶102.

- e. **1[d]: wherein the RFID integrated circuit chip is encoded with a unique object number, the unique object number comprising an object class information space and a unique serial number space,**

Dummies discloses or suggests 1[d]. *Clare*, ¶¶103-108. *Dummies*’ integrated circuit has a memory that stores an EPC, which is a unique object number. For example, *Dummies* explains “[t]he tag has a small computer chip (or memory area) that is programmed with information that uniquely identifies the tag.” *Dummies*, 79; *see id.*, 51-52 (describing “four distinct memory banks” including one that stores the “EPC data”). “The EPC is the individual number associated with an RFID tag or chip.” *Id.*, 10. “A tag’s embedded EPC number is unique to that tag.” *Id.* “The [EPC]...uniquely identifies objects.” *Id.*, 45; *Clare*, ¶¶104-105.

Dummies also discloses the EPC stored in tag memory includes a space for object class information and a space for a unique serial number, with object class occupying bits 36-59 and the serial number occupying bits 60-95:



Id., 46 (highlighting added); *Clare*, ¶106.

The “object class [is] similar to a stock-keeping unit or SKU.” *Id.* A SKU identifies a product type. *Clare*, ¶107. This satisfies the prior construction of “object class information space” which is a “data field within the memory of the RFID integrated circuit chip for information identifying the class of an object, such as a company prefix, item reference code, partition value, and/or filter value.” EX-1007, 3; *Clare*, ¶107.

The “serial number...is the specific instance of the object class being tagged.” *Dummies*, 47. This satisfies the prior construction of “unique serial number space,” which is a “data field within the memory of the RFID integrated circuit for information identifying a unique serial number.” EX-1007, 3; *Clare*, ¶108.

- f. 1[e]: wherein the unique serial number space is encoded with one serial number instance from an allocated block of serial numbers, the allocated block being assigned a limited number of most significant bits,**

The Dummies-Traub combination teaches 1[e]. *Clare*, ¶¶109-125. As discussed above for 1[d], Dummies discloses a “unique serial number space” because its RFID tag has memory that stores an EPC with a serial number space including a serial number. The prior construction of the term “is encoded with one serial number instance” means “has stored within it one serial number instance.” EX-1007, 4. Thus, Dummies discloses a “unique serial number space” that is “encoded with one serial number instance,” i.e., the serial number instance for that RFID tag. *Clare*, ¶110.

Dummies further discloses the EPC serial number comes “from an allocated block of serial numbers.” For example, Dummies discloses a “decentralized, hierarchical approach to allocating serial numbers” where “[a] range of serial numbers for each product is allocated to each manufacturing facility.” *Dummies*, 239-40. This range of serial numbers satisfies the prior construction of the term “an allocated block of serial numbers,” as meaning “a pre-authorized range of serial numbers.” EX-1007, 4, 9; *Clare*, ¶111. Because the range of serial numbers is generated prior to being assigned to multiple different manufacturing facility locations, this discloses “pre-authorizing” the block. *Dummies*, 239; *Clare*, ¶111.

The term “being assigned a limited number of most significant bits” was previously construed to mean “includes a limited, predefined sequence of higher order bits at the leading end.” EX-1007, 3. Dummies discloses the use of an EPC comprised of 96 bits, with one partition of the bits corresponding to a serial number, i.e., the serial number is a binary number. *E.g., Dummies*, 46, 47. POSITAs would have understood multi-digit binary numbers have higher order bits at the leading end. *Clare*, ¶¶113-115. This concept applies to many familiar numeric systems, such as the decimal (base 10) system, where the leading digits have higher value, i.e., they are of higher order than the digits that follow, which are considered to be lesser significant digits (e.g., for the decimal number 103, read left to right, the 1 is highest order digit and the 3 is the least significant digit). *Id.* Thus, POSITAs would have understood the EPC serial number includes a “sequence of higher order bits at the leading end.” *Id.* As previously discussed, Dummies discloses the serial number occupies bit locations 60-95 of the EPC (*Dummies*, 46), and POSITAs would have understood the bit in position 60 is the leading end of the binary serial number and thus has the highest order in the serial number, while bit position 95 at the trailing end is the lowest order bit, i.e., the least significant bit. *Clare*, ¶115.

If Dummies does not disclose or suggest the higher order bits in the serial number are “a limited, predefined sequence,” as the term was previously construed, Traub does.

Traub discloses creating “blocks” (also referred to as “pools”) of EPCs with “business information” encoded into the EPC:

[T]he EPC server can *create pools of EPC codes*. The *EPC codes can be created based on business policies that* can be used to *indicate business information in the EPC code*. The RFID edge servers can obtain EPC codes from the pool, store these EPC codes into a local cache and then *use these EPC codes in the construction of RFID tags*, such as with an RFID tag printer.

Traub, 3:40-47; *see id.*, 3:66-4:4 (“[a]n EPC provisioning system 400 comprising an EPC server 402 adapted to dynamically provide EPC code blocks 404 and 406 for one product to multiple client sites. The EPC server 402 can use business rules to determine the EPC codes for the multiple client sites 408 and 410.”), Fig. 4B; *Clare*, ¶117. In particular, Traub discloses the business information could include a “lot number” for the product and/or the “location” where the product was manufactured. *Id.*, 3:49-52 (“The EPC code blocks can be assigned so as to indicate business information such as lot number and/or location.”), 4:7-9 (“The EPC code blocks can be assigned to [sic] as to indicate lot number. The EPC code blocks can be assigned so as to indicate location.”). Such business information including “lot number” or “location” is analogous to “product line” or “operation of the brand owner” that PO described to the Oregon district court during claim construction as being examples

of information encoded in the serial number MSBs. EX-1008, 2; *supra* §IV.A; *Clare*, ¶118.

This business information teaches the claimed “limited, predefined sequence of higher order bits at the leading end.” For example, Traub illustrates further partitioning an EPC to encode the business information directly into the leading bits of the EPC’s serial number portion, as shown below in Figure 4B:

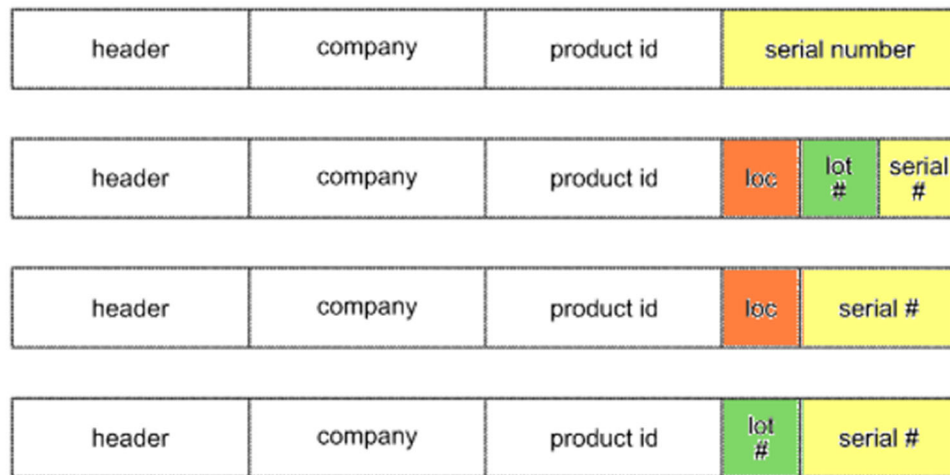
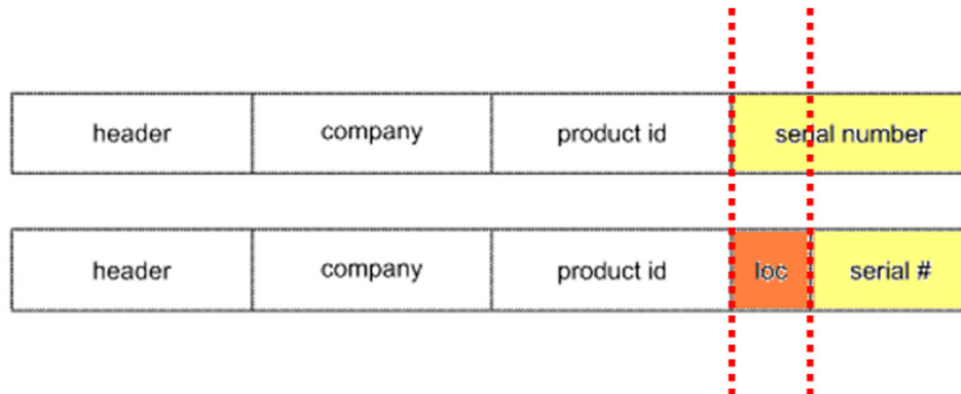


FIG. 4B

Traub, Fig. 4B (highlighting added). POSITAs would have recognized Traub’s Figure 4B illustrates possible EPC formats. *Clare*, ¶¶119-120.

Comparing the formats of Traub’s Figure 4B to each others shows in formats that include business information, the serial number portion of the EPC has been further partitioned (i.e., subdivided) to create space to store that information at the leading end of the EPC’s serial number space—i.e., it occupies the most significant

bits portion of the serial number. For example, compare the format without business information with one including location:



Traub, Fig. 4B (excerpted and modified with highlighting and dotted line); *Clare*, ¶121. As discussed above in the Technology Background, POSITAs were very familiar with the composition of hierarchical identifiers composed of bits, like EPC, and that the various partitions within such identifiers have defined, fixed-length portions. *Supra*, VIII. Thus, POSITAs would have recognized, or found it obvious based on the knowledge of how fixed-length, hierarchical identifiers like EPCs are composed, Traub's Figure 4B as disclosing the serial number portion of the EPC has been subdivided to include a partition for the business information. *Clare*, ¶121. For example, POSITAs were aware that information, including lot number, encoded in a hierarchical identifier would occupy its own portion of bits within the identifier. *E.g., id.*; see also *Powell*, 4:29-40. Here, for Traub's embodiment including the

location field, if Traub's EPC needed to support up to eight locations, then at least the first three leading bits of the serial number space would need to be partitioned for encoding that information, because three bits are required to represent eight different values. *Clare*, ¶121.

POSITAs also would have understood encoding the business information into the leading bits portion of the hierarchical EPC's serial number would define the block/pool (i.e., range or sector) of available serial numbers. *Clare*, ¶122. Traub discloses an "EPC server [that] can create pools of EPC codes," and such codes "can be created based on business policies that can be used to indicate business information in the EPC code." *Traub*, 3:40-47. Traub's Figure 4B illustrates the business information used to create the pool is in in the leading bits of the serial number and the bits that follow are the serialized value. The range of number values available for the serialized portion within the sector are *all* the values that can be represented by those bits, from all 0s to all 1s and any combination of 0s and 1s in between—for example, if there are 20 bits remaining for the serial number, then the range of available serial number values is 00000000000000000000 to 11111111111111111111, which means there are over 1 million serial number values for uniquely identifying the objects that correspond to the specific business information (e.g., specific location) defining the sector. *Clare*, ¶122.

Further, POSITAs would have understood the business information encoded into the leading bits of the EPC's serial number are "limited" because fields within a hierarchical identifier are known to occupy a fixed (i.e., limited) space, as discussed in the Technology Background. *Clare*, ¶123. In other words, there are a limited number of locations or lots, and there must be sufficient space left over in the EPC's serial number portion to contain the "serial #" value that follows the business information. *Id.*

POSITAs would have also understood the business information encoded in the leading bits is "predefined," because, as Traub discloses, the pools of EPCs are generated ***based on*** the business information that is encoded (*Traub*, 3:40-47 ("EPC codes can be created based on business policies that can be used to indicate business information in the EPC code")), and thus the value was known (i.e., defined) before it was encoded into the leading end of the serial number space. *Clare*, ¶124.

As discussed above in the Motivation to Combine section, it would have been obvious to combine this teaching of Traub with Dummies. *Supra*, X.A.1.

- g. 1[f]: wherein the unique serial number space comprises the limited number of most significant bits uniquely corresponding to the limited number of most significant bits of the allocated block and of remaining bits of lesser significance that together comprise the one serial number instance.**

The Dummies-Traub combination teaches 1[f]. *Clare*, ¶¶126-131. As discussed above for 1[e], Dummies with Traub teaches an RFID tag stores an EPC including a “unique serial number space” that “is encoded with one serial number instance from an allocated block of serial numbers” with the “allocated block being assigned a limited number of most significant bits.”

As previously discussed, “uniquely corresponding” was construed as having its “plain and ordinary meaning as...Adasa suggests.” EX-1007, 9. During claim construction briefing, Adasa indicated that it “added this term as a clarifying amendment to make clear that the serial number encoded within the claimed RFID transponder utilizes the same most significant bits of the allocated block.” EX-1008, 18. Traub’s disclosure satisfies this prior construction of the term “uniquely corresponding.” *Clare*, ¶¶127-128. As discussed above for 1[e], Traub discloses the unique serial number space itself is encoded with “the limited number of most significant bits uniquely corresponding to the limited number of most significant bits of the allocated block.” For example, Traub’s Figure 4B illustrates the EPC as

including the business information, such as location and lot number, in the leading bits of the serial number space. *Traub*, Fig. 4B; *Clare*, ¶128.

Traub further discloses the “most significant bits” and “remaining bits of lesser significance...together comprise the one serial number instance.” *Clare*, ¶¶129-130. For example, Traub teaches a pool of EPCs is defined based on business information, such as location and/or lot number, and such information is included in the most significant bits portion of the serial number space, followed by a serialized number in the lesser significant portion of the serial number:

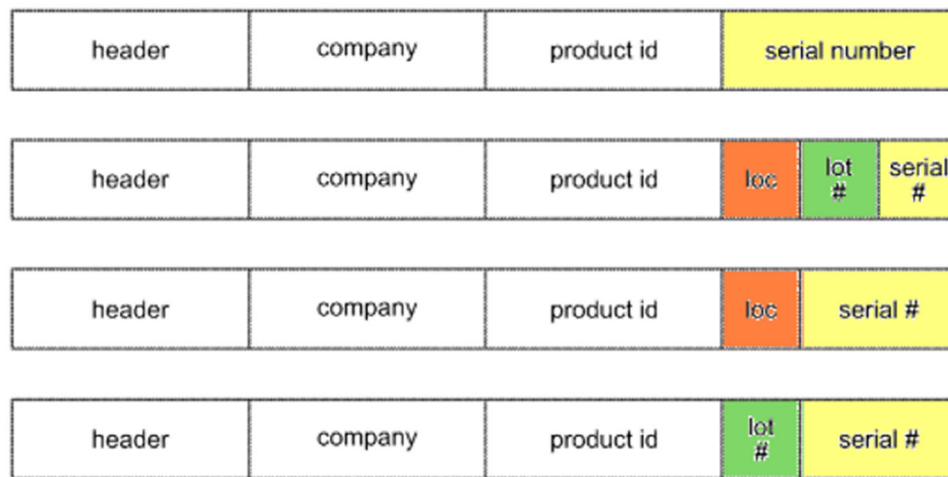


FIG. 4B

Traub, Fig. 4B (highlighting added). POSITAs would have understood this business information and the serialized number together form a unique serial number instance, due to the hierarchical nature of such numbers. *Clare*, ¶130. For example, as Dummies explained, “[a]ll numbering schemes in use...rely on some sort of

numbering hierarchy.” *Dummies*, 238. This is true for EPCs: “The general identifier EPC comprises three numbers whose combination uniquely identifies an item. Those three numbers are the manufacturer number, the product number, and the serial number.” *Id.*, 239. *Dummies* further indicates a “serial number” may be “effectively subdivided into a facility number, line number, and subserial number, in which the allocation hierarchy is maintained between facility number and line number.” Thus, POSITAs would have understood Traub’s business information and serialized number together form a serial number instance for a product, and the entire EPC together forms a unique identifier. *Clare*, ¶130.

As discussed above in the Motivation to Combine section, it would have been obvious to combine this teaching of Traub with *Dummies*. *Supra*, X.A.1.

3. Dependent Claim 6: The RFID transponder of claim 1, wherein the allocated block is defined by at least 3 most significant bits.

Claim 6 depends from claim 1, and the *Dummies*-Traub combination teaches claim 6’s additional limitation. *Clare*, ¶¶132-133. As discussed above regarding 1[e], the *Dummies*-Traub combination teaches the claimed “allocated blocks” of serial numbers and “most significant bits,” including based on business information encoded into an EPC, such as Traub’s Figure 4B teaches:

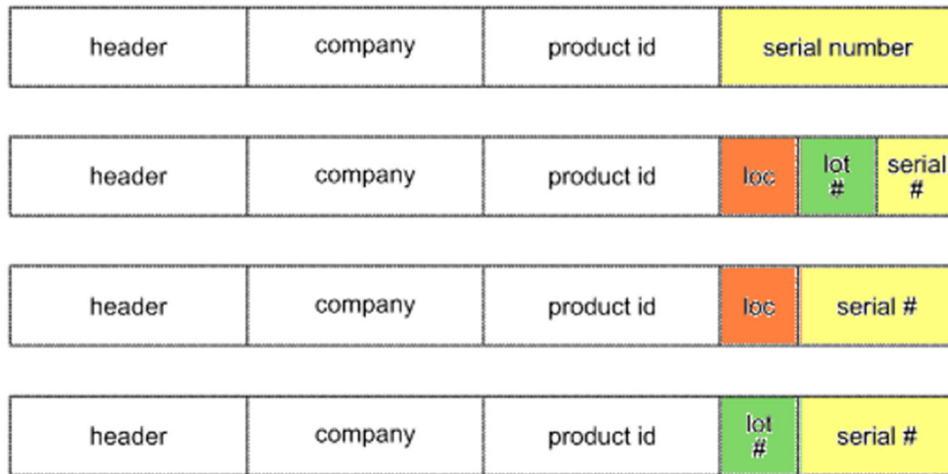


FIG. 4B

Traub, Fig. 4B (highlighting added); *see supra* §X.A.2.f.

Traub, however, does not appear to expressly disclose the number of bits that comprise the “most significant bits.” This number, however, would have been obvious to POSITAs by applying ordinary design considerations and simple bit mathematics that were well understood by POSITAs to Traub’s teachings. *Clare*, ¶133. For example, as previously discussed, Traub discloses there may be “multiple” locations and/or lots (*Traub*, 4:12-15 (“EPC code blocks for multiple client sites”)) and information representing each of those locations and/or lots is encoded into the beginning of the EPC serial number space. POSITAs would have known the number of multiple locations (or lots) being supported would be directly tied to the minimum number of bits required to represent those locations in the EPC serial number. For example, to represent more than four locations (or lots) in bits, i.e., as a binary value,

POSITAs would have known at least three bits would be required for the MSB. One bit can represent two values (e.g., 0, 1), two bits can represent up to four values (e.g., 00, 01, 10, 11), and three bits can represent up to eight values (e.g., 000, 001, 010, 011, 100, 101, 110, 111). *Clare*, ¶133. Thus, it would have been obvious to POSITAs for the MSB in Traub's serial number to contain at least three bits, and hence the allocated block, such as to support five or more locations or lots.

4. Dependent Claim 7: The RFID transponder of claim 1, wherein the allocated block is one of a plurality of allocations intermittently received by an encoder.

Claim 7 depends from claim 1, and *Dummies* teaches claim 7's additional limitation. *Clare*, ¶¶134-136. For example, *Dummies* discloses the use of RFID "printers" to "encode" tags with an EPC, and hence the use of "encoders." *Dummies*, 238 ("The [RFID label printer] module broadcasts a special command with a discrete number (usually an EPC number) through the transmit (Tx) antenna, and that number is 'written' onto the tag.") *Dummies* further criticizes having to consult an "always reachable" centralized authority "every time an item is produced, requiring that [the centralized authority] be accessible over the network whenever production runs are in process" as not "practical for many companies," particularly if multiple "locations" or "lines" are used to manufacture the same product. *Id.*, 239. To avoid these problems, *Dummies* suggests assigning from the central authority multiple, i.e., "a plurality," of allocated serial number ranges among multiple different facilities.

Id., 240 (“A range of serial numbers for each product is allocated to each manufacturing facility.”). Because this assignment avoids the use for an “always reachable” centralized authority, POSITAs would have understood the assignment is not continuous, i.e., it is “intermittently received.” *Clare*, ¶135.

Alternatively, Traub also teaches this limitation. *Clare*, ¶136. Traub discloses a “plurality of allocations”: “One embodiment of the present invention is a computer implemented method using business rules to determine EPC code blocks for multiple client sites and providing the EPC code blocks to the multiple client sites.” *Traub*, 4:12-15; *see id.*, 3:34-4:11. Traub also discloses the allocations of code blocks are “intermittently received by an encoder.” For example, Traub discloses providing the allocations to “RFID edge servers” that have a corresponding “RFID tag printer,” i.e., encoder, at client sites, for caching upon request:

The RFID edge servers can obtain EPC codes from the pool, store these EPC codes into a local cache and then use these EPC codes in the construction of RFID tags, such as with an RFID tag printer. Unused RFID tags can be returned from the cache to the pool.

Id., 3:43-47.

5. Dependent Claim 8: The RFID transponder of claim 1, wherein the RFID integrated circuit chip is comprised of silicon.

Claim 8 depends from claim 1, and Dummies teaches claim 8’s additional limitation. *Clare*, ¶137. As previously discussed, Dummies discloses an RFID tag

includes “[a]n integrated circuit or chip.” *Dummies*, 89. *Dummies* further discloses such chips may be created from silicon: “Die: The silicon block onto which circuits are etched to create a chip.” *Id.*, 366.

6. Dependent Claim 9: The RFID transponder of claim 1, wherein the RFID integrated circuit chip is comprised of polymer.

Claim 9 depends from claim 1, and *Dummies* teaches claim 9’s additional limitation. *Clare*, ¶138. *Dummies* discloses an RFID tag includes “[a]n integrated circuit or chip.” *Dummies*, 89. *Dummies* further discloses the substrate for the chip is “mylar or plastic film.” *Id.*, 89 (“The substrate (or material that holds it all together): This is most often a mylar or plastic film. Both the antenna and chip are attached to it.”). “Mylar” and “plastic” are both polymers, and integrated circuits are considered to include the substrate on which they are formed. *Clare*, ¶138. Accordingly, *Dummies* discloses a chip that “comprises” (i.e., includes) polymer or, at the least, it would be obvious to use a polymer in forming the chip. Further, the background section of the ’967 patent acknowledges it was known for such chips to be comprised of a polymer. For example, the background of the ’967 patent acknowledges “combining the benefits of the latest technology in RFID transponders with sensing devices, a broader class of devices called wireless sensors is emerging” (EX-1001, 1:65-67) and “[w]ireless sensors, made using silicon circuits, polymer circuits...communicate wirelessly to other devices” (*id.*, 2:11-15).

7. Dependent Claim 10: The RFID transponder of claim 1, wherein the substrate, antenna structure, and RFID integrated circuit chip are covered by a face stock material.

Claim 10 depends from claim 1, and Dummies teaches claim 10's additional limitation. *Clare*, ¶¶139-141. Dummies discloses an RFID tag "consists of three components" including "[a]n integrated circuit," "an antenna" and "a substrate" for the chip and antenna. *Dummies*, 89. Dummies further discloses such "tags" may be covered by a face stock material. POSITAs would have known face stock is the top layer of a label and typically made from paper or another material. *Clare*, ¶140. Dummies discloses RFID tags as "labels" applied to a surface. *E.g.*, *Dummies*, 113 ("One way for manufacturers to curb theft and counterfeiting is to apply tamper-proof RFID labels to these drugs."); *id.*, 238 ("Most of the deployments I have set up so far encode tags with an RFID label printer."). Dummies further discloses the label may have "backing paper" and a "face":

1. Place the label face down on a flat surface with the backing paper face up; the face of the label is therefore down on the table or flat surface.
2. Peel the backing paper away from the label while keeping the label flat on the surface.
3. Without bending or twisting the label, lift it from the flat surface....
4. Position the label over the correct location on the object and smoothly apply it to the surface....

Id., 240-41 (describing applying tags as “labels” to an object without “damag[ing] the connections between the chip and the antenna.”); *see id.*, 242 (illustrating where to put a label on a box). Because Dummies implements its tags as labels, POSITAs would have understood the components of those tags (the substrate, antenna structure, and RFID integrated circuit chip) are covered with the top layer of the label (face stock material). *Clare*, ¶¶140-141.

8. Dependent Claim 11: The RFID transponder of claim 1, wherein the RFID integrated circuit chip is disposed on the substrate.

Claim 11 depends from claim 1, and Dummies teaches claim 11’s additional limitation. *Clare*, ¶¶142-143. POSITAs would have understood Dummies also discloses “disposing” the chip onto a substrate. For example, Dummies discloses one of the “three components” of an RFID tag includes a “substrate,” and that “[b]oth the antenna and chip are attached to it.” *Dummies*, 89. Dummies further describes the “flip chip” process where “the chip is ‘flipped’ onto the antenna inlay with a special adhesive” (*id.*, 241), which POSITAs would have understood as disposing the chip onto the substrate. *See id.* 90 (“Another area for innovation and cost savings is the substrate that holds tags together.... Historically, chips have been attached by using a *flip-chip* (flipping a chip into place and gluing it to an antenna) assembly process”); *Clare* ¶¶142-143.

9. Dependent Claim 12: The RFID transponder of claim 1, wherein the limited number of most significant bits that correspond to the allocated block further correspond to an encoder that encodes the RFID transponder.

Claim 12 depends from claim 1, and Traub teaches claim 12's additional limitation. *Clare*, ¶144. For example, as previously discussed, Traub discloses encoding location/lot information into the most significant bits of an EPC's serial number. *Traub*, Fig. 4B. Traub further discloses those locations/lots include an "edge server" with a corresponding "RFID tag printer," i.e., an "encoder." *Id.*, 3:43-47. Thus, bits corresponding to the location or lot that are encoded in the EPC also correspond to an encoder. *Clare*, ¶144.

10. Independent Claim 16

a. 16[pre]: An integrated circuit, comprising:

Dummies discloses or suggests 16[pre]. *Clare*, ¶146. Dummies discloses one of the RFID tag's "three components" is "[a]n *integrated circuit or chip*." *Dummies*, 89.

b. 16[a]: a radio frequency circuit configured to backscatter a return link signal for processing by an RFID interrogator;

Dummies discloses or suggests 16[a]. *Clare*, ¶¶147-148. Dummies discloses an RFID integrated circuit (i.e., "radio frequency circuit") in an RFID tag communicates with a reader (i.e., "RFID interrogator") using a backscatter signal, and thus discloses a "radio frequency circuit configured to backscatter a return link

signal [to] an RFID interrogator”: “The IC, or simply the chip, is responsible for converting RF energy into usable electrical power, storing and retrieving data, and modulating the ***backscatter signal*** (the signal that the tag sends back to the reader).” *Dummies*, 92; *see id.*, 79 (“A passive RFID transponder does not contain its own power source; rather, it absorbs energy propagated from a reader...to supply all the power it needs to wake up its chip and communicate with a reader by sending back (backscattering) the information contained in its memory to a receiving antenna.”); *id.*, 20; *Clare*, ¶147.

Dummies further discloses the reader/interrogator processes the backscattered signal to turn the signal into digital information, and thus also discloses the claimed signal is “for processing by” the reader:

The reader not only generates the signal that goes out through the antenna into space, but also listens for a response from the tag. The RFID reader is like a high-tech Morse code machine, but instead of the dots and dashes the Lone Ranger might have listened in on, the ***RFID reader*** transmits and ***receives analog waves and then turns them into a string of zeros and ones, bits of digital information.***

Dummies, 20; *see id.*, 97 (describing readers as having a “DSP [digital signal processor] and main processors”); *Clare*, ¶148.

c. 16[b]: control logic; and

Dummies discloses or suggests 16[b]. *Clare*, ¶¶149-150. Dummies discloses: “[t]he chip also has the *logic* to tell itself what to do when it is in front of a reader.” *Dummies*, 20. Dummies also discloses the RFID integrated circuit executes commands: “This chip stores data and executes specific commands” (*Dummies*, 89) such as “read,” “write,” and “kill” (*id.*, 209). POSITAs would have understood an IC that executes commands uses “control logic,” i.e., the logic controlling the IC to perform the requested operations. *Clare*, ¶150.

d. 16[c]: a memory,

Dummies discloses or suggests 16[c]. *Clare*, ¶151. Dummies discloses the RFID integrated circuit includes “a memory”: “[m]ost of the passive tags today carry 96 bits of *memory*, although some can carry as little as 2 bits or as much as 1,000 bits.” *Dummies*, 89; *see id.*, 79 (“The tag has a small computer chip (or memory area) that is programmed with information that uniquely identifies the tag.”).

e. 16[d]: wherein the memory is configured with a unique object number space, the unique object number space comprising an object class information space and a unique serial number space,

This limitation is substantively similar to 1[d] and is thus disclosed or suggested by Dummies for the same reasons discussed above. *See supra* §X.A.2.e; *Clare*, ¶152.

- f. 16[e]: wherein the unique serial number space is encoded with one serial number instance from an allocated block of serial numbers, the allocated block being assigned a limited number of most significant bits, and**

This limitation is substantively similar to 1[e] and is thus taught by Dummies and Traub for the same reasons discussed above. *See supra* §X.A.2.f; *Clare*, ¶153.

- g. 16[f]: wherein the unique serial number space comprises the limited number of most significant bits uniquely corresponding to the limited number of most significant bits of the allocated block and remaining bits of lesser significance that together comprise the one serial number instance.**

This limitation is substantively similar to 1[f] and is thus taught by Dummies and Traub for the same reasons discussed above. *See supra* §X.A.2.g; *Clare*, ¶154.

- 11. Dependent 20: The integrated circuit of claim 16, wherein the limited number of most significant bits that correspond to the allocated block further correspond to an encoder that encodes the memory of the integrated circuit.**

This claim's additional limitation is substantively similar to claim 12's and is thus disclosed by Traub for the same reasons discussed above. *See supra* §X.A.9; *Clare*, ¶155.

B. Ground 2: Obviousness Based on Combination of Dummies, Traub and TDS-2004 (Claims 2-5, 13-15, 17-19)

1. Motivation To Combine Dummies, Traub and TDS-2004

As discussed above in §X.A.1, POSITAs would have been motivated to combine Dummies and Traub. POSITAs would have been further motivated to

combine TDS-2004 with those references. *Clare*, ¶¶160-161. In particular, Dummies and Traub both involve the use of EPCs in RFID tags and systems, and TDS-2004 sets forth and specifies EPCGlobal standardized formats for EPCs:

This document defines the EPC Tag Data Standards. These standards define completely that portion of EPC tag data that is standardized, including how that data is encoded on the EPC tag itself (i.e. the EPC Tag Encodings), as well as how it is encoded for use in the information systems layers of the EPC Systems Network (i.e. the EPC URI or Uniform Resource Identifier Encodings).

TDS-2004, 3. Thus, POSITAs would have been motivated to use TDS-2004's teachings to format the EPCs of the Dummies-Traub combination, because the purpose of a standard is to instruct artisans to conform to it and in some cases may be required. As indicated in Dummies:

As you make decisions about your RFID system, two factors that come into play are where you are going to incorporate the RFID network and with whom you'll have to interoperate. Different regions or countries have different standards, and ISO and EPCglobal have different requirements incorporated into their open standards.

Dummies, 50; *see id.*, 53 (“EPCglobal also has several highly involved working groups, which bring end users together to help figure out the best way to adopt RFID, from data standards to preparing analysis on return on investment (ROI).”); *Clare*, ¶161.

2. Dependent Claim 2: The RFID transponder of claim 1, wherein the object class information space is encoded with information comprising a company prefix, an item reference, a partition value, and a filter value.

As discussed above, independent claim 1 is taught by the Dummies-Traub combination. TDS-2004 teaches claim 2’s additional limitations. *Clare*, ¶¶162-164. The ’967 patent acknowledges the claimed object class information was known and defined by GS1 for the SGTIN format: “GS1 defines EPCglobal SGTIN number fields as having a company prefix, an item reference, a partition value, and a filter value that comprise the object class information.” EX-1001, 9:7-13. TDS-2004 discloses a 96-bit SGTIN, referred to as “SGTIN-96” (*TDS-2004*, 20), includes the fields “Filter Value, Partition, Company Prefix, [and] an Item Reference:

3.4.2 SGTIN-96

In addition to a Header, the SGTIN-96 is composed of five fields: the *Filter Value*, *Partition*, *Company Prefix*, *Item Reference*, and *Serial Number*, as shown in Table 6.

	Header	Filter Value	Partition	Company Prefix	Item Reference	Serial Number
SGTIN-96	8	3	3	20-40	24-4	38
	0011 0000 (Binary value)	8 (Decimal capacity)	8 (Decimal capacity)	999,999 – 999,999,9 99,999 (Decimal capacity*)	9,999,999 – 9 (Decimal capacity*)	274,877,906 ,943 (Decimal capacity)

*Capacity of Company Prefix and Item Reference fields vary according to the contents of the Partition field.

Table 6. The EPC SGTIN-96 bit allocation, header, and decimal capacity.

TDS-2004, 23-24; *see id.*, 11-12. As discussed above, it would have been obvious to combine this teaching of TDS-2004 with Dummies and Truab. *Supra* §X.B.1; *Clare*, ¶¶163-164.

3. Dependent Claim 3: The RFID transponder of claim 1, wherein the unique object number is a portion of a serialized global trade item number.

As discussed above, independent claim 1 is taught by the Dummies-Traub combination. TDS-2004 teaches claim 3's additional limitation. *Clare*, ¶165-166. TDS-2004 discloses EPCs in the form of a "serialized global trade identification number" ("SGTIN"), which includes a "unique serial number." *TDS-2004*, 12 ("The combination of GTIN and a unique serial number is called a Serialized GTIN (SGTIN)"). As discussed above, it would have been obvious to combine this teaching of TDS-2004 with Dummies and Traub. *Supra* §X.B.1. In claim 1, the "unique serial number" is part of the "unique object number."

4. Dependent Claim 4: The RFID transponder of claim 3, wherein the serialized global trade item number is an EPC SGTIN-96 encoding.

As discussed above, claim 3 would have been obvious in light of the Dummies-Traub-TDS-2004 combination. TDS-2004 also teaches claim 4's additional limitation. *Clare*, ¶167. TDS-2004 discloses encoding EPCs using "SGTIN-96": "The EPC encoding scheme for SGTIN permits the direct embedding of EAN.UCC System standard GTIN and Serial Number codes on EPC tags....Two encoding schemes are specified, SGTIN-64 (64 bits) and **SGTIN-96 (96 bits)**." *TDS-2004*, 20. As discussed above, it would have been obvious to combine this teaching of TDS-2004 with Dummies and Traub. *Supra* §X.B.1.

**5. Dependent Claim 5: The RFID transponder of claim 1,
wherein the unique serial number space is at least 38 bits.**

As discussed above, independent claim 1 is taught by the Dummies-Traub combination. TDS-2004 teaches claim 5's additional limitation. *Clare*, ¶¶168-170. TDS-2004 discloses the serial number in "SGTIN-96" is 38 bits, as highlighted in yellow below:

	Header	Filter Value	Partition	Company Prefix	Item Reference	Serial Number
SGTIN-96	8 bits	3 bits	3 bits	24 bits	20 bits	38 bits
	0011 0000 (Binary value)	7 (Decimal value)	5 (Decimal value)	0614141 (Decimal value)	100734 (Decimal value)	2 (Decimal value)

TDS-2004, 75 (highlighting added). The '967 patent acknowledges this. EX-1001, 8:21-23 ("Again using the SGTIN-96 as an example, there are a total of 38 bits used to define the entire serial number space"). *Clare*, ¶169. As discussed above, it would have been obvious to combine this teaching of TDS-2004 with Dummies and Traub. *Supra* §X.B.1.

6. Independent Claim 13

Independent claim 13 would have been obvious in light of Dummies, Traub and TDS-2004.

- a. **13[pre]: An RFID transponder comprising; 13[a]: a substrate; 13[b]: an antenna structure formed on the substrate; and 13[c]: an RFID integrated circuit chip which is electrically coupled to the antenna structure**

13[pre], 13[a], 13[b], and 13[c] are respectively substantively the same as 1[pre], 1[a], 1[b], and 1[c] and are thus disclosed or suggested by Dummies for the same reasons discussed above. *See supra* §§X.A.2.a-X.A.2.d; *Clare*, ¶¶172-175.

- b. **13[d]: wherein the RFID integrated circuit chip is encoded with a global trade item number including a unique object number, the unique object number comprising an object class information space including a block of at least 50 bits and a unique serial number space including a block of at least 38 bits,**

This limitation is taught by the Dummies-TDS-2004 combination. *Clare*, ¶¶176-178. As discussed above for 1[d], Dummies discloses an “RFID integrated circuit chip” “encoded with” a “unique object number” comprising “an object class information space and a unique serial number space,” such as based on EPCs. *Supra* §X.A.2.e. Dummies further discloses the use of a “global trade identification number.” *Dummies*, 368 (defining “GTIN”).

Dummies does not, however, explicitly disclose the EPC is a global trade item number where the object class information space includes “a block of at least 50 bits” and the serial number space includes “a block of at least 38 bits.” But TDS-2004 does. In particular, TDS-2004 discloses the use of the SGTIN-96 format which uses 50 bits for the “Filter Value” (3 bits), “Partition” (3 bits), “Company Prefix” (24

bits), and “Item Reference” (20 bits), highlighted in red below, combined and the remaining serial number is 38 bits, highlighted in yellow:

	Header	Filter Value	Partition	Company Prefix	Item Reference	Serial Number
SGTIN-96	8 bits	3 bits	3 bits	24 bits	20 bits	38 bits
	0011 0000 (Binary value)	7 (Decimal value)	5 (Decimal value)	0614141 (Decimal value)	100734 (Decimal value)	2 (Decimal value)

TDS-2004, 75 (highlighting added); *Clare*, ¶177. As discussed above, it would have been obvious to combine this teaching of *TDS-2004* with *Dummies* and *Traub*.
Supra §X.B.1.

- c. **13[e]: wherein the unique serial number space has one serial number instance from an allocated block of serial numbers, the allocated block being assigned a limited number of most significant bits, and**

This limitation is substantively similar to 1[e] and is thus taught by *Dummies* and *Traub* for the same reasons discussed above. *See supra* §X.A.2.f; *Clare*, ¶179.

- d. **13[f]: wherein the unique serial number space comprises at least 3 most significant bits uniquely corresponding to the limited number of most significant bits of the allocated block.**

This limitation is substantively similar to claim 6’s additional limitation and is thus taught by *Dummies* and *Traub* for the same reasons discussed above. *See supra* §X.A.3; *Clare*, ¶180.

- 7. Dependent Claim 14: The RFID transponder of claim 13, wherein the unique serial number space further comprises remaining bits of lesser significance that together with the at least 3 most significant bits comprise the one serial number instance.**

As discussed above, independent claim 13 is obvious based on Dummies, Traub, and TDS-2004. Claim 14's additional limitation is further taught by the Dummies-Traub combination. *Clare*, ¶¶181-183. As discussed above for 1[f], Dummies and Traub teach a "unique serial number space" that "comprises remaining bits of lesser significance" and "that together with the...most significant bits comprise the one serial number instance." *See supra* §X.A.2.g. And, as discussed above for claim 6, Dummies and Traub teach the most significant bits comprise "at least 3...bits." *See supra* §X.A.3.

- 8. Dependent Claim 15: The RFID transponder of claim 13, wherein the at least 3 most significant bits that correspond to the allocated block further correspond to an encoder that encodes the RFID transponder.**

As discussed above, independent claim 13 would have been obvious based on Dummies, Traub and TDS-2004. Claim 15's additional limitation would have been obvious over the Dummies-Traub combination. *Clare*, ¶184. As discussed above for claim 6, Dummies and Traub teach "the allocated block is defined by at least 3 most significant bits," which teaches the claimed "at least 3 most significant bits that correspond to the allocated block." *See supra* §X.A.3. Dependent claim 15 adds that those bits further "correspond to an encoder that encodes the RFID transponder,"

which is the same as dependent claim 12. Thus, for the same reasons discussed above for claim 12, Traub teaches this aspect of claim 15. *See supra* §X.A.9.

9. Dependent Claim 17: The integrated circuit of claim 16, wherein the object class information space is encoded with information comprising a company prefix, an item reference, a partition value, and a filter value.

As discussed above, independent claim 16 would have been obvious based on Dummies and Traub. Claim 17's additional limitation is substantively similar to claim 2's and is thus taught by TDS-2004 for the same reasons discussed above regarding claim 2. *See supra* §X.B.2; *Clare*, ¶185.

10. Dependent Claim 18: The integrated circuit of claim 16, wherein the unique object number is a portion of a serialized global trade item number.

As discussed above, independent claim 16 would have been obvious based on Dummies and Traub. Claim 18's additional limitation is substantively similar to claim 3's and is thus taught by TDS-2004 for the same reasons discussed above regarding claim 3. *See supra* §X.B.3; *Clare*, ¶186.

11. Dependent Claim 19: The integrated circuit of claim 18, wherein the serialized global trade item number is an EPC SGTIN-96 encoding.

As discussed above, claim 18 would have been obvious based on Dummies, Traub, and TDS-2004. Claim 19's additional limitation is substantively similar to claim 4's and is thus taught by TDS-2004 for the same reasons discussed above regarding claim 4. *See supra* §X.B.4; *Clare*, ¶187.

XI. SECONDARY CONSIDERATIONS

Petitioner is unaware of any secondary considerations that would overcome the above-presented, strong showing of obviousness. Petitioner understands that during the *Avery Dennison* case following remand, PO contended Walmart instructed suppliers “to allocate most significant bits in the serial number space” and argued this was a secondary consideration. EX-1027, 1417:23-25. It is unclear whether ADASA contended this was purported evidence of copying, commercial success or any other indicia—Petitioner does not have access to the underlying exhibits in the that case. Regardless, even if there were evidence suggesting some sort of copying or commercial success—and Petitioner is not currently aware of any such evidence or any purported nexus between such evidence and the ’967 claims—such evidence would not overcome the strong showing of obviousness presented in this Petition. *Clare*, ¶¶188-192; *see Dow Chemical Co. v. Halliburton Oil Well Cementing Co.*, 324 U.S. 320, 330 (1945); *Ohio Willow Wood Co. v. Alps S., LLC*, 735 F.3d 1333, 1344 (Fed. Cir. 2013).

XII. DISCRETIONARY FACTORS FAVOR INSTITUTION

A. Section 314(a)

For the reasons discussed above regarding Grounds 1 and 2, there is more than a reasonable likelihood that the Petitioner will prevail with respect to at least 1 of the Challenged Claims.

In addition, the Board should not deny institution under *Fintiv*, as the *Fintiv* factors do not favor denial. See *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation*, 4-5 (June 21, 2022) (“*Interim Procedure*”). The r-pac Lawsuit is in its infancy. The lawsuit was recently filed on August 12, 2024, and r-pac has yet to file an Answer, which is not due until October 21, 2024, after this Petition has been filed. No case schedule has been set, and the time-to-trial in the Southern District of New York is presently 42.4 months. EX-1028.

According to the *Interim Procedure*, the PTAB considers a non-exclusive list of factors when deciding whether to institute an IPR when there is a co-pending lawsuit, including:

1. Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. Proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. Investment in the parallel proceeding by the court and the parties;
4. Overlap between issues raised in the petition and in the parallel proceeding;
5. Whether the petitioner and the defendant in the parallel proceeding are the same party; and

6. Other circumstances that impact the Board's exercise of discretion, including the merits.

Interim Procedure, 2.

Here, these factors do not favor denial. In particular, factors 2, 3, and 6 strongly weigh against denial, while the remaining factors are neutral. Regarding factor 2, the Board's projected statutory deadline for a final written decision, which is 12 months after institution (likely around March of 2026), will be well in advance of any trial in the Southern District of New York court proceeding, which currently has a time-to-trial of 42.4 months (which would be approximately March of 2028). Under factor 3, there has been near-zero investment by the parties in the district court proceeding because the proceedings have just begun, and Petitioner has not yet answered the complaint. Indeed, Petitioner was diligent in preparing this Petition, and brought it long before infringement contentions have been served. Under factor 6, the strong merits of this Petition, where the claims of the '967 patent do little more than apply well-known and understood techniques for subdividing a hierarchical identifier, weigh against denial. *Interim Procedure, 4-5.* The other factors are at least neutral. For example, under factor 4, it is premature to determine the extent of overlapping issues because Petitioner does not yet know which claims are being asserted, nor have invalidity contentions been served.

Because three factors weigh strongly against discretionary denial, and the others are at least neutral, the Board should not exercise its discretion to deny institution.

B. Section 325(d)

The Board should also decline to exercise its discretion to deny review under 35 U.S.C. §325(d) at least because neither the Examiner in the original prosecution or the reexamination analyzed the prior art combinations forming the basis of this Petition. The PTAB follows a “two-part framework” when deciding whether to apply §325(d):

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and
- (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

IPR2019-01469, Paper 6, 8 (Feb. 13, 2020) (precedential). With respect to part (1), only five pages of *Dummies* was submitted by the applicant during prosecution, and no claims were rejected based on it. Furthermore, although Traub was considered during reexam proceedings, the combination of *Dummies* and Traub was not. None of the references presented herein have been considered in a Final Written Decision of an IPR on substantially similar claims. Moreover, the '967 Patent has never been

subject to an IPR before. Accordingly, part (1) of the framework is not met, and the Board should decline to exercise its discretion.

If the Board determines that part (1) is met, Petitioner respectfully submits the Office erred in a manner material to the patentability of the Challenged Claims. Specifically, the Office did not consider the *Dummies*-Traub combination and so overlooked or misapprehended the references' combined teachings. The Examiner in original prosecution did not issue a rejection based on *Dummies*, and the discussion herein illustrates *Dummies*' specific teachings impacting the Challenged Claims' patentability. For Traub, the Examiner in reexam overlooked Traub's teachings applied here that impact the Challenged Claims' patentability. For example, the reexam examiner did not discuss Traub's Figure 4B. *Compare* EX-1004, 67-77, *with* §X(A)(2)(f). Accordingly, even if the Board finds part (1) is met, part (2) is not. Thus, the Board should decline to exercise its discretion.

XIII. CONCLUSION

Inter Partes Review of the Challenged Claims is respectfully requested.

XIV. MANDATORY NOTICES

A. Real Party in Interest

Petitioner is the real party in interest.

B. Related Matters

PO has asserted the '967 patent against r-pac in *ADASA Inc. v. R-Pac International LLC*, No. 1:2024-cv-06102 (S.D.N.Y.).

C. Notice of Counsel and Service Information

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CERTIFICATE OF WORD COUNT UNDER 37 CFR § 42.24(D)

Pursuant to 37 C.F.R. §42.24(a), Petitioners hereby certify that portions of the above-captioned Petition for *Inter Partes* Review of U.S. Patent 9,798,967, in accordance with and reliance on the word count provided by the word-processing system used to prepare this Petition, that the number of words in this paper is 13,976. Pursuant to 37 C.F.R. §42.24(a), this word count is in compliance and excludes the table of contents, table of authorities, mandatory notices under §42.8, certificate of service, certificate of word count, appendix of exhibits, and any claim listing. This word count was prepared using Microsoft Word.

Respectfully submitted,

/ Jessica Kaiser /

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that true copies of the Petition for *Inter Partes* Review of U.S. Patent No. 9,798,967 and supporting materials (Exhibits and Power of Attorney) were served via overnight delivery on the Patent Owner at the correspondence address of record as listed on PAIR:

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