

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SML INTELLIGENT INVENTORY SOLUTIONS LLC and SML (USA) INC.,
Petitioners,

v.

ADASA INC.,
Patent Owner

Case IPR2025-00125
U.S. Patent No. 9,798,967 C1

PATENT OWNER'S PRELIMINARY RESPONSE

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35 U.S.C. § 325	1, 7, 24-25
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LIST OF PATENT OWNER'S EXHIBITS

Exhibit No.	Description
2001	File History for U.S. Patent Application Serial No. 15/707,828
2002	Excerpts from Transcripts of Proceedings (Testimony of Mr. Michael Kuhno), <i>ADASA, Inc. v. Avery Denison Corp.</i> , Case No. 6:17-cv-01685-MK, District of Oregon, Eugene Division.
2003	Excerpts from Transcripts of Proceedings (Testimony of Dr. Daniel Engels), <i>ADASA, Inc. v. Avery Denison Corp.</i> , Case No. 6:17-cv-01685-MK, District of Oregon, Eugene Division.
2004	Verdict Form, Dkt. 577, <i>ADASA, Inc. v. Avery Denison Corp.</i> , Case No. 6:17-cv-01685-MK, District of Oregon, Eugene Division.
2005	Order on Motions for Summary Judgment, Dkt. 167, <i>ADASA, Inc. v. Avery Denison Corp.</i> , Case No. 6:17-cv-01685-MK, District of Oregon, Eugene Division.
2006	EPCglobal Tag Data Standards Version 1.1, Rev. 1.24 (April 1, 2004)
2007	RFID for Dummies (2005)
2008	U.S. Patent No. 9,272,805
2009	Letter dated May 22, 2017, from counsel for Avery Dennison Corp. identifying <i>RFID for Dummies</i> and Tag Data Standard Version 1.23, with annotations
2010	Walmart document entitled "Walmart Private Label Item Level Encoding Standard," dated March 12, 2010, with annotations
2011	GS1 US Guideline document entitled "EPC-enabled RFID Serialization Management for SGTIN-96," copyright 2012, with annotations

I. INTRODUCTION

Petitioners SML Intelligent Inventory Solutions LLC and SML (USA) Inc. (collectively “SML” or “Petitioners”) petition for *inter partes* review challenging the validity of all claims of U.S. Patent No. 9,798,967 (“the ‘967 Patent”), owned by ADASA Inc. (“PO” or “Adasa”) by assignment.

The Petition (Paper 2) presents a first series of purported grounds for invalidity under 35 U.S.C. § 103 that relies upon the base combination of U.S. Pat. No. 7,827,200 (Ex. 1007 or “IBM200”) and U.S. Pat. No. 7,857,221 (Ex. 1008 or “Kuhno”), designated as Ground 1A. This combination further modified by the EPCglobal Tag Data Standards Version 1.3 (Ex. 1011 or “TDS”) as alleged Ground 1B, and further modified by U.S. Patent No. 7,394,382 (Ex. 1022 or “Nitzan”) as alleged Ground 1C.

Discretionary denial under § 325(d) is appropriate because validity of the challenged claims of the ‘967 Patent over the primary references proffered under Grounds 1A-C has already been considered in multiple prior proceedings before the USPTO. More specifically, a version of the TDS¹ was considered in combination with various other prior art references during prosecution of the application issuing

¹ Version 1.1, Rev. 1.23, of the TDS was considered during original prosecution of the ‘967 Patent before the USPTO. Ex. 1001 at 1.

as the '967 Patent. Ex. 1001 at face. Thereafter, IBM200 and the TDS were considered in combination with one another and with additional prior art in an *ex parte* reexamination proceeding. Ex. 1004 at 4-5. The validity of the claims of the '967 Patent was affirmed in each instance. Ex. 1004 at 192-193. These same combined teachings were considered a third time during prosecution of a continuation application of the '967 Patent having claims similarly drawn to an RFID tag comprising the same data structure comprising MSBs within the unique serial number space. Ex. 2001 at 64, 120, 163. Here, again, the combined teachings of IBM200 and the encoding schemes presented in the TDS were found insufficient to anticipate or render obvious the claimed subject matter, resulting in issuance of U.S. Patent No. 10,552,720. Ex. 2001 at 14.

While Kuhno was not among the references at issue during original prosecution or reexamination of the '967 Patent, its inclusion with Grounds 1A-C of the Petition adds nothing to the analysis that could warrant revisiting invalidity over IBM200 and the TDS for a fourth time. The express language of Kuhno affirms that protocols relating to the "format and configuration of the RFID Printer Data ...are [] *not discussed herein*." Ex. 1008 at 6:66-7:3; 19:14-20. The only disclosure relevant to encoding formats merely identify the standard EPC encoding schemes presented in the TDS. Ex. 1008 at 1:23-27; 15:65-16:6; 23:41-44; Fig. 31F. Any teaching from Kuhno regarding bitwise data structures implemented within an

encoded RFID tag are necessarily and completely duplicative of the teachings of the TDS and institution is unnecessary based on this redundant reference.

The limited extent of the Kuhno reference was confirmed at trial by the named inventor of the Kuhno patent, Mr. Michael Kuhno himself, along with another prominent expert in the RFID field. Ex. 2002 at 408:13-409:1; 448:4-16 (Kuhno testifies that his patent “does not explicitly speak to data structures” or mention “most significant bits”); *see, also* Ex. 2003 at 453:24-454:6; 715:13-20; 1058:2-11; 1059:3-22; 1062:1-4; and, 1065:17-25. Notably, the outcome at trial was a finding of validity of the ‘967 Patent claims over the teachings of Kuhno, *RFID for Dummies*, and the TDS, among other prior art raised to purportedly explain background information known to a POSITA in early 2008. Ex. 2004.

Nonetheless, SML presses forward with this latest serial and redundant challenge, asking the Board to consider the disclosures of these references, for a third or even a fourth time. Given the consistent and unanimous findings that these references are insufficient to invalidate the ‘967 Patent, discretionary denial is the most efficient and proper outcome here.

However, should the Board elect to continue the serial review process and reach the merits of the Petition with regard to Ground 1, it will come to the same conclusion already unanimously reached by the many PTO examiners involved in prosecution and reexamination of the ‘967 Patent and the trial jury. Namely, the

Board will find that the prior art references relied upon under Ground 1 fails to teach, disclose, or suggest an RFID transponder (or tag) comprising the novel data structure required by limitations present in all claims of the '967 Patent.

Specifically, none of these references disclose or suggest, at least, that “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 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. 1001 at Claim 1; Ex. 1004 at 6; Ex. 2004 at 2-3. These requirements are present within the limitations of all claims of the '967 Patent, including within each of the independent claims of the '967 Patent at Limitations 1[e]-[f], 13[e]-[f], and 16[e]-[f], respectively. Practice of these limitations yields a data structure within the serial number memory space of an encoded RFID tag comprising a first limited sequence of pre-defined MSBs to which a second sequence of bits of lesser significance is appended to form one complete serial number instance.

IBM200 contemplates use of batch allocation of complete serial numbers as *discrete ranges and subranges of values* for use at different encoding facilities, production lines, and/or devices for ensuring uniqueness of encoded data. Engels Tr.

Testimony at 763:9-764:3, 765:1-7, 1040:21-1041:23, 1044:1-1049:19. This type of serialization merely uses the entire serial number memory space to store a single identifier value comprising the next available decimal number within an allocated range. This practice does not result in binary encodings comprising a static MSB sequence followed by bits of lesser significance, as claimed in the '967 Patent.

SML points to alleged teachings found in Kuhno to demonstrate practice of the claimed data structure comprising MSBs. Pet. at 34-40, 50, 53. But Kuhno explicitly affirms that discussion of any particular RFID encoding scheme is beyond the scope of the invention disclosed therein and is omitted from its teachings. Ex. 1008 at 6:66-7:3; 19:14-20. Kuhno applies industry standard EPC formats, including the SGTIN and SSCC, that are disclosed in the TDS for encoding RFID tags. Indeed, these standard formats are the only selectable options provided to users by the software interfaces used to operate the Fast Tag Mobile system that is the subject of Kuhno. Ex. 1008 at Figs. 20A, 31F. These schemes are the subject matter of the TDS, which Dr. Engels and Michael Kuhno agree does not teach use of MSBs within the serial number space of an EPC as claimed. Ex. 2002 at 386:19-24; Ex. 2003 at 761:1-11; 1126:17-22; 1128:12-19.

SML simply ignores these aspects of Kuhno, as well as the many inconsistencies and illogical outcomes that result from application of SML's forced interpretations of Kuhno. SML fails to maintain any distinction between information

that is printed on a label rather than encoded into the memory of an RFID tag. Worse, SML thoroughly applies hindsight bias while refusing to interpret Kuhno in accordance with the express language used, going so far as to substitute “bits” in place of the word “digits” in order to manufacture otherwise nonexistent bases for alleging obviousness. These erroneous assertions underpinning SML’s invalidity contentions for each of Grounds 1A-C must be rejected.

Turning to the second invalidity Grounds presented, designated as Grounds 2A-C, the Petition is similarly defective. These Grounds assert the combination of Bowers with Tilson and the TDS. The Petition purports to rely on newly raised prior art under Ground 2, including Bowers and Tilson, to present new questions of validity and avoid the specter of discretionary denial.

In truth, however, Bowers is asserted only with respect to known elements of the claimed RFID tag, such as the physical components of the RFID tag and the concept of allocating serial number values to ensure uniqueness. These known elements are not the crux of the dispute on validity. Bowers is not alleged to disclose the claimed data structure comprising MSBs within Limitations 1[e]-[f].

The cited teachings of Tilson are alleged to show practice of the claimed data structure implementing MSBs within the serial number space. This allegation is the result of sleight of hand, however, as the Petition points to an encoding scheme comprising a manufacturer number and an identifier field whose stored data is used

as an identifier for the concrete component tagged. Pet. at 64; Ex. 1010 at 7:65-8.5, Fig. 8. Because Tilson uses the term “serial number” broadly to identify the entire encoding, the Petition alleges that “Tilson partitions the 96-bit serial number at the bit level” and thereby implements a data structure comprising MSBs within the serial number space. Pet. at 64. The data structure of Tilson schematically mirrors and is duplicative of the SSCC encoding type taught by the TDS, however, which unequivocally does not teach use of MSBs. Accordingly, no new arguments for invalidity are fairly raised under Ground 2A, nor is any prior art that discloses, teaches, or suggests practice of at least Limitations 1[e]-[f], 13[e]-[f], and 16[e]-[f]. The Petition is ripe for discretionary denial under §325(d) or denial on the merits for failure to demonstrate the requisite likelihood of success as to any challenged claim.

II. BACKGROUND

A. The ‘967 Patent

The application issuing as the ‘967 Patent was filed on February 12, 2016, and issued on October 24, 2017. Ex. 1001 at face. The ‘967 Patent claims priority to the filing date for Application Ser. No. 12/124,768, which was filed on May 21, 2008. Ex. 1001 at 1:4-21. During the Avery Litigation², the claims of the ‘967 Patent were

² *ADASA Inc. v. Avery Dennison Corporation*, Case No. 6:17-cv-01685-MK, District of Oregon, Eugene Division (“Avery Litigation”).

found to be entitled to claim of priority going back to at least the filing date of the '768 Application. Ex. 2005 at 6-16.

The '967 Patent is directed to “novel systems, devices, and methods for commissioning RFID transponders with unique object class instance numbers without requiring a real time connection to a serialization database.” Ex. 1001 at Abstract. Encoding systems and commissioned wireless radio frequency identification (RFID) transponders, or tags, are disclosed.

RFID tags are wireless devices that use electromagnetic or electrostatic coupling in the radio frequency portion of the electromagnetic spectrum for communication. Ex. 1001 at 1:50-53, 2:11-20. RFID tags are used “to identify and track objects by encoding data electronically in a compact label” that do not require “external, machine-or human-readable labels and can communicate the data they encode over a distance using radio-frequency transmission.” Ex. 1032 at 904 (citing Ex. 1001 at 1:32–53, 3:27-32, 6:28-59).

RFID tags comprise each of an antenna, an integrated circuit, and a substrate. Ex. 1001 at 1:40-45. These elements are combined to form an inlay. In commercial applications, the inlay may be incorporated into a label or sticker that is affixed to consumer goods for use in inventory management and item-level tracking. Ex. 1001 at 6:1-12; Ex. 1032 at 904 (citing Ex. 1001 at 1:40-53). In this setting, an RFID tag is encoded with a globally unique data sequence that is stored in the RFID tag

memory. This globally unique data sequence accommodates item-level identification of the item to which the RFID is affixed. Ex. 1001 at 1:32-34, 1:45-50, 2:21-22, 2:48-50.

Global uniqueness of the encoded data is critical for proper function of inventory management and item-level tracking using RFID. Ex. 1001 at 2:21-25, 2:48-50, 7:60-61; Ex. 1032 at 904 (“Regardless of the specific categories included, to ensure accurate tracking, it is critical that the data uniquely identify the tagged object.”). Accordingly, industry tag data standards have been developed to standardize characteristics of encoded data sequences used for RFID tagging, including the EPC Tag Data Standard cited by the ‘967 Patent. Ex. 1032 at 904 (citing Ex. 1001 at 9:7-15). This standard relates to the Electronic Product Code (EPC) that was first developed by engineers at MIT’s Auto-ID Center, including Dr. Dan Engels. Ex. 2006 at 65-66.

An EPC comprises object class information identifying the brand owner or manufacturer associated with the consumer goods being tagged. Ex. 1032 at 904 (citing Ex. 1001 at 9:7-15). This information is referred to as a “company prefix” within the TDS. Ex. 2006 at 12. Unique company prefix data is issued to requesting brand owners by GS1, which operates as a central issuing authority for GS1 members that ensures each company prefix is unique. Ex. 1001 at 7:61-66; Ex. 2006 at 12; Ex. 1032 at 904 (citing Ex. 1001 at 7:61-8:3).

The Serialized Global Trade Identification Number (SGTIN) is a specific EPC data structure. Ex. 1001 at 9:7-15. Object class information within a SGTIN additionally includes an item reference identifier to identify the type of goods being tagged. Ex. 2006 at 12. This combination of object class information is further combined with a third identifier value, a unique serial number instance, to specifically identify the item being tagged. Accordingly, by implementing this combination of object class information identifying the manufacturer and item along with a unique serial number, as the EPC data structure does, a globally unique identifier can be derived and allocated for every individual item tagged. Ex. 1001 at 2:23-29, 7:65-8:3.

The '967 Patent describes the SGTIN structure as implementing "a set of hierarchies" under which data comprising aspects of an SGTIN is generated at different levels of issuing authority. *Id.* A first level of authority is GS1, which issues object class information to its members. The member brand owners represent a second level of authority that manages serialization for EPCs throughout its various facilities performing RFID tagging operations. Ex. 1001 at 2:23-29, 7:65-8:3; Ex. 2006 at 12.

The '967 Patent recognized that ensuring global uniqueness of encoded RFID tag data remained a difficult task, even when implementing a standardized, hierarchical data structure like that of the SGTIN type EPC. Ex. 1001 at 2:21-32,

2:48-50, 3:13-23; Ex. 1032 at 904. Difficulties arose in the context of management of serialization for EPC encodings to avoid duplicate use of any serial number instance. These difficulties are greatly exacerbated as large manufacturers implemented item-level RFID tagging, which could be proceeding simultaneously at multiple remote production facilities and product lines. To ensure global uniqueness, prior art systems adhered to strict reliance on a central database issuing authority for serialization management that maintained continuous control of EPC allocation across all RFID tagging operations. Ex. 1032 at 904 (citing Ex. 1001 at 2:23-32). For this architecture to function properly, each RFID tag encoding location or device was “generally require[d] to maintain a continuous network connection with the database so that new serial numbers can be retrieved when an RFID tag is commissioned.” Ex. 1032 at 904 (citing Ex. 1001 at 3:27–4:4). The ’967 Patent explains that such “[c]ontinuous connection is not always possible” both within large manufacturing facilities and for facilities located in remote areas of the world. Ex. 1032 at 904 (citing Ex. 1001 at 3:64–4:4). Further, even when it is, the connection may be plagued by network delays that slow down the commissioning process.” *Id.*

The ‘967 Patent discloses and claims improved system for ensuring global uniqueness across a brand owner’s RFID operations to overcome this and other shortcomings of the prior art. It discloses systems “that enable point-of-use and on-demand commissioning of RFID transponder-equipped wireless sensors” which

solved problems faced in the industry while accommodating improvements in RFID tag commissioning efficiency. Ex. 1001 at 1:27-31; Ex. 1032 at 904 (“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.”) (citing Ex. 1001 at 3:27–35, 3:64–67).

The solutions disclosed address the problem from the perspective of the individual RFID tag. For example, systems and methods implementing “quasi-autonomous RFID encoding authority” are disclosed as advantageously circumventing a need for “continuous wireless connection to a host database.” Ex. 1001 at 7:57-59, 8:4-39; Ex. 1032 at 904. Certain embodiments are disclosed which involve “an external number issuance authority [that] allocates to the encoder blocks of numbers for specific object classes.” Ex. 1001 at 8:4-7. Among these, embodiments in which “large pre-authorized blocks of serial numbers are made available to [an] encoder” are identified as preferred. Ex. 1001 at 8:4-7. The ’967 Patent discloses a specific manner for implementing preferred large pre-authorized blocks implementing the novel use of “most significant bits” for defining allocated blocks, stating:

A preferred method of providing pre-authorized blocks of object class serial numbers is to ***subdivide the entire object class serial number space into sectors that are defined by a limited number of MSB's (Most Significant Bits)*** of the serial number field...

Again using the SGTIN-96 as an example, there are a total of 38 bits used to define the entire serial number space which contains 2^{38} unique numbers. For example ***the upper 14 bits could be designated as the most significant bits for a particular embodiment. In that case the object class serial number space would be comprised of 16,384 sectors.*** Since in this example there are 14 most significant bits within a 38 bit serial number field, there must be 38 minus 14 bits of lesser significance, which equals 24 bits. Therefore, the lower 24 bits represent 16,777,216 unique serial number values. ***Once a sector is allocated to a lower level within an authority hierarchy, it is referred to as a block.*** Each allocated block of serial numbers represents authority for encoding objects of an object class that can either be used by an encoder for encoding transponders, or allocated to a lower level in the authority hierarchy.

In a preferred embodiment serial number block sizes are sufficient to operate encoder 175 or 30 for extended periods of time without any further external authorization steps.

...

Block allocations are preferably assigned with reference to how many encoders 175 or 30 are authorized to operate within the facilities of the owner of certain object class numbers.” Ex. 1001 at 8:11-51 (emphasis added); Ex. 1032 at 904.

This stood apart from prior art systems which employed “batch mode” serialization under which a central encoding authority allocated to facilities, lines, or encoding devices large, decimal ranges of serial numbers comprising the next

hundred, or thousand, or million unused serial numbers, for example. This methodology was done without any consideration of the binary representation of those values when encoded. Ex. 2003 at 955:9-956:1, 958:11-959:3. Conversely, the solution taught by the '967 Patent was entirely focused on the binary representation within the unique serial number space of an EPC and the physical memory location within an RFID tag.

Use of MSBs is a hardware-based approach that uses the available physical memory of the RFID tag to define large pre-authorized blocks for delegating encoding authority and permit quasi-autonomous encoding operation. Ex. 1032 at 904. In view of the foregoing disclosure, the Federal Circuit acknowledged:

“Critically, once a block is allocated to an encoder, there is no need to reconnect to a central database until the unique numbers within the block have been exhausted. *See id.* at 8:37–51. Thus, in the previous example, 2^{24} , or approximately 16.8 million, RFID tags could be commissioned before reconnection to a central database is required. And by eliminating the need for a continuous connection to the database, the attendant delays are reduced and the commissioning process is improved. ***The '967 patent refers to such a system, where only intermittent connection to a central database is necessary, as quasi-autonomous encoding authority.***” Ex. 1032 at 904 (citing Ex. 1001 at 8:4–7) (emphasis added).

The '967 Patent additionally presents an exemplary serial number allocation system in which the entire object class serial number space is subdivided into sectors, each of which being defined by a sequence of MSBs in the serial number space. Ex.

1001 at 33:14-24. A block of serial numbers of a desired size (*i.e.*, bit length) is generated and allocated to an encoder or other lower-level authority upon request for use to perform tag encoding operations. Ex. 1001 at 33:34-58.

In the district court proceedings, testimony was received from Dr. Dan Engels, a pioneer in RFID technology who is credited with developing the electronic product code (EPC) as part of his work with the Auto-ID Center at M.I.T. Ex. 2006 at 65. Dr. Engels testified that the inventions claimed in the '967 Patent ran counter to the guidance from industry leaders and standards organizations, and represented a novel approach to solving serialization-related problems that were first encountered in real-world settings in the years after the priority date of the '967 Patent. Ex. 2003 at 956:6-12 ("I thought it was a very novel approach to solving the problem."), 854:15-20, 955:14-956:1, 968:9-969:7, 993:11-994:2, 994:20-995:22, and 996:13-997:20. Dr. Engels also explained the common serialization practices applied in the prior art in the context of describing the teachings of *RFID4D*, which includes a chapter on serialization authored by Dr. Engels. Ex. 2007 at vi-vii (acknowledging Dr. Engels as contributing author), 44 ("Birth of a revolution: The MIT Auto-ID Laboratory" discussion). Dr. Engels explained that serialization via batch allocation of large, discrete ranges of decimal values does not practice a data structure comprising most significant bits (MSBs) within the serial number space as claimed in the '967 Patent.

Ex. 2003 at 764:21-765:7, 856:14-23, 994:20-995:22, 1040:21-1041:23, 1049:22-1050:19.

B. Challenged Claims

Petitioners challenge the validity of all claims of the '967 Patent (claims 1-20), to include independent claims 1, 13, 16, and each of their respective dependent claims. Independent Claim 1 is presented below, and it is representative of the limitations present within each of the claims of the '967 Patent.

1. An RFID transponder comprising:
 - a substrate;
 - an antenna structure formed on the substrate; and
 - an RFID integrated circuit chip which is electrically coupled to the antenna structure;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;
 - 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
 - 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. 1001 at Claim 1 (emphasis added).

Independent Claims 13 and 16 comprise limitations that mirror those of Claim 1, along with certain additional requirements on the amount of memory afforded for

each of the object class information space (at least 50 bits), the unique serial number space (at least 38 bits), and the limited number of most significant bits (at least 3 bits). Importantly, the emphasized limitations of Claim 1, shown above, are present within Claims 13 and 16 in substantially identical form. Accordingly, all distinguishing arguments and evidence presented herein with respect to Claim 1 are equally applicable and compelling to show validity of Claims 13, 16, and each dependent claim depending therefrom over the asserted art.

The Federal Circuit characterized the inventions claimed in the '967 Patent as being "directed to a specific, hardware-based RFID serial number data structure designed to enable technological improvements to the commissioning process." Ex. 1032 at 908. The '967 Patent claims are "focuse[d] on the data structure of the serial number space." Ex. 1032 at 910. The Federal Circuit opinion highlighted the importance of the limitations directed to use of MSBs within the claims:

"In essence, the claimed MSBs function as an additional data field within the serial number space that uniquely identifies the allocated block from which it came.

This one-to-one correspondence has important technological consequences. Because the predefined sequence of MSBs in a given serial number uniquely corresponds to an allocated block, and vice versa, serial numbers drawn from different blocks are guaranteed to be unique. It is *this central feature of the claim* that enables improvements in the commissioning process. Ex. 1032 at 909 (emphasis added).

C. Prior Proceedings Relating to Validity of the '967 Patent

1. Original Prosecution

The '967 Patent issued from U.S. Patent Application Ser. No. 15/042,993, filed on February 12, 2016 as a continuation application claiming priority through string of earlier filed parent applications. Ex. 1001 at face. The originally examined claims were subject to a double-patenting rejection in view of the issued claims in parent Patent No. 9,272,805, but were otherwise found allowable in the first Office Action dated February 14, 2017. Ex. 1003 at 147-149.

One of the parent applications to the '967 Patent is Appl. Ser. No. 13/526,520, which issued as U.S. Patent No. 9,272,805 B2 on March 1, 2016. Like the '967 Patent, the '805 Patent presents claims directed to use of a hardware-based data structure within the unique serial number space of an encoded RFID tag. Ex. 2008 at Claims. Following issuance of the '805 Patent, and during prosecution of the application that would later issue as the '967 Patent, PO initiated a lawsuit against Avery Denison Corp. ("ADC") alleging infringement of the '805 Patent on February 21, 2017. In defense, ADC alleged that certain teachings of the EPC Tag Data Standard Version 1.1, Rev. 1.23 ("TDS-2004") and within the publication *RFID for Dummies (RFID4D*, Ex. 1013) invalidated claims in the '805 Patent. Ex. 2009 at 1-2, 4, 8-12.

Despite issuance of a Notice of Allowance on June 7, 2017, during the prosecution of the application issuing as the '967 Patent, PO elected not to pay the issue fee and instead amended the claims of the application while concurrently submitting an IDS identifying only two references –TDS-2004 and the portions of *RFID4D* referenced by ADC in its invalidity defense. Ex. 1003 at 233-238, 239-41.

These references were considered by the Examiner in connection with examining the newly amended claims, which were subsequently found allowable over the disclosures of the TDS-2004, *RFID4D*, and all other known prior art. Ex. 1003 at 262, 272-277, 287-294.

2. *Ex Parte* Reexamination

Following issuance of the '967 Patent, PO filed a complaint to commence the ADC Litigation alleging patent infringement, prompting Avery Denison Corp. to petition for *ex parte* reexamination of all claims of the '967 Patent. Ex. 1004 at 1, 4. The reexam proceedings were purportedly addressed to a “new question of patentability” couched in assertions of obviousness in view of the teachings of prior art patents and publications that were not considered during original prosecution, including IBM200, the TDS, U.S. Patent No. 8,373,545 (“Traub”), and Patent Appl. Publication 2007/0040684 (“‘684 Publ.”). Ex. 1004 at 4. Among the asserted grounds for invalidity considered were obviousness grounds based on the combinations of IBM200, the TDS, and the '684 Publ. Ex. 1004 at 4, 17, 28-29.

Combinations of Traub with the TDS and '684 Publ. were also considered. Ex. 1004 at 4, 23, 28-29.

The reexam asserted portions of the disclosures from IBM200 to purportedly teach practice of limitations within the '967 Patent claims relating to the data structure for the encoding of the claimed RFID tag (designated as Limitations 1[e]-[g], 13[d]-[f], and 16[d]-[f]). Ex. 1004 at 29-32, 35, 41-44. Many of these same excerpts from IBM200 are now cited in the Petition with respect to these same limitations. Pet. at 33-35, 39. Just as in the Petition, the citing disclosures from IBM200 were presented in the reexam in concert with disclosures from the '684 Publ. and Traub discussing the use of standard EPC formatted encoding schemes. Ex. 1004 at 30, 35; Pet. at 36-37. Regarding TDS, the reexam focused on its disclosure detailing the data format for an SGTIN-96 encoding. Ex. 1004 at 35-37. This same information is directly referenced in the specification of the '967 Patent. Ex. 1001 at 1:32-39. Additionally, the disclosure of TDS relied upon is substantially identical to that of Version 1.1, Rev. 1.23 of the TDS considered by the USPTO during original prosecution.

Following an initial rejection, clarifying and non-substantive amendments were made within independent claims 1, 13, and 16. Ex. 1004 at 163-182. Thereafter, PO persuasively demonstrated that all challenged claims remained patentably distinct from the prior art raised in the reexam and all other known prior art, leading

to issuance of a reexamination certification. Ex. 1004 at 193-194. The three-examiner panel for the reexam affirmed the validity of all claims over all “prior art of record,” including IBM200, TDS, Traub, and all other art known to the USPTO, including *RFID4D*, among other references. Ex. 1004 at 193-194. The basis for validity was that no art of record in the reexamination or from the prior prosecution discloses or fairly teaches limitations addressed to the data structure of the encoding within the claimed RFID tag, found at Limitations 1[e]-[f], 13[e]-[f], and 16[e]-[f], respectively. *Id.*

3. Prosecution of the Continuation Application 15/707,828

Prior to issuance of the ‘967 Patent, PO filed a continuation application, designated as Application Ser. No. 15/707,828 (“‘828 Appl.”). Ex. 2001 at 174-310. The ‘828 Appl. included claims to an RFID transponder comprising virtually identical limitations to the same data structure claimed in the ‘967 Patent claims:

wherein the RFID circuit is encoded with a unique object number, the unique object number comprising an object class information space and a unique serial number space, and

wherein the unique serial number space is encoded with one serial number instance from an allocated block of serial numbers, the one serial number instance comprising a limited number of most significant bits corresponding to the allocated block and remaining bits of lesser significance.

Ex. 2001 at 177-179

The ‘828 Appl. claims were rejected for double patenting with specific reference to the issued claims of the ‘967 Patent. Ex. 2001 at 159-160. The ‘828

Appl. claims were also initially rejected for purportedly being anticipated by IBM200 and for purportedly being obvious in view of various combinations of IBM200 and the '684 Publ., U.S. Patent No. 8,266,027 ("Moritz"), and Patent Appl. Pub. 2006/0016866 ("Oakes"). Ex. 2001 at 106-117.

IBM200 was asserted to teach a data structure comprising MSBs within the unique serial number space based upon its teaching assignment of large, discrete ranges consisting of one million decimal values to different manufacturers to ensure unique serialization. Ex. 2001 at 109-110. Moritz was relied on for its disclosure of the standard SGTIN-96 encoding scheme, as detailed in the TDS, with respect to dependent claims further defining the data structure claimed. Ex. 2001 at 114-115.

These rejections were subsequently overcome and the '828 Appl. issued as U.S. Pat. No. 10,552,720. The Notice of Allowance explained that none of IBM200 (identified as "Rowe") or the other art of record, whether alone or in combination, disclose or fairly suggest an encoded RFID tag comprising the data structure required by the issued claims. Ex. 2001 at 14-15. Claim 1 of the '720 Patent recites, in part:

wherein the RFID circuit is encoded with a unique object number, the unique object number comprising an object class information space and a unique serial number space, and
wherein the unique serial number space is encoded with one serial number instance from an allocated block

of serial numbers, each serial number of the allocated block comprising a same limited number of most significant bits, wherein the one serial number instance comprises the same limited number of most significant bits uniquely corresponding to the same limited number of most significant bits of the allocated block of serial numbers and remaining bits of lesser significance.

Ex. 2001 at 44

Notably, the issued claims include substantially identical limitations relating to the data structure within the encoded RFID tag as are present in the claims of the '967 Patent.

D. Petitioners' Grounds of Challenge

The Petition presents the following prior art combinations as the respective grounds for invalidating claims of the '967 Patent:

Ground	Claims	Basis	Reference(s)³
1A	1, 6-8, 10-12, and 20	Obviousness	IBM200 and Kuhno
1B	2-5, 13-19	Obviousness	IBM200 and Kuhno and TDS
1C	9	Obviousness	IBM200 and Kuhno and Nitzan ⁴

³ Throughout this Preliminary Response, for ease of understanding, PO will refer to the prior art reference by the name indicated above. The prior art references are described below in conjunction with the arguments presented in this Preliminary Response.

⁴ Nitzan and Forster are not specifically addressed in this Response. PO contends that the prior art combinations of Grounds 1A, 1B and 2A each fail to establish a *prima facie* showing of obviousness as to any claim, to include all independent claims of the '967 Patent. Accordingly, the remaining Grounds addressed to further dependent claims need not be addressed. PO reserves the right to present evidence

2A	1-8, 11-20	Obviousness	Bowers and Tilson and TDS
2B	9	Obviousness	Bowers and Tilson and TDS and Nitzan
2C	10	Obviousness	Bowers and Tilson and TDS and Forster

PO does not purport to present all of its rebuttal arguments herein and reserves its right to present further argument and evidence related to these prior art references, the combinations thereof, and the content of the Petition later in this proceeding, consistent with the Board's Rules and practice. No waiver is intended by any argument withheld by PO at this stage of the proceeding.

III. DISCRETIONARY DENIAL

By statute, the Board is authorized to exercise discretion to deny institution where the Petition presents "the same or substantially the same prior art or arguments previously were presented to the Office." 35 U.S.C. §325(d). The Board applies the two-part test set forth in *Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GmbH* to determine if discretionary denial under 325(d) is appropriate. 2020 Pat. App. LEXIS 1476, *7; IPR2019-01469, Paper 6, 8 (Feb. 13, 2020) (precedential). Discretionary denial is also permissible under 35 U.S.C. §314(a) in consideration of concurrent district court proceedings in which validity of the

and argument addressed to all prior art and invalidity grounds asserted if further Response to the Petition becomes necessary.

challenged patent is at issue and when the challenged patent has been subject to serial or parallel IPR proceedings.

The *Advanced Bionics* test first considers whether the same or substantially the same art or argument were previously presented to the USPTO. *Id.* If so, discretionary denial under 325(d) is appropriate unless the Petition demonstrates that the USPTO committed error material to its determination(s) of patentability when previously presented with the repeated art and/or argument raised in the Petition. *Id.* This requires the Petition to identify a specific error in the analysis of the previously presented art.

Here, the Petition relies on much of the same prior art references that have been submitted to the USPTO during prosecution and again in an *ex parte* reexamination. In both instances, the claims of the '967 Patent were found patentable over the teachings present in each of these references. This same art was also considered during prosecution of a continuation application, which ultimately proceeded to issuance.

The inclusion of Kuhno among the references asserted as Grounds 1A-C does not provide immunity to discretionary denial under *Adv. Bionics*. The teachings of Kuhno are duplicative of art previously considered, to include at least Traub and the TDS. Traub was asserted as a primary reference purportedly teaching the data structure comprising MSBs claimed by the '967 Patent in the reexamination

proceedings. Ex. 1004 at 4, 19-23, 30-36. The petition cited to Traub's use of EPC encoding schemes along with disclosure regarding an "EPC server" that "can use business rules to assign the EPC code blocks [that] can be assigned so as to indicate business information such as lot number and/or location." Further, the petition cited to Traub's disclosure that "the EPC codes can be created based on business policies that can be used to indicate business information in the EPC code." Ex. 1004 at 30-36.

These allegations regarding Traub's purported teaching of the claimed data structure mirror those now presented by SML regarding Kuhno to allege teaching of the claimed data structure. SML argues that "Kuhno teaches subdividing the serial number space (referred to as the "carton serial number") before encoding, such that "the carton serial number may include several components desired, for example including the Julian calendar date, the production line number and the carton number" despite not being able to point to any direct disclosure in Kuhno detailing the data format within an encoded RFID tag. Pet. at 35. Likewise, Traub merely made passing remarks about the use of business rules and assigning EPC codes "to indicate business information in the EPC code" such as a lot number or location identifier without any explanation of how this would be done.

Because both references omit express disclosure directly detailing the format applied to RFID tags encoded thereby, each boils down to invalidity contentions that

relies heavily on the alleged understanding of a POSITA to fill in the glaring gaps within the asserted references. This was found insufficient during the reexamination with respect to Traub, even when presented in combination with the TDS. Ex. 1004 at 193. The jury in the Avery Litigation also rejected invalidity challenges at trial based upon the non-existence of any disclosure in Kuhno detailing the data structure within an encoded RFID tag, even after presentation of argument about the knowledge of a POSITA that would include the teachings of the TDS and *RFID4D*, among others.

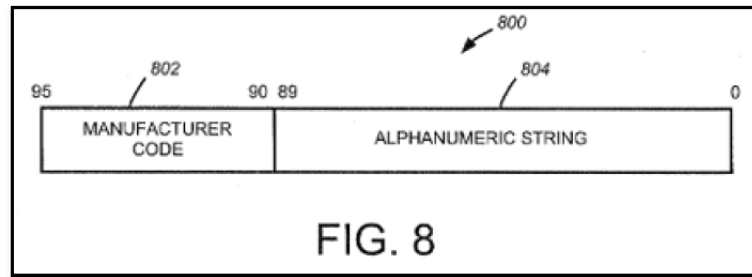
The Board should exercise its discretion to deny institution, now, in recognition that SML merely uses Kuhno as a Trojan Horse to permit its expert to baldly assert invalidity arguments regarding the purported understanding of a POSITA in view of unasserted art to provide what is missing in Kuhno. *See*, Ex. 1005 at ¶¶177, 181 (expressly relying on teachings from unasserted and non-analogous art as alleged evidence that a POSITA would read omitted encoding scheme disclosure into the teachings of Kuhno). Institution of SML's Petition would unnecessarily require the Board to address invalidity arguments already presented and rejected twice before.

Discretionary denial is also warranted as to Grounds 2A-C. Eighteen of the '967 Patent's twenty claims are challenged under Ground 2A which asserts the combination of Bowers, Tilson, and TDS. Among these, versions of the TDS have

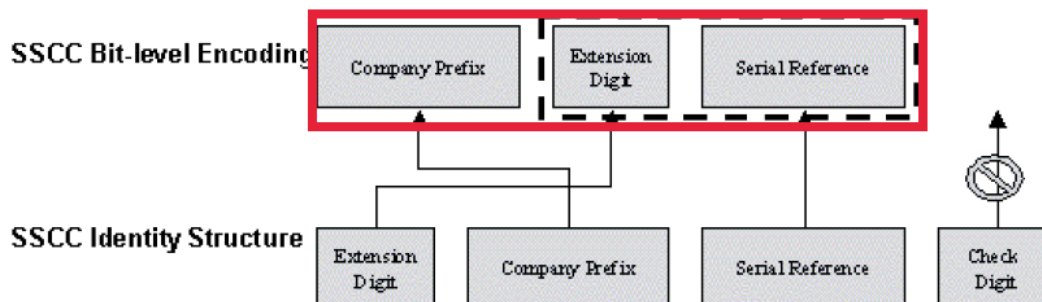
been considered in every prior Office proceeding relating to the '967 Patent as well as during the Avery Litigation. Neither Tilson nor Bowers were previously raised. Regardless, their inclusion should not render Ground 2 immune from discretionary denial under *Adv. Bionics*.

Bowers is asserted in connection with only limitations regarding subject matter well known in the prior art, including the physical components of an RFID tag and encoding an RFID tag with object class information and a serial number. Pet. at 60-61. Regarding the Limitations addressed to the data structure comprising MSBs, Bowers is alleged to generally “disclose[] allocating a block of serial numbers and the importance of avoiding duplication across entities.” Pet. at 63, 65, 67. This importance of avoiding duplicates is well known, however, and taught by the TDS. Ex. 1011 at 11-13. It appears the inclusion of Bowers is mere pretext aimed to stave off discretionary denial as it is not presented in a manner that suggests it forms the basis for any new argument for invalidity.

Tilson likewise presents disclosure that is duplicative of previously considered art. The Petition alleges that Tilson “discloses a unique serial number space being assigned a limited number of MSBs identifying an entity” in view of this description of its Fig. 8, “the serial number has a manufacturer code portion 802 and an alphabetic, numeric or alphanumeric portion 804, which together form the unique serial number for the respective concrete component.”



The Petition seeks to capitalize on the broad use of the generic term “serial number” in Tilson to describe the entirety of the encoded data string. In truth, however, the serialized portion of encoded data used to uniquely identify the tagged object is the portion identified as 804. The “manufacturer code” within portion 802 is fairly understood to fall within the ambit of a company prefix disclosed by the TDS and used in several of the EPC encoding schemes it presents. Ex. 1011 at 11 (“EPC Tag Encodings carry an explicit division between the Company Prefix and the remaining digits, with each individually encoded into binary.”), 13. Tilson is asserted for disclosure of a data structure having two fields. It appears schematically identical and therefore cumulative of the SSCC encoding scheme taught in the TDS:



Ex. 1011 at 14 (annotation added)

Under *Adv. Bionics*, Ground 2 should be deemed ripe for discretionary denial because, at bottom, all citations to Bowers and Tilson are made either in connection with showing satisfaction of limitations drawn to non-controversial, known physical components comprising an RFID tag, or to merely present disclosure that is wholly redundant of the disclosure of the TDS, which has been considered in all prior Office proceedings discussed herein.

The Petition provides no argument addressed to step two of *Adv. Bionics* to identify any error in the prior consideration of the art and argument re-raised in the Petition, let alone material error. This is particularly telling given the consistent rulings and findings that have determined the claims of the '967 Patent to be valid and enforceable. Discretionary denial under *Adv. Bionics* is appropriate and no further inquiry is necessary.

IV. CLAIM CONSTRUCTION

Claim terms are “generally given their ordinary and customary meaning” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” 37 CFR § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (*en banc*). In interpreting the meaning of words in a claim, intrinsic evidence of record including the claims, the specification, and the prosecution history are considered. *Phillips* at 1312-17. Claims are “read in view of the specification, of which they are a part ... [but]

particular embodiments and examples appearing in the specification will not generally be read into the claims.” *Id.* at 1314-15, 1323. “[T]he Board’s construction ‘cannot be divorced from the specification and the record evidence,’ and ‘must be consistent with the one that those skilled in the art would reach.’” *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) (internal citations omitted). A construction that is “unreasonably broad” and which does not “reasonably reflect the plain language and disclosure” will not pass muster. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010).

If a patentee gives a term a different meaning than would otherwise be the customary meaning in the field, however, then that meaning applies. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002); *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). *See also Digital-Vending Servs. Int'l, LLC v. Univ. of Phoenix, Inc.*, 672 F.3d 1270, 1280 (Fed. Cir. 2012). Further, when the patentee distinguishes an invention over the prior art in an unmistakable disavowal of features of the prior art within the specification, the claim is interpreted more narrowly than it otherwise would to give effect to the patentee’s explicit intent to disavow a broader claim scope. *Phillips*, 415 F.3d at 1316.

Several of the claims at issue in this proceeding were previously litigated through a first jury trial, appeal to the Federal Circuit, and a remand jury trial. In connection therewith, constructions for several claim terms were entered by the

District Court which were applied in both jury trials and by the Federal Circuit on appeal. Ex. 1034; Ex. 1032 at 9, 11 15 (at fn1). PO applies the claim language in this Preliminary Response in accordance with the following constructions entered during the Avery Litigation:

1. “object class information space” shall mean “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;”
2. “unique serial number space” shall mean “data field within the memory of the RFID integrated circuit for information identifying a unique serial number;”
3. “being assigned a limited number of most significant bits” shall mean “includes a limited, predefined sequence at the leading end;”
4. “remaining bits of lesser significance” shall mean “the remaining lower order bits at the trailing end;”
5. “is encoded with one serial number instance” shall mean “has stored within it one serial number instance;”
6. “an allocated block of serial numbers” shall mean “a pre-authorized range of serial numbers;” and,
7. “uniquely corresponding” shall be applied in accordance with its plain and ordinary meaning.

V. DISCUSSION OF THE ALLEGED PRIOR ART

A. EPCglobal Tag Data Standard, Version 1.3 (“TDS,” Ex. 1011)

The Tag Data Standards version cited by the Petition is the “Ratified Specification named Tag Data Standards Version 1.3” that was ratified by EPCglobal on March 8, 2006. Ex. 1011 at 3. It presents industry adopted standards for “Gen 2” RFID tags that “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). Ex. 1011 at 3. TDS Version 1.3 was preceded by Version 1.1, which similarly defines EPC Tag Encodings. Ex. 1011 at 4.

“The Electronic Product Code (EPC) is an identification scheme for universally identifying physical objects via Radio Frequency Identification (RFID) tags and other means.” Ex. 1011 at 8. A unique EPC is encoded into the memory of an RFID tag for use to “uniquely identif[y] an individual object” to which the RFID tag is affixed. Ex. 1011 at 8. The TDS discloses several EPC encoding schemes, including, among others, the Serialized Global Trade Item Number (SGTIN) and Serial Shipping Container Code (SSCC). Ex. 1011 at 8.

For each encoding scheme, the TDS sets for the required data fields, their respective memory locations relative to one another and within the memory of an RFID tag, and “specifies what limits it imposes on the value that may appear in any given encoded field.” Ex. 1011 at 10. For example, the TDS expressly defines the

fields comprising an SGTIN-96 encoding, the memory locations within an RFID tag allocated to each field, and sets forth a maximum permissible value for each identifier field as a decimal integer value:

688 **3.5.1 SGTIN-96**

689 In addition to a Header, the SGTIN-96 is composed of five fields: the *Filter Value*, *Partition*,
690 *Company Prefix*, *Item Reference*, and *Serial Number*, as shown in Table 4.

	Header	Filter Value	Partition	Company Prefix	Item Reference	Serial Number
SGTIN-96	8	3	3	20-40	24-4	38
	0011 0000 (Binary value)	(Refer to Table 5 for values)	(Refer to Table 6 for values)	999,999 – 999,999,999,999 (Max. decimal range*)	9,999,999 – 9 (Max. decimal range*)	274,877,906,943 (Max. decimal value)

Ex. 1011 at 25 (annotated)

The EPC data is not all that is stored within the memory of an encoded Gen 2 RFID tag. Additional data indicating certain control and formatting information needed by an RFID reader to correctly read and decode the RFID tag data is also stored in the tag memory. The EPC bit sequence is stored among this other information at specified memory locations, as shown:

The following figure depicts the complete contents of the EPC bank of a Gen 2 Tag, including the EPC and the surrounding control information, when an EPC is encoded into the EPC bank:

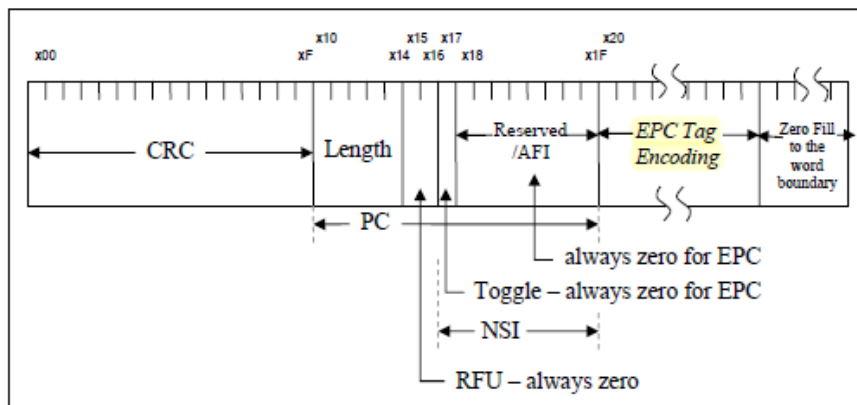


Figure I. Complete contents of EPC memory bank of a Gen 2 Tag.

Ex. 1011 at 20-22, Figure I (annotated)

For an SGTIN-type EPC, a portion of the EPC data consists of a unique “Company Prefix” identifier that is assigned by GS1 to a “managing entity” for its use to generate EPCs for item-level RFID tagging operations. Ex. 1011 at 12. The Company Prefix is followed by an “Item Reference” number – an identifier maintained by the managing entity and uniquely associated to a particular product type. Ex. 1011 at 12. The combination of these two identifiers comprises a Global Trade Identification Number (GTIN) that operates to “identif[y] a particular class of object, such as a particular kind of product or SKU.” Ex. 1011 at 12.

“To create a unique identifier for individual objects, the GTIN is augmented with a serial number, which the managing entity is responsible for assigning uniquely to individual object classes. The combination of GTIN and a unique serial number is called a Serialized GTIN (SGTIN).” Ex. 1011 at 12. The encoding

schemes place restrictions on the data within the various fields of an EPC. Data for each field must comprise a non-negative integer value that fits within the memory allocated for the respective field. Ex. 1011 at 23. TDS provides maximum decimal values within the tables setting forth each encoding scheme, as shown above in the excerpted SGTIN-96 table.

TDS teaches encoding procedures for populating the fields comprising an EPC. Ex. 1011 at 27-28. Those procedures teach that serial number data must comprise only digits and that the string of digits be treated as a single value for encoding. Ex. 1011 at 28 (“when the Serial Number is provided as an EAN.UCC-128 Application Identifier 21 consisting of characters $s_1s_2\dots s_K$, construct the Serial Number by concatenating digits $s_1s_2\dots s_K$ ”; and, “leading zeros are not permitted”).

For all encoding schemes, TDS teaches that the data string(s) for each field comprising an EPC is/are concatenated and considered as a single decimal integer. Ex. 1011 at 28, 30-31, 34, 38, 41, 44-45, 47, 50 (steps 2 and 3 of “Encoding Procedure”). These single decimal integer values are appended to one another to form a complete EPC. When written to an RFID tag, each of the decimal integer values is separately encoded into its assigned memory locations (i.e., bit spaces) within the memory of an RFID tag. Id. (final step of “Encoding Procedure”).

B. U.S. Patent No. 7,827,200 (“IBM200,” Ex. 1007)

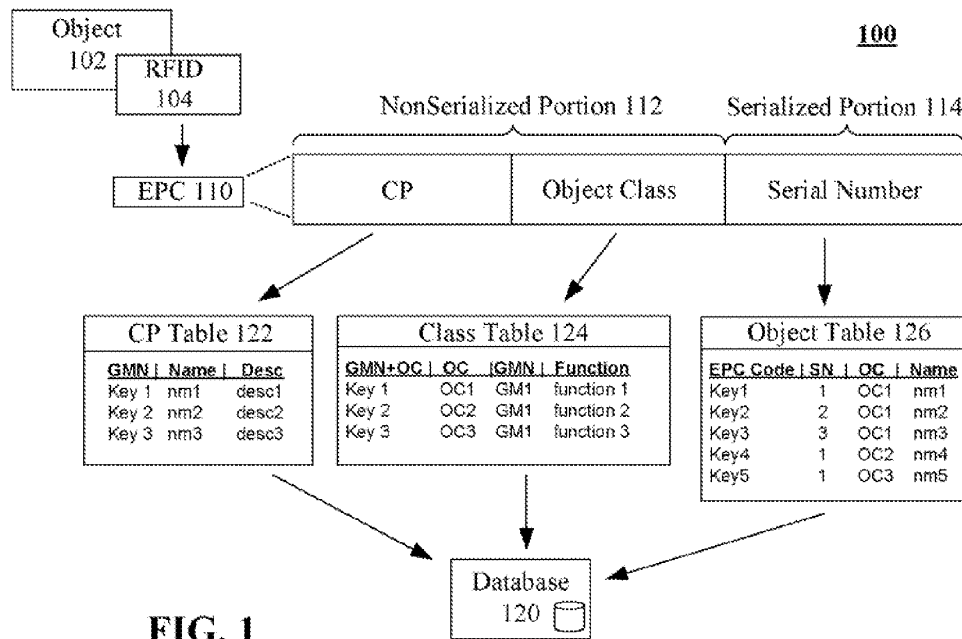
IBM200 is addressed to management of serialization in the context of generating EPCs compliant with the standard formats set forth in the TDS. Ex. 1007 at Abstract; 1:8-10; 1:18-20 (“The format and contents of an EPC-compliant tag are governed by the EPCglobal Tag Data Specification (TDS).”); 1:52-55. IBM200 aims to provide a solution “to efficiently generate and manage unique serial number portions of EPC identifiers” that satisfies the TDS requirement that “each EPC identifier includes a serial number that is unique for each tagged object/location/entity or collection thereof.” Ex. 1007 at 1:34-36, 44-47.

“The EPC 110 is a simple, compact ‘license plate or identifier that uniquely identifies an associated object 102.” Ex. 1007 at 3:32-34. “The format and contents of an EEC-compliant tag is governed by the EPCglobal Tag Data Specification (TDS).” Ex. 1007 at 3:41-43.

According to the IBM200 system, serialization management is affected through use of a database to “use the non-serialized portion of an EPC to automatically generate the serialized portion of the EPC.” “Different sets of sequentially increasing (or sequentially decreasing) serial numbers (that are assigned to the associated unique nonserialized portions of the EPCs) can be associated with different nonserialized values.” Ex. 1007 at 1:62-67; 6:11-14. Nonserialized portions

include identifiers that “can specify a manufacturer and an object classification” of the tagged item. Ex. 1007 at 3:65-66, 4:4-7.

This system is shown graphically at Fig. 1 of IBM200:



In use, the company prefix or object classification for an item is used as a “key” to tables stored in the database defining an available pool of serial number values corresponding to the nonserialized key. Ex. 1007 at 4:21-33; 5:7-22; 6:15-26.

Discrete subsets of available serial numbers may be allocated to separate manufacturing divisions producing the same items to prevent duplication. For example, “a first division can assign serial numbers in the range of one to a million and the second division can assign serial numbers in a range of three to four million.” Ex. 1007 at 15-18.

C. U.S. Patent No. 7,857,221 (“Kuhno,” Ex. 1008)

Kuhno is entitled “RFID Tag System” and discloses “[a] system for applying [RFID] tags” that provides users with “an indication of a predetermined position for placement of the [RFID] tag.” Ex. 1008 at Abstract. The specification of Kuhno is effectively a “user manual” for a label printer system developed by Accu-Sort in the early 2000s called Fast Tag Mobile. Cite. It presents fifty-six Figures showing various screen interfaces through which commands and information are input by a user to operate the Fast Tag system.

**VI. THE PETITION FAILS TO DEMONSTRATE A REASONABLE
LIKELIHOOD OF PREVAILING UNDER ANY ASSERTED
GROUND**

Institution is only permissible when the Petition establishes a “reasonable likelihood that the petitioner would prevail with respect to at least one of the claims challenged in the petition.” 35 U.S.C. § 314(a). SML fails to meet this threshold requirement because every prior art reference relied upon fails to disclose, teach, or suggest at least Limitations 1[e]-[f], 13[e]-[f], and 16[e]-[f], which are present within all claims of the ‘967 Patent. The Board should therefore deny institution. *Par Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1194 (Fed. Cir. 2014) (petitioner bears burden of proving every claim limitation is disclosed in the prior art); *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1164 (Fed. Cir. 2006) (consideration of any motivation to combine and reasonable expectation of success is only reached

“if all the elements of an invention are found in a combination of prior art references”).

A. The Asserted Art of Grounds 1A-C Does Not Disclose, Teach, or Suggest the Data Structure Comprising MSBs Claimed

Limitations [e] – [f] of independent claim 1 of the ‘967 Patent state:

“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,

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. 1001 at Claim 1.

These limitations are directed to the data structure within the unique serial number space of the encoded RFID transponder claimed.⁵ They specifically require that the one serial number stored therein comprises a limited number of MSBs and remaining bits of lesser significance. Further, these limitations require that the MSBs of the one serial instance uniquely correspond to those of an allocated block of serial numbers. Ex. 2003 at 1009:5-21. Independent claims 13 and 16 include substantially

⁵ The Petition purports to address these limitations separately, but in truth merely presents the same citations and argument for Limitation 1[f] as was previously presented in regard to Limitation 1[e]. Accordingly, these limitations will be addressed in concert in this Response.

identical limitations to the RFID transponder and integrated circuit claimed, respectively.

Under Grounds 1A-1C, the Petition asserts the combination of IBM200 and Kuhno render obvious the data structure implementing MSBs as claimed in Limitations 1[e]-[f], and corresponding limitations of claims 13 and 16.⁶

With respect to these limitations, IBM200 is only alleged to teach “a unique serial number space,” “encoding an RFID tag with one serial number instance,” “allocating a block of serial number instances,” and, “that there are multiple ways to allocate serial numbers.” Pet. at 34-35 (citing Ex. 1006 at 1:34-36, 4:49-53, 5:7-22, and 6:33-36). Each of these allegations relate to just the first part of Limitation 1[e] while completely ignoring the remainder of the limitation. Accordingly, the Petition does not assert that IBM200 discloses, teaches, or suggests an “allocated block being assigned a limited number of [MSBs].”

Grounds 1A-C each rely solely on Kuho with respect to this element of the challenged claims and with respect to the requirements of Limitation 1[f]. As detailed herein, Kuhno does not disclose, teach, or suggest an allocated block using MSBs as claimed, nor a unique serial number space encoded with a serial number

⁶ The Petition does not assert the disclosure of the TDS to disclose, teach, or suggest either of these Limitations. Pet. at 34-40, 50, 53.

instance comprising MSBs uniquely corresponding to those of the allocated block and remaining bits of lesser significance. This deficiency in the Petition is incurable and fatal to all validity challenges presented under Grounds 1A-C. *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1357 (2018) (the petition defines the metes and bounds of an inter partes review).

1. Kuhno Expressly Acknowledges Its Silence Regarding Data Structure of RFID Encodings

Kuhno unequivocally affirms that protocols relating to the “format and configuration of the RFID Printer Data ...are [] *not discussed herein*.” Ex. 1008 at 6:66-7:3. Kuhno later explains the reason for this purposeful omission, stating:

“The data fields under a Field Name column are the variables that comprise the RFID Printer Data, i.e. data that the system application outputs to the RFID printer for inclusion in the label. For any given carton, each variable is populated by data determined by a rule corresponding to the variable under a Data Source Expression column 454.

...

As noted above, the definition of the Data Source Expression rules depends on the information requested to be included on the carton label by the retailer/wholesaler, as well as information desired by the manufacturer to be included in the label. The specific information is not, in-and-of-itself, part of the present invention and is therefore not discussed in further detail herein.” Ex. 1008 at 18:65-19:20.

These statements directly refute SML's assertions that Kuhno discloses the claimed data structure, since all such detail is expressly excluded from the disclosure. Kuhno does nothing beyond providing dropdown menus for selection

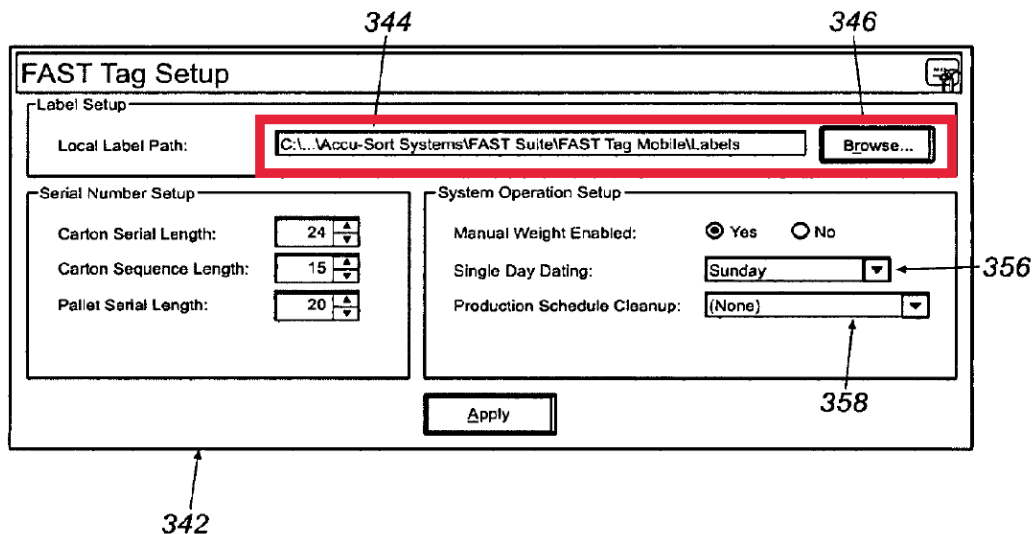
among industry standard EPC encoding schemes that are detailed in the TDS. Ex. 1008 at 1:23-27; 15:65-16:6; 23:41-44; Fig. 31F.

Kuhno provides no discussion regarding how a serial number incorporating a Julian date, production line, carton number, or other information would be formatted or encoded. Its scant disclosure does not support a POSITA understanding it teaching the novel data structure claimed in the '967 Patent. Because no such detail is provided, the Petition improperly resorts wholesale to the alleged understanding of a POSITA to provide the missing disclosure. This reliance fails, as a matter of law, to provide a basis for a finding of obviousness. *DSS Tech. Mgmt. v. Apple Inc.*, 885 F.3d 1367, 1374, 1377 (Fed. Cir. 2018) (Board may not rely on alleged common knowledge to fill in missing limitations or as a wholesale substitute for evidence and analysis); *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1361-62 (Fed. Cir. 2016) (assertions that a central limitation of a claim is within the common knowledge of those skilled in the art must evident and indisputable).

2. SML's Reading of Kuhno is Motivated by Hindsight Bias

The Petition points to portions of Kuhno discussing a carton serial number as disclosing the data structure comprising MSBs as claimed in Limitations 1[e]-[f]. Pet. at 35. In short, SML contends that the "Carton Serial Length" input is alleged to define the number of *bits* in the RFID tag memory used to store a carton serial number, with the carton serial number consisting of "(1) a fixed portion including,

e.g., the Julian calendar date and production line number; and (2) the incrementing carton number.” Pet. at 35-36. The “Carton Sequence Length” input is alleged to define the number *bits* of the Carton Serial Length that are used for storing the incrementing carton number portion. *Id.* SML and its expert’s understanding of Fig. 19 and associated description is fatally flawed and is undeniably infected by impermissible hindsight bias, however. *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570 (Fed. Cir. 1996) (“To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction—an illogical and inappropriate process by which to determine patentability.”)



Ex. 1008 at Fig. 19 (annotated)

SML ignores that the interface shown in Fig. 19 is introduced as “a screen 342 [] through which the user may modify setting regarding *labels to be printed* by the

mobile unit.” Ex. 1008 at 14:9-12. From screen 342, format files may be identified or selected that define “how alphanumeric and barcode characters and graphics are to be *printed* on the *labels*.” Ex. 1008 at 14:12-19. This choice of language is meaningful, as Kuhno consistently distinguishes between printed information shown on a physically printed label and encoded information stored in the memory of an RFID tag. Ex. 1008 at 5:8-12 (“RFID printer may *print alphanumeric and/or barcode characters on a label*... [and] may encompass a device that *encodes RFID tags*”); 5:25-29; 6:61-64; 7:23-28; 8:27-30; 15:65-16:6; 19:19-23 (“the application then instructs RFID printer 20 (Figs. 1-3) to *print the RFID Printer Data on the barcode* and *encode the same on the RFID tag*.”). SML chooses to ignore the plain language of Kuhno expressly confining the inputs to Fig. 19 relate information that is printed rather than encoded. Its comparison of printed labels to encoded RFID tags is apples to oranges.

Even more egregious is the refusal by SML and its expert to accept the actual written language of Kuhno regarding information to be entered as “Carton Serial Length” and “Carton Sequence Length” via screen 342. The specification says these inputs “define the number of *digits*” in the carton serial number and carton number, respectively. Ex. 1008 at 31-35. Yet, SML chooses to re-write these definitions to replace “digits” with “bits” to align this description with its invalidity position. Pet. at 36-37. SML provides only the following purported justification for rewriting this

portion of Kuhno's specification: "A POSITA would not have understood Kuhno's reference to a 24-digit Carton Serial Number to refer to decimal digits, as 24 decimal digits require **80 bits**, far greater than the 25 total bits assigned to the serial number space in a 64-bit encoding scheme, such as SGTIN-64." Pet. at 37.

Through this explanation, SML admits that it is reading Kuhno through the lens of impermissible hindsight bias rather than simply applying the language as written. Swapping "bits" for "digits" is necessary for SML to preserve its unfounded presupposition that Kuhno teaches the claimed data structure using MSBs, and so SML must present this disclosure from Kuhno as being made in the context of describing the format of a binary encoding even if there is no objective basis for its doing so. Stated another way, SML reads "digits" to mean "bits" because otherwise their invalidity theory is undermined. This interpretation finds no support in the teachings of Kuhno, itself, as Kuhno opts to use the term "bits" elsewhere, when appropriate. Ex. 1008 at Fig. 20B; 15:65-16:6. Kuhno also affirms twice that it does not disclose protocols and formats for any RFID encoding. Ex. 1008 at 6:66-7:3, 19:14-20. Likewise, the TDS distinguishes between "digits" and "bits" in the same manner. Ex. 1011 at 10-13, 91, Appx. A.

Additionally, SML's understanding is illogical in view of the RFID encoding-specific inputs solicited through other interfaces of the Fast Tag software. For example, screen 362 shown in Fig. 20A includes "drop-down box 374 [] to select

the encoding type of the RFID tag used in the system,” which defines the amount of memory bit space of the RFID tag used and “how the information should be encoded to properly fit in the tag’s memory space.” Ex. 1008 at 15:65-16:6, Fig. 20A. RFID tab 742 is also provided through screen 718 for receiving inputs selecting “EPC encode type “SGTIN, SSCC, SGLN, and GRIA), EPC product code, EPC manufacturer number, and RFID tag serial number range.” Ex. 1008 at 23:41-44, Fig. 31F. These inputs fully define at least the number of bits within the RFID tag memory that *must be* reserved for storing the serial number portion of an EPC under the TDS, which moots any need for having a separate screen for entering a Carton Serial Length value that, according to SML, would serve the same purpose.

As another example, Kuhno shows two separate interfaces for receiving serial number range inputs as starting and ending decimal values. Ex. 1008 at Figs. 20A, 31F. According to SML, the Carton Serial Number comprises a Julian calendar date, production line number and the incrementing carton number. Pet. at 36. SML further alleges that this combined data is what is encoded into the memory of an RFID tag in the serial number memory space. If so, then it is unclear why Kuhno would separately provide an interface screen that expressly soliciting input of decimal values defining a permissible “RFID Tag Serial Number Range” and how that range input would be used. Ex. 1008 at Fig. 31F.

The screenshot shows a software window titled "Full Product Table". At the top, there is a search bar with "Search for 726" and a "Search Value" field. Below this is a "Product Code:" dropdown menu. On the left, a table lists product codes from 10001 to 10010. The main area contains several input fields: "Product Code:" (10001), "UPC Product Code:" (738), "UPC Manufacture Number:" (0078912), "EPC Encode Type:" (740), "EPC Product Code:" (10001), and "EPC Manufacture Number:". A red box highlights the "RFID Tag Serial Number Range" section, which includes "Starting:" (1) and "Ending:" (99999). At the bottom are buttons for "Add New", "Delete", "Cancel", "Apply", and "Import...".

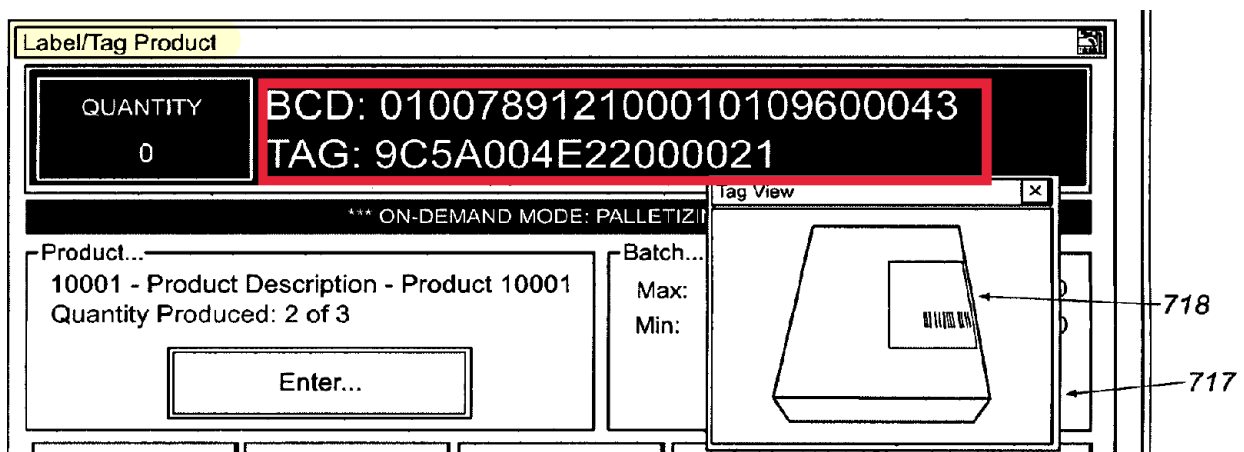
Product	Description	Weight	UCC	Miscellaneous	RFID	Label/Tag Placement
10001						
10002						
10003						
10004						
10005						
10006						
10007						
10008						
10009						
10010						

Ex. 1008 at Fig. 31F (annotation added)

SML's faulty understanding of the teachings of Kuhno must be rejected as incorrect and motivated solely by impermissible hindsight bias. Based on the actual text of the reference itself, Kuhno does not disclose, teach, or suggest implementing the data structure comprising MSBs as claimed in every claim of the '967 Patent. The entirety of SML's arguments to the contrary are premised on its conflating discussion of printed information with encoded data, ignoring express statements in Kuhno affirming that encoding schemes are not part of the invention disclosed and therefore omitted, and the application of hindsight bias to skew and rewrite aspects of Kuhno to foster the illusion of obviousness.

1. Kuhno's Teachings are Inconsistent with Use of MSB Data Structure

Fig. 29E, reproduced below, presents the lone example within Kuhno of a printed barcode on a label alongside the corresponding data encoded into the memory of the embedded RFID tag. The barcode information and encoding correspond to a hypothetical "Product 10001" that is used throughout several of the Figures to show various commands and information that a user can input using various screens. Ex. 1008 at Figs. 28A – 29F.



A hexadecimal representation of the data encoded into the RFID tag is shown, 9C5A004E22000021. This corresponds to a 64-bit binary data string. The binary equivalent of this hex value is shown below and is color coded to identify the bit locations corresponding to each field of the encoding, according to the SGTIN-64 encoding scheme from Version 1.1 of the TDS. Ex. 2006 at 21.

[10][011] [10001011010000] [00000010011100010001] [00000000000000000000100001]

The 25 red bits store the serial number portion of the encoding. The 20 green bits store an Item Reference number. The 14 yellow bits store an index value of a Company Prefix. The black bits at the lead end are memory locations storing each of a 2 bit Header and a 3 bit Filter value. These fields and their corresponding memory allocations are shown in the TDS table reproduced below:

	Header	Filter Value	Company Prefix <i>Index</i>	Item Reference	Serial Number
SGTIN-64	2	3	14	20	25
	10 (Binary value)	8 (Decimal capacity)	16,383 (Decimal capacity)	9 --1,048,575 (Decimal capacity*)	33,554,431 (Decimal capacity)

*Capacity of Item Reference field varies with the length of the Company Prefix

Table 4. The EPC SGTIN-64 bit allocation, header, and decimal capacity.

Ex. 2003 at 21

The encoded bit strings within the fields for Company Prefix and Item Reference match those of hypothetical “Product 10001” presented in Figs. 28A, B. The barcode data, which is presented in decimal in Fig. 29E, also includes a matching sequence of values corresponding to the UPC (or GTIN) for Product 10001 - 7891210001. *See* Ex. 1008 at Fig. 28A (entry for Product 10001 indicating UPC value of 007891210001, and at Fig. 29E (BCD includes UPC string).

Notably, the serial number values of the printed barcode (spanning the trailing 10 digits of the BCD string) varies greatly from the data string encoded into the 25 red bits at the trailing end of the RFID tag encoding. This provides undeniable

evidence taken directly from the express teachings of Kuhno that further demonstrate that the serialization methodology described in connection with printed aspects of a carton label are not also applied to generate the serial number portion of an EPC encoding, as SML contends. The 10 digit serialized portion of the barcode is large enough to require a sequence of 9 digits to represent it (along with a leading 0 filling out the remaining, unused spot). Conversely, the serial number portion of the RFID encoding is a simple and small value that requires only 6 of the available 25 bits of memory to store it and is therefore preceded by a sequence of 19 consecutive '0' bits as filler. If SML's allegations regarding the make-up and encoding format applied by Kuhno were accurate, a larger value occupying most or all of the available bits of memory would be expected. SML's assertions are wrong.

But even if Kuhno did expressly teach generating a serial number value for encoding into an RFID tag that combines a Julian date, production line number and an incrementing carton number, this alone would still be insufficient to teach an encoded RFID tag comprising the data structure claimed. This limited disclosure omits any discussion of the encoding procedure used to generate a binary representation and therefore cannot teach or suggest an encoded RFID tag having the claimed data structure.

As noted above, the TDS teaches encoding procedures using combinations of decimal values. For all encoding schemes, TDS teaches that the data string(s) for

each filed comprising an EPC is/are concatenated and considered as a single decimal integer. Ex. 1011 at 28, 30-31, 34, 38, 41, 44-45, 47, 50 (steps 2 and 3 of “Encoding Procedure”). Applying this industry standard encoding process to combine, for example, combining the Julian date for December 31, 1999 (YYDDD = 99365)⁷ with a production line “1” and an incrementing value of “1” for a 96-bit encoding yields a concatenated string 9936511. This is treated as the single, decimal value 9,936,511 when converted to binary form. For the carton encoded, the decimal value to be converted to binary is 99,365,110. Corresponding binary representations are:

9,936,511 → 000100101111001111010000000

99,365,110 → 101111011000011000011110110

Notably, the leading bits of these sequences vary greatly from one another. This demonstrates that more is needed to practice the claimed data structure limitations implementing MSBs within the encoded serial number space than just applying a methodology for generating serial numbers that involves combining multiple decimal values. Such a scheme for generating serial number values may appear to maintain a static leading digit sequence when shown as decimal values, but the illusion does not hold up upon conversion to binary representations for

⁷ 99365 is the largest Julian date value possible and corresponds to a binary data string that spans 17 bits – 11000010000100101.

encoding, as shown above. Disclosure focused exclusively on the bitwise representation of serial numbers and specifically detailing how allocation and encoding will be affected is required but omitted from Kuhno.

Examples of bit-centric allocation and encoding scheme disclosures implicating the claimed data structure have been published by GS1 and Walmart years after the priority date of the '967 Patent. GS1 published Version 1 of a Guideline on Serialization on May 9, 2012. Ex. 2011 at 4. It provides a detailed explanation and accompanying graphical representations of serialization schemes for grappling with these complicated, real-world scenarios, including adoption of structured serial numbers in binary, as shown below:

Here is an example of a structured approach, expressed in binary:

- Each manufacturing line is assigned a three-bit binary code 000, 001, 010, etc.
- The serial number assigned on a given manufacturing line is composed of the line's 3-bit code, followed by 35 bits assigned by the line, resulting in a 38-bit serial number.

The following table illustrates the ranges that result from the above rule:

Manufacturing Line	Line Code	Serial Number Pattern (binary)	Minimum Serial Number (decimal)	Maximum Serial Number (decimal)
Line #1	000	000bbbbbb...bbb	0	34359738367
Line #2	001	001bbbbbb...bbb	34359738368	68719476735
Line #3	010	010bbbbbb...bbb	68719476736	103079215103

In the "serial number pattern" column above, the actual serial number is 38 bits – in the table, several bits are omitted for reasons of space. The size of each range is $2^{35} = 34,359,738,368$ serial numbers in each range.

Ex. 2011 at 12-13 (annotations added)

The Guideline details precisely how to implement a binary structure within the serial number space of an EPC by focusing its discussion entirely on the bit

This level of detail is mirrored in a 2010 Walmart document detailing its providers about its newly adopted binary data structure comprising “a Walmart assigned supplier serial site key embedded within the serial number.” Ex. 2010 at 1. This too teaches the use of MSBs within the serial number space. Again, detail is provided for showing precisely how the site key is to be implemented, accounting for all 38-bits of the serial number space:

Header	Filter Value	Partition	Company Prefix	Item Reference	Serial Number
8	1	5	24	20	38
48	Table 1	Table 2	GTIN (-check digit)		8 bit Site Key 30 bit serial
00110000	001	101	GTIN (-indicator digit)	Indicator digit	ssssnnnnnnnnnn

SERIAL NUMBER BITS (38 total = max 274,877,906,944)

First 8 bits (256) **Remaining 30 bits (1,073,741,824)**

Site ID #	Binary Site ID	Starting Serial #	Ending Serial #	Range of Serial #'s
0	00000000	0	1,073,741,823	1,073,741,824
1	00000001	1,073,741,824	2,147,483,647	1,073,741,824
2	00000010	2,147,483,648	3,221,225,471	1,073,741,824
3	00000011	3,221,225,472	4,294,967,295	1,073,741,824
255	11111111	273,804,165,120	274,877,906,943	1,073,741,824

The difference in the level of discussion provided in these publications issued many years after the priority date of the '967 Patent by RFID industry leaders when compared to that of Kuhno is stark. Each provides explicit instruction detailing the

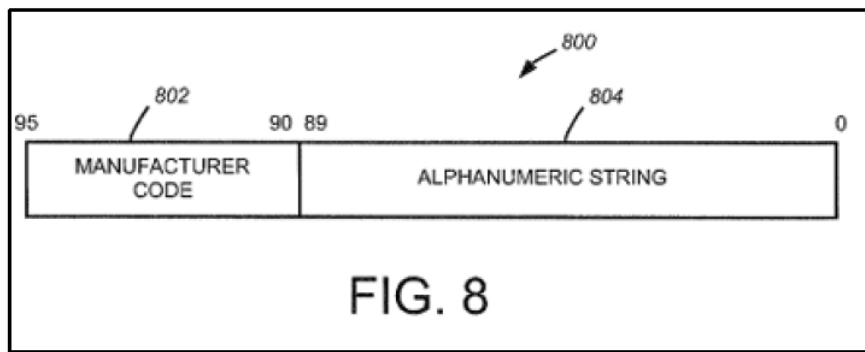
number and location of memory space to be utilized for storing a predefined sequence comprising a “line code” or “site key,” respectively, and identify the number of remaining memory bits available for storing a serial value. *Id.* Kuhno does none of this. There is no mystery as to why it fails to do so – *Kuhno* explicitly fails to disclose these important and inventive concepts of the ‘967 Patent.

In sum, because Kuhno does not disclose Limitations 1[e]-[f] and the corresponding limitations present in all other claims of the ‘967 Patent, and because the Petition relies solely on Kuhno with respect to these limitations, each of Grounds 1A-C are fatally flawed and fail to demonstrate obviousness as to any claim.

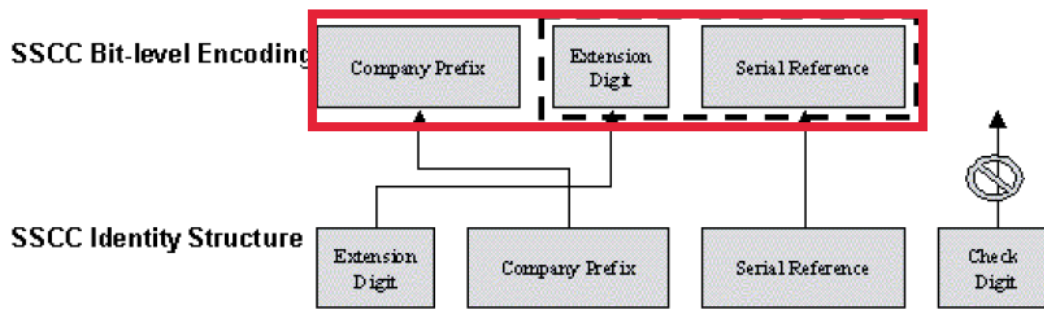
B. The Asserted Art of Grounds 2A-C Does Not Disclose, Teach, or Suggest the Data Structure Comprising MSBs Claimed

Grounds 2A-C rely on a base combination of Bowers, Tilson, and the TDS. Regarding Limitations 1[e]-[f] and the corresponding limitation in claims 13 and 16, the Petition alleges that: (1) TDS discloses a unique serial number space; (2) Bowers discloses allocating blocks of serial numbers; and (3) Tilson discloses a unique serial number space being assigned a limited number of MSBs identifying an entity. Pet. at 62-67. At bottom, therefore, the Petition cites exclusively to Tilson for disclosing the use of a data structure comprising MSBs within the serial number space of an encoded RFID tag.

The Petition alleges that Tilson “teaches encoding an RFID tag with ‘a serial number that uniquely identifies’ an item (Ex-1010, 7:61-63) that is partitioned into (1) a predetermined set of most significant bits identifying an entity, such as a manufacturer (“bits 90-95 of a 96-bit data structure”) (*id.*, 8:3-4), followed by (2) less significant bits with a numeric or alphanumeric string identifying the individual item (*id.*, 8:5-6).” Pet. at 57 (citing Ex-1010 at 7:66-8:3, Fig. 8).



The section of Tilson’s specification describing Fig. 8 represents the entirety of Tilson’s discussion of the contents and structure of encoded data in an RFID tag. What is shown and described is a data string made up of two fields. The first field stores an identifier value 802 corresponding to a “manufacturer code.” The remainder of the available memory is used to store an alphanumeric string 804 that is assigned to the concrete component to which the RFID tag is coupled and usable as a key for looking up information about the concrete component in a database. This encoding scheme closely mirrors that of the SSCC-type EPC, shown below:



Ex. 1011 at 14 (annotation added)

In each, a first portion of the encoding stores a manufacturer identifier. This aligns with the use of Company Prefix by GS1 and with how this term is used in the ‘967 Patent as a category of object class information. Ex. 1001 at 9:7-15; Ex. 1011 at 11 (“EPC Tag Encodings carry an explicit division between the Company Prefix and the remaining digits, with each individually encoded into binary.”), 13. In Tilson and the SSCC-type EPC, the second portion of the encoding stores an identifier that is specific to the item being tagged. Ex. 1001 at 9:13-15.

Elsewhere, the Petition acknowledges that a “unique EPC object number that is divided into a “nonserialized portion” and a “serialized portion” comports with the standard encodings schemes taught in the TDS, with the non-serialized portion corresponding to object classification space and the serialized portion corresponding to a unique serial number associated with object. Pet. at 33. The disconnect between SML’s description of the TDS, which is not alleged to practice the MSB limitations, and Tilson, is that Tilson loosely refers to the entirety of the encoding shown

schematically in Fig. 8 as a generic “serial number.” Ex. 1010 at 7:65-8:10. Additionally, while Tilson treats portions 802 and 804 as separate fields of the encoding stored at defined bit locations as discrete data representations, Tilson does not expressly define its portions 802, 804 as separate fields.

In truth, however, the serialized portion of encoded data used to uniquely identify the tagged object is the portion 804, which is not shown or described to have any internal data structure. The “manufacturer code” within portion 802 is fairly understood to fall within the ambit of a company prefix disclosed by the TDS which the ‘967 Patent regards as “object class information.” Ex. 1011 at 11 (“EPC Tag Encodings carry an explicit division between the Company Prefix and the remaining digits, with each individually encoded into binary.”), 13. SML’s contention that Tilson “discloses a unique serial number space being assigned a limited number of MSBs identifying an entity” is incorrect. Tilson fails to disclose or suggest any data structure beyond use of an object class information field along with a serial number field in schematically identical manner to the SSCC scheme taught in the TDS.

Just as SML understands that no encoding scheme disclosed in the TDS practices the limitations of the ‘967 Patent claims addressed to a data structure comprising MSBs, neither does Tilson.

VII. CONCLUSION

For the many reasons discussed above, the Petition should be denied with respect to all claims of the '967 Patent.

Discretionary denial is appropriate as the Petition is merely a regurgitation of art and arguments already considered in prior PTO proceedings and in a district court litigation. To the extent newly raised art is asserted, those references are either entirely cumulative of the disclosure of art that has been previously considered, or are raised in name only while Petitioner actually seeks to make its case for obviousness by shoehorning in the teachings of unasserted art under the guise of establishing the knowledge of a POSITA. As a result, no new question of is truly presented to warrant the Board's attention.

None of the art relied upon by Petitioners in support of its proffered grounds for invalidation disclose, teach, or suggest at least the limitations present in all challenged claims directed to a data structure comprising MSBs.

Kuhno omits any discussion of particular data structures implemented in an encoded RFID tag beyond reference to encoding schemes taught in the TDS. Likewise, Tilson does not disclose use of the claimed data structure. Instead, Tilson teaches an encoding scheme comprising two fields – one storing a manufacturer identifier and the other storing an identifier value to be associated to the concrete component tagged. This simplified structure mirrors the SSCC type EPC structure

disclosed in the TDS and therefore does not practice the claimed structure of the '967 Patent.

Use of a data structure comprising MSBs is a critical element of the subject matter claimed by the '967 Patent. The Petition's reliance on the purported background knowledge and alleged understandings of a POSITA is legally ineffective for filling the gaps in the teachings of the prior art it asserts. The Petition fails to present any disclosure from any of IBM200, Kuhno, Bowers, Tilson, or the TDS that teaches or suggests allocation of serial numbers in any manner beyond sequential allocation or the commonplace practice of batch allocation of large decimal ranges of values. This prior art methodology does not imply the use of the MSB data structure claimed at Limitations 1[e]-[f], 13[e]-[f], and 16[e]-[f].

PO therefore respectfully requests that the Board deny institution of SML's Petition with respect to all grounds asserted and all challenged claims.

Date: February 21, 2025

Respectfully submitted,

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CERTIFICATION UNDER 37 C.F.R. §42.24(d)

I hereby certify that the word count for the foregoing Patent Owner's Preliminary Response is 12,958 words, which is within the limit set in 37 C.F.R. §42.24(b)(1).

Dated: February 21, 2025

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CERTIFICATE OF SERVICE

I hereby certify that on December 30, 2024, a true and correct copy of the foregoing *Patent Owner's Preliminary Response* was served via electronic mail upon counsel of record for Petitioners at the following addresses:

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