

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HANSHOW AMERICA INC. AND HANSHOW
TECHNOLOGY CO., LTD.,

Petitioner

v.

SES-IMAGOTAG INC.,

Patent Owner.

IPR2024-00208

U.S. Patent No. 11,010,709

PATENT OWNER'S RESPONSE

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EXHIBIT LIST

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2003	Machine English Translation of Exhibit 2002
2004	French Patent No. 3039681 to Bottine
2005	U.S. Patent Application Publication No. 2015/0178767A1 to Wu et al.
2006	Comparison Document of Wu (Ex-1003), Figs. 1–5E, 1:1–9:31, <i>with</i> Wu Pub. (Ex-2005), Figs. 1–5E, ¶¶[0001]–[0076].
2007	Translation of French patent office (Institut National De La Propriété Industrielle, or “INPI”) Preliminary Search Report, February 12, 2016, with certification
2008	Translation French patent office (Institut National De La Propriété Industrielle, or “INPI”), “Opinion écrite” (Office Action), February 17, 2016, with certification
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LISTING OF CHALLENGED CLAIMS

Claim 1	
[1a]	A method for updating a planogram registered in a computer system, to reflect an addition of a shelf label in a shelf of a retail area,
[1b]	wherein the planogram comprises association data between articles of the retail area and locations of the retail area, the method comprising:
[1c]	acquiring, by a reading device, a sequence of label identifiers comprising a label identifier of an added shelf label reflecting an addition of the shelf label in the shelf of the retail area, and also comprising a label identifier of an adjacent shelf label which is adjacent to the added shelf label
[1d]	according to a scrolling direction of the locations of the retail area,
[1e]	the retail area having a plurality of shelf labels distributed in the retail area,
[1f]	each of the shelf labels being associated with a respective article and being disposed near a respective location associated with the article,
[1g]	each of the shelf labels being associated with a label identifier of its own,
[1h]	wherein the adjacent shelf label is either the preceding shelf label or the following shelf label in the shelf according to the scrolling direction and in relation to the added shelf label, wherein
[1i]	a location of the adjacent shelf label is preliminarily known in the planogram;
[1j]	identifying a location corresponding to the added shelf label in the shelf of the retail area, comprising:
[1k]	transmitting, by the reading device, the sequence of label identifiers to the computer system,
[1l]	updating, by the computer system, the planogram on the basis of the sequence of label identifiers, by determining:
[1m]	articles associated with the labels of the sequence of label identifiers, and

[1n]	locations of the articles, on the basis of an obtained location of the added shelf label, wherein
[1o]	the obtained location is a location in the planogram which is adjacent to the preliminarily known location of the adjacent shelf label.
Claim 2	
[2a]	The method according to claim 1, wherein
[2b]	acquiring the sequence of label identifiers comprises receiving, by the reading device, an indication of relative positioning, relative to the location of the added shelf label to be located, and the adjacent label whereof the location is known to the computer system, the indication of relative positioning being transmitted by the reading device to the computer system.
Claim 3	
[3a]	The method according to claim 2, wherein
[3b]	receiving the indication of relative positioning comprises: identifying, from the acquisition order of the label identifiers of the sequence of label identifiers, the indication of relative positioning of the added shelf label, relative to the location of the adjacent label.
Claim 4	
[4a]	The method according to claim 1, further comprising:
[4b]	transmitting, by the reading device and to the computer system, data corresponding to an association between the label identifier of the added shelf label and a reference of an article with which the added shelf label is associated with.
Claim 5	
[5a]	The method according to claim 1, wherein
[5b]	the added shelf label is one of a plurality of electronic shelf labels to be located, the electronic shelf labels to be located being adjacent to each other in the scrolling direction of the locations of the retail area, and

[5c]	wherein the acquiring comprises acquiring the label identifiers of the plurality of electronic shelf labels to be located in the order of their arrangement.
Claim 6	
[6a]	The method according to claim 5, wherein
[6b]	each electronic shelf label of the sequence is fitted with a radiofrequency peripheral, and wherein
[6c]	the acquiring comprises acquiring, by the reading device, the label identifiers of the electronic shelf labels by setting up
	communication via radiofrequency with the electronic shelf labels and the reading device.
Claim 7	
[7a]	The method according to claim 1, wherein
[7b]	the reading device comprises a displacement measuring member, and the method further comprises:
[7c]	determining, by the reading device, the displacement between the label identifier of the adjacent shelf label whereof the location is preliminarily known and the label identifier of the added shelf label.
Claim 8	
[8a]	The method according to claim 7, further comprising:
[8b]	determining, by the reading device, the distance between the adjacent shelf label whereof the location is known and the added shelf label to be located from the displacement of the reading device between the identifier of the adjacent shelf label whereof the location is known and the identifier of the added shelf label, and
[8c]	wherein the identifying further comprises obtaining the location of the added shelf label, by the computer system, and using the distance to update the planogram.
Claim 9	
[9a]	The method according to claim 1, further comprising:

[9b]	acquiring, by the reading device, a label identifier of the adjacent shelf label,
[9c]	acquiring, by the reading device, a characteristic dimension of the location associated with the shelf label acquired the reading device,
[9d]	transmitting, by the reading device, the characteristic dimension of the location with the label identifier to the computer system.
Claim 10	
[10a]	A non-transitory computer program product comprising program code instructions for updating a planogram registered in a computer system to reflect an addition of a shelf label in a shelf of a retail area, comprising:
[10b]	acquiring, by a reading device, a sequence of label identifiers comprising a label identifier of an added shelf label reflecting an addition of the shelf label in the shelf of the retail area, and also comprising a label identifier of an adjacent shelf label which is adjacent to the added shelf label
[10c]	according to a scrolling direction of the locations of the retail area,
[10d]	the retail area having a plurality of shelf labels distributed in the retail area,
[10e]	each of the shelf labels being associated with a respective article and being disposed near a respective location associated with the article,
[10f]	each of the shelf labels being associated with a label identifier of its own, wherein
[10g]	the adjacent shelf label is either the preceding shelf label or the following shelf label in the shelf according to the scrolling direction and in relation to the added shelf label, wherein
[10h]	a location of the adjacent shelf label is preliminarily known in the planogram;
[10i]	identifying a location corresponding to the added shelf label in the shelf of the retail area, comprising:
[10j]	transmitting, by the reading device, the sequence of label identifiers to the computer system,
[10k]	updating, by the computer system, the planogram on the basis of the sequence of label identifiers, by determining:

[10l]	the articles associated with the labels of the sequence of label identifiers, and
[10m]	the respective locations of the articles, on the basis of an obtained location of the added shelf label, wherein
[10n]	the obtained location is a location in the planogram which is adjacent to the preliminarily known location of the adjacent shelf label.
Claim 11	
[11a]	A system for managing a planogram,
[11b]	the planogram comprising association data between articles of a retail area and locations of the retail area, the system comprising:
[11c]	a plurality of electronic shelf labels,
[11d]	each of the shelf labels being associated with a label identifier of its own,
[11e]	a reading device adapted to acquire the label identifiers of the plurality of electronic shelf labels and
[11f]	to acquire the references of the articles associated with the electronic shelf labels,
[11g]	a computer system in which the planogram is registered,
[11h]	the computer system being configured to receive, from the reading device, a transmitted sequence of label identifiers, and
[11i]	being further configured to update the planogram by determining an obtained location of an added shelf label reflecting an addition of a shelf label of the retail area, wherein
[11j]	the obtained location is a location in the planogram which is immediately adjacent to the known location of the adjacent shelf label,
[11k]	the reading device being configured to: acquire a sequence of label identifiers comprising the label identifier of the added shelf label, and further comprising the label identifier of an adjacent shelf label which is adjacent to the added shelf label
[11l]	according to a scrolling direction of the locations of the retail area, wherein
[11m]	the adjacent shelf label is either the preceding shelf label or the following shelf label in the shelf according to the scrolling

	direction and in relation to the added shelf label, wherein
[11n]	a location of the adjacent shelf label is preliminarily known in the planogram, and
[11o]	transmit the sequence of label identifiers to the computer system.
Claim 12	
[12a]	The system of claim 11, wherein
[12b]	the reading device is further configured to: acquire an indication of relative positioning, relative to the location of the added shelf label and the adjacent label; and transmit the indication to the computer system.
Claim 13	
[13a]	The system of claim 12, wherein
[13b]	the reading device is further configured to: identify, from the acquisition order of the label identifiers of the sequence of label identifiers, the indication of relative positioning of the added shelf label, relative to the location of the adjacent label.
Claim 14	
[14a]	The system of claim 11, wherein
[14b]	the reading device is further configured to: transmit to the computer system data corresponding to an association between
	the label identifier of the electronic and a reference of an article with which the added shelf label is associated with.
Claim 15	
[15a]	The system of claim 11, wherein
[15b]	the added shelf label is one of a plurality of electronic shelf labels to be located, the electronic shelf labels to be located being adjacent to each other in the scrolling direction of the locations of the retail area, and
[15c]	wherein the reading device is further configured to: acquire the label identifiers of the plurality of electronic shelf labels to be located in the order of their arrangement.

Claim 16	
[16a]	The system of claim 15, wherein
[16b]	each electronic shelf label identified in the sequence is fitted with a radiofrequency peripheral, and wherein
[16c]	the reading device is further configured to acquire the label identifiers of the electronic shelf labels by setting up communication via radiofrequency with the electronic shelf labels and the reading device.
Claim 17	
[17a]	The system of claim 11, wherein
[17b]	the reading device comprises a displacement measurement member, and wherein
[17c]	the reading device is further configured to: Determine the displacement between the label identifier of the adjacent shelf label whereof the location is preliminarily known and the label identified of the added shelf label.
Claim 18	
[18a]	The system of claim 17, wherein
[18b]	the reading device is further configured to determine the distance between the adjacent shelf label and the added shelf label from the displacement of the reading device between the label identifier of the adjacent shelf label whereof the location is known, and the added shelf label.
Claim 19	
[19a]	The system of claim 18, wherein
[19b]	the computer system is configured to obtain the location of the added shelf label as a function of the preliminarily known location of the adjacent shelf label and as a function of the determined distance.
Claim 20	
[20a]	The system of claim 11, wherein

[20b]	the computer system is further configured to: update the planogram on the basis of the sequence of label identifiers, by determining: articles associated with the labels of the sequence of label identifiers, and locations of the articles, on the basis of the obtained location of the added shelf label.
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I. INTRODUCTION

Petitioners’ challenge as to the patentability of U.S. Patent 11,010,709 (the “’709 Patent”) impermissibly rewrites the claims to fit the prior art. The ’709 Patent is directed to electronic shelf labels (“ESLs”) for retail stores that can not only display product and price information like their paper predecessors, but can also be used—as the ’709 Patent claims—to update retail “planograms” that track the “location(s)” of products throughout the store. Although Petitioners nominally recite the claims and cite to prior art that discusses ESLs, Petitioners contort claim terms beyond any reasonable meaning, conflate or ignore express claim limitations that are missing from the prior art, cherry-pick pieces of the prior art to combine them in ways that are riddled with hindsight, and present an expert declaration that effectively parrots the Petition without any further discussion.

Petitioners’ challenge depends on adopting expansive constructions of the terms “location” and “planogram” that are divorced from their use in the ’709 Patent and how these terms are generally understood in the art. Indeed, Petitioners’ sole primary prior-art reference (Wu) discloses only codes that provide a relative *order* of ESLs on a shelf, and not *locations* of an ESL or product in a retail area or on a shelf. Nor can having a mere order of ESLs be sufficient to constitute a “planogram,” as claimed, because one would not know where a given ESL or product sits in the retail area, or even where exactly on the shelf.

But even if these terms are as sweeping as Petitioners contend, Wu still does not teach a system or process in which a *sequence* of ESL *identifiers* are acquired and then transmitted when installing a new ESL on the shelf—as also required by the claims—because Wu only discloses acquiring a *single* ESL identifier during installation. To bridge the gap, Petitioners largely ignore the express words of the claim, point to additional prior art without explaining why or how they would be combined, and summarily conclude the limitation is met. And, finally, for dependent claims 7, 8, 17, and 18, Petitioners ignore the claims’ exacting process to measure distance between ESLs—by measuring displacement of an ESL-reading device from the moment it receives one ESL identifier to the moment it receives another—by pointing to a completely different prior-art process that merely uses a camera and image-processing software, contending these processes are one-and-the-same.

In an attempt to provide cover for these gaps, Petitioners present the declaration of their expert, Dr. Tentzeris. But Dr. Tentzeris offers no explanation or support of his own. Instead, Dr. Tentzeris presents a nearly verbatim recitation of the arguments in the Petition, at each turn summarily concluding that he agrees with those arguments without any additional explanation. Such support is insufficient as a matter of law and should be afforded no weight.

For these reasons and more, Petitioners have failed to demonstrate unpatentability of any claim of the ’709 Patent.

II. LEGAL STANDARDS

A claim is invalid under 35 U.S.C. § 103(a) only if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made” to a person of ordinary skill in the art (“POSITA”). *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). An obviousness determination must be based on four factual inquiries: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the art; and (4) objective indica of nonobviousness. *Id.* (citing *Graham v. John Deere Co. Kan. City*, 383 U.S. 1, 17-18 (1996)). A party alleging obviousness is “required to place themselves in the minds of those of ordinary skill in the relevant art at the time the invention was made, to determine whether that which is now plainly at hand would have been obvious at such earlier time.” *Millennium Pharms., Inc. v. Sandoz Inc.*, 862 F.3d 1356, 1367 (Fed. Cir. 2017). When a limitation is missing from the asserted prior art references, this gap cannot be filled simply by blanket assertions of common sense, and “this is particularly true where the missing limitation goes to the heart of an invention.” *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1362-63 (Fed. Cir. 2016).

Petitioners have the burden to clearly set forth the basis for their challenges in the petition. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (explaining 35 U.S.C. § 312(a)(3) “requir[es] IPR petitions to identify ‘with

particularity . . . the evidence that supports the grounds for the challenge to each claim”). Petitioners also have the burden to include a “statement” for each challenged claim including “[h]ow the challenged claim is to be construed” to explain “[h]ow the construed claim is unpatentable.” 37 CFR § 42.104(b)(3)-(4).

In view of the applicable burden and the reasons presented herein, the Board should find that Petitioners have not proven by a preponderance of the evidence that any claim is unpatentable.

III. BACKGROUND

A. Overview of the Technology

In brick-and-mortar retail, product placement is key, and shelf space is a finite and valuable resource. Products are typically arranged throughout a retail store to try to maximize sales, and the locations of products throughout a store can be planned and tracked using a “planogram.” Ex-2010, ¶37.

Retail stores often use traditional shelf labels, such as pieces of paper or stickers, applied to the store shelves to identify each product on the shelf, its price, and other relevant information (e.g., a barcode or price-per-unit). If a store manager needs to change the price of a product, or add, remove, or move a product at a given location, store clerks or managers must change the paper or sticker labels and then manually update any planograms to reflect the new arrangement of products on the shelves. This can be a tedious task that, if not managed carefully, can quickly

produce an inaccurate or outdated planogram in which the product locations in the store are no longer accurately tracked. Ex-1001, 2:10-27; Ex-2010, ¶38.

With the proliferation of low-powered microelectronics, however, stores have begun transitioning to *electronic* shelf labels (“ESLs”) to replace traditional paper or sticker labels that require manual updating. Ex-1001, 1:26-30. ESLs generally present customers with the same information as traditional product labels, such as the product name, price, and other relevant information, but often have digital screens and wireless communication features. This allows store managers to control the ESLs and update prices or product identifiers remotely, such as from a mobile device or central computer system. *Id.*, 1:26-30, 1:49-52. The ’709 Patent, discussed below, taught for the first time a way to seamlessly and automatically update store planograms when ESLs are rearranged on store shelves, eliminating the need to manually update the planogram. Ex-2010, ¶39.

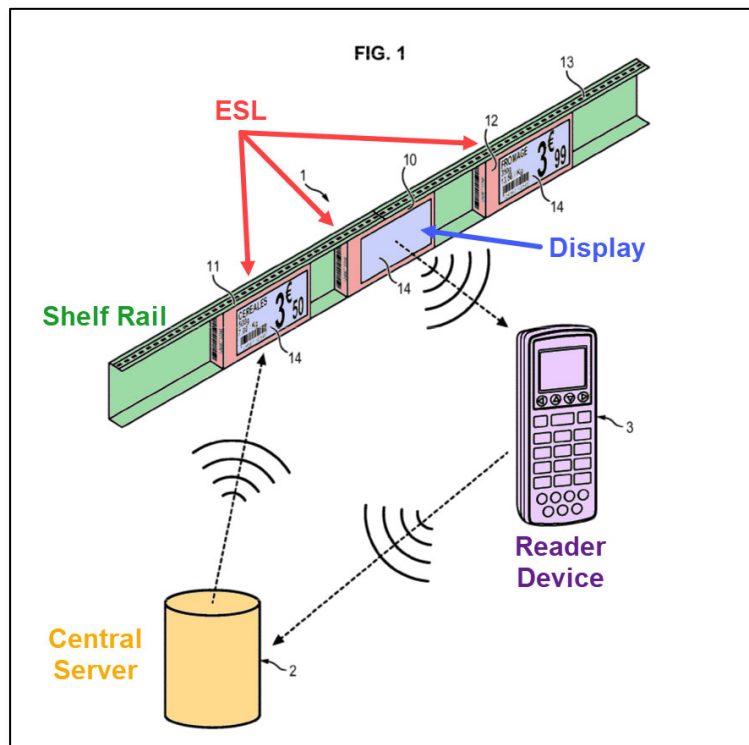
B. Overview of the ’709 Patent

The ’709 Patent was filed as an international application (PCT/FR2016/051930) on July 25, 2016, and made its national-stage entry into the United States on January 25, 2018. Ex-1001, Cover. The ’709 Patent claims priority to a French Patent Application (No. 1557153) filed on July 27, 2015. *Id.*; Ex-2010, ¶40.

Although ESLs existed in the prior art generally, the inventors of the '709 Patent created a novel system and method of using ESLs: not only would ESLs adaptively display product and price information, but they could also be configured to automatically update store planograms. Ex-1001, 2:6-9, 2:40-44; Ex-2010, ¶41.

Specifically, the '709 Patent discloses a process of using a mobile reading device (such as a mobile phone) to track ESL locations in a store and which products those ESLs identify at a particular location. Ex-1001; 1:44-52, 4:47-54, 4:64-5:15, 5:21-27. Knowing a product's location has many advantages when deploying and updating ESLs, including the ability to advise consumers and employees of the locations of products, better management of the products for sale, and better productivity of the store. *Id.*, 9:61-10:9; Ex-2010, ¶41.

The '709 Patent explains that each ESL (e.g., 10, 11, 12, below) comprises a casing, a microprocessor, memory, a display screen (14) for displaying product pricing and other relevant information, and a radiofrequency communication module for wireless communication with "reader" devices (3) and/or central servers (2), and is placed along a shelf rail (13). Ex-1001, 4:55-5:27; Ex-2010, ¶42.



Ex-1001, Fig. 1 (annotated)

The '709 Patent also provides a use case as to how a planogram can be automatically updated when reconfiguring ESLs on a shelf. Specifically, the '709 Patent explains how a new ESL (10) can be added to a shelf that already has existing ESLs (11 and/or 12) installed on the shelf rail (13). *Id.*, 5:60-67. First, an operator (such as a store manager or clerk) “uses the reading device 3 to acquire (step S1) a label identifier of an ESL 11 or 12 adjacent to the location of the added ESL 10.” *Id.*, 6:25-29. The '709 Patent explains that the “label identifier” is an identifier specific to each ESL—like a serial number. *Id.*, 2:50-51 (“each of said shelf labels being fitted with a label identifier of its own.”), 4:49-53 (“This label identifier therefore

identifies unequivocally a single ESL only”), 9:28-32 (explaining each label has a “label number, i.e., the label identifier”). Next, the operator “points out an indication of relative positioning” between the new ESL (10) and an existing ESL (11 and/or 12) to characterize where the new ESL (10) will be placed relative to the existing ESL (11 and/or 12). *Id.*, 6:35-54; Ex-2010, ¶43. The operator then “uses the reading device 3 to acquire the label identifier of the added ESL 10,” although the ’709 Patent notes the order in which the label identifiers for the new and existing ESLs are acquired is inconsequential. Ex-1001, 6:55-64. After the reading device (3) acquires this information, it then “transmits (step S2) to the computer 2 the sequence of label identifiers,” including the identifiers of both the existing (11 and/or 12) and new (10) ESLs, along with “the indication of relative positioning” between the new and existing ESLs, *id.*, 7:9-17, and the computer (2) then uses this information to update the planogram, *id.*, 8:25-39; Ex-2010, ¶43.

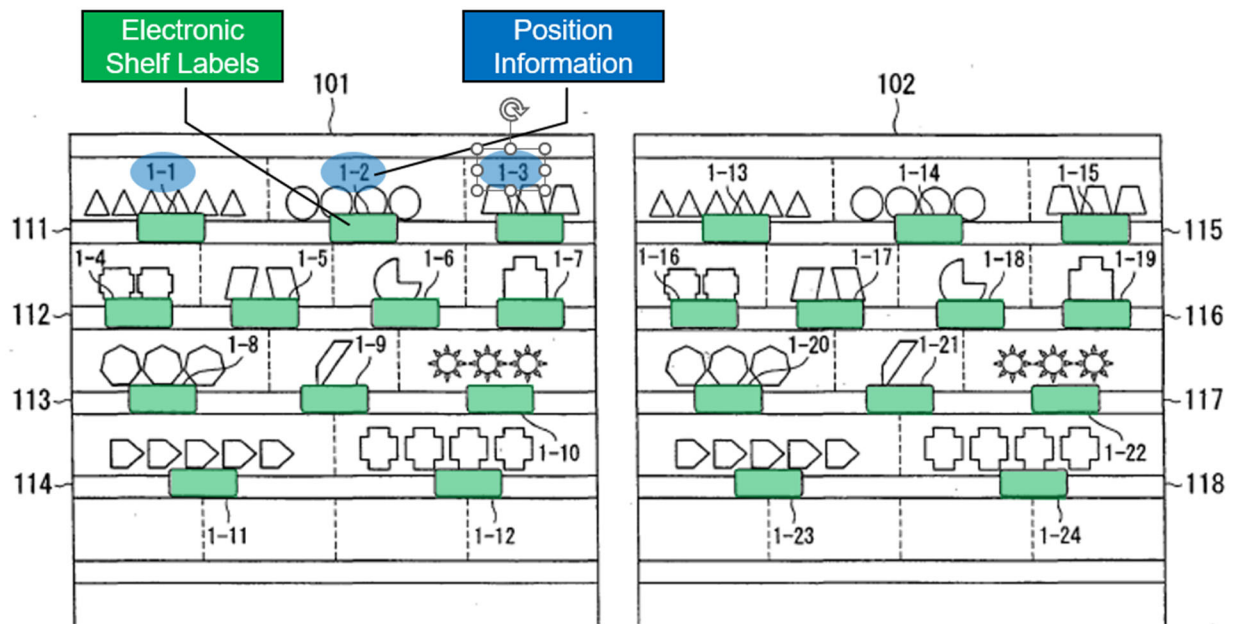
C. Prosecution History of the ’709 Patent

The applications that led to the ’709 Patent were examined twice before issuance. Despite already knowing of the primary prior-art reference (Wu) Petitioners advance here, neither examiner found that it precluded issuance of the ’709 Patent claims. Ex-2010, ¶44.

Specifically, after the parent application of the ’709 Patent (PCT/FR2016/051930 (“PCT App.”)) was filed with the World Intellectual Property

Organization (“WIPO”), it underwent a foreign examination. Ex-1002, 139. As part of that examination, the international examiner not only located, but expressly *mapped* Wu’s published patent application (U.S. App. Pub. No. 2015/178767 (“Wu Application”)) to the claims, and found that the Wu Application failed to teach several limitations required by the claims. *Id.* In particular, the foreign examiner found that Wu at a minimum failed to disclose acquiring and transmitting a *sequence* of label identifiers, as required by the claims. *Id.*; Ex-2010, ¶45.

When the ’709 Patent application then made its national-stage entry into the United States, the Examiner did not just have an Information Disclosure Statement identifying the Wu Application, as is often the case, but instead WIPO’s full search report that provided the mapping of the Wu Application to the claims. Ex-1002, 80 (signed IDS listing WIPO search report), 135-140 (English translation of the WIPO search report in the U.S. file history). And yet the Examiner elected not to apply Wu or the earlier Wu Application. Instead, the Examiner applied other prior art—Okina (U.S. Pat. App. Pub. 2011/0102144, Ex-2012)—that the examiner asserted taught a “sequence of label identifiers” (unlike Wu), Ex-1102, 60, but that, *like* Wu, taught only labels with relative order information (e.g., 1-1, 1-2, 1-3) associated with the shelf labels, rather than *location* information:



Ex-2012, Fig. 5 (annotated), [0056], [0059], [0114], [0111], [0116]-[0119], [0125];
Ex-2010, ¶46.

In response, the Applicant amended the then-pending claims to remove a reference to “determining...locations of articles...*from the order of the labels in the sequence of labels,*”¹ to instead recite “identifying a location corresponding to the added shelf label ... on the basis of *an obtained location of the added shelf label*” that is “adjacent” a known “reference label.” Ex-1002, 38-39. With this change (in combination with others), the Examiner allowed the claims over prior art that disclosed a mere ordering of ESLs. Ex-1002, 12-15; Ex-2010, ¶47.

¹ All emphasis has been added unless otherwise noted.

IV. ASSERTED PRIOR ART REFERENCES

A. Wu (Ex-1003)

Wu is a U.S. Patent that was filed on July 17, 2014 and issued on June 28, 2016.² Ex-1003, Cover; Ex-2010, ¶70.

Wu discloses “an electronic shelf label controlling system” that includes “at least one electronic shelf label 110, a controlling device 120, a deploying device 130, and a communication gateway device 140,” as well as “installing method” for installing additional ESLs on a shelf. Ex-1003, 1:37-39, 2:51-3:15; Ex-2010, ¶71.

Wu explains that “[t]he controlling device 120 stores a label location table 121,” which “records a label identifying information and a label location information of the electronic shelf label 110” and depicts an example of such a “label location table”:

² Petitioners wrongly characterize Wu as prior art under §102(a)(1) by referring to the publication date of Wu’s prior patent *application*. Paper 2 (“Petition”), 3. The Wu *patent* on which Petitioners rely was published (June 28, 2016) *after* the Critical Date of the ’709 Patent (July 27, 2015), *id.*, and therefore, even if Wu may serve as prior art, generally, Wu does not qualify as prior art under §102(a)(1).

label identifying information	label location information
ESL-1	S01_R1

Id., Fig. 1 (excerpted)

Ex-1003, 3:16-19; Ex-2010, ¶72.

Wu explains that “[t]he label identifying information is used for identifying the electronic shelf label 110, such as ‘ESL-1,’” and the “label location information” is used “for recording the shelf 901 [(e.g., ‘S01’)] where the electronic shelf label 110 is disposed and the *relative position* on the shelf [(e.g., ‘R01’)] in the form of a code.” Ex-1003, 3:23-28; Ex-2010, ¶73.

When installing a new ESL on a shelf that already has existing ESLs, Wu explains that, first, “the deploying device 130 obtains the label identifying information of the electronic shelf label 110 to be installed.” *Id.*, 3:59-61. Next, either the “deploying device 130 or the controlling device 120 *creates the label location information* of the electronic shelf label 110 to be installed.” Ex-1003, 4:9-11; Ex-2010, ¶74.

If only one ESL is already installed on the shelf, Wu discloses that the “label location” code for the new ESL is generated by obtaining *the “label location” code*—not its label identifier—of an existing ESL, and “performing a mathematical extrapolation” to obtain a “label location” code for the new ESL. Ex-1003, 4:15-20.

For instance, if the existing ESL (“ESL-1”) has a “label location” code of “S01_R1,” the new ESL (“ESL-2”) can be assigned a code of “S01_R2” by acquiring the code “S01_R1” from the existing ESL and merely “adding 1 to R1.” *Id.*, 4:53-5:11; Ex-2010, ¶75.

But if the new ESL is intended to be installed *between* two existing ESLs, the new ESL can be assigned a “label location” code by “performing a mathematical interpolation on the [ESLs] which are already installed.” Ex-1003, 4:20-25. For instance, if the existing ESLs (“ESL-1” and “ESL-2”) have codes of “S01_R1” and “S01_R2,” respectively, the new ESL (“ESL-3”) can be assigned a “label location” code of “S01_R1.5” by merely “dividing the sum of the number of ‘R1’ and ‘R2’ by 2.” *Id.*, 5:37-63; Ex-2010, ¶76.

In sum, Wu discloses an ESL-installation process that characterizes the *relative order* of ESLs on a given shelf, but not their actual locations in a retail area or on the shelf. *See* Ex-1003, 3:23-27; Ex-2010, ¶77.

B. Chaves (Ex-1006)

Chaves is a U.S. Patent Application published on September 17, 2009. Ex-1006, Cover; Ex-2010, ¶78.

Chaves discloses a system and method to query information about an article using a radio-frequency identification (“RFID”) device, such as “to determine which items or products are expected at a given location.” Ex-1006, [0003]. Chaves

envisions using an RFID reader for a range of purposes, including checking products in specific locations, tracking the location and quantity of inventory items, ensuring compliance with planograms, checking for incorrectly-placed items, and filtering which RFID tags are read when users walk through various locations. *Id.*, [0020], [0022], [0024], [0025]-[0031], [0037]-[0038]. Chaves does not envision the use of ESLs, or updating planograms after adding or removing an ESL from a shelf. Ex-2010, ¶79.

C. Auclair (Ex-1005)

Auclair is a U.S. Patent Application published on December 5, 2013. Ex-1005, Cover; Ex-2010, ¶80.

Auclair discloses a software-based process of updating an existing planogram for a store to account for changes in the placement of particular products. Ex-1005, Abstract, [0063]. Specifically, Auclair’s software takes an existing planogram and a user-defined “new assortment of products” as inputs; the software evaluates the organizational structure of how products are grouped together using a set of categories (such as how products are grouped together in one section of a shelf and/or brand); and then the software outputs a new planogram that accounts for the “new assortment of products” consistent with the organizational structure. *Id.*, [0063]-[0073]. Auclair does not envision the use of ESLs, or updating planograms after adding or removing an ESL from a shelf. Ex-2010, ¶81.

D. Itou (Ex-1004)

Itou is a U.S. Patent Application published on October 12, 2017. Ex-1004, Cover; Ex-2010, ¶82.

Itou discloses a process to check whether the product information displayed on an ESL matches the product closest to the ESL. Itou's process involves: (1) taking a picture of shelves with one or more ESLs; (2) identifying the product(s) in the picture using image processing; (3) extracting the "label ID" of each ESL also using image processing; (4) identifying which ESL is closest to each product in the picture; and (5) comparing the products identified in the picture to the products associated with the closest ESL to ensure there is a match between the two. Ex-1004, [0005], [0007]-[0009], [0044]-[0050], Figs. 2, 10. In one embodiment, Itou suggests that, if there is a mismatch between a product and its closest ESL, the ESL can be updated to match the product closest to it on the shelf. *Id.*, [0139]. Itou does not envision updating a planogram after adding or removing an ESL from a shelf. Ex-2010, ¶83.

E. Fujiwara (Ex-1007)

Fujiwara is an English translation of a Japanese Patent Application published on April 3, 2008. Ex-1007, Cover; Ex-2010, ¶84.

Fujiwara discloses a system of wirelessly reading and transmitting ESL information, including a "electronic shelf label ID" to inform customers about the locations of products in a store. Ex-1007, Abstract, [0005]-[0006], [0072], [0076].

Fujiwara explains that the “location information” provided is “the shelf number of the product display shelf,” and consistently describes the shelf number as the location of the electronic shelf label ID. *Id.*, [0009], [0044], [0062], [0086], [0093]. Fujiwara does not envision updating a planogram after adding or removing an ESL from a shelf. Ex-2010, ¶85.

V. LEVEL OF ORDINARY SKILL IN THE ART

For purposes of this *inter partes* review only, Patent Owner applies Petitioners’ definition of a POSITA. Dr. Rajeev Surati meets and exceeds the qualifications of a POSITA as evidenced by his education and experience with the technology leading to and claimed in the ’709 patent and his opinions are further substantiated by his familiarity with patent law. Ex-2010, ¶¶1-36, 48-50.

VI. CLAIM CONSTRUCTION

A. “Location(s)” must be represented in units that allow distance from a point of reference in the retail area to be determined.

One of the central disputes raised by the Petition is the meaning of the word “location(s),” which appears either directly or indirectly throughout every claim of the ’709 Patent.³ *See, e.g.*, Ex-1001, cl. 1 (“the planogram comprises association data between articles of the retail area and *locations* of the retail area...the shelf labels

³ Petitioners challenge every claim of the ’709 Patent.

being...disposed near a respective *location* associated with the article...wherein a *location* of the adjacent shelf label is preliminarily known...identifying a *location* corresponding to the added shelf label in the shelf of the retail area, comprising: ...updating, by the computer system, the planogram on the basis of the sequence of label identifiers, by determining: ...*locations* of the articles, on the basis of an obtained *location* of the added shelf label, wherein the obtained *location* is a *location* in the planogram which is adjacent to the preliminarily known *location* of the adjacent shelf label.”); *see also, e.g., id.*, cl. 10, 11; Ex-2010, ¶51.

The Board should resolve the construction of “locations,” and the term should be construed such that “locations” must be represented in units that allow distance from a point of reference in the retail area to be determined. Ex-2010, ¶52.

A construction is necessary to resolve the parties’ dispute. Petitioners have not formally offered a construction for this term, and instead purport to apply its “plain and ordinary meaning.” Petition, 4. However, Petitioners have implicitly construed “location(s)” when applying the prior art to the challenged claims. Specifically, Petitioners argue that, *inter alia*, a “label location” code that indicates nothing more than an *order* of shelf labels on a given shelf—no matter where that shelf is located, or where exactly the label sits on the shelf—constitutes a “location.” *See, e.g.*, Petition, 8-9 (identifying Fig. 5C as showing “association data between products and locations” comprising a unitless “label location” code); Paper 12

(“Prelim. Reply”), 9 (“Wu’s label location table fits th[e] definition [of planogram] – comprising association data between products and locations.”). In the Institution Decision, the Board preliminarily agreed that Wu’s “label location” codes provide “locations.” *See* Paper 14 (“Institution Decision”), 15-16 (“Recognizing that [Wu’s] label content table 122 associates labels *and locations*, Petitioner correctly refers to label content table 122 as the planogram.”); Ex-2010, ¶53.

The intrinsic record supports PO’s construction. *See, e.g.*, Institution Decision, 19 (“The specification, or more precisely, the written description, is the ‘single best guide to the meaning of a disputed term.’”) (quoting *Grace Instrument Indus., LLC v. Chandler Instruments Co.*, 57 F.4th 1001, 1008 (Fed. Cir. 2023)). The ’709 Patent describes a “planogram” as including “a set of association data among articles of a retail area *and locations* of said retail area.” Ex-1001, 2:6-7. As shown below, the ’709 Patent then consistently discloses that such “locations” must be represented in units that allow distance from a point of reference in the retail area to be determined. Ex-2010, ¶54.

For example, in describing the “General Technical Field and Context of the Invention,” the ’709 Patent discloses that a planogram that comprises location information enables users to “determine[] which products must be *at which height*, on which shelves and *over how many linear meters*.” Ex-1001, 2:7-9. For a “planogram” to allow determination of the height of the products and how many

linear meters they occupy, the “locations” in the planogram must be represented in units that allow distance from a point of reference in the retail area to be determined (e.g., in coordinates with metric units, imperial units, or even latitude/longitude). Ex-2010, ¶55. The ’709 Patent further explains that, through the use of wireless communications protocols (such as near-field communications (“NFC”) and RFID), the *location of each product can be measured* with “considerable precision, of the order of a few centimeters.” Ex-1001, 1:44-2:2. The specification contrasts this with other prior-art “triangulation” methods that “at best enable precision of the order of a meter only, which prevents knowing [at] which product the client is *located*,” meaning identifications of imprecise, general regions are insufficient to constitute a “location.” *Id.*; Ex-2010, ¶55. Again, in order to “measure” a location with “precision, of the order of a few centimeters,” a location must be represented in units that allow distance from a point of reference to be determined. Ex-2010, ¶¶55-56.

Ultimately, through a combination of features, the ’709 Patent explains that having locations represented in units that allow distance from a point of reference in the retail area to be determined allows those locations to be used to produce a planogram preferably in the “form of a cadastre”—a French term that refers to detailed property-boundary maps, Ex-2014, 5; Ex-2015—that treats planogram locations as “a referential or a set of *coordinates* representative of the *spatial organization of the retail area*,” Ex-1001, 8:40-44; Ex-2010, ¶57.



Ex-2015 (depicting a generic “cadastre” identifying the particular locations of properties). The ’709 Patent explains that, by providing such “location” information, store managers are equipped with “highly precise knowledge of *the location of products*” needed “for order picking, for a cycle counting, or even tidying away articles left around the shop out of their location.” Ex-1001, 10:5-9; Ex-2010, ¶57.

Accordingly, the term “locations” should be construed to require a representation in units that allow distance from a point of reference in the retail area to be determined. Ex-2010, ¶58.

B. “Planogram” has its own, generally understood meaning in the art that should be applied here.

Another dispute between the parties is whether the primary prior-art reference Petitioners rely upon—Wu—teaches a “planogram,” a term appearing in claims 1, 10, and 11. This term appears throughout the claims as well. *See, e.g.*, Ex-1001, cl. 1 (“the *planogram* comprises association data between articles of the retail area and

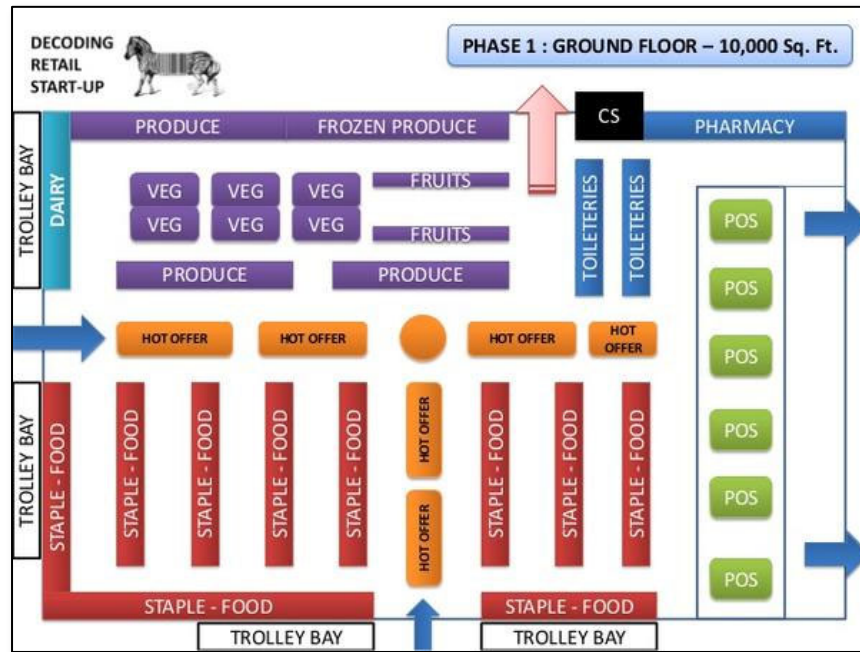
locations of the retail area ... updating, by the computer system, the *planogram* on the basis of the sequence of label identifiers, by determining: ... locations of the articles, on the basis of an obtained location of the added shelf label, wherein the obtained location is a location in the *planogram* which is adjacent to the preliminarily known location of the adjacent shelf label.”); *see also id.* cls. 10, 11; Ex-2010, ¶¶59-60.

The term “planogram” is a well-known and often-used term in the art. Ex-2010 ¶61. It is generally understood to refer to some form of dataset, map, diagram, schematic, or the like, that allows retailers to accurately plan out the placement of products in a retail store in an effort to maximize sales. *See, e.g.,* Ex-2016, 948 (defining “planogram” as “*a schematic drawing or plan for displaying merchandise in a store so as to maximize sales*”); Ex-2017, 1:12-21 (“*A planogram...is a diagram of fixtures, fittings and products that illustrates how and where retail products should be displayed.*”); Ex-2018, 1:31-36 (“*A planogram is a layout, or ‘blueprint’, that assigns a specific display location on a specific display fixture within a retail store to each product to be displayed.*”); Ex-2010, ¶61.

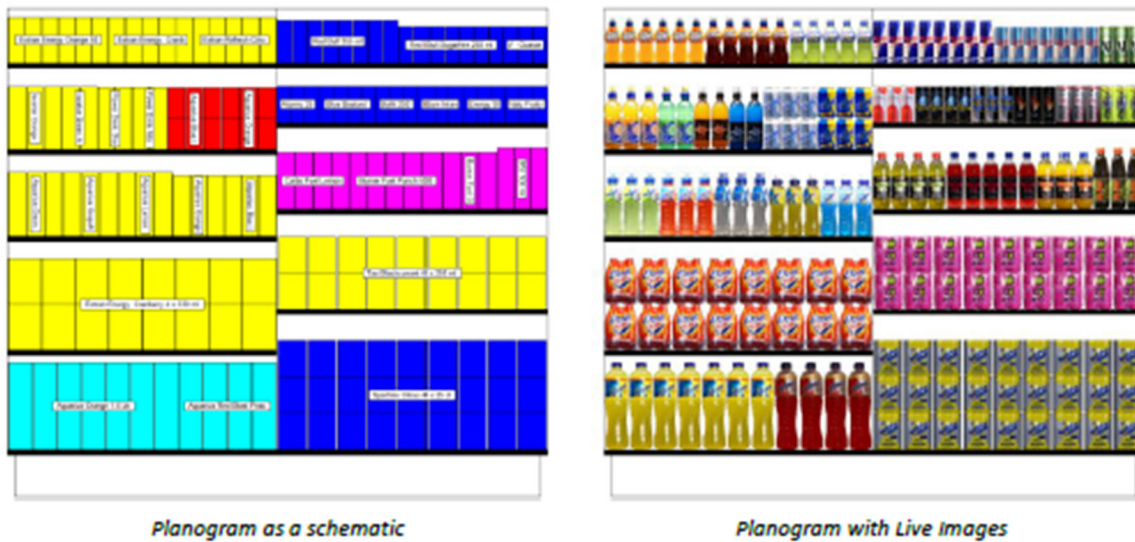
In particular, “planograms” generally include information as to: (1) how similar products are grouped together and where these groups of products are placed in the retail store; (2) where each product is placed on a retail shelf-segment, including relative to other products (e.g., how high off the ground, how prominent a

position, which products are nearby, etc.); (3) and how much shelf space is dedicated to each product. *See, e.g.*, Ex-2019, 4-10 (noting the various layers of data used to build a planogram, including how products are grouped, how much space should be allocated to each product, and product-performance data to decide which products to prioritize); Ex-2020, 5:57-61 (“a planogram is, at a minimum, a list of products..., *positions of the products (e.g., x, y, z coordinates for the center of product)* and orientations....”); Ex-2017, 1:12-21 (“An essential part of creating a planogram is collecting information about the geometry of the underlying retail space (floor levels, walls, doors, obstructions, etc.) and location and size of fixtures (shelves, racks, display cases, etc.) and fittings (power outlets, communication devices, points-of-sale, etc.).”); Ex-2018, 1:31-36 (“[A] planogram may assign each product to a specific location on specific shelf or to a specific hook of a specific peg grouping of a particular display fixture within the retail store.”); Ex-2010, ¶62.

Indeed, a “planogram” may take the form of a top-down map depicting the various groupings of products by type, as shown below:



Ex-2021, 2 (depicting an exemplary top-down planogram). Or a “planogram” could be a depiction of a shelf segment intended to reflect reality, as shown below:



Ex-2019, 5; Ex-2010, ¶63.

At base, “planograms” at a minimum include information about how products are grouped, where they are placed, and how much space they are provided so that retailers can plan, track, and make decisions about their product placements to ensure each product is positioned in a way that will generate the most sales. Ex-2022, 4 (providing example questions planograms can help answer, such as “Do my products get their fair share of shelf space?” and “Is the planogram that I made implementable in the stores?”). Although there are many different definitions of “planogram” that exist throughout the art, they are all share these same basic features. Ex-2010, ¶64.

The Board need not expressly construe the term “planogram” to define its outer bounds here, but resolving the parties’ dispute requires an understanding of what the plain meaning of “planogram” encompasses and what it does not. *See, e.g., Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms...that are in controversy, and only to the extent necessary to resolve the controversy,’” quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). That is because, here, Petitioners contend that a database that contains only product identifiers and so-called “label location” codes—that in actuality represents nothing more than the **order** of shelf labels on a given shelf—constitutes a “planogram.” *See, e.g.,* Petition, 12 (identifying Wu’s table 122 in Fig. 5C, contending “[t]his table is the claimed **planogram.**”); Prelim. Reply, 9 (“Wu’s label location table fits th[e] definition [of

planogram] – comprising association data between products and locations.”); Ex-2010, ¶¶65, 77. This view, however, is inconsistent with how the term “planogram” is generally understood and such association data is not a “planogram” as recited, which is all the Board needs to decide.

When the ’709 Patent uses the term “planogram,” it does so consistent with its generally understood meaning in the art and nowhere suggests the term has taken on a different meaning. Specifically, in the ’709 Patent, one of the central problems with prior-art systems is that “the planogram never complies with reality,” and that an accurate representation of where products are located throughout a retail area and on shelves is critical. Ex-1001, 2:28-36. To overcome this problem, the claimed invention requires providing a “planogram [that] comprises association data between articles of the retail area and locations of the retail area” that is updated when altering product placements and their associated ESLs. *See, e.g., id.*, cl. 1. Indeed, the ’709 Patent expressly states that these associations produce a planogram that can be used to “determine[] ***which products must be at which height, on which shelf, and over how many linear meters,***” *id.*, 2:7-9, and can ultimately “present[] a listing of the locations of the retail area taking the form of a cadastre,” *id.*, 8:40-44, which is again a French term for a map. Ex-2010, ¶65.

Moreover, the prosecution history further underscores what at least the Examiner and Applicant understood did and did ***not*** constitute a “planogram.”

Specifically, in a non-final office action, the Examiner rejected the then-pending claims—which at the time recited the term “planogram” only in dependent claim 8, Ex-1002, 199-201—under §§101, 102, and 103, *id.*, 58-67. For the prior-art rejections, the Examiner relied primarily upon Okina, which disclosed a database that assigned each ESL positional codes reflecting the relative *order* of ESLs—similar to how Petitioners cite Wu here. *Id.*, 56-67. Yet the Examiner did not cite Okina as teaching the “planogram” of dependent claim 8. *Id.* Okina’s Figure 16, provided below, shows a database with even more positional information than Wu’s includes:

Fig.16

ESL INFORMATION			POSITION INFORMATION			PRODUCT INFORMATION				DISPLAY ATTRIBUTE
ESL CODE	SIZE	COLOR	PRODUCT SHELF NUMBER	ROW (VERTICAL DIRECTION)	COLUMN (LATERAL DIRECTION)	PRODUCT CODE	PRODUCT NAME	DESCRIPTION	PRICE	
1001	M	MONOCHROME	101	1	1	10501	SAUCE FOR SWEET AND SOUR PORK	SICHUAN FLAVOR	420	1
1002	M	MONOCHROME	101	1	2	10689	SAUCE FOR MAPO DOUFU	SICHUAN FLAVOR	380	0
1003	M	MONOCHROME	101	1	3	10605	SAUCE FOR SAUTERED SHREDDED BEEF WITH GREEN PEPPER	AUTHENTIC CANTONESE FLAVOR	380	0
1004	M	MONOCHROME	101	2	1	10566	SAUCE FOR TWICE COOKED PORK	AUTHENTIC CANTONESE FLAVOR	400	0
1005	S	COLOR	101	2	2	10802	STAR ANISE	MUST FOR CHINESE FOOD	580	0
1006	S	COLOR	101	2	3	10803	CHILI BEAN SAUCE	AUTHENTICALLY SUPER HOT	720	0
1007	S	COLOR								
1008	S	COLOR								
1009	S	COLOR								
1010	S	COLOR								
1011	S	COLOR								
1012	S	COLOR								
1013	M	MONOCHROME	102	1	1					
1014	M	MONOCHROME								
1015	M	MONOCHROME								
1016	M	MONOCHROME								

Ex-2012, Fig. 16 (annotated)

Instead, the only reference the Examiner identified as teaching a “planogram” was U.S. Application No. 2008/0198001 (Ex-2013, “Sarma”).⁴ Ex-1002, 63-64. And Sarma described the “planogram” as “a schematic drawing of fixtures that illustrate product placement,” Ex-2013, [0005], in line with the term’s plain meaning. Ex-2010, ¶66.

To overcome the §101 rejection at least, the Applicant amended the claims to recite the term “planogram” throughout, and argued that “[a] planogram *is a digital representation of the layout of a retail area,*” and must “accurately relate to the retail area” to provide a host of practical benefits, such as ““estimat[ing] the number of articles on the shelves, based on theoretical extent of their presence[.]” Ex-1002, 46; *see also id.*, 47-48 (noting benefits of accurate planograms). Based on this and other amendments to the claims, the Examiner allowed the ’709 Patent to issue. *Id.*, 12-15. Accordingly, not only did the Examiner apparently find that a mere database of ordered positional codes did *not* constitute a planogram, but the Applicant and

⁴ Although the Examiner identified Sarma as teaching a planogram, the Examiner relied upon Sarma only for dependent claim 6, which did not recite a planogram. Ex-1002, 63. For dependent claim 8—which recited a planogram—the Examiner relied upon Mitsuokia (JP 2011-96038), but did not expressly address claim 8, and did not identify Mitsuokia as teaching a planogram. *Id.*, 64-66.

Examiner-cited prior art used the term “planogram” consistent with its generally understood meaning. Ex-2010, ¶67.

In the Institution Decision, the Board incorrectly suggested that the ’709 Patent redefined the term “planogram” *exclusively* by one and only one of its qualities: “the planogram comprises association data between articles of the retail area and locations of the retail area.” Institution Decision, 14-15 (quoting cl. 1). This view, respectfully, overlooks that a planogram has its own meaning in the relevant art and that the claim *non-exhaustively* describes just one element thereof. *CIAS, Inc. v. All. Gaming Corp.*, 504 F.3d 1356, 1360 (Fed. Cir. 2007) (“In the patent claim context the term ‘comprising’ is well understood to mean ‘including but not limited to.’”). If the view set forth in the Institution Decision were correct, for instance, when faced with a claim to a “lightbulb comprising a filament,” that would mean that unpatentability would rest upon showing just a prior-art filament, without accounting for the import or intrinsic meaning of the term “lightbulb” at all. Treating the “association data” phrase as definitional reads out the term, “planogram,” but the Federal Circuit has not endorsed such an expansive view of claim construction. *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (“claims are interpreted with an eye toward giving effect to all terms in the claim”); Ex-2010, ¶68.

Accordingly, the term “planogram” should be understood as having its plain meaning in the relevant art, and applied consistent with how the term is generally

used throughout the art. If so applied, then for the reasons discussed in further detail below, Petitioners' reliance on Wu as teaching the claimed planogram is misplaced. Ex-2010, ¶69.

VII. PETITIONERS HAVE NOT ESTABLISHED BY A PREPONDERANCE OF THE EVIDENCE THAT ANY CLAIM IS UNPATENTABLE

Petitioners fail to demonstrate by a preponderance of the evidence that any claim of the '709 Patent is unpatentable. Ex-2010, ¶¶86-88.

In Ground 1, Petitioners rely upon Wu as rendering every limitation in claims 1-5, 10-15, and 20 obvious. In Ground 2, Petitioners then contend that if Wu does not render certain limitations obvious—and specifically the claimed (1) “retail area,” (2) “acquiring” and “transmitting ... [a] sequence of label identifiers,” and/or (3) “transmitting ... a reference of an article”—Wu combined with Chaves would, as well as claims 6 and 16. In Ground 3, Petitioners similarly contend that the combination of Wu, Itou, and Auclair further renders the same “retail area” and “acquiring” and “transmitting” limitations obvious, as well as claims 7-9, 17, and 19. And finally, in Ground 4, Petitioners again contend that Wu combined with Fujiwara further renders the same “retail area” and “acquiring” and “transmitting” limitations obvious. Ex-2010, ¶89. But in making these arguments, Petitioners repeatedly ignore express claim limitations, conflate the teachings of the prior art, and offer only conclusory reasons riddled with hindsight to combine prior-art references.

First, when the term “location” is properly construed, Wu fails to disclose “locations” because Wu discloses only codes that provide an *order* of shelf labels, and not *locations* of a product or label in a retail area or on a shelf. Petitioners do not rely on any of the additional art presented in Grounds 2-4 as teaching “locations” for purposes of the Petition. Ex-2010, ¶90.

Second, when the term “planogram” is properly construed, Wu fails to disclose one because providing only a mere *order* of shelf labels on a shelf, as Wu discloses, is again insufficient to enable retailers to plan out and track the particular arrangement of products on shelves, such as how much shelf space each product is given—the information planograms are generally understood to provide. Ex-2010, ¶90.

Third, even without any claim construction, all Grounds fail because Wu does not disclose a label reader that acquires and transmits *a sequence* of label identifiers. Wu only ever acquires a *single* label identifier and a *single* “label location” code. And although Petitioners point to additional prior art in Grounds 2-4 to teach this limitation as well, Petitioners’ proffered motivation is cursory and riddled with hindsight, which is insufficient to satisfy their burden. Ex-2010, ¶90.

And, finally, for dependent claims 7, 8, 17 and 18, Petitioners ignore that these claims recite a process to calculate distance by measuring the displacement of the reading device itself from the moment the device receives one label identifier to the

moment it receives a second label identifier. Indeed, Petitioners rely upon a prior-art camera that simply calculates distance by analyzing a picture, without ever reading a label identifier directly or moving the camera to calculate distance. Ex-2010, ¶90.

Accordingly, the Board should find that Petitioners have not proven any of the claims are unpatentable. Ex-2010, ¶90.

A. Grounds 1-4: Wu fails to disclose “locations” consistent with the ’709 Patent (all claims).

For Ground 1, Petitioners rely on Wu for every element of every independent claim. Petition, 10-32 (claim 1), 37-42 (claims 10-11). And Petitioners offer Grounds 2-4 only as *additional or alternative* support for discrete limitations, to the extent Wu is found not to teach certain limitations. Petition, 52-56 (Ground 2 addressing “retail area” (limitation 1[a]); “acquiring ... a sequence of label identifiers,” (limitation 1[c]); “transmitting ... the sequence of label identifiers,” (limitation 1[k]))⁵; 70-72 (Ground 3 same); 84-87 (Ground 4 same). In all Grounds, Petitioners rely on Wu to teach the recited “locations,” but when properly construed as discussed in Section VI.A, Wu does not teach “location(s).” Ex-2010, ¶91.

⁵ Petitioners also address “transmit[ting] ... a reference of an article” found in the dependent claims as part of Ground 2 (limitations [4b], 14[b]).

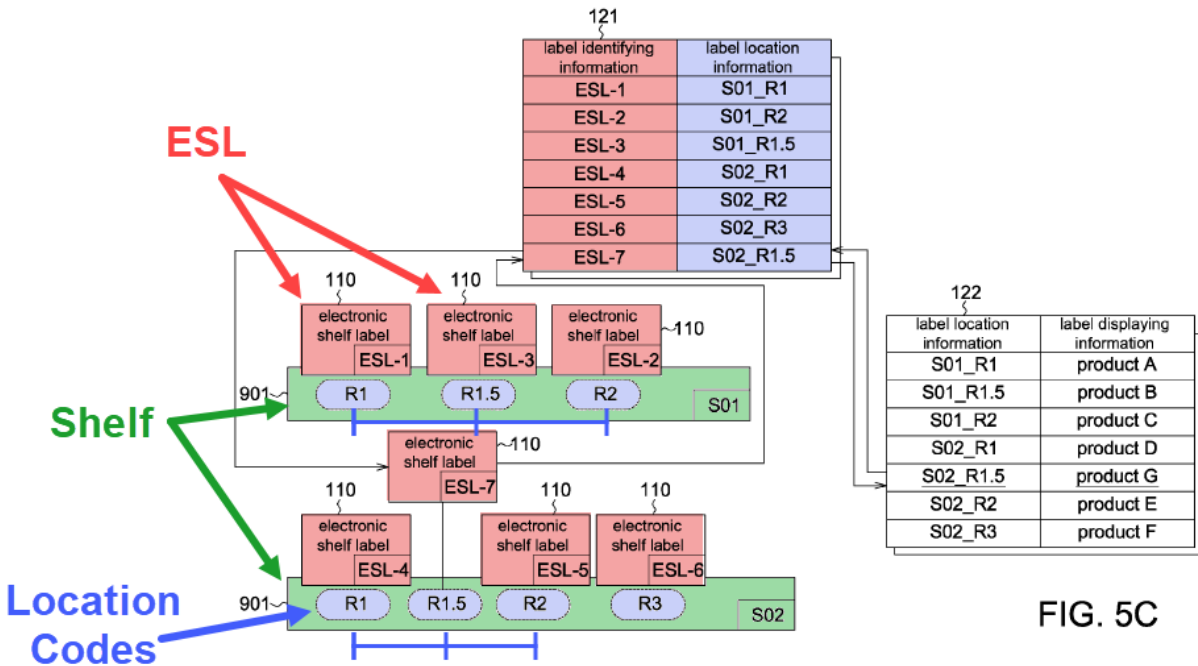
1. Wu fails to disclose “locations” because Wu discloses a system for tracking the order of shelf labels, not their location in a retail area or even on a shelf.

The independent claims of the '709 Patent recite “location(s),” including the locations of articles in a retail area (e.g., [1b], [1n]), the locations of “adjacent shelf label[s]” to serve as reference points for “added shelf label[s]” (e.g., [1i]), and locations of “added shelf label[s]” (e.g., [1j]). In each instance, the claims refer to these “locations” as being represented in units that allow distance from a point of reference in the retail area to be determined. *See, e.g.,* Ex-1001, cls. 1, 10, 11 (limitations [1b], [1d], [1f], [1i], [1j], [1n], [10b], [10c], [10e], [10h], [10i], [10m], [10n], [11b], [11j], [11l], [11n]); Ex-2010, ¶92. Wu, however, does not disclose any “locations,” but instead merely discloses a way to track the *order* of labels (and their associated articles) on a shelf, without any measurable way to track their locations. Ex-2010, ¶93.

Although Wu nominally uses the term “location” when describing its invention, and presents codes that are described as tracking a “location,” that is a misnomer; Wu uses the term in a way that refers only to the *order* of labels on a given shelf. Specifically, Wu discloses a process to produce a one-dimensional, unitless, linear order of shelf labels by using simple extrapolation (e.g., using addition or subtraction when a new ESL is being added next to an existing ESL) or interpolation (e.g., using averaging when a new ESL is being added *between* two

existing ESLs) to maintain a database that tracks shelf labels when the relative order of labels is changed on the shelf. Ex-2010, ¶94.

For instance, Wu describes that, when adding a new shelf label next to an existing label that has a “label location” code of S01_R1—with S01 representing a shelf number, and R1 representing a numerical index of the order of labels—the new label can be provided a “label location” code of “S01_R2” by simply adding “1” to the existing label code’s numerical index. Ex-1003, 5:3-11. And when adding a new shelf label *between* two existing shelf labels (e.g., with “label location” codes R1 and R2, respectively), Wu uses simple averaging to assign the new label a code (e.g., R1.5, or $\frac{R1+R2}{2}$) *between* the existing ones. At base, this mathematical process to create new “label location” codes produces a one-dimensional, unitless progression that serves no purpose other than to maintain a system with the correct *order* of labels:



Ex-1003, Fig. 5C (annotated); Ex-2010, ¶95.

As exemplified in the annotated figure above, however, missing entirely from Wu’s disclosure is any use of these “label location” codes to define a “location,” as properly construed. Wu’s shelf codes (“S01,” “S02”), for instance, do not provide any information as to the *location* of the shelf in the retail area (e.g., where the shelf is located on the retail floor, or how high off the ground the shelf is). And the relative positional codes (“R1,” “R1.5,” “R2”) do not represent the *location* of a label by any unit of measure, because even when ESLs on different shelves have the same positional codes (e.g., ESL-1 and ESL-4 both have code “R1”; ESL-3 and ESL-7 both have code “R1.5”; and ESL-2 and ESL-6 both have code “R2”), Wu depicts that the ESLs can be at entirely different locations on their respective shelf, as shown

in the annotated length lines above. That is because Wu’s “label location” codes do not provide a representation of a location in units that allow distance from a point of reference in the retail area to be determined, consistent with how the ’709 Patent uses the term “location.” Ex-2010, ¶96; Ex-1001, 2:6-9 (explaining a “planogram” has “association data among articles of a retail area and *locations* of said retail area,” and “determines which products must be at which height, on which shelves and over how many meters”), 8:40-50 (explaining how planograms use a coordinate system for locations that can be used to produce a “cadastre”-type map of the retail area); *see* Section VI.A. And although Wu uses the terms “extrapolate,” and “interpolate” when deriving these codes, those terms do not incorporate any unit of measure either; because “label location” codes are extrapolated or interpolated from unitless starting points (e.g., R1, R2, etc.), any extrapolated or interpolated value would be unitless as well. Ex-2010, ¶¶97-99.

Importantly, a “location” according to the ’709 Patent must provide *more* than a simple ordering of labels, which is all Wu teaches; it must provide units that allow distance to be determined from a reference point so that the actual *location* of a label and/or article can be determined in a retail area, which Wu does not disclose. Ex-2010, ¶100.

2. Petitioners do not rely upon the prior art in Grounds 2-4 to cure the deficiencies in Wu’s disclosure of “location.”

Although Petitioners present three additional grounds to fill in gaps in Wu’s disclosure, Petitioners do not contend that these additional prior-art references disclose “locations” consistent with the ’709 Patent, let alone identify any motivation to modify Wu to create a dataset of “locations” as opposed to an order of labels. *See* Petition, 52-56 (Ground 2 relying on Chaves to teach “retail area” (limitation 1[a]); “acquiring ... a sequence of label identifiers,” (limitation 1[c]), “transmitting ... the sequence of label identifiers,” (limitation 1[k])),⁶ 70-72 (Ground 3 relying on Auclair and Itou to teach same), 84-87 (Ground 4 relying on Fujiwara to teach same). Ex-2010, ¶¶101-02. For this reason alone, if the Board finds that Wu does not teach the claimed “locations,” Petitioners’ arguments as to the unpatentability of the claims can be rejected across all Grounds. *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (“It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify with particularity the ‘evidence that supports the ground for the challenge to each claim.’” (cleaned up)).

⁶ Petitioners also address “transmit[ting] ... a reference of an article” found in the dependent claims as part of Ground 2 (limitations [4b], 14[b]).

B. Grounds 1-4: Wu fails to disclose the claimed “planogram” of a retail area (all claims).

Not only does Wu fail to disclose “locations” consistent with the ’709 Patent, but, relatedly, Wu fails to disclose a “planogram” as that term is ordinarily understood. Ex-2010, ¶¶103-04.

1. Wu fails to disclose a “planogram ” because Wu’s system for tracking the order of shelf labels does not include a planogram as the term is generally understood.

Petitioners contend that Wu’s “label content table 122” teaches the claimed planogram, *see, e.g.*, Petition, 13, 27; Ex-1009 ¶70, but this is wrong not only because Wu fails to disclose “locations” for the reasons discussed above, but also because Wu’s “label content table 122” does not constitute a “planogram” as the term is generally understood. Ex-2010, ¶105. Although Petitioners bore the burden to explain exactly why the “label content table 122” constitutes a “planogram,” they made no attempt to meet that burden.

Provided below is Wu’s “label content table 122”:

122
}

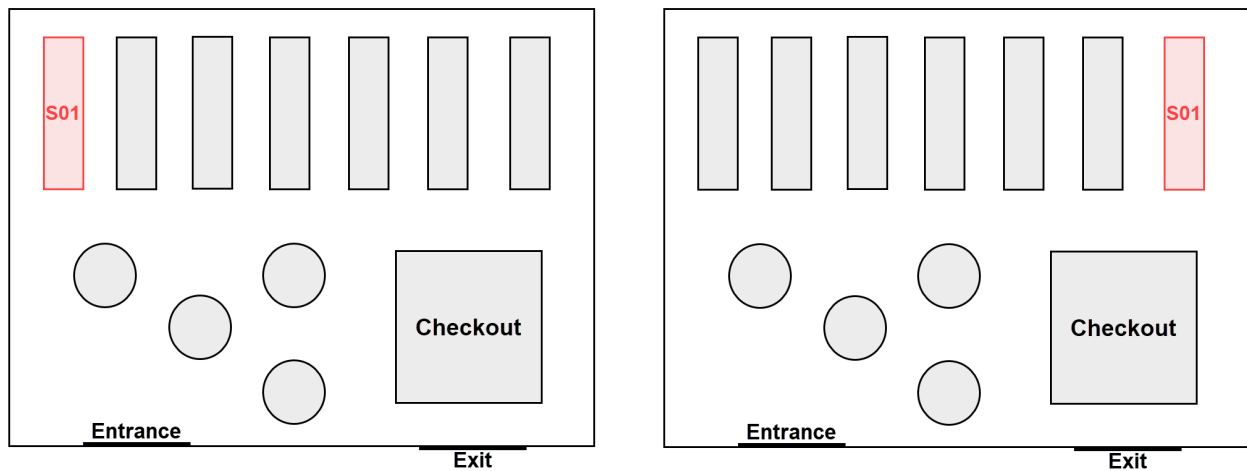
label location information	label displaying information
S01_R1	product A
S01_R1.5	product B
S01_R2	product C
S02_R1	product D
S02_R1.5	product G
S02_R2	product E
S02_R3	product F

Ex-1003, Fig. 5C

Wu’s table (122) includes only two pieces of information: (1) “label displaying information” that identifies the product associated with each label; and (2) “label location information” made up of so-called “label location” codes. *See, e.g.*, Ex-1003, Fig. 5C, 3:16-31. But, as explained previously, the “label location” codes (e.g., “S01_R1,” “S01_R1.5,” etc.) are not tied to any concrete unit of measure; the codes are either manually selected using an arbitrary starting point (e.g., R1), or can be extrapolated or interpolated using existing “label location” codes. *See id.*, 4:9-25. The end result is a table that preserves only the *order* of labels on any given shelf. *See* Section VII.A.1; Ex-2010, ¶106.

But having just the order of labels on any given shelf cannot constitute a “planogram” of the retail area for two reasons. *First*, the “label content table 122” does not provide any information as to how products are grouped or where those products are located in the retail area. Wu’s “label content table 122” does not, for

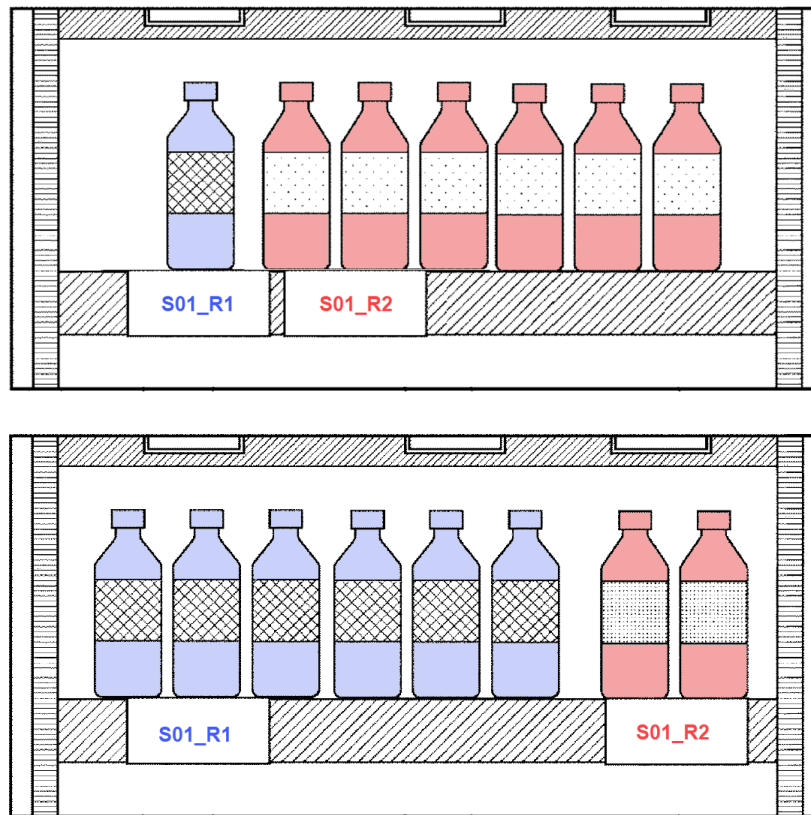
instance, provide any information as to where the shelf associated with each shelf code (e.g., “S01,” “S02,” etc.) is located, or how each shelf code relates to one another (e.g., whether S01 and S02 are on the same shelf segment at different heights, or even the same aisle). Indeed, these codes can represent shelves in any conceivable location:



Ex-2010, ¶107 (example provided by Dr. Surati). Because Wu discloses only arbitrary shelf codes without specifying a location of those shelves, or how each shelf is positioned relative to one another, Wu’s “label location” codes lack the sort of information considered necessary to plan product placement in a retail area, and therefore the “label content table 122” cannot constitute a planogram. *Id.*

Second, Wu’s positional codes (e.g., “R1,” “R1.5,” “R2,” etc.) do not provide any information indicating *where* a given product is on its assigned shelf, or the extent of shelf space each product is provided, which are also fundamental elements of a planogram. *See* Section VI.B. Although these codes represent the *order* of

products on a shelf, they provide no additional information beyond that, such as “which products must be at which height, on which shelf, and over how many linear meters.” Ex-1001, 2:7-9; Ex-2010, ¶108; *see* Section VII.A.1. Indeed, the positional codes “R1” and “R1.5” may just be millimeters apart from each other, or on opposite ends of a shelf:



Ex-1004, Fig. 10; Ex-2010, ¶108 (modifying Fig. 10 of Itou). Such bare information is again insufficient to enable retailers to plan out and track the particular arrangement of products on shelves, such as how much shelf space each product is given, which is information planograms are understood to provide. *See* Section VI.B.

Wu's "label content table 122" is therefore insufficient to constitute a planogram. Ex-2010, ¶108.

Critically, despite being a well-known term of art at the time, *see* Section VI.B, Wu never uses the term "planogram." But the Wu applicant, at least, was aware of this term, as it filed another patent application soon after Wu that was expressly directed to an "Intelligent Planogram." *See, e.g.*, Ex-2023, Cover. And there, the Wu applicant described a "planogram" as "a *diagram* [that] indicates the placement of objects in conventional stores," and is intended to "increase sales and make the most of the space" by accounting for "statistical analysis based on the historical data such as sales and the disposing location of products," *see id.*, [0003]-[0004], consistent with the term's plain meaning, *see* Section VI.B. This stands in stark contrast to Wu itself, which chose *not* to describe its "location content table 122" the same way.

Because Wu fails to use the term planogram, the onus was on Petitioners to explain why Wu's "location content table 122" nonetheless constitutes one. Yet Petitioners identify *no* evidence or factual support explaining *why* a POSITA would understand Wu's "label content table 122" to be a "planogram" apart from the opinion of their expert, who merely cites the disputed portion of the '709 specification to summarily conclude that it is. *See* Ex-1009, ¶64 (stating only that Wu's table is the claimed planogram; Ex-1001, 2:6-7 (defining a planogram as "a set of association data among articles of retail area and locations of said retail

area”)); Ex-2010, ¶109. To prove obviousness, however, “a petitioner cannot employ mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016); *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (noting rejections based on obviousness must be supported by “some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”); *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019) (stating “conclusory expert testimony is inadequate to support an obviousness determination” and reversing the Board’s decision since its obviousness determinations were based on conclusory expert testimony as opposed to substantial evidence). Petitioners’ expert’s opinion simply calling Wu’s table 122 a “planogram” therefore cannot suffice.

Absent a finding that the ’709 Patent expressly *redefined* the term planogram far broader than its plain meaning to require *only* some general association between a product and its “location” (if also construed broadly to encompass unitless orders of things)—neither of which finds support in the ’709 Patent, *see* Section VI—Wu cannot possibly teach a “planogram” as claimed.

2. Petitioners do not rely upon the prior art in Grounds 2-4 to cure the deficiencies in Wu’s disclosure of “planogram.”

Just as with the “location” limitations, Petitioners do not rely on any of the additional prior art identified in Grounds 2-4 to teach the claimed “planogram,” or

provide any motivation to modify Wu’s “label content table 122” to include sufficient information to constitute a “planogram.” *See* Section VII.A.2. Thus, Grounds 2-4 cannot save Petitioners’ challenge either. Ex-2010, ¶110.

C. Grounds 1-4: The prior art does not disclose “acquiring, by a reading device, a sequence of label identifiers” or “transmitting, by the reading device, the sequence of label identifiers” (all claims).

1. Ground 1: Wu does not disclose acquiring or transmitting more than one label identifier as required by all claims.

Regardless of any claim construction, Petitioners cannot demonstrate unpatentability of any claim of the ’709 Patent because Petitioners fail to identify a “reading device” that acquires and transmits the “sequence of label identifiers” recited by the claims. That warrants rejecting Petitioners’ challenge as well. Ex-2010, ¶111.

For instance, limitation [1c] of the ’709 Patent requires that a reading device “acquir[es] ... *a sequence of label identifiers*,” including at least a label identifier of “an added shelf label” (e.g., a new label to be added to a shelf) and a label identifier of an “adjacent shelf label” (e.g., an existing label already installed on the shelf). Ex-1001, cl. 1. Further, limitation [1k] requires “transmitting, by the reading device, *the sequence of label identifiers* to the computer system.” *Id.*, cl. 1. The remaining independent claims include similar limitations. *See id.*, cl. [10a], [10b], [10j] (claiming (at [10a]) “[a] non-transitory computer program product” comprising

programming for (at [10b]) “acquiring, by a reading device, a sequence of label identifiers” including identifiers for “an added shelf label” and “adjacent shelf label,” and (at [10j]) “transmitting, by the reading device, the sequence of label identifiers to the computer system...”); *id.*, cl. [11a], [11e], [11k], [11o] (claiming (at [11a]) “[a] system for managing a planogram” comprising (at [11e]) “a reading device adapted to acquire the label identifiers of the plurality of electronic shelf labels,” (at [11k]) “the reading device being configured to: acquire a sequence of label identifiers” including identifiers for “an added shelf label” and “adjacent shelf label,” and (at [11o]) “transmit the sequence of label identifiers to the computer system”); Ex-2010, ¶112.

The '709 Patent makes plain that a “label identifier” is an identifier specific to the label—like a serial number. Ex-1001, 2:50-51 (“each of said shelf labels being fitted with a label identifier of its own.”), 4:49-53 (“This label identifier therefore identifies unequivocally a single ESL only”), 9:28-32 (explaining each label has a “label number, i.e., the label identifier”). The '709 Patent also explains that the label identifier is *distinct* from other information, such as the *location* of the label or the *article* subsequently associated with the label. *See, e.g., id.*, 5:21-25 (“The memory ... stores data relative to the *association between the label identifier and a location.*”), 5:25-27 (“[B]y way of the label identifier, *the location of the ESL* identified by said identifier and the *article to which it refers* can be found.”), 7:9-17

(explaining how the reading device transmits “the sequence of label identifiers” *and* “relative positioning” of the shelf labels), 8:25-30 (“By way of the sequence of label identifiers, the computer system determines the location of the added ESL 10.”); Ex-2010, ¶113.

And as several of the independent claims later specify—and the specification further clarifies—the ’709 Patent acquires the sequence of label identifiers to determine not only the articles associated with each label identifier, but also additional information such as specific product packaging dimensions (e.g., the size and number of seasonally-changing customer-facing products on a shelf), which thereby enables more-precise planogram renderings by the back-end computer system. *Id.*, cl. [11]-[1o] (claiming a method in which a computer system updates “the planogram on the basis of the sequence of label identifiers, by determining: *articles associated with the labels ... and, locations of the articles.*”), cl. [10k]-[10n], 2:10-27 (describing the need for updating a theoretical planogram with reality), 9:6-17 (noting how “characteristics of the articles” impacts location information to “further improve[] the representativeness and performance of the planogram”); Ex-2010, ¶114.

For instance, the ’709 Patent states that planograms relevant to the disclosed invention can “determine[] which products must be at which height, on which shelves and over how many linear meters,” Ex-1001, 2:3-9, and that the planogram

can “tak[e] the form of a cadastre,” *id.*, 8:40-50, which, as noted previously, is like a map. *See* Section VI.B. As the ’709 Patent explains, having “an ESL [or electronic shelf label] and an article” associated with each location (linked through the label identifiers) means that “any modification to the arrangement of locations of the ESLs ... is immediately relayed to the computer system 2, and integrated into the planogram.” Ex-1001, 8:51-67; 9:1-5; Ex-2010, ¶¶115-16.

Accordingly, the independent claims of the ’709 Patent require a reader that acquires and then transmits *a sequence of label identifiers* that includes an identifier of both an existing and a new shelf label as a starting point to register the new label. Ex-2010, ¶117.

To meet the “sequence of label identifiers” specified first in limitation [1c],⁷ Petitioners point to Wu’s acquisition of “the label identifying information of the electronic shelf label *to be installed*,” which Petitioners contend corresponds to the claimed “added shelf label.” Petition, 14-15 (citing Wu, 3:59-61, Fig. 2). Ex-2010, ¶119.

However, Wu does not disclose that the reader *also* acquires a *label identifier* of an adjacent, already installed shelf label, as claim limitations [1c], 10[b], and

⁷ Petitioners refer back to the analysis of limitation [1c] for limitations [10b] and [11k] in the other independent claims. Petition, 38, 42; Ex-2010, ¶118 .

11[k] require. As Petitioners concede, Wu instead “acquires the *location* of an adjacent shelf label that was already installed.” Petition, 16.⁸ Wu suggests that only the “label location” codes of an existing shelf label are acquired, not any label *identifier* of the existing shelf label. *See, e.g.*, Ex-1003, 4:9-25, Fig. 2 (S103-105). As noted, acquiring *location* information of an already installed shelf label (e.g., Wu’s “label location” codes) is not the same as acquiring its unique label identifier, which the ’709 Patent specifies are distinct pieces of information. *See* Ex-1001, 2:50-51, 4:49-53, 5:21-27, 7:9-17, 8:25-30, 9:28-32; Ex-2010, ¶¶118-20.

Petitioners recognize this deficiency, but contend that a “POSITA would understand that, without acquiring this second identifier in the sequence...the reading device could not possibly ‘create the relationship between the label identifying information and the label location information.’” Petition, 16 (quoting Wu, 4:26-28, cleaned up); Ex-2010, ¶121.

Petitioners appear to argue that Wu must inherently acquire a label identifier *in addition to* a “label location” code for an existing shelf label. Petitioners’ inherency arguments are fatally unsupported and, in any case, plainly incorrect.

⁸ As noted, Wu uses the term “location” in a fundamentally different way than the ’709 Patent. *See* Section VII.A.1.

To demonstrate that a prior art reference inherently meets a claim limitation, Petitioners must identify evidence that “make[s] clear that the missing descriptive matter is *necessarily present* in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” *Continental Can Co. USA, v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991). “Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Id.* at 1269.

Petitioners offer no evidence that, in addition to acquiring an existing “label location” code, Wu’s reader *necessarily* acquires the label identifier. Ex-2010, ¶122. Instead, to argue that “this second identifier” meets the claim, Petitioners cite only the declaration of their expert. But the declaration repeats the same arguments as the Petition without any additional elaboration or factual support. Petition, 16 (citing and quoting Ex-1009, ¶80 (first conceding that “the reading device ... acquires the *location* of an adjacent shelf label that is already installed”), ¶81 (“In my opinion ... without acquiring this second identifier in the sequence ... the reading device could not possibly ‘create the relationship between the label identifying information and the label location information,’” (cleaned up))). Such conclusory opinions are given little weight, and cannot carry Petitioners’ burden on inherency. *See Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 12, 15 (Feb. 10, 2023) (precedential) (the Board was correct in giving little weight to Petitioner’s

expert because the expert declaration merely offered conclusory assertions without underlying factual support and repeated, *verbatim*, Petitioner's conclusory arguments, collecting Federal Circuit cases).

Moreover, Petitioners' reading of Wu is incorrect. Simply put, acquiring a label identifier of an existing shelf label is not necessary for Wu to add a new shelf label. Rather, when adding a shelf label, all Wu needs regarding the existing shelf label(s) is the existing "label location" code, which provides the necessary information to generate the "label location" code for the new shelf label. Ex-2010, ¶123.

Wu only discloses using an *existing* "label location" code from an existing shelf label to extrapolate a new code for a *new* shelf label, and then associate that new code to the new shelf label's identifier only. *See, e.g.*, Ex-1003, 4:53-5:11, Figs. 3A-D; Ex-2010, ¶123.

Using Wu's codes as an example, if an existing shelf label (with an *identifier* of ESL-1) has "label location" code "S01_R1" (e.g., shelf 1, order 1), all Wu needs is that "label location" code from that existing shelf label to generate an extrapolated location information code for the new shelf label (with an *identifier* of ESL-2) of "S01_R2" by simply incrementing "R1" by 1. *See* Ex-1003, Fig. 3B. This is accomplished without any reference to the existing label's identifier (e.g., ESL-1). Ex-2010, ¶¶124-25. That is because, as explained previously, Wu concerns only

generating a table of *relative order* of label positions, and not locations for a planogram. *See* Section VII.A.1.

Throughout this entire process, Wu never teaches or suggests acquiring *identifier information* for an existing shelf label. This makes sense because, in Wu, identifier information for an existing shelf label is already known and mapped to its “label location” code in the label location table. Ex-1003, Fig. 5C (121), 3:16-31. Label identifier information need not be acquired and transmitted by a reader device during Wu’s process, because Wu’s controlling device (e.g., network server) can retrieve that information from the label location table on the basis of the acquired label location information. *Id.*; *see also id.*, 2:64-67. As such, Wu’s method does not need, let alone inherently disclose, acquiring a label identifier *in addition to* a “label location” code for an existing shelf label.⁹ Ex-2010, ¶125.

⁹ Nor, to be clear, could Wu’s “label location” code itself satisfy the “label identifier” limitation. Petitioners have not shown that Wu’s “label location” codes are unique to each shelf label, as the ’709 Patent specifies a label identifier must be. *See* Ex-1001, 2:50-51, 4:49-53, 9:28-32. Nor have Petitioners reconciled the fact that the ’709 Patent uses the term “label identifier” as being *distinct* from the label’s location. *See id.*, 5:21-25, 5:25-27, 7:9-17, 8:25-30. Wu itself describes label identifiers and

Accordingly, Petitioners fail to demonstrate that Wu discloses a reader device that acquires and then transmits *multiple* label identifiers, as claimed. Ex-2010, ¶127.

2. Grounds 2-4: The additional references do not disclose or suggest acquiring or transmitting more than one label identifier or would not have motivated a POSITA to acquire or transmit such a sequence.

The additional prior art references cited in Grounds 2-4 do not disclose or suggest acquiring and transmitting a sequence of label identifiers or would not have motivated a POSITA to acquire/transmit such a sequence in Wu when registering a new shelf label. Ex-2010, ¶128.

In Ground 2, Petitioners contend that Wu and Chaves together disclose acquiring/transmitting a sequence of label identifiers (Petition, 53), but that is wrong. Petitioners rely upon Chaves only for its disclosure of an RFID reader, and *not* for any disclosure of acquiring multiple label identifiers. Petition, 53. Moreover, just

“label location” codes as distinct pieces of information. *See, e.g.*, Ex-1003, 3:16-31, Figs. 1, 3A-D, 5A-E. And, if Wu’s “label location” codes were unique to each of Wu’s shelf labels, or the “label location” codes and label identifier could be considered one-and-the-same, then there would be no need for Wu’s separate label identifiers (e.g., “ESL-1” and “ESL-2”). Ex-2010, ¶126.

like Wu, Petitioners’ cited portions of Chaves merely disclose acquiring “location data” or inventory-level data from labels, and not label identifiers. *See id.* (citing Chaves, [0036], [0037] (“the mobile reader 102 may receive initial and updated object location data”), [0040] (noting reader “may transmit the low-level query”)). Thus, Chaves does not cure the deficiency of Wu. Ex-2010, ¶¶129-38.

In Ground 3, Petitioners combine Wu with Itou and Auclair, and contend that Itou discloses acquiring and transmitting a sequence of label identifiers. Petition, 70-72. This is wrong for several reasons. First, Itou does not acquire *and* transmit label identifiers—it only acquires and processes them. Ex-1004, [0043]-[0046], [0055] (noting how an “information processing apparatus” acquires a picture itself or using an external device, and performs image processing to extract the shelf label IDs); Ex-2010, ¶¶139-40. Second, Itou acquires multiple label identifiers for a fundamentally different purpose, and Petitioners never explain why those teachings would apply to Wu. Specifically, whereas Wu discloses a set of procedures to track the order of electronic shelf labels on a shelf, Itou merely concerns taking a picture of a shelf to ensure the electronic labels match the products where the labels are located, and can perform this check on multiple products based on a single picture. *See generally, e.g.*, Ex-1003, Abstract (disclosing “an electronic shelf label installing method and an electronic shelf label updating method”); Ex-1004, Abstract (disclosing a system to determine whether or not products and their shelf labels

match); Ex-2010, ¶140-41. There is no motivation—and Petitioners identify none of substance—to combine Itou’s teaching of acquiring (but not transmitting) multiple label identifiers *for ensuring each product matches their respective label* with Wu’s procedures for generating location information for a new shelf label. Ex-2010, ¶¶141-44.

Petitioners instead summarily contend that “[b]y implementing Itou’s sequential acquisition and transmission in Wu’s system and methods, a POSITA would realize the advantages discussed in Section III.F.8 above for the Wu-Chaves combination,” or the combination would have otherwise been obvious to try. Petition, 79-80. There are several problems with this argument.

First, Section III.F.8 is the analysis of claim 18 in Ground 3 (Itou), and does not address motivation at all.

Second, even assuming that Petitioners meant to point to Section III.E.4 that addresses the motivation to combine Wu with Chaves, Petitioners’ purported motivation is untethered from the proposed combination of Wu and Itou and provides no motivation at all. The only proffered motivation the Chaves ground provides (in Section III.E.4) for acquiring/transmitting a sequence of label identifiers is to “realize the advantages of simplified and streamlined communications,” and particularly transmitting label identifiers in a sequence “is more efficient and error-resistant than assembling multiple separately acquired or transmitted label

identifiers.” *Id.*, 60-61. This rationale has nothing to do with the actual combination of Wu and Itou. Petitioners’ rationale wrongly assumes that Wu discloses acquiring multiple label identifiers, which it does not. *See* Section VII.C.1; Ex-2010, ¶142. Accordingly, Petitioners’ proffered motivation does not address why a POSITA would modify Wu in view of Itou to acquire label identifiers from existing shelf labels *when registering a new shelf label* to then transmit them together. Ex-2010, ¶142. At bottom, Petitioners’ purported motivation is “a conclusory assertion with no explanation...[and] inadequate to support a finding that there would have been a motivation to combine” because “[t]his type of finding, without more, tracks the *ex post* reasoning *KSR* warned of and fails to identify any actual reason why a skilled artisan would have combined the elements in the manner claimed,” *In re Van Os*, 844 F.3d 1359, 1361-62 (Fed. Cir. 2017).

And, finally, Petitioners’ “obvious to try” arguments fail. Petitioners do not even address the relevant standard—which requires identifying a design need or market pressure to solve a problem with a finite number of predictable solutions. *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1328 (Fed. Cir. 2009) (citing *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007)). Indeed, a conclusory “obvious to try” argument, without a supporting explanation, is insufficient to carry Petitioners’ burden. *See, e.g., Shenzhen Buxiang Network Tech. Co. v. Sun Pleasure Co.*, No. 2022-1912, 2024 WL 3451830, at *2 (Fed. Cir. July 18, 2024) (affirming

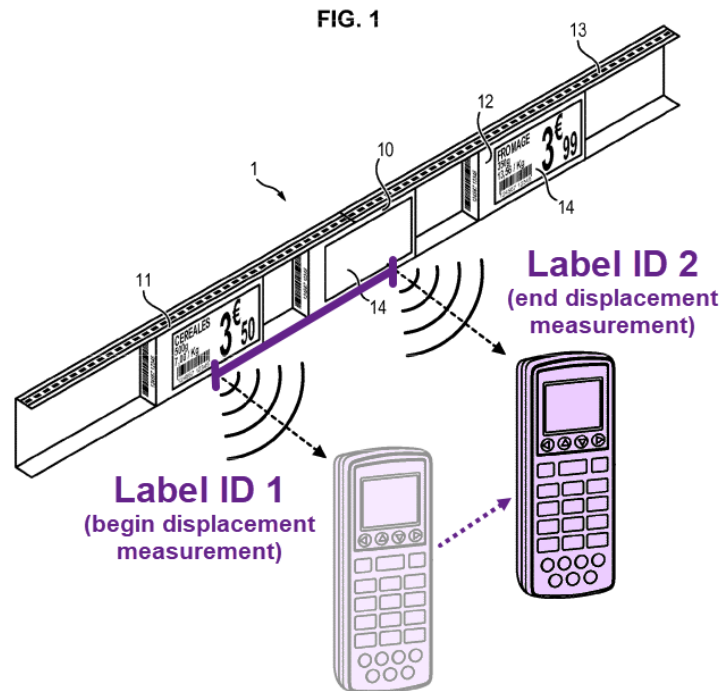
the Board’s non-obviousness finding that had rejected petitioner’s “‘unsupported, conclusory assertion’ that this modification would have been ‘obvious to try,’ finding that Shenzhen provided ‘no supporting explanation’” (cleaned up)); *see also Ecolochem, Inc. v. S. Cal. Edison Co.*, 227 F.3d 1361, 1372 (Fed. Cir. 2000) (“Broad conclusory statements regarding the teaching of multiple references, standing alone, are not ‘evidence.’”).

Lastly, in Ground 4, Petitioners contend that Fujiwara also discloses a reader for acquiring a sequence of label identifiers, Petition, 84-85, but Petitioners’ analysis suffers the same flaws as Itou in Ground 3. Once again, Fujiwara acquires and transmits multiple label identifiers for a fundamentally different purpose than Wu—to read label identifiers and provide users the ability to “locat[e] a product in a store and present[] the location of the product.” Ex-1007, [0006]. Fujiwara says nothing of acquiring and transmitting a sequence of label identifiers as part of an installation procedure to register a new shelf label relative to one or more existing shelf labels, and Petitioners again never explain why those teachings would apply to Wu’s registration procedure that looks only to the order of shelf labels. Indeed, Petitioners rely on the same motivations “discussed in Section III.F.8 above for the Wu-Chaves combination,” Petition, 89, which provides no such motivation for the reasons previously addressed. Ex-2010, ¶¶145-47.

At base, none of the additional prior art references in Grounds 2-4 cure Wu's failure to disclose or suggest a reader that acquires and transmits a sequence of label identifiers as part of a label-installation process, as required by at least claim limitations [1c], [1k], [10b], [10j], [11e], [11k], and [11o]. Ex-2010, ¶148.

D. Ground 3: Petitioners fail to identify a “displacement measuring member” that measures displacement using “label identifiers,” or that measures distance using displacement of the reading device (dependent claims 7, 8, 17 and 18).

Claims 7 and 8 of the '709 Patent recite that “the reading device comprises a displacement measuring member,” which determines “the displacement between the label identifier[s]” of the adjacent and added shelf labels. Ex-1001, cl. 7. Claim 8 further specifies that the distance between the added and adjacent shelf labels is determined “from the displacement of the reading device.” *Id.*, cl. 8. Claims 17 and 18 contain materially similar limitations, respectively. *Id.*, cl. 17, 18. An exemplary depiction of the '709 Patent's process to measure distance is provided below. Ex-2010, ¶¶149-50.



Ex-1001, Fig. 1 (modified and annotated)

Petitioners contend that Itou and Auclair together teach these limitations because Itou uses a camera that can calculate the distance between two labels in the image, and Auclair teaches measuring the amount of shelf space a product occupies. Petition, 72-75. But Petitioners do not identify a “displacement measuring member” that measures either the “displacement between *the label identifier[s]*” of an adjacent label and added label (limitation [7b]-[7c]) or “the distance between the adjacent shelf label” and added label (limitation 8[b]). Ex-2010, ¶¶151-52.

For claims 7 and 17, Petitioners contend that Itou teaches the limitations by disclosing a “determination unit that can ‘calculate the distance between *a product* and *an electronic shelf label.*’” *Id.*, 72 (quoting Itou, [0097] (cleaned up)). But

calculating a distance between a “product” and its associated “electronic shelf label” in a picture, as Itou teaches, is not measuring the “displacement between *the label identifiers*,” as claimed. Ex-2010, ¶¶152-53. Indeed, Itou merely describes calculating the distance using detected coordinates in the picture, without using the label identifiers at all. *See, e.g.*, Ex-1004, [0097]; Petition, 72 (citing same and explaining the calculation is based on “the positional relationship between the product 40 and the electronic shelf label,” and uses “a coordinate of the right end of the product group area” and “a coordinate of the center of the electronic shelf label”); Ex-2010, ¶153.

Although Petitioners also cite Auclair for further support, Auclair is inapposite. Petitioners concede that Auclair simply evaluates “the position of the product on th[e] shelf and the length of linear the product occupies” by using “placement data” from a planogram. Petition, 72 (citing Auclair, ¶ [0037]; *see also* Ex-1005, [0088] (defining “placement data” as “geometrical properties describing [product] position in the existing planogram”)); Ex-2010, ¶155.

None of the prior art Petitioners rely upon—Wu, Itou, or Auclair—alone or in combination suggest using “label identifiers” for delineating a displacement measurement. Ex-2010, ¶156. And Petitioners offer no explanation for why a POSITA would modify Wu in view of Itou and Auclair to measure displacement this way, citing only the declaration of their expert that repeats the same arguments in

the Petition without any additional factual support or explanation. Petition, 72-73 (citing Ex-1009, ¶¶243-45). To the contrary, a POSITA would not think to use such disparate teachings to modify Wu to use ESL label identifiers to measure displacement. Ex-2010, ¶¶157-62.

Petitioners’ analysis of claims 8 and 18 fares no better. These claims specify that the reading device “determine[es] ... the distance between [the adjacent and added] shelf label[s] ... *from the displacement of the reading device ...*” Ex-1001, cl. 8; *see also id.*, cl. 18 (materially same). The specification, for instance, provides one exemplary embodiment in which “the reading device 3 can be fitted with an accelerometer for determining by integration the displacement from said reading device 3 between the two acquisitions” of label identifiers. *Id.*, 8:7-14; Ex-2010, ¶¶154-56.

For claims 8 and 18, Petitioners *presume* Wu’s reader would have an accelerometer solely on the basis that Wu describes using a “smartphone [or] a tablet PC,” and then summarily conclude that, despite Itou’s and Auclair’s disparate teachings, a POSITA would nonetheless modify Wu’s presumptive accelerometer to measure distance through the displacement of the reading device. Petition, 74. But even if Wu is presumed to have an accelerometer, Petitioners identify no reason why Itou or Auclair would have motivated a POSITA to measure distance using the displacement of the reading device, as opposed to image processing taken from a

stationary reading device (Itou), or planogram “placement data” that does not even use a reading device at all (Auclair). Ex-2010, ¶¶154-55. Such a cursory, backwards-looking analysis is the epitome of hindsight.

E. Petitioners’ expert declaration merely rehashes the petition without providing any additional factual support, and is therefore entitled to minimal weight.

Petitioners’ expert provides a declaration that provides no further explanation or analysis beyond the conclusions of the Petition, except that, to give the declaration a patina of legitimacy, the expert tacks on the preamble “[i]n my opinion” in a handful of places. *See Xerox*, IPR2022-00624, Paper 9 at 15-17. The expert declaration even cites itself without explanation, truly parroting the Petition. *See* Ex-1009, ¶¶153, 198, 202, 203, 245, 257, 274.

The chart below shows examples of conclusory statements addressing claim 1 limitations in the Petition replicated at the cited portions of the expert declaration.

Claim	Petition	Expert Declaration (Ex-1009)
[1a]	“To the extent that Wu does not specifically disclose a retail area, it was well known to a POSITA that such a business development with shelves on which products are arranged for consumers to choose can be a retail area. Ex-1009, ¶67. Further, at the time of the claimed	“To the extent that Wu does not specifically disclose a retail area, it is well known for a POSITA that such a business development with shelves on which products are arranged for consumers to choose can be a retail area. Further, at the time of the claimed invention, it was well known to a POSITA that

Claim	Petition	Expert Declaration (Ex-1009)
	invention, it was well known to a POSITA that ESLs are widely used in retail areas, and a POSITA would be motivated to use the ESL system and accompanying planogram updating methods of Wu in a retail area (i.e., a store), which requires no changes to Wu's system and methods and represents nothing more than the application of a known technique to a similar setting. <i>Id.</i> , ¶68.” Petition, 12-13.	ESLs are widely used in retail areas, and a POSITA would be motivated to use the ESL system and accompanying planogram updating methods of Wu in a retail area (i.e., a store), which requires no changes to Wu's system and methods and represents nothing more than the application of known technique to a similar setting.” Ex-1009, ¶¶67-68.
[1c]	“A POSITA would recognize that, in order for the reading device (deploying device) to complete steps S103-S106, the reading device (deploying device) acquires the location of an adjacent shelf label that was already installed. Ex-1009, ¶80.” Petition, 16.	“In my opinion, a POSITA would recognize that, in order for the reading device (deploying device) to complete steps S103-S106, the reading device (deploying device) acquires the location of an adjacent shelf label that was already installed.” Ex-1009, ¶80.
[1c]	“Further, a POSITA would understand that the reading device that is equipped to read shelf label identifiers can be used to read the identifier of an adjacent shelf label in order to associate the added shelf	“In my opinion, a POSITA would understand that the reading device that is equipped to read shelf label identifiers can be used to read the identifier of an adjacent shelf label in order to associate the added shelf label

Claim	Petition	Expert Declaration (Ex-1009)
	label with a location in the retail area. <i>Id.</i> , ¶85.” Petition, 17.	with a location in the retail area.” Ex-1009, ¶85.
[1d]	“Thus, a POSITA would recognize that the order of acquisition of identifiers, by the reading device (deploying device), is either left to right or right to left. Ex-1009, ¶90. Accordingly, the POSITA would understand that the acquisition of the sequence of label identifiers in Wu is according to a scrolling direction of the locations of the retail area. <i>Id.</i> , ¶91.” Petition, 20.	“In my opinion, a POSITA would recognize that the order of acquisition of identifiers, by the reading device (deploying device), is either left to right or right to left. In my opinion, a POSITA would understand that the acquisition of the sequence of label identifiers in Wu is according to a scrolling direction of the locations of the retail area. <i>Id.</i> ” Ex-1009, ¶¶90-91.
[1g]	“A POSITA would recognize that this inherently discloses unique label identifiers associated with shelf labels (that is, each shelf label is associated with a label identifier of its own), because without such unique label identifiers, the processes disclosed by Wu would not work. Ex-1009, ¶102.” Petition, 23.	“In my opinion, a POSITA would recognize that this inherently discloses unique label identifiers associated with shelf labels (that is, each shelf label is associated with a label identifier of its own), because without such unique label identifiers, the processes disclosed by Wu would not work.” Ex-1009, ¶102.
[1k]	“A POSITA would recognize that the flow from deploying device 130 to controlling device 120 obviously transmits the	“In my opinion, a POSITA would recognize that the flow from deploying device 130 to controlling device 120 obviously transmits the

Claim	Petition	Expert Declaration (Ex-1009)
	sequence of label identifiers that the deploying device 120 obtained from ESL-1 and ESL-2 to the computer system. Ex-1009, ¶113.” Petition, 27.	sequence of label identifiers that the deploying device 120 obtained from ESL-1 and ESL-2 to the computer system.” Ex-1009, ¶113.
[11]	“A POSITA would find it obvious that the manager does so through computer programming instructions previously stored inside the controlling device (a computer system). Ex-1009, ¶120. A POSITA, familiar with computer systems in general and computer systems that manage information such as planograms in particular, would find it obvious that the computer system of Wu can be equipped with previously stored computer programming instructions that effect the updating as claimed in [11]. <i>Id.</i> , ¶121.” Petition, 29-30.	“In my opinion, a POSITA would find it obvious that the manager does so through computer programming instructions previously stored inside the controlling device (computer system). In my opinion, a POSITA, familiar with computer systems in general and computer systems that manage information such as planograms in particular, would find it obvious that the computer system of Wu can be equipped with previously stored computer programming instructions that effect the updating as claimed in [11].” Ex-1009, ¶¶120-21.
[1m]	“[A] POSITA would find it obvious that the controlling device of Wu (the computer system) can update the planogram automatically without participation of human actors upon the receipt of	“As discussed, in my opinion, a POSITA would find it obvious that the controlling device of Wu (the computer system) can update the planogram automatically without participation of human actors upon the receipt

Claim	Petition	Expert Declaration (Ex-1009)
	the sequence of label identifiers. Ex-1009, ¶124.” Petition, 30.	of the sequence of label identifiers.” Ex-1009, ¶124.

The Board has explained that “[m]erely repeating an argument from the Petition in the declaration of a proposed expert, does not give that argument enhanced probative value.” *Content Square SAS v. Medallia, Inc.*, IPR2022-00316, Paper 13 at 37-38 (July 14, 2022) (affording the declaration of petitioner’s expert “little probative weight” because “much of the testimony merely parrot[ed], essentially verbatim, the arguments in the Petition” without “provid[ing] any facts, data, or analysis to support the opinion stated”); *see also NXP B.V. et al. v. Bell Semiconductor, LLC*, IPR2021-00967, Paper 32 at 37 (Oct. 6, 2022) (determining that the declaration of petitioner’s expert, which “simply parrot[ed] the language in the Petition, without offering the underlying facts on which the opinion [was] based” was “conclusory and entitled to little or no weight”); *Xerox*, IPR2022-00624, Paper 9 at 15-17. Therefore, the conclusory opinion of the Petitioners’ expert should be given little or no weight.

VIII. CONCLUSION

For the reasons set forth above, Patent Owner respectfully requests that the Board find that Petitioners have not proven by a preponderance of the evidence that any claim of the '709 Patent is unpatentable.

September 6, 2024

Respectfully submitted,

/ Jessica Kaiser /

Jessica Kaiser

Reg. No. 58,937

Lead Counsel for Patent Owner

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), I, Jessica C. Kaiser, certify that **PATENT OWNER'S RESPONSE** contains 13,575 words, excluding those portions identified in 37 C.F.R. § 42.24(b), as measured by the word-processing system used to prepare this paper.

September 6, 2024

Respectfully submitted,

/ Jessica Kaiser /

Jessica Kaiser

Reg. No. 58,937

Lead Counsel for Patent Owner

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I certify that on September 6, 2024, a copy of **PATENT OWNER'S RESPONSE** was served upon the below-listed counsel by electronic mail:

Hao Tan
haotan@archlakelaw.com

Shen Wang
shenwang@archlakelaw.com

September 6, 2024

Respectfully submitted,

/ Jessica Kaiser /

Jessica Kaiser

Reg. No. 58,937

Lead Counsel for Patent Owner