

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

Petitioners

v.

SES-IMAGOTAG INC.,

Patent Owner

Case No.: IPR2024-00189

Patent No. 10,674,340

PETITIONER'S REPLY

CONTENTS

I.	INTRODUCTION.....	1
II.	CLAIM CONSTRUCTION.....	2
A.	“planogram”	2
B.	“activated”/”activating”	6
III.	ALL CHALLENGED CLAIMS ARE UNPATENTABLE	9
A.	Grounds 1-2	9
1.	Claims 1, 5	9
2.	Claims 6, 7	18
B.	Grounds 3-4	18
1.	Claims 1, 5	18
2.	Motivation to Combine.....	24
C.	Petitioner did not rely on hindsight.	25
IV.	CONCLUSION	26

TABLE OF AUTHORITIES

Cases

<i>Advanced Lighting Concepts v. Mate, LLC</i> , IPR2023-01258, Paper 9 (Feb. 13, 2024)	11
<i>Amazon.com, Inc. v. Barnesandnoble.com, Inc.</i> , 239 F.3d 1343 (Fed. Cir. 2001)....	4
<i>Cephalon, Inc. v. Abraxis Bioscience, LLC</i> , 618 F. App'x 663 (Fed. Cir. 2015)	8
<i>Depuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.</i> , 567 F.3d 1314 (Fed. Cir. 2009)	17
<i>e.Digital Corp. v. Futurewei Techs., Inc.</i> , 772 F.3d 723 (Fed. Cir. 2014)	9
<i>Elekta Limited v. ZAP Surgical Systems, Inc.</i> , 81 F.4th 1368 (Fed. Cir. 2023)	25
<i>Galderma Labs., L.P. v. Tolmar, Inc.</i> , 737 F.3d 731 (Fed. Cir. 2013).....	20
<i>Hill-Rom Servs. v. Stryker Corp.</i> , 755 F.3d 1367 (Fed. Cir. 2014)	9
<i>Home Semiconductor Corp. v. Samsung Elecs. Co.</i> , 701 Fed. Appx. 1006 (Fed. Cir. 2017)	5
<i>In re Geisler</i> , 116 F.3d 1465 (Fed. Cir. 1997)	16
<i>In re Gorman</i> , 933 F.2d 982 (Fed. Cir. 1991)	26
<i>In re Magnum Oil Tools Int'l, Ltd</i> , 829 F.3d 1364 (Fed. Cir. 2016).....	23
<i>In re Sneed</i> , 710 F.2d 1544 (Fed. Cir. 1983).	25
<i>Liebel-Flarsheim Co. v. Medrad, Inc.</i> , 358 F.3d 898 (Fed. Cir. 2004)	6, 21
<i>Profectus Tech. LLC v. Huawei Techs. Co.</i> , 823 F.3d 1375 (Fed. Cir. 2016).....	6

<i>Qualcomm Inc. v. Apple Inc.</i> , 24 F.4th 1367 (Fed. Cir. 2022)	26
<i>Seabed Geosolutions (US) Inc. v. Magseis FF LLC</i> , 8 F.4th 1285 (Fed. Cir. 2021).	5
<i>Toro Co. v. Deere & Co.</i> , 355 F.3d 1313 (Fed. Cir. 2004).....	5
<i>Tri-Arc LLC v. Safe Rack LLC</i> , IPR2020-01566, Paper 12 (Mar. 25, 2021)	24
<i>Uber Techs., Inc. v. Surgetech LLC</i> , IPR2023-00738, Paper 8 (Oct. 23, 2023)	24
<i>Unwired Planet, LLC v. Google Inc.</i> , 841 F.3d 995 (Fed. Cir. 2016)	26

Exhibit List¹

Exhibit Number	Description
1011	U.S. Patent App. Pub. No. 2013/0048721 (“Rasband”)
1012	Deposition Transcript of Dr. Rajeev Surati (“Surati Dep. Tr.”)
1013	U.S. Patent App. Pub. No. 2012/059741 A1 (“Khan”)
1014	U.S. Patent App. Pub. No. 2014/0195925 A1 (“Wikander”)
1015	U.S. Patent No. 7,937,107 B2 (“Rofougaran”)
1016	U.S. Patent App. Pub. No. 2010/0161434 A1 (“Herwig”)
1017	U.S. Patent App. Pub. No. 2008/0255947 A1 (“Friedman”)
1018	Japan Patent Application Publication 2007-155383A (“Sakata”)
1019	Certified Translation of Japan Patent Application Publication 2007-155383A
1020	Japan Patent Application Publication 2009-64316A (“Akao”)
1021	Certified Translation of Japan Patent Application Publication 2009-64316A
1022	U.S. Patent No. 7,973,722 B1 (“Hill”)

¹ Only new exhibits are listed in this table. Petitioner also relies upon already-submitted exhibits by both Petitioner and Patent Owner, Ex. 1001-1009, 2001-2026.

1023	microID® 13.56MHz RFID System Design Guide by Microchip Technology Incorporated (2004)
1024	Taiwan Patent No. M353498 (App. No. 97219709) (“Kong”)
1025	Certified Translation of Taiwan Patent App. No. 97219709
1026	China Patent No. CN 202068693 U (“Yang”)
1027	Certified Translation of China Patent No. CN 202068693 U
1028	An Introduction to RFID Technology by Roy Want, IEEE Pervasive Computing, February 2006
1029	RFID Handbook: Fundamentals and Applications in Contactless Smart Cards and Identification, Second Edition by Klaus Finkenzeller, translated by Rachel Waddington, Wiley 2003
1030	Flexible tag microlab development: Gas sensors integration in RFID flexible tags for food logistic by Estefania Abad <i>et al.</i> , Sensors and Actuators B 127 (2007) 2-7
1031	AN1445: Antenna design guide for MFRC52x, PN51x and PN53x, Rev. 1.2 (11 October 2010) by NXP Semiconductors
1032	Reply Declaration of Dr. Manos Tentzeris

I. INTRODUCTION

Patent Owner SES-Imagotag Inc. (“Patent Owner” or “SES”) centers its arguments on two points: (1) that Petitioners Hanshow America Inc. and Hanshow Technology Co., Ltd. (collectively, “Petitioner” or “Hanshow”)’s prior art Fujiwara (Ex. 1003) does not disclose a “planogram” as SES would construe this term, or at least does not disclose horizontal positions; and (2) that prior arts Fujiwara and Bandy (Ex. 1006) are not compatible with NFC technology. Both are incorrect .

First, SES ignores clear intrinsic evidence for “planogram,” and instead seeks to import ill-defined limitations from extrinsic evidence. When SES’s proposed construction is rightfully rejected, there is no doubt that Fujiwara discloses the claimed “planogram.” Further, contrary to SES’s argument, “horizontal positions” are disclosed by Fujiwara.

Second, SES’s argument that introducing NFC technology “would destroy core functionality of the prior art” (Paper 21, at 2) is unsupported by evidence. To the contrary, a POSITA would have had motivation and a reasonable expectation of success for modifying the prior arts to use NFC technology.

SES puts forward various other arguments, but they all suffer from the same problems – mischaracterization of prior art, of background technology, or of Petitioner’s arguments.

The Board should cancel all challenged claims.

II. CLAIM CONSTRUCTION

The Board should reject SES's proposed constructions for the term "planogram" and "activated"/"activating."²

A. "planogram"

SES argues that "[t]he term 'planogram' is a well-known and often-used term in the art." Paper 21, at 20. Yet it then proposes at least *three* differently-worded "general understandings" of the term:

- "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."
Id. at 20.
- "generally include[s] information regarding: (1) how similar products are grouped together and where these groups of products are placed; (2) where each product is placed on a shelf-segment, including relative to other products (e.g., how high off the ground, how prominent a

² SES also argues that the preamble of Claim 1 [1pre] is limiting. Paper 21, at 18-19. Petitioner never argued otherwise, except that the *preamble portion* "A method for communicating spatially localized information" is *not* limiting. Paper 2, at 17, 62.

position, which products are nearby, etc.); and (3) how much shelf space is dedicated to each product.” *Id.*

- “at a minimum include[s] 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.” *Id.* at 22.

SES further provided two exemplary planograms, calling them “top-down” and “shelf-segment” types. *Id.* at 21-22.

With so many different “general understandings” and examples, one is left to wonder what SES explicitly requires to meet its definition of “planogram.” *See* Ex. 1032, ¶¶5-8. Is a “dataset, map, diagram, schematic, or the like” *without* product grouping information or shelf space measurement (such as the planogram shown in FIG. 1 of Ex. 2015, which SES cited for its “general understanding”) a planogram? Is SES’s exemplary top-down-type “planogram” (which does not show how each product is placed on a shelf segment, or how much space each product takes) a planogram? What amount of shelf space is required (SES’s exemplary shelf-segment-type “planogram” does not show any numerical length unit)? SES’s bare assertion that “[a]lthough there are many different definitions of ‘planogram’ that exist throughout the art, they all share these same basic features” (Paper 21, at 22)

rings hollow as the '340 Patent disclosures do not involve “features” such as shelf space measurement, SES's own examples do not share all its so-called “basic features,” SES and its expert refused to provide a definitive (or minimal) list of its so-called “basic features,” and its expert could not decide whether a given example is a “planogram” under SES's proposal. *See* Ex. 1012 at 84:22-85:13; 89:10-92:13; 95:16-96:20; 98:19-99:17; 100:2-101:14; 102:7-107:16; 130:8-132:5; *see also* Ex. 1032, ¶¶7-9.

SES further confuses the issue by apparently requiring the “planogram” of the '340 Patent to be a *subtype* of planograms, one belonging to the “shelf-segment” type, and one that may further contain three-dimensional information (which its expert failed to clarify, Ex. 1012, 97:3-98:18). Paper 21, at 23; Ex. 2001, ¶77. But SES deliberately avoids incorporating such requirements into its proposed construction for “planogram,” and seemingly retreats from this position in its conclusion. Paper 21, at 24; *see also* Ex. 1012, 98:19-99:17 (SES's expert refusing to confirm the requirement for third dimension). SES's proposal “injects ambiguity” into the term, “leaves unclear the precise scope of [the limitation],” and as a result, it is impossible to know what the prior art must disclose to render the limitation obvious. *See Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001); *Home Semiconductor Corp. v. Samsung Elecs. Co.*, 701 Fed. Appx.

1006, 1011 (Fed. Cir. 2017); *Toro Co. v. Deere & Co.*, 355 F.3d 1313, 1319 (Fed. Cir. 2004). It should be rejected for this reason alone.

Whereas, clear intrinsic evidence supports the Board's earlier holding that "the planogram of the '340 patent is merely a list of locations of labels and associated locations and the items on sale." Paper 11, at 27. First, the claim language itself "a planogram associating a plurality of unique identifiers of radio-frequency peripherals with a plurality of locations within a predetermined area" (Ex. 1001, 8:20-23) supports the Board's understanding. Second, as the Board noted, the specification of the '340 Patent states "[a] planogram lists the locations of all the electronic labels 3 and of the items on sale in a sales area." Ex. 1001, 6:35–37. Third, the prior art Egan (Ex. 2003) is cited in the '340 Patent (Ex. 1001, (56)) and was considered during prosecution (*see* Ex. 1002, 35). And Egan defines the term consistent with the Board's holding as "custom product assortment and product placement plans." Ex. 2003, 1:16; *see also* Ex. 1032, ¶10.

"If the meaning of a claim term is clear from the intrinsic evidence, there is no reason to resort to extrinsic evidence." *Seabed Geosolutions (US) Inc. v. Magseis FF LLC*, 8 F.4th 1285, 1287 (Fed. Cir. 2021). Yet that is exactly what SES did – sifting through no less than *eight* pieces of extrinsic evidence, picking and choosing and selectively omitting bits and pieces (*see* Ex. 1012 at 93:15-94:2, 107:5-16), in order to assemble its "general understanding." But extrinsic evidence may not be

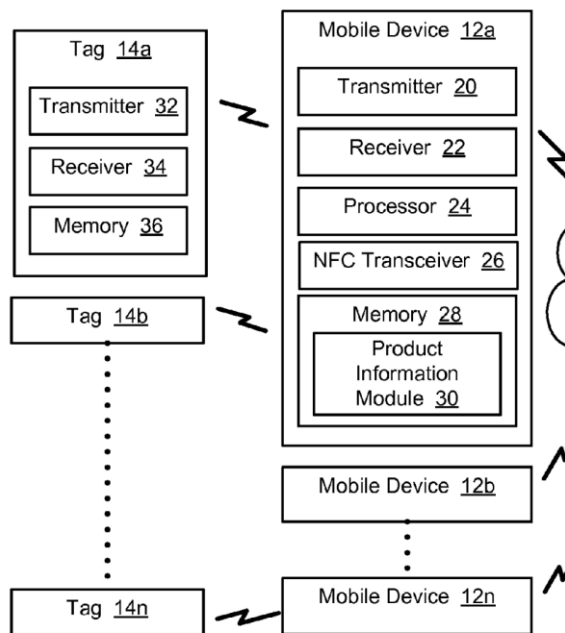
used to contradict claim meaning that is unambiguous in light of the intrinsic evidence. *Profectus Tech. LLC v. Huawei Techs. Co.*, 823 F.3d 1375, 1380 (Fed. Cir. 2016). The Board's understanding, not SES's ill-defined and amorphous description, is the correct construction. *See* Ex. 1032, ¶¶4, 11.

B. “activated”/“activating”

SES also argues that “activated”/“activating” requires powering a label, seeking to limit the '340 Patent's radio-frequency peripheral to “passive RFID and NFC tags.” Paper 21, at 24-26. However, SES's only evidence from the specification are two sentences from a preferred embodiment (Ex. 1001, 6:1-9). *See* Ex. 1032, ¶13.

“[I]t is improper to read limitations from a preferred embodiment described in the specification -- even if it is the only embodiment -- into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004). Here, there is clear indication in the intrinsic record to the contrary. *See* Ex. 1001, 4:50-53 (disclosing that the RF peripheral could be NFC-type or RFID-type, without limiting it to be passive); *see also* Ex. 1032, ¶14. As shown by SES's own expert and exhibit, NFC and RFID tags can be active (with internal power source) or passive (without internal power source). Ex. 2001, ¶57; Ex. 2010, at 4; *see also* Ex. 1032, ¶15.

The prosecution history also shows that the patentee did not intend to limit this term. The examiner once mapped this term to the disclosures of FIG. 1 and paragraph [0031] of prior art Rasband (Ex. 1011). Ex. 1002, at 42. FIG. 1 of Rasband generally shows communications between tags and mobile devices, and [0031] discloses that tag 14 may be an active tag that use batteries to power its circuitry throughout the tag interrogation process. Ex. 1011, [0031].



Ex. 1011, FIG. 1.

The applicant did not refute this mapping (“activating” process being comparable to Rasband’s interrogation process for an active tag, without powering it), and thus the prosecution history further supports not limiting the term. SES’s

attempt to import limitation from a preferred embodiment should be rejected. *See* Ex. 1032, ¶16.

Further, if adopted, SES's position would render claim 2 superfluous. If "activated"/"activating" requires powering a passive NFC tag, then the claim language "energy of electromagnetic waves emitted by the mobile terminal activating the radio-frequency communication peripheral" (8:33-35) becomes surplusage because there is no other way of "activating" under SES's proposed construction, and claim 2 collapses into a reiteration of claim 1. SES's proposal essentially construes two terms "activated by the mobile terminal" (claim 1) and "energy of electromagnetic waves emitted by the mobile terminal activating the radio-frequency communication peripheral" (claim 2) to have no difference in meaning, which is disfavored in claim construction. *See Cephalon, Inc. v. Abraxis Bioscience, LLC*, 618 F. App'x 663, 666 (Fed. Cir. 2015).

SES cites Petitioner and its expert as somehow supporting SES's proposed construction. Paper 21, at 25. However, SES mischaracterized Prof. Tentzeris's testimony (*see* Ex. 1032, ¶18) and identified no supporting legal authority. Instead, SES improperly points to a *different* party's position in a *different* ongoing proceeding regarding a *different* patent_with *different* claim language. *Id.*, at 25-26. *See Hill-Rom Servs. v. Stryker Corp.*, 755 F.3d 1367, 1380 (Fed. Cir. 2014) (collateral estoppel requires the party prevail on its position); *e.Digital Corp. v.*

Futurewei Techs., Inc., 772 F.3d 723, 727 (Fed. Cir. 2014) (“a court cannot impose collateral estoppel to bar a claim construction dispute solely because the patents are related.”).

Accordingly, the Board should reject SES's proposed construction. “Activate” has its plain and ordinary meaning, which is “to put into action.” See Ex. 1032, ¶¶12, 16-17.

III. ALL CHALLENGED CLAIMS ARE UNPATENTABLE

SES argues that none of the grounds renders any of the challenged claims obvious. Paper 21, at 26-77. SES is incorrect.

A. Grounds 1-2

1. Claims 1, 5

a. Fujiwara discloses “planogram.”

First, contrary to SES's arguments, Fujiwara discloses “planogram.” SES argues that Fujiwara's electronic shelf label database 301 cannot be the claimed “planogram” because it allegedly does not provide certain product location and shelf space information. Paper 21, at 29-31. However, SES's requirement for such information is based on its proposed construction of the term “planogram,” which, as discussed above, should be rejected.

Under the Board's correct understanding (Paper 11, at 27), Fujiwara's electronic shelf label database 301, “storing the shelf label product information

associating the electronic shelf label information with the product information, as well as storing the shelf label location information identifying the location of the electronic shelf label,” (Ex. 1003, [0013]), teaches the “planogram” limitation (Paper 11, at 27).

SES refers to a different patent (Ex. 2026) as somehow negating Fujiwara’s disclosure of “planogram.” Paper 21, at 31. But SES failed to offer a certified translation as required by 37 CFR §42.63(b) and, regardless, the use of a term in a different patent, without overlapping inventors, is irrelevant to Fujiwara’s disclosure.

SES also argues that Fujiwara’s disclosure of lighting up shelf labels negates the disclosure of “planogram.” Paper 11, at 30-31. The disclosure of additional functionality in a different embodiment is irrelevant. In addition, this functionality, as SES agrees, shows that Fujiwara’s shelf labels *can operate as* precise locations, thus it strengthens the mapping of Fujiwara’s electronic shelf label database 301 to “planogram.”

b. Fujiwara discloses or renders obvious “horizontal position” and “associated one-to-one.”

SES argues that Figure 4 of Fujiwara does not disclose “horizontal position.” Paper 21, at 34-36. Yet its reliance on *Advanced Lighting Concepts v. Mate, LLC*, IPR2023-01258, Paper 9, 16 (Feb. 13, 2024) is misplaced because that case deals with anticipation, not obviousness. Here, the question is whether a POSITA 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, as the Board has correctly ruled (Paper 11, at 28), the answer is yes.

SES further contends that Figure 4, a “diagram” (Ex. 1003, [0066]), represents an actual shelf and thus cannot be used to show what Fujiwara’s database 301³ contains. Paper 21, at 35-36. However, SES itself argues that a planogram can be represented by a diagram. *Id.*, at 20-22. Thus a POSITA would find it obvious 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.

SES also takes an overly restrictive view of Fujiwara’s database 301 when arguing that it “only associat[es] a ‘shelf label ID’ to a shelf number.” *Id.*, at 36 (citing Ex. 1003, [0066]’s discussion of “location information” as negating any disclosure of horizontal position). This is a distortion. Fujiwara teaches “The 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.” (Ex. 1003, [0062]). Therefore, Fujiwara’s shelf label

³ SES repeatedly states that Ground 1 matches Fujiwara’s “database (310)” to “planogram.” Paper 21, at 33-36. That is a typo for 301, as Dr. Surati admitted. Ex. 1012, 117:1-8.

ID 311 is a part of “shelf label location information” (different from the “location information” that SES emphasizes), and works together with shelf number 313 to define the shelf label location information – and a POSITA would understand, based on the disclosures of Figure 4, that the shelf label ID 311 would supply the horizontal information missing from shelf number 313. There is no reason to limit Fujiwara’s database to the two-column example provided by SES’s expert (Ex. 2001, ¶113), or to believe the assertion (contrary to Fujiwara’s explicit teaching above) that “[a]ll Fujiwara provides is a shelf number” (Ex. 2001, ¶114).

SES further disagrees with the Board’s finding that Figure 4 discloses vertical and horizontal positions (Y and X coordinates) (Paper 11, at 28). Paper 21, at 36 n.4. In particular, SES’s expert argues that locations on a regular 2-dimensional lattice can be defined in other ways such as polar coordinates or rows/columns. Ex. 2001, ¶111. First, it is unclear how the proposed “rows/columns” differ from Y and X coordinates. Second, a 2-dimensional location can be represented in any coordinate system while still being “defined by a vertical and horizontal position,” for example, a point defined by polar coordinates (1, 0) is still *defined* by a vertical and horizontal position (Y coordinate 0, X coordinate 1). Therefore, any association of peripherals with two-dimensional locations in the claimed plane (however represented) would read on the limitation. Further, when applied to the regular lattice locations in Figure

4 of Fujiwara, SES's polar-coordinate argument amounts to having a POSITA deliberately forego the simplest representation of the lattice for no reason.

Simply put, the Board correctly recognized that a POSITA would understand, based on Fujiwara's disclosures, that "listing the horizontal and vertical position of each of Fujiwara's uniquely numbered tags in a database would define the location of each such tag" (Paper 11, at 28), and thus find "vertical and horizontal position" limitation obvious over Fujiwara.

SES's argument against Fujiwara's disclosure of "associated one-to-one" is based on its erroneous position that Fujiwara does not differentiate between different horizontal positions. Paper 21, at 37. As discussed above, this is wrong.

Further, as the Board agreed (Paper 11, at 28), there is an independent rationale for why a POSITA would find "horizontal position" obvious. SES's argument that a shelf cannot be a "horizontal position" (Paper 21, at 37; Ex. 2001, ¶118) rests upon the assumption that a "position" is a mathematical point, but there is no support for such (physically impossible) requirement in the '340 Patent. Further, SES's argument that a POSITA would not know that multiple shelves can be placed side-by-side within an aisle (Paper 21, at 38-39; Ex. 2001, ¶121) is, simply, detached from reality.

c. Fujiwara, by itself or with Arntzen, discloses “activated.”

SES argues that neither Fujiwara nor Arntzen discloses or renders obvious “activated” under SES’s proposed construction of this term. Paper 21, at 40-43. As discussed above, SES’s proposed construction is erroneous. When “activated” is correctly construed as having its plain and ordinary meaning of “put into action,” there is no dispute that Fujiwara’s “resonant call-up signal,” which SES’s own expert describes as “establishing a communication channel” between the IC tag and tag reader (Ex. 2001, ¶127), discloses this limitation. *See also* Ex. 1032, ¶¶16-17.

Further, a POSITA would find it obvious, based on the POSITA’s background knowledge or on Arntzen’s disclosures⁴, to implement Fujiwara’s IC tags with passive NFC tags. Paper 2, at 27-29, 54-56. SES admits that a passive NFC tag will

⁴ SES argues that “Arntzen. . . discloses only active labels.” Paper 21, at 42. This is incorrect. Arntzen discloses that its electronic display is powered. Ex. 1005, 9:17-18, 13:35-14:2. Arntzen then discloses that the electronic display can communicate externally with other handheld units through NFC following universally implemented standards. *Id.*, 12:15-20; 6:6-8. Thus, Arntzen is compatible with a powered electronic display incorporating a standard-following passive NFC component, just like the ’340 Patent’s electronic label can have both a display screen and an NFC-type radio-frequency peripheral (Ex. 1001, 4:29-56).

read on the “activated” limitation under its proposed construction. Paper 21, at 24-25. Therefore, even under SES’s construction, Fujiwara, by itself or with Arntzen, still renders this limitation obvious.

d. Fujiwara, by itself or with Arntzen, discloses or renders obvious “communication range is less than twenty centimeters.”

SES admits that Fujiwara discloses a communication range of “several to several tens of centimeters,” thus encompassing the claimed “less than twenty centimeters.” Paper 21, at 43. SES argues that the claimed range is critical to the inventions of the ’340 Patent. *Id.* at 44. However, SES has not advanced any argument, and its expert could not explain, why the cutoff point of 20 cm, as opposed to another arbitrary distance, is critical. *See* Ex. 1012, at 117:19-121:5.

SES also argues that shorter ranges provide certain benefits, but, as various prior arts disclosed (e.g. Ex. 1005, 6:8-11), these benefits were well known, so they would not offer the “unexpectedly good” results necessary for overcoming the presumption of obviousness. *See In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997). Indeed, SES merely states that the claimed range has “advantages” (*not* “unexpected advantages”). Paper 21, at 44. This cannot overcome the *prima facie* case of obviousness. *See Geisler*, 116 F.3d at 1469-70.

SES also mistakenly argues that “Fujiwara was intended to read more than one label at a time” and therefore cannot work with the claimed range. Paper 21, at

45. In fact, Fujiwara, in the embodiment employing the mobile IC tag reader, discloses reading IC tags of “one or more electronic shelf labels,” without expressing a preference for more labels (and thus longer ranges). Ex. 1003, [0090]. A POSITA would find it obvious to limit Fujiwara’s communication range to less than 20 centimeters in order to improve the precision of product locating and achieve the objective of easy shopping and effective sales promotion effect. Paper 2, at 28-29.

SES’s expert argues that Fujiwara requires its readers to operate at a range larger than 20cm so as to read multiple labels. Ex. 2001, ¶¶139-141, 151-152. This argument is wrong for two reasons. First, Fujiwara discloses reading IC tags from “one or more electronic shelf labels” (Ex. 1003, [0066], [0090]) -- including just “one” label. Second, nothing in Fujiwara restricts the placement of the on-shelf tag reader 104 (or the mobile reader 107) to one end of the shelf, so Fujiwara is compatible with an 80-cm shelf having two tags placed at 20- and 60-cm positions and a reader at 40-cm position. SES’s imagined scenario that “Fujiwara’s labels would need to be spaced extremely close together” (Ex. 2001, ¶142) with a 20cm range is simply wrong.

SES’s teaching away arguments also fail. Fujiwara does not criticize or even express a preference against a short range. *See Depuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009) (“A reference does not teach away. . . if it merely expresses a general preference for an alternative invention

but does not ‘criticize, discredit, or otherwise discourage’ investigation into the invention claimed.”).

Moreover, SES apparently does not dispute that Arntzen discloses the claimed range. See Paper 21, at 45. SES instead argues that a POSITA would not modify Fujiwara to use Arntzen’s NFC because Fujiwara is incompatible with the short range. Paper 21, at 45; Ex. 2001, ¶144. As discussed above, this is wrong.

e. Fujiwara, by itself or with Arntzen, discloses or renders obvious “an antenna and an electronic chip configured for near field communication.”

SES argues that a POSITA would not modify Fujiwara to use NFC tags because NFC tags are not compatible with Fujiwara’s “intended use.” Paper 21, at 47-51. But this argument is based on its misunderstanding that Fujiwara requires the reading of more than one tag. As discussed above, this is incorrect⁵. SES’s argument that a POSITA would not have an expectation of success in implementing NFC tags on Fujiwara’s electronic shelf labels (Paper 21, at 47) similarly fails. Dr. Surati could not rule out that this can be done with off-the-shelf parts and did not deny that this was within the capability of a POSITA (Ex. 1012, at 121:21-125:12). He also admitted that NFC was used in retail settings by 2012 (Ex. 1012, at 46:18-20) which

⁵ SES cites Dr. Tentzeris’s testimony (Ex. 2024, 12:5-8) for support. Paper 21, at 51. However, the cited portion contains nothing remotely close to SES’s description.

corroborates Arntzen's disclosure of NFC communication capability in electronic displays in shops (Ex. 1005, 12:15-20) and belies SES's argument otherwise (Paper 21, at 47).

2. Claims 6, 7

SES's arguments related to claims 6 and 7 (Paper 21, at 53-57) derive from a mischaracterization of the Petition -- that Petitioner is proposing to replace Fujiwara's infrared communications with NFC in ground 1, and with Zigbee in ground 2. Petitioner did not. Instead, the proposed modification was to replace infrared with RF communication (which includes more than NFC or Zigbee) in both grounds. Paper 2, at 46, 55. SES's strawman argument thus fails.

B. Grounds 3-4

1. Claims 1, 5

a. Bandy, together with Fowler, renders obvious "vertical and horizontal positions."

SES argues: (1) "Fowler never contemplates tracking a vertical position as part of the planogram." Paper 21, at 58; (2) "it is not 'necessary' to provide a horizontal and vertical position to determine a location as recited because Fowler concerns only generating a top-down map with no vertical (z) information." *Id.*, at 62; and (3) "Fowler has no need to determine the vertical position of the cart." *Id.*, at 64.

SES misses the point. The issue is not whether *Fowler* needs a vertical position, it is whether a POSITA would be motivated to modify *Bandy* to incorporate Fowler's disclosures that products and tags can be located on different shelves, counters, and heights (Ex. 1007, [0137], [0145], FIGS. 15, 18), so that the modified planogram will associate tags with locations defined by vertical and horizontal positions. See Paper 2, at 65-67, 87-90. On this point, there is no dispute that Fowler discloses "placing RFID tags at different heights on the shelf" – and therein the vertical position. See Paper 21, at 64. Further, despite SES's attempt to obfuscate (Paper 21, at 63; Ex. 2001, ¶180), there is no practical difference between "item" and "tag" with regards to Bandy's location data (part of "item data"), since the tag is attached directly to or located nearby the item. Ex. 1006, [0054], [0057].

SES's argument should therefore be rejected.

b. Bandy, together with Fowler (or Fowler and Arntzen), renders obvious "an antenna and an electronic chip configured for near-field communication."

SES advances several flawed arguments for why NFC tags (and in particular NFC antennas) are incompatible with Bandy and Fowler.

First, SES argues that Bandy's list of exemplary communication protocols does not include NFC, so it teaches away. Paper 21, at 65. But failing to mention something is not the same as teaching away. See *Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738-39 (Fed. Cir. 2013) (failure to mention 0.3% compositions

is not teaching away from 0.3%). In fact, Bandy's "interrogation/read protocols" (Ex. 1006, [0055]) are fully compatible with NFC protocols. *See* Ex. 1032, ¶16; Ex. 2006, R102. Similarly, SES argues that Bandy, through the incorporated Bandy-344, "does not disclose using anything other than UHF RFID protocols." Paper 21, at 66. But Bandy is "directed to all types of RFID tag devices." Ex. 1006, [0074]. Therefore, Bandy's RFID tag is not limited to the tag (UHF RFID or not) in Bandy-344's preferred embodiment, and could be a passive NFC tag. *See* Ex. 1032, ¶21.

Second, SES argues that Bandy-344's antennas are not compatible with NFC. Paper 21, at 66-68. According to SES (and without properly proposing a construction), the only possible antenna configured for NFC is "a coil antenna (as shown in '340 Patent's Figure 3) with sufficient turns to receive the magnetic field." *Id.*, at 66. This is a classic case of importing limitations from the specification (without *any* textual support), and as such should be rejected. *See Liebel-Flarsheim*, 358 F.3d at 913; *see also* Ex. 1032, ¶21. In addition, contrary to SES's assertions, coil antenna is not the only suitable antenna for NFC. Ex. 1032, ¶¶22-29; *see also* Ex. 1012 at 81:12-84:16 (admitting that different types of antennas, including omnidirectional antennas, are suitable for NFC); Ex. 2013, 4:13-27 (Bandy-344 disclosing omnidirectional antennas).

Then, SES erroneously asserts that the antennas shown in Fig. 9 of Bandy-344 are not “coils required by NFC,” and a POSITA would not be motivated to modify them to work with NFC, because this will be incompatible with Bandy’s intended purposes. Paper 21, at 67-68. First, SES calls the antennas illustrated in Fig. 9 of Bandy-344 “the antennas in Bandy’s RFID tag,” as if Bandy explicitly limited its antenna to these configurations. Paper 21, at 67. Nowhere does Bandy restrict its antenna in this way. Bandy-344 merely shows these configurations as suitable for its manufacturing method (Ex. 2013, 9:47-63). Bandy incorporates Bandy-344 for its interrogation protocols, not for its manufacturing method. Ex. 1006, [0077]. Thus Bandy does not adopt (certainly not exclusively) these configurations. In fact, Bandy-344 does not restrict its antenna to these specific configurations either, but simply provides them as exemplary. Regardless, these configurations are completely suitable for NFC. Ex. 1032, ¶¶22-29.

SES also erroneously states that to “modify Bandy’s antenna to work with NFC. . . would have increased the size and stiffened the tag, making it unsuitable for Bandy’s disclosed purpose.” Paper 21, at 67. Again, the exemplary antennas of Bandy-344’s Fig. 9, designed for soft and flexible tags (Ex. 2013, 10:50-11:15), are suitable for NFC. Ex. 1032, ¶¶22-29. Moreover, it is well within a POSITA’s knowledge to implement NFC antennas on small and flexible tags. Ex. 1032, ¶¶30-37.

SES further erroneously states that “modifying Bandy to use NFC would have been impractical” because NFC tags cannot work when attached directly to metallic or liquid objects, and because the limited ranges of NFC tags require a reader to be “brought close.” Paper 21, at 68. First, Bandy explicitly discloses that “attached directly” is not the only intended use for tags. Ex. 1006, [0055]. Further, a POSITA would know that NFC tags can be used in the vicinity of metal or liquid⁶. Ex. 1032, ¶¶38-40. Second, Bandy specifically discloses the use of a mobile device to read tags (Ex. 1006, [0054], FIG. 9) which belies SES’s impracticality argument (Paper 21, at 68).

SES then argues that NFC is incompatible with Fowler. Paper 21, at 69, 74-75. But Fowler is directed to implementing “a proximity scan of the shopping cart” (Ex. 1007, [Abstract]) that can “determine what products and items are in proximity to the cart” (Ex. 1007, [0151]) and selecting advertisements based on such proximity information (Ex. 1007, [0166]). Further, Fowler discloses the use of passive RFID tags (which have relatively limited ranges). Ex. 1007, [0097], [0139], [0140]. Thus,

⁶ SES’s selective cites to Dr. Tentzeris’s deposition testimony are misleading. Paper 21, at 68. In fact, he testified that enclosures generally applied to NFC tags can realize a spacing, allowing the tag to work near metal or liquid. Ex. 2024, 32:19-33:13. Dr. Surati confirmed this. Ex. 1012, 53:13-16, 77:6-79:6.

if anything, Fowler expresses a preference for *proximity*, not a long range. Nothing in Fowler discourages or criticizes the use of NFC tags in locations close to the trajectory of Fowler's cart.

Therefore, SES's attempt to distance Bandy and Fowler from NFC technology fails. See Ex. 1032, ¶¶19-20, 41 (discussing Bandy).

SES's attempts to discredit Arntzen in Ground 4 through inapposite authorities also fail. Paper 21, at 69. Unlike the petitioner in *In re Magnum Oil Tools Int'l, Ltd.*, Petitioner here is not substituting a *different* prior art through cross-referencing without explanation, but referring to earlier discussions of the *same* prior art (Arntzen). 829 F.3d 1364, 1379 (Fed. Cir. 2016). Unlike the petitioner in *Uber Techs., Inc. v. Surgetech LLC*, Petitioner here is not grouping all grounds together and obscuring which argument goes in which ground to which claim, but properly segmenting the grounds. IPR2023-00738, Paper 8, 22-23 (Oct. 23, 2023). Petitioner's cross-referencing is no different from the cross-referencing between claim 5 and claim 1 in Grounds 1 and 3, which SES does not challenge.

SES admits that Arntzen discloses NFC. Paper 21, at 69. Cross-referencing aside, SES's only argument against Ground 4 on this issue is that NFC is incompatible with Bandy and Fowler. As discussed above, this is wrong.

2. Motivation to Combine

SES's arguments against motivation to combine in Grounds 3-4 (Paper 21, at 70-76) are largely a rehash (and sometimes a word-to-word repetition) of the arguments in its Preliminary Response (Paper 10, at 36-44), which the Board rejected. Paper 11, at 46-49.

In particular, SES argues that Bandy and Fowler use RFID for different purposes. Paper 21, at 70-73. But, as the Board concluded, "Bandy and Fowler disclose similar techniques for storing data that associates product and location information in a physical space, such as a retail store." Paper 11, at 49. SES fails to address the Board's holding, instead simply repeating its argued-and-discredited contentions. Further, SES's reliance on *Tri-Arc LLC v. Safe Rack LLC* is misplaced since that case, unlike the current one, involves a situation of one prior art teaching away from elements of the other prior art's disclosures. IPR2020-01566, Paper 12, 33 (Mar. 25, 2021).

SES also argues that Bandy and Fowler are somehow physically incompatible. Paper 21, at 73. Apart from being based on strawman combinations that Petitioner never advanced, this argument is untenable in both fact and law. The '340 Patent does not require a "hand-operated reader" (Paper 21, at 70) but a "*mobile device*" – a description fitting both Bandy's reader and Fowler's *hand-pushed* cart. Moreover, literal physical compatibility is not required for combining arts. *See Elekta Limited*

v. ZAP Surgical Systems, Inc., 81 F.4th 1368, 1375 (Fed. Cir. 2023); *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983).

Contrary to SES's assertions (Paper 21, at 72-73), Petitioner spelled out how a POSITA would be motivated and able to modify Bandy in view of teachings from Fowler and background knowledge. Paper 2, at 86-91. The Board should reject SES's recycled arguments and reconfirm its holding.

SES's argument against the motivation to combine in Ground 4 is wholly based upon Bandy's and Fowler's so-called incompatibility with NFC. Paper 21, at 76. As discussed earlier, this is incorrect.

C. Petitioner did not rely on hindsight.

Finally, SES erroneously argues that Petitioner improperly relied on hindsight to select and modify prior arts. Paper 21, at 76-77. A closer look at the cited portions reveals that Petitioner relied upon *other* references cited by its expert for certain NFC advantages, which the '340 Patent acknowledges. In addition, "a patentee's admissions about the scope and content of the prior art provide a factual foundation as to what a skilled artisan would have known at the time of invention." *Qualcomm Inc. v. Apple Inc.*, 24 F.4th 1367, 1376 (Fed. Cir. 2022). The '340 Patent itself admits these factual foundations.

SES further cites *In re Gorman*, 933 F.2d 982 (Fed. Cir. 1991) to argue that the references must provide some teaching whereby the combination would have

been obvious. Paper 21, at 76. But explicit teachings of a motivation to combine is not required. *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1003 (Fed. Cir. 2016). Regardless, Petitioner pointed to such teachings. *See e.g.* Paper 2, at 28-29, 54-55, 86-91.

IV. CONCLUSION

For at least the above reasons, Petitioner respectfully requests the Board cancel all the challenged claims.

Date: December 2, 2024

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

I hereby certify that the foregoing PETITIONER'S REPLY includes 5,539 words (as calculated by Microsoft Word), excluding those in the table of contents, table of authorities, list of exhibits, list of claims, mandatory notices, signatures, certificate of word count, and certificate of service. Accordingly, this Reply is under the word count limit of 5,600 words.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I hereby certify that, on December 2, 2024, a set of true and correct copies of PETITIONER'S REPLY and supporting materials has been served via e-mail and UPS to the Petitioner by serving the below-listed attorneys of record for Petitioner in the concurrent proceeding:

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