

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HANSHOW AMERICA INC. and
HANSHOW TECHNOLOGY CO., LTD.,
Petitioners,

v.

SES-IMAGOTAG INC.,
Patent Owner

IPR2024-00189
U.S. Patent No. 10,674,340 B2

PETITIONERS' NOTICE OF APPEAL

Petitioners' Notice of Appeal
IPR2024-00189 (US. Patent No. 10,674,340 B2)

Pursuant to 28 U.S.C. § 1295(a)(4)(A), 35 U.S.C. §§ 141(c), 142, and 319, 37 C.F.R. §§ 90.2(a) and 90.3(a); and Federal Circuit Rule 15(a)(1), Petitioners Hanshow America Inc. and Hanshow Technology Co., Ltd. hereby give notice of their appeal to the United States Court of Appeals for the Federal Circuit from the Final Written Decision in Case No. IPR2024-00189, concerning U.S. Patent No. 10,674,340 B2 (“the ’340 Patent”), entered May 14, 2025 (Paper No. 43) by the Patent Trial and Appeal Board (“Board”), and all other underlying and related findings, orders, decisions, rulings, opinions, or other determinations merged into the Final Written Decision. A copy of the Final Written Decision is attached to this Notice.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Petitioners state that the anticipated issues on appeal include, but are not limited to, the following:

- 1) Whether the Board erred in determining that claims 1–9 of the ’340 Patent are not unpatentable as obvious in light of JP 2008-77131 A (Fujiwara);
- 2) Whether the Board erred in determining that claims 1–9 of the ’340 Patent are not unpatentable as obvious in light of Fujiwara and WO 2010/082835 A1 (Arntzen);
- 3) Whether the Board erred in determining that claims 1–5, 8, and 9 of the ’340 Patent are not unpatentable as obvious in light of U.S. Pat. App. Pub. 2007/0024436 A1 (Brandy) and U.S. Pat. App. Pub. 2008/0231228 A1 (Fowler);
- 4) Whether the Board erred in determining that claims 1–5, 8, and 9 of the ’340 Patent are not unpatentable as obvious in light of Brandy, Fowler, and Arntzen; and
- 5) All other issues decided adversely to Petitioners in any order, decision, ruling, finding, determination, judgment, or opinion underlying or supporting the Final Written Decision.

Petitioners' Notice of Appeal
IPR2024-00189 (US. Patent No. 10,674,340 B2)

Pursuant to 37 C.F.R. § 90.3, this Notice of Appeal is timely filed within 63 days of entry of the Final Written Decision dated May 14, 2025.

Per 35 U.S.C. § 142 and 37 C.F.R. § 90.2(a)(1), this notice is being filed with the Director of the U.S. Patent and Trademark Office, and a copy is also being filed with the Board. Per Federal Circuit Rule 15(a)(1) and 37 C.F.R. 90.2(a)(2), Petitioners are also electronically filing this notice with the United States Court of Appeals for the Federal Circuit through its CM/ECF System, together with the requisite filing fee.

Respectfully submitted,

Dated: May 19, 2025

/Hao Tan/
Hao Tan, Reg. No. 73,711
Shen Wang, Reg. No. 71,847
Arch & Lake LLP
203 N LaSalle Street
Suite 2100
Chicago, IL, 60601
Tel. 312-558-1369

*Attorneys for Petitioners Hanshow America
Inc. and Hanshow Technology Co. Ltd.*

CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(1), the undersigned certifies that on May 19, 2025, a complete and entire copy of this Petitioners' Notice of Appeal was provided by email to the Patent Owner by serving the email correspondence addresses of record as follows:

Jessica Kaiser
Matthew J. Moffa
David Pekarek Krohn
Tyler Knox
PERKINS COIE LLP
jessica.kaiser@arnoldporter.com
moffa-ptab@perkinscoie.com
pekarekkrohn-ptab@perkinscoie.com
knox-ptab@perkinscoie.com

Pursuant to 37 C.F.R. §§ 90.2(a)(1), I hereby certify that in addition to being filed electronically through the Board's P-TACTS System, this Petitioners' Notice of Appeal is being provided to the Director of the USPTO on May 19, 2025, by electronically filing to the email address as follows:

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
efileSO@uspto.gov

I hereby certify that on May 19, 2025, a true and correct copy of the foregoing Petitioners' Notice of Appeal, along with a copy of the Final Written Decision, was filed electronically with the Clerk's Office of the United States Court of Appeals for the Federal Circuit, at the following address:

United States Court of Appeals for the Federal Circuit
717 Madison Place, N.W., Suite 401
Washington, DC 20005

Petitioners' Notice of Appeal
IPR2024-00189 (US. Patent No. 10,674,340 B2)

Respectfully submitted,

/Hao Tan/

Hao Tan, Reg. No. 73,711
Shen Wang, Reg. No. 71,847
Arch & Lake LLP
203 N LaSalle Street
Suite 2100
Chicago, IL, 60601
Tel. 312-558-1369

Dated: May 19, 2025

*Attorneys for Petitioners Hanshow America
Inc. and Hanshow Technology Co. Ltd.*

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

SES-IMAGOTAG INC.,
Patent Owner.

IPR2024-00189
Patent 10,674,340 B2

Before WILLIAM V. SAINDON, JAMES P. CALVE, and
TERRENCE W. MCMILLIN, *Administrative Patent Judges*.

SAINDON, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)
Dismissing Patent Owner's Motion to Exclude as Moot
37 C.F.R. § 42.64(c)

I. INTRODUCTION

A. Background and Summary

Hanshow America Inc. and Hanshow Technology Co., Ltd. (“Petitioner”) filed a petition (Paper 2, “Pet.”) to institute *inter partes* review of claims 1–9 of U.S. Patent No. 10,674,340 B2 (Ex. 1001, “the ’340 patent”). An *inter partes* review was instituted on May 20, 2024. Paper 11. Subsequent to institution, SES-Imagotag SA (“Patent Owner”) filed a Response (Paper 21, “PO Resp.”), after which Petitioner filed a Reply (Paper 26, “Pet. Reply”) and Patent Owner filed a Sur-reply (Paper 34, “PO Sur-reply”). An oral argument was held on February 18, 2025, a transcript of which is found in Paper 42 (“Tr.”).

We have authority to enter this final written decision (“Decision”) under 35 U.S.C. § 318(a). The standard for review is set forth in 35 U.S.C. § 316(e), which provides that “the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.” For the reasons provided below, we determine that Petitioner has not met the burden of establishing unpatentability of the challenged claims.

Patent Owner also filed a Motion to Exclude (Paper 35, “PO Mot. Excl.”), which we dismiss as moot because it involves exhibits submitted in support of arguments we do not reach in this Decision.

B. Real Parties in Interest

Petitioner states that its real parties in interest are Hanshow America Inc. and Hanshow Technology Co., Ltd. Pet. 1. Patent Owner states that its real parties in interest are SES-Imagotag GmbH, SES-Imagotag SA, and SES-Imagotag Inc. Paper 6, 2 (Patent Owner’s Mandatory Notice).

C. Related Matters

The parties both identify the following related matter outside the USPTO: *SES-Imagotag SA et al. v. Hanshow America Inc. et al.*, Case No. 1:23-cv-01667-BMC (E.D.N.Y.). Pet. 1; Paper 6, 2.

Petitioner also filed IPR2024-00190 challenging the '340 patent, but the petition in that case was denied. *Hanshow America Inc., Hanshow Tech. Co. Ltd. V. SES-Imagotag Inc.*, IPR2024-00190, Paper 10 (PTAB May 20, 2024) (Decision Denying Institution of *Inter Partes* Review).

D. Prior Art and Asserted Grounds

Petitioner's grounds rely on the following prior art references:

Name	Reference	Exhibit No.
Bandy	U.S. Pat. App. Pub. 2007/0024436 A1, pub. Feb. 1, 2007	1006
Fowler	U.S. Pat. App. Pub. 2008/0231228 A1, pub. Sept. 25, 2009	1007
Fujiwara	JP 2008-77131 A, pub. Apr. 3, 2008	1003
Arntzen	WO 2010/082835 A1, pub. July 22, 2010	1005

Petitioner asserts that the challenged claims would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–9	103	Fujiwara
1–9	103	Fujiwara, Arntzen
1–5, 8, 9	103	Bandy, Fowler
1–5, 8, 9	103	Bandy, Fowler, Arntzen

Petitioner relies on the testimony of Manos M. Tentzeris, Ph.D. (Ex. 1009). Patent Owner relies on the testimony of Rajeev Surati, Ph.D. (Ex. 2001).

E. Overview of the '340 Patent

The '340 patent is directed to electronic product labels on supermarket display shelves. Ex. 1001, 1:25–30. The '340 patent seeks to provide spatially localized information that compliments the information already visible to a customer in the sales area. *Id.* at 2:8–12. The labels, which use NFC (near field communication) radio technology, are densely distributed throughout the sales area. *Id.* at 4:21–24, 4:50–53. Use of NFC means that any mobile terminal reading an electronic product label must be very close to it. *Id.* at 5:45–48, 6:52–54. The locations of all the labels are stored by the system. *Id.* at 6:35–37. Thus, using short-range NFC in combination with location data for each electronic product label means that the system can very precisely locate any mobile terminal reading an electronic product label. *Id.* at 6:54–58. Accordingly, the system can provide spatially localized information to the mobile terminal. *Id.* at 7:45–49. For example, a user can be notified that the product they are looking for is “50 cm” away on the shelf they are facing, “in a top/right diagonal direction” from the mobile terminal. *Id.* at 7:50–59.

F. Challenged Claims

Claims 1–9 are challenged. Claims 1 and 5 are independent. Claim 1 is reproduced below.

1. A method for communicating spatially localized information to a mobile terminal, the method being performed by a central server configured to access a planogram associating a plurality of unique identifiers of radio-frequency peripherals with a plurality of locations within a predetermined area, each of the plurality of locations being defined by a vertical and horizontal position within a plane perpendicular to a floor of the predetermined area, and each of the plurality of locations being

associated one-to-one with a corresponding unique identifier, the method comprising:

receiving a communication from a mobile terminal, the communication comprising a unique identifier received by the mobile terminal from a radio-frequency peripheral located in the predetermined area, the unique identifier being particular to the radio-frequency peripheral, wherein the radio-frequency peripheral includes an antenna and an electronic chip configured for near-field communication, and is configured to be activated by the mobile terminal when the radio-frequency communication peripheral is within a communication range of the mobile terminal, wherein the communication range is less than twenty centimeters;

determining a location of the mobile terminal within the predetermined area based on the location associated with the unique identifier of the received communication in the planogram, the location of the mobile terminal comprising the vertical and horizontal position of said location; and

transmitting to the mobile terminal spatially localized information associated with the location of the mobile terminal.

II. ANALYSIS

A. Burden of Proof

“[T]he petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.” 35 U.S.C. § 316(e). In particular, a petitioner must “define the contours of the proceeding,” *SAS Inst., Inc. v. Iancu*, 584 U.S. 357, 364 (2018), such that “the petitioner’s contentions, not the Director’s discretion, define the scope of the litigation all the way from institution through to conclusion,” *id.* at 367. “[N]othing in the . . . statute permits the Board to expand that scope in its final written

decision.” *Samsung Elecs. Am., Inc. v. Prisia Eng'g Corp.*, 948 F.3d 1342, 1351 (Fed. Cir. 2020).

B. Level of Ordinary Skill in the Art

Petitioner asserts that:

A person of ordinary skill in the art . . . would have had at least a Master of Science Degree in an academic area emphasizing electrical engineering, computer engineering, wireless telecommunication systems, or an equivalent field (or a similar technical Master's Degree, or higher degree). Ex. 1009, ¶34. Alternatively, . . . a Bachelor's Degree (or higher degree) in an academic area emphasizing electrical engineering, computer engineering, wireless telecommunication systems, or an equivalent field with two or more years of work experience in electrical engineering, wireless telecommunication systems, computer engineering, or an equivalent field. *Id.* Additional education in a relevant field or relevant industry experience may compensate for a deficit in one of the other aspects of the requirements stated above. *Id.*

Pet. 9. Patent Owner applies the same definition. PO Resp. 17. We apply the parties' proposed level of ordinary skill because it is reasonably consistent with the level of skill implied in the disclosure of the '340 patent and the cited prior art.

C. Claim Construction

Under 37 C.F.R. § 42.100(b), we apply the claim construction standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). That is, “the words of a claim ‘are generally given their ordinary and customary meaning’ . . . that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1312–13. “[T]he specification aids in ascertaining the scope and

meaning of the claims inasmuch the words of the claims must be based on the description.” *Id.* at 1315 (internal quotation omitted).

Petitioner asserts that no claim terms require explicit construction. Pet. 3. Patent Owner offers a construction for the term “activated,” but we do not reach the parties’ dispute over the claim limitation involving this term. *See* PO Resp. 24–26. Thus, we do not construe the term “activated.” *Realtime, 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)).

1. Planogram

Much of the dispute between the parties revolves around the “planogram” limitation of independent claims 1 and 5. *See* PO Resp. 19–24, 28–40, 57–64; Pet. Reply 2–6, 9–13, 18–19; PO Sur-reply 1–6, 13–18.

a) The Claim and Specification

Independent claim 1 describes a method for communicating information between a mobile terminal and a server. Ex. 1001, 8:18–20. The server accesses a collection of information, called a “planogram,” in order to help determine the location of the mobile terminal. *Id.* at 8:20–31, 8:41–46. Importantly, the claim states that the planogram “define[s]” “location[]” information having two components—“a vertical and horizontal position,” both of which are “within a plane perpendicular to a floor” of a predetermined area. *Id.* at 8:20–27, 8:41–46.¹ We note that a plane

¹ Independent claim 5 is similar. For ease of discussion, we will focus our analysis on claim 1.

perpendicular to the floor of a supermarket would correspond to a product display shelf, as a shopper would look at it when standing in front of it.

The specification of the '340 patent largely mirrors the claim language. When a mobile terminal scans a label, the mobile terminal sends an identifier of the scanned label to the server. *Id.* at 6:1–28. The server determines the location of the mobile terminal from the label identifier by using location data stored in the planogram, which is stored in a database. *Id.* at 6:29–36, 7:16–18. This allows the system to precisely determine the location of a user's mobile terminal. *Id.* at 7:45–59 (providing one example where the user is notified that the product they are looking for is 50 cm along the shelf up and to the right of the user's present location, which indicates knowledge of the vertical and horizontal position of the mobile terminal in a plane perpendicular to the floor).

b) The Parties' Positions

Patent Owner provides a discussion of how the term “planogram” is used in the art (PO Resp. 18–24), which Petitioner critiques (Pet. Reply 9–10), but ultimately Patent Owner asserts that:

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. That is because, here, *Petitioners contend a database that contains only label identifiers and [only one of a horizontal or vertical position] constitutes a “planogram.”* This view, however, is inconsistent with how the term “planogram” is understood and such a database is not encompassed by “planogram” as recited, which is all the Board needs to decide.

PO Resp. 22–23 (citations omitted and emphasis added); *see also id.* at 28–40 (arguing that Fujiwara does not disclose a *horizontal* position), 57–64 (arguing that Fowler does not disclose a *vertical* position).

Petitioner does not appear to dispute that these three pieces of information are required. *See* Pet. Reply 11 (“each shelf label location in Fujiwara is defined by a vertical and a horizontal position”), 12 (“any association of peripherals with 2-dimensional locations in the claimed plane (however represented) would read on the limitation”), 19 (arguing that the issue is whether the “planogram will associate tags with locations defined by vertical and horizontal positions”). Petitioner asserts that the prior art teaches the claimed horizontal and vertical positions. *See, e.g., id.* at 10–13, 18–19. We will discuss the dispute over what the prior art teaches in a separate analysis of the obviousness grounds below.

c) Conclusion

Having reviewed the claim language and the specification, we determine that the claimed planogram stores one piece of data with respect to identification—a unique identifier—and two pieces of data with respect to location—a vertical position and a horizontal position. Further, claim 1 states that each location (i.e., each horizontal/vertical position pair) is unique (“one-to-one”) for each unique identifier. Ex. 1001, 8:25–27. Thus, we determine that no horizontal/vertical position pair will be associated with more than one unique identifier (and vice versa). No other terms require construction at this time. *See Realtime*, 912 F.3d at 1375.

D. Asserted Obviousness in View of Fujiwara

Petitioner asserts that all challenged claims (1–9) would have been obvious over Fujiwara. Pet. 16–56. We focus our analysis on independent claim 1, and specifically, on the “planogram” limitation, which requires a “plurality of locations . . . defined by a vertical and horizontal position.” We begin with an overview of Fujiwara, before turning to Petitioner’s position and our analysis of the parties’ dispute.

1. Fujiwara

Fujiwara’s system “provides a function for locating a product in a store and presenting the location of the product” using an electronic shelf label system. Ex. 1003 ¶ 6. The location information helps direct customers to the location of advertised products. *Id.* ¶ 5. In particular, the electronic shelf label is equipped with a “light emitting means,” e.g., an LED, to assist the user in finding a given product. *Id.* ¶¶ 6, 70, 96, 100–102, 108, Fig. 5 (items 605), Fig. 13 (steps S1304–1307). The LED on the shelf label is illuminated in order to direct the customer to the location of the product associated with that label. *Id.* For example: “Today’s special sale is OO. This product is depicted by a red light.” *Id.* ¶ 96. In this way, Fujiwara describes how a person would be able to locate a particular electronic shelf label.

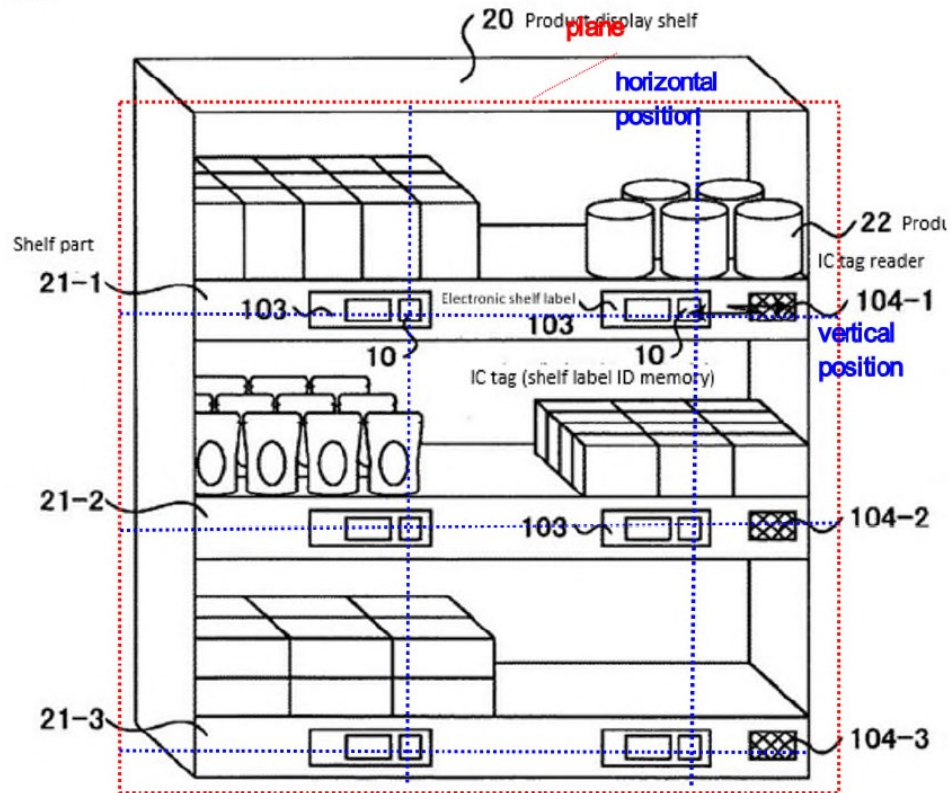
Fujiwara also discloses how the underlying system shows a person where a label is located. In particular, Fujiwara discloses location information associated with each electronic shelf label. *Id.* ¶ 9. Fujiwara associates a given shelf label ID 311 with a given shelf number 313, and “[t]he shelf number 313 is the location information for each shelf part 21 of the product display shelf 20.” *Id.* ¶ 62; *see also id.* Fig. 3 (depicting

“Electronic shelf label database” 301, including “Shelf label location information” 320, in turn made of “Shelf label ID” 311 and “Shelf number” 313). In summary, Fujiwara discloses using an electronic shelf label ID and a shelf number, in conjunction with an LED, to locate a particular electronic shelf label.

2. Petitioner’s Position

Petitioner asserts that the claimed “plurality of locations” is met by the “shelf label location” of an electronic shelf label in Fujiwara, and specifically that the vertical position is “represented by shelf number 313” and the horizontal position is represented by “the horizontal position of the electronic shelf label along the horizontal shelf part 21, as shown in FIG. 4.” Pet. 20–21 (citing Ex. 1009 ¶¶ 72–75). Petitioner’s annotated version of Figure 4 of Fujiwara is reproduced below:

[FIG. 4]



Pet. 22 (providing an annotated copy of Ex. 1003, Fig. 4). Figure 4 is an illustrative plan view of a product display shelf (such as found in a grocery store). In particular, Fujiwara describes Figure 4 as “a diagram depicting the appearance configuration of the electronic shelf label 103 and IC tag reader 104.” Ex. 1003 ¶ 66. Product display shelf 20 contains three shelf parts 21 (21-1, 21-2, 21-3), with each shelf part containing two shelf labels 103 and one tag reader 104. *Id.* Figure 4 depicts each electronic shelf label 103 corresponding to a particular product 22. *Id.* ¶ 6 (describing Fujiwara’s invention as “for locating a product in a store and presenting the location of the product, by the use of an electronic shelf label”).

Addressing the limitation in claim 1 requiring a “plurality of locations . . . defined by a vertical and horizontal position within a plane

perpendicular to a floor of the predetermined area,” Petitioner annotates Figure 4 to include blue dashed lines labeled “vertical position” along the horizontal shelves 21, blue dashed lines labeled “horizontal position” to line up with the arrangement of shelf labels 103 spaced along the shelves, and a red dashed box parallel to the face of the shelf denoting a “plane.” Pet. 22. Accordingly, Petitioner’s position is that the claimed “vertical position” of the planogram is met by the fact that the shelves are at different heights, and the claimed “horizontal position” is met by the fact that the shelf labels 103 are spaced along those shelves. *See id.* at 21–23, 31–33; Pet. Reply 10–13.

3. *Patent Owner’s Position*

Patent Owner disputes that Fujiwara discloses the claimed planogram, and in particular, the horizontal position. PO Resp. 28–40; PO Sur-reply 13–18. Patent Owner’s chief argument is that merely storing Fujiwara’s shelf number (e.g., 1, 2, 3; *see* Ex. 1003, Fig. 4) does not provide sufficient information to qualify as the claimed horizontal position. For example, Patent Owner argues that if “the whole shelf . . . can also be the horizontal position,” then “such a view would render the claimed ‘horizontal position’ meaningless, as a shelf contains multiple ‘horizontal positions’ along it.” PO Resp. 37 (emphasis omitted). In support, Patent Owner points to Figure 4 of Fujiwara and notes that a given shelf (e.g., shelf part 21-1) contains multiple electronic shelf labels 103. *Id.* at 38. In sum, Patent Owner’s position is that “Fujiwara never discloses or suggests tracking horizontal positions in a database, and Petitioners offer no rationale to *modify* Fujiwara to do so.” PO Sur-reply 18.

4. *Analysis*

We have reviewed the briefs of the parties and the specific evidence cited therein. We agree with Patent Owner that Petitioner has not met its burden of showing unpatentability because Fujiwara lacks the horizontal component of the claimed location. Our reasoning follows.

a) Fujiwara does not Disclose the Claimed Horizontal Position

Petitioner asserts that the horizontal component of the location is taught by “the horizontal position of the electronic shelf label along the horizontal shelf part 21, as shown in FIG. 4.” Pet. 21 (citing Ex. 1009 ¶ 75). Certainly, each shelf label in the real world, as well as in the drawing of Figure 4, has a horizontal position. However, that does not mean that Fujiwara’s database *stores information* indicating the horizontal position of the shelf label as required by the claim. The claim is not calling for the shelf label to have a location; it is calling for location information to be *accessible by the server* so that the *server* can determine the location of the mobile terminal. Ex. 1001, 8:19–24 (claiming a “method being performed by a central server configured to access a planogram associating . . . identifiers . . . with . . . locations . . . defined by a vertical and horizontal position”), 8:41–46 (claiming a method step of “determining a location of the mobile terminal . . . based on . . . the planogram). For example, fields in a database storing horizontal and vertical positions would be sufficient. *Id.* at 6:31–36 (“The central server 2 determines the location of said mobile terminal 1 from the identifier of said electronic label 3 using the data of a planogram associating a location with the label identifier.”), 7:16–18 (calling for the planogram to be stored in a database). To the extent we accept that Fujiwara teaches a unique identifier (shelf label ID) and a vertical position (e.g., shelf

number 21-1), we find Fujiwara to be missing a horizontal position as required by the claim because neither the shelf number nor the shelf label ID provides an indication of where along the shelf the shelf label is located.

b) Fujiwara's Asserted Vertical Position does not also Disclose the Claimed Horizontal Position

Petitioner asserts that “the product display shelf 20 itself is a horizontal position within a plane (face of aisle) perpendicular to a floor of the predetermined area.” Pet. 33 (emphasis removed). Even if we were to accept Petitioner’s alternative position (*e.g.*, *id.* at 22–23, 33) that a shelf unit 20 or a shelf 21 in and of itself represents a horizontal position, this runs afoul of the requirement in claim 1 that “each of the plurality of locations [is] associated one-to-one with a corresponding unique identifier.” As Patent Owner explains, and we agree, “multiple labels can be placed on a single shelf, and therefore they would have the exact same entries in the ‘location information’ portion of [the] database.” PO Resp. 37 (citing Ex. 2001 ¶ 116); *see* Ex. 1003, Fig. 4 (depicting multiple electronic shelf labels 103 per shelf unit 21). Thus, the shelf 20 or shelf unit 21 in Fujiwara cannot serve as a horizontal position in the manner required by claim 1 because such a reading would mean identifiers and locations would not be “one-to-one” as claimed.

c) Fujiwara's Asserted Identifier does not also Disclose the Claimed Horizontal Position

Petitioner asserts that the location limitation is shown when a user of Fujiwara scans a tag: “[a] [person of ordinary skill in the art] would understand this to mean that retrieving the location associated with the unique identifier is necessarily determination of a location of the mobile

information terminal.” Pet. 31–32; *see also* Pet. Reply 12 (arguing that “the shelf label ID 311 would supply the horizontal information missing from the shelf number 313”). Petitioner continues, “this location comprises vertical and horizontal positions.” Pet. 32 (emphasis removed).

We do not find persuasive Petitioner’s assertion that the shelf label ID serves as the claimed horizontal position. In some sense, the system does know that the mobile terminal is *near the tag*, and the tag exists in some location in space, but the tag does not provide horizontal or vertical position information to the system; it is merely an identifier used to look up other information. Ex. 1003 ¶¶ 62 (discussing “shelf label ID” and “location information” as separate items). There is no indication in Fujiwara that the identifier itself provides such positional information. Instead, in terms of location information, scanning a tag in Fujiwara only returns the shelf part, which is a vertical position, but no other information is stored that provides the horizontal position. *See, e.g.*, Ex. 1003 ¶¶ 62 (stating that “[t]he shelf label location information 320 includes shelf label ID 311, shelf number 313, and the like. The shelf number 313 is the location information for each shelf part 21 of the product display shelf 20.”), 100 (stating that the server “searches for and acquires the shelf label location information 320”), Fig. 3. In sum, we do not find that that the shelf label ID in Fujiwara is also location information, let alone horizontal location information as claimed. The electronic shelf label ID in Fujiwara thus does not serve as both a unique identifier and a horizontal position in the manner required by claim 1.

d) Petitioner does not Show that it would have been Obvious to Modify Fujiwara to Include the Claimed Horizontal Position

Petitioner also asserts in its Reply that a person of ordinary skill in the art “would find it obvious, based on disclosures in Figure 4, that each shelf label location in Fujiwara is defined by a vertical and a horizontal position,” and similarly that “information from Fujiwara’s Figure 4, a diagram representing the layout of an actual shelf, is part of planogram information represented in Fujiwara’s database 301.” Pet. Reply 11. As we explained above, merely because a shelf label exists in a position in space does not mean that Fujiwara’s database contains data describing that position in terms of “a vertical and horizontal position within a plane perpendicular to a floor of the predetermined area” as claimed. Nor does Fujiwara’s depiction of electronic shelf labels 303 in a figure mean that Fujiwara records in a database all of the information in that figure, such as the positions of the various labels and products. Ex. 2001 ¶ 110 (asserting that a person of ordinary skill in the art “would understand Figure 4 to be a depiction of an actual shelf consistent with Fujiwara’s disclosure, not the contents of Fujiwara’s database”).²

² The parties both discuss the Board’s statement in the Decision on Institution that “[a]lthough Fujiwara does not explicitly discuss vertical and horizontal positions as defining the location of an electronic tag, we agree with Petitioner that, based on Fujiwara’s illustrations of uniquely numbered electronic tags positioned at spaced locations along vertically separated shelves, an ordinarily skilled artisan would have understood that listing the vertical and horizontal position of each tag in the database would define the position of the tag as claimed.” Paper 11 at 27–28; *see* PO Resp. 36; Pet. Reply 12; PO Sur-reply 13–14. Our statement that “we agree with Petitioner” means that we were sufficiently persuaded that Petitioner has shown a *reasonable likelihood of success* that Fujiwara lists the vertical and

Whether it would have been obvious to modify Fujiwara to store both horizontal and vertical positions of a tag is a separate issue from whether Fujiwara discloses a tag. Petitioner has not squarely set out in its Petition the position that it would be obvious to modify Fujiwara to include horizontal position information. *See* PO Sur-reply 13–14 (arguing that Petitioner’s obviousness position in its Reply is new); *SAS Inst.*, 584 U.S. at 367 (“the petitioner’s contentions . . . define the scope of the litigation all the way from institution through to conclusion”). Even if Petitioner had clearly set forth its position, that position would be unpersuasive on this record because Fujiwara itself has no reason to precisely define the location of any given product. That is because Fujiwara uses the LEDs to assist the user in identifying the specific location of a product. *See, e.g.*, Ex. 1003 ¶ 96. Thus, the reason to modify Fujiwara must come from somewhere else, and Petitioner has not adequately made that argument in its Petition. The record does not indicate that a person of ordinary skill in the art wished to track the horizontal and vertical position of electronic product labels, so absent hindsight reconstruction using the teachings of the ’340 patent, we are apprised of no reason to modify Fujiwara to obtain these features.

horizontal position of each tag in the database. Now we find, based on a *preponderance of the evidence*, that Petitioner has not established its position that Fujiwara stores the horizontal position of each tag in the database based on our review of the entire record of trial. The standards of review are different at different stages of the proceeding and thus our statements must be interpreted in those contexts. *See Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (“there is a significant difference between a petitioner’s burden to establish a ‘reasonable likelihood of success’ at institution, and actually proving invalidity by a preponderance of the evidence at trial”).

5. Conclusion Regarding the Fujiwara Obviousness Grounds

For the reasons explained above, we find that Petitioner has not met its burden in showing by a preponderance of the evidence³ that Fujiwara discloses the claimed horizontal position in the planogram accessed by the server of claim 1. This finding disposes of both the Fujiwara-alone and the Fujiwara-Arntzen grounds, both of which rely on Petitioner’s position that Fujiwara teaches the claimed horizontal position. *See* Pet. 20–22, 31–34, 42, 52 (noting that Arntzen is added as a backup position for limitations regarding near-field communication). Thus, we need not reach the other alleged deficiencies in Petitioner’s ground raised by Patent Owner. *See* PO Resp. 40–57.

E. Asserted Obviousness in View of Bandy and Fowler

Petitioner asserts that claims 1–5, 8 and 9 would have been obvious in view of Bandy and Fowler. Pet. 56–91. Similar to the Fujiwara ground, we will focus our analysis on independent claim 1, and particularly, the planogram limitation. At a high level, Petitioner’s combination relies on Bandy for most of the limitations of claim 1, and Fowler specifically for the vertical position component of the planogram. *See, e.g.*, Pet. 62 (marking up a drawing in Bandy), 65 (“Fowler discloses a planogram”) (emphasis

³ We do not separately discuss Petitioner’s declarant’s positions on this topic because the declarant’s testimony is nearly identical to Petitioner’s argument on each of the key issues discussed herein, such that separate analysis on the declarant’s positions would not be fruitful. *Compare, e.g.*, Pet. 19–22 with Ex. 1009 ¶¶ 72–77 and Pet. 31–33 with Ex. 1009 ¶¶ 99–102; *see also* *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022) (precedential) (considering unpersuasive testimony that “merely repeats, *verbatim*, the conclusory assertion for which it is offered to support”).

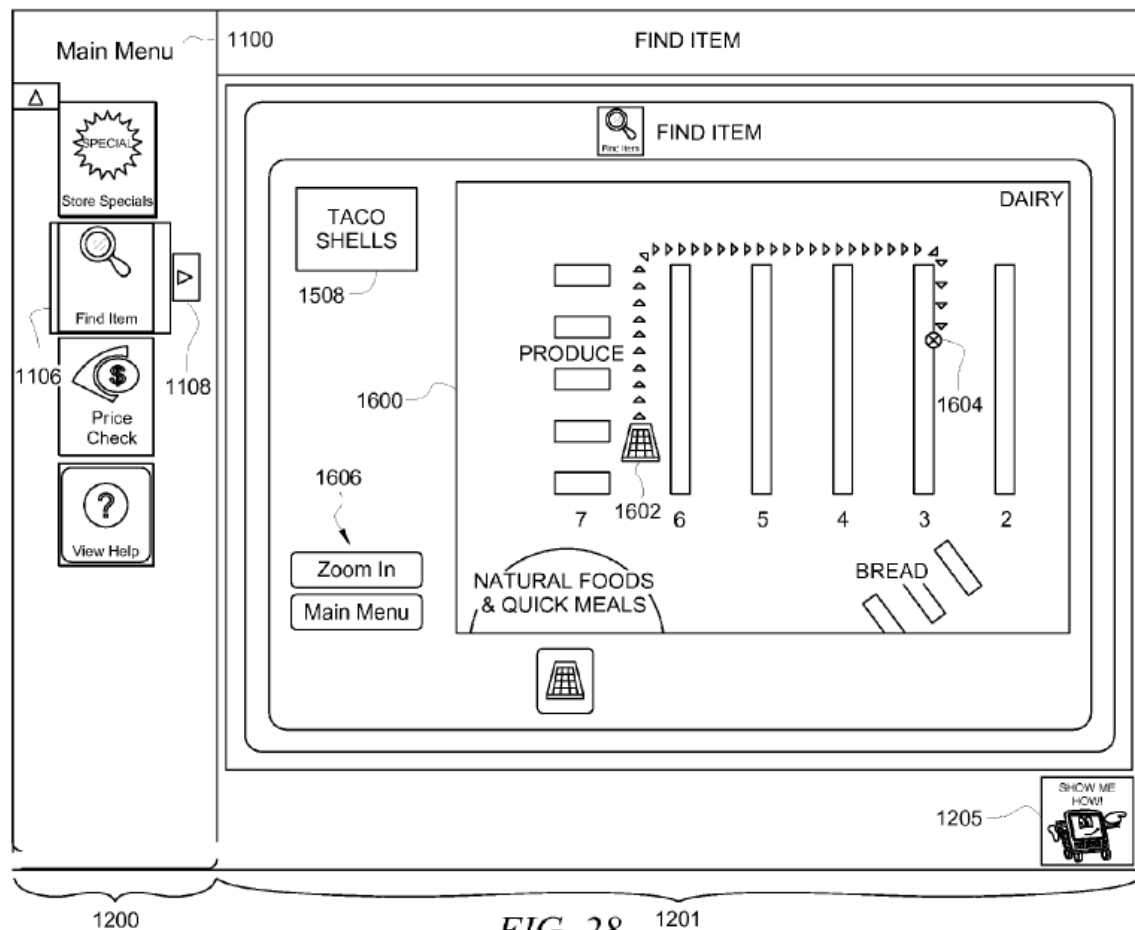
removed), 87 (asserting it would have been obvious to modify Bandy to include “Fowler’s disclosures of . . . vertical positioning”). We will first provide a brief overview of the prior art, before turning to the parties’ positions and our analysis.

1. Bandy

Bandy discloses a system where a mobile communications device communicates with RFID tags. Ex. 1006 ¶ 37. The RFID tags contain an identification number that associates a tag with an item as well as “location data regarding the item in store 500, availability data for the item, and any other data related to the item.” *Id.* ¶¶ 56–57. There does not appear to be any further detail about what “location data” means.

2. Fowler

Fowler discloses a system where a shopping cart communicates with RFID tags in order to locate the shopping cart within the store. Ex. 1007 ¶ 144. The RFID tags are placed around the store in known locations. *Id.* RFID tag readers on the cart read the tags found throughout the aisles of the store in order to determine the x-y location of the shopping cart. *Id.* ¶¶ 150–153. An example of this x-y location is shown in Figure 28 of Fowler, reproduced below:

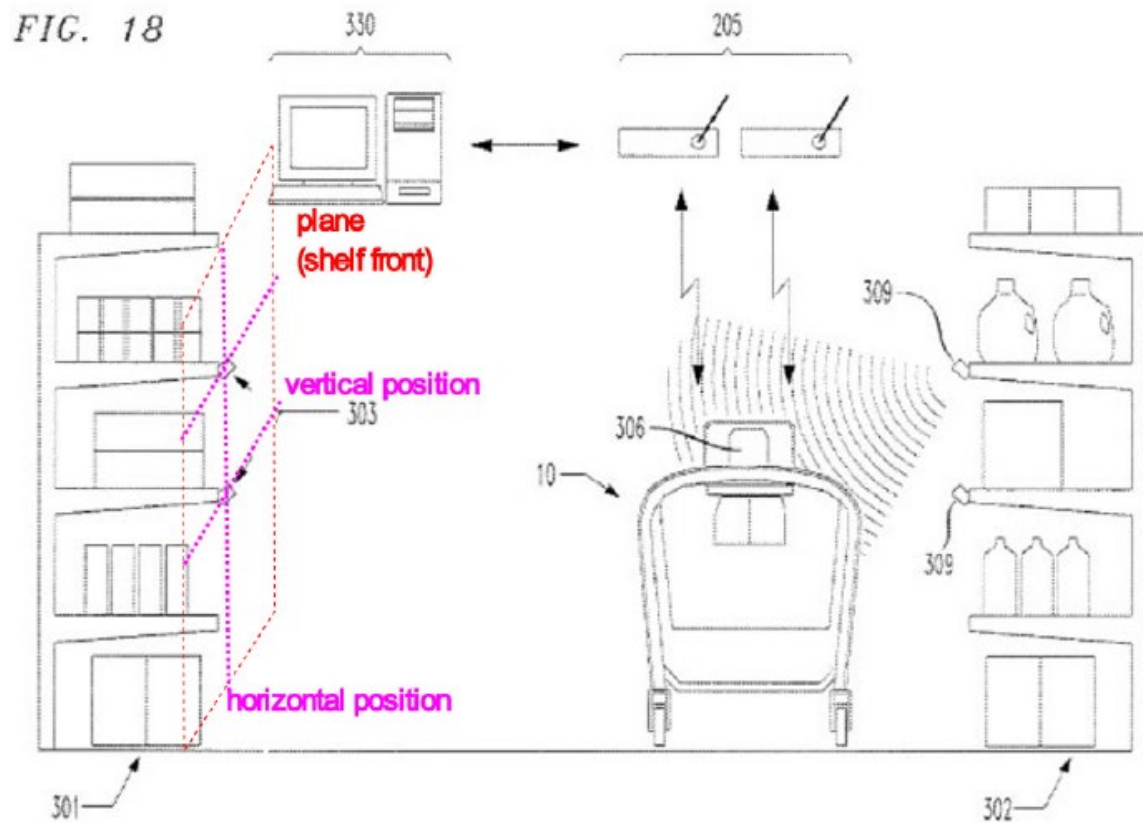


Ex. 1007, Fig. 28. Figure 28 shows a mockup of an in-cart display where a user selected a particular item (1508, taco shells) the user wished to find. *Id.* ¶ 198. Overhead store map 1600 is displayed showing the present location of cart 1602, the location of the item 1604, and a path through the store aisles (7, 6, 5, 4, etc.) connecting the two. *Id.*

3. Petitioner's Position

As we explained in our claim construction section, the claimed planogram requires three pieces of information—a unique identifier, a vertical position, and a horizontal position. Petitioner asserts that Bandy

discloses the claimed unique identifier, as well as some form of location data. Pet. 63. Petitioner asserts that this information constitutes the claimed planogram. *Id.* As to the specific claim requirements that the planogram defines a vertical and horizontal position, Petitioner asserts that a person of ordinary skill in the art “would also look at the disclosures of Fowler to supplement the planogram of Bandy,” and asserts that Fowler discloses “the location of products within the store.” *Id.* at 65. In particular, Petitioner asserts that “a location of a product on a shelf or bin necessarily comprises a vertical and horizontal position within a plane (the shelf front plane) perpendicular to a floor of the predetermined area of the store.” *Id.* (citing Ex. 1009 ¶ 185) (emphasis removed); *id.* at 66–67 (citing Ex. 1009 ¶ 186); *see also* Pet. Reply 19 (“[T]here is no dispute that Fowler discloses ‘placing [radio frequency identification] RFID tags at different heights on the shelf’ – and therein the vertical position.”). Petitioner provides an annotated copy of Figure 18 of Fowler, reproduced below:



Pet. 66 (providing an annotated version of Ex. 1007, Fig. 18). Figure 18 of Fowler is an illustrative view of a media-enabled shopping cart in a store network system. Ex. 1007 ¶ 29. The view is down an aisle of a store, with shelves 301, 302 containing products on either side of shopping cart 10. *Id.* at Fig. 18. Petitioner has identified in purple dashed lines what it asserts to be the claimed horizontal and vertical positions. Pet. 66. Four shelf positions are depicted for each shelf, and the lines demarcating vertical positions generally align with the middle two shelf positions. *Id.* On those middle two shelf positions are RFID tags 303, which are not present on the top and bottom shelf positions. *Id.*; see also Ex. 1007 ¶ 141. Petitioner has identified in red dashed lines what it asserts to be the claimed plane perpendicular to the floor, generally corresponding to what would be the

face of the product display shelf. Pet. 66. Petitioner asserts that it would have been obvious to incorporate “Fowler’s disclosures of . . . vertical positioning with Bandy.” Pet. 87; *see id.* at 87–90 (further details).

4. *Patent Owner’s Position*

Patent Owner asserts that Bandy and Fowler do not disclose the vertical position required by claim 1. PO Resp. 57–64; PO Sur-reply 20–21. Patent Owner asserts that Fowler never contemplates tracking a vertical position and instead determines the location of a shopping cart “in an x-y plane *parallel* to a store floor by reading RFID tags of nearby products.” PO Resp. 58 (citing Ex. 1007, Figs. 5, 15); *see also* Ex. 2001 ¶ 176 (Patent Owner’s declarant explaining that Fowler uses an x-y plane but the ’340 patent is concerned with an x-z plane). Patent Owner argues that Petitioner’s position, that mere disclosure of a product or tag on a shelf necessarily or inherently includes vertical and horizontal position information, is unsupported by “facts or technical basis.” PO Resp. 60–62. Specifically as to Petitioner’s position regarding Figure 18 of Fowler, reproduced above, Patent Owner asserts that “Fowler discloses RFID tags are placed at different heights only to improve reception of the cart’s RFID antennas.” *Id.* at 64 (citing Ex. 1007 ¶ 137; Ex. 2001 ¶ 181); *see also id.* at 62–64 (further argument). Similarly, Patent Owner asserts that “it makes no sense to determine the vertical position of the cart based on the vertical position of [an RFID tag]” because “a cart always remains at a consistent vertical position.” *Id.* at 64. In other words, Patent Owner is referring back to the fact that Fowler is concerned with the overhead x-y positioning of the cart within the store, not the horizontal and vertical (x-z) position of the cart, which remains on the floor.

5. *Analysis*

We have reviewed the briefs of the parties and the specific evidence cited therein. We determine that Petitioner has not met its burden of showing unpatentability, because Bandy and Fowler lack the vertical component of the claimed location and Petitioner has not otherwise explained why such a vertical component would have been obvious to include in that combination. Our reasons follow.

Petitioner asserts that a person of ordinary skill in the art “would understand that a location of a product on a shelf or bin necessarily comprises a vertical and horizontal position,” and that Fowler “discloses that RFID tags [are] located at various heights and locations along the shelves.” Pet. 65–66; Pet. Reply 19. However, merely because tags physically exist in a three-dimensional space does not mean that the system stores data regarding the horizontal and vertical position of those tags in a planogram. Claim 1 requires a planogram that stores specific information regarding a product’s location; claim 1 does not merely require a planogram that stores any type of location information, nor does it merely require that the products exist in some location.

The fact that Fowler discloses RFID tags at multiple heights along the shelves does not mean that Fowler is storing the vertical positions of those tags. As Patent Owner and its declarant argue, and we agree, Fowler is concerned with the top-down, x-y location of a shopping cart within the floor plan of the store. PO Resp. 58–64 (citing, e.g., Ex. 1007 ¶¶ 88, 137, 144, 153, Figs. 5, 15; Ex. 2001 ¶¶ 176 (explaining the differences between the claimed plane of interest and Fowler’s plane of interest)). We are apprised by Petitioner of no reason to track the vertical (z) position of the

cart, nor of persuasive evidence in support of a reason to do so. Patent Owner and its declarant argue, and we agree, that the reason Fowler discloses RFID tags on multiple shelves is to increase antenna reception, not to discern vertical location. PO Resp. 62–64 (citing, e.g., Ex. 1007 ¶ 137 (“RFID antennas 226 are in a location to maximize the effectiveness of the reader distribution pattern and encompass RFID tags located at various heights and locations along the shelves”); Ex. 2001 ¶¶ 181–182). Indeed, if Fowler was concerned with the vertical location of the items, as opposed to the location of the cart, it would seem that Fowler would have RFID tags on more than just two of the four shelf positions shown in Figure 18. Instead, Fowler is specifically concerned about the location of the cart. Ex. 1007 ¶¶ 143 (describing a “location[] component . . . [that] determines the location of the cart 10 in the store”), 144 (describing “the process of locating the cart . . . using the location of a number of reference or anchor RFID tags (e.g., shelf or fixture level tags) placed around the store in known locations”), 145–152 (similar), 153 (“With the inventory of locations in the system, locations may then be evaluated to determine cart position as a relative x, y coordinate within the store map.”). Thus, in Fowler, we find no storage of the vertical position of the RFID tags, nor do we find any particular reason to store the vertical position of the RFID tags. For that reason, Petitioner’s ground fails to adequately address the vertical position aspect of the claim.

6. *Conclusion for the Bandy-Fowler Ground*

Based on our review of the arguments and evidence,⁴ we determine that Petitioner has not met its burden of establishing by a preponderance of the evidence that the vertical position of the location of the planogram in claim 1 would have been obvious in view of Bandy and Fowler. This finding disposes of both the Bandy-Fowler and the Bandy-Fowler-Arntzen grounds, both of which rely on Petitioner's position that Fowler teaches the claimed vertical position. *See* Pet. 82 (addressing independent claim 5), 87 (addressing reason to combine, and notably, stating that Fowler is used to teach vertical positioning), 91–92 (noting that Arntzen is added as a backup position for limitations regarding near-field communication). Thus, we need not reach the other alleged deficiencies in Petitioner's ground raised by Patent Owner. *See* PO Resp. 65–77.

III. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner moves to exclude Exhibits 1013–1021 and 1024–1027. PO Mot. Excl. 1. Our analysis above focuses on a dispositive issue regarding the claimed planogram. We are not apprised of any citations to these documents in the briefing regarding the planogram issue. Indeed, according to Patent Owner, Exhibits 1013–1021 involve one of the issues we did not address, regarding near-field communications. PO Mot. Excl. 3–4. Because this motion involves a question on evidence that is not relevant to the issues discussed in this Decision, we need not rule on the motion at this time. We dismiss Patent Owner's motion to exclude as moot.

⁴ *See* n.3; *compare, e.g.,* Pet. 64–67 *with* Ex. 1009 ¶¶ 184–188 and Pet. 74–75 *with* Ex. 1009 ¶¶ 203–204.

IV. CONCLUSION

For the reasons given above, we determine that Petitioner has not established by a preponderance of the evidence that claims 1–9 are unpatentable. The following table summarizes the outcome of this proceeding:

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–9	103	Fujiwara		1–9
1–9	103	Fujiwara, Arntzen		1–9
1–5, 8, 9	103	Bandy, Fowler		1–5, 8, 9
1–5, 8, 9	103	Bandy, Fowler, Arntzen		1–5, 8, 9
Overall Outcome				1–9

V. ORDER

In consideration of the foregoing, it is hereby

ORDERED that the record shows that Petitioner has *not* established the unpatentability of claims 1–9 over Fujiwara or the combinations of Fujiwara and Arntzen, Bandy and Fowler, or Bandy, Fowler, and Arntzen;

FURTHER ORDERED that Patent Owner’s Motion to Exclude Evidence is *dismissed* as moot; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2024-00189
Patent 10,674,340 B2

FOR PETITIONER:

Hao Tan
Shen Wang
ARCH & LAKE LLP
haotan@archlakelaw.com
shenwang@archlakelaw.com

FOR PATENT OWNER:

Jessica Kaiser
Matthew Moffa
David Pekarek Krohn
Tyler Knox
PERKINS COIE LLP
jessica.kaiser@arnoldporter.com
moffa-ptab@perkinscoie.com
pekarekkrohn-ptab@perkinscoie.com
knox-ptab@perkinscoie.com