

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZEBRA TECHNOLOGIES CORPORATION,
Petitioner,

v.

LONE STAR SCM SYSTEMS, LTD.,
Patent Owner.

IPR2022-01376
Patent 9,996,717 B2

Before KEN B. BARRETT, AARON W. MOORE, and
RUSSELL E. CASS, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. *Background and Summary*

Zebra Technologies Corporation (“Petitioner”)¹ filed a Corrected Petition requesting *inter partes* review of U.S. Patent No. 9,996,717 B2 (“the ’717 patent,” Ex. 1001). Paper 3 (“Pet.”). The Petition challenges the patentability of claims 1–4 and 6–20 of the ’717 patent. Lone Star SCM Systems, Ltd. (“Patent Owner”)² filed a Preliminary Response to the Petition. Paper 10 (“Prelim. Resp.”).

An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). Having considered the arguments and evidence presented by Petitioner and Patent Owner, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on at least one of the challenged claims of the ’717 patent. Accordingly, we institute an *inter partes* review as to all the challenged claims of the ’717 patent on all the grounds of unpatentability set forth in the Petition.

B. *Related Proceedings*

Both parties identify, as matters involving or related to the ’717 patent, *Lone Star SCM Systems, Ltd. v. Zebra Technologies Corporation*, No. 6:21-cv-00842 (W.D. Tex.); *Lone Star SCM Systems, Ltd. v. Honeywell*

¹ Petitioner identifies Zebra Technologies Corporation as the real party-in-interest. Pet. 1.

² Patent Owner identifies Lone Star SCM Systems, Ltd. as the real party-in-interest. Paper 6.

International Inc., No. 6:21-cv-00843 (W.D. Tex.); and *Lone Star SCM Systems, Ltd. v. Bluebird Inc.*, No. 6:21-cv-00844 (W.D. Tex.). Pet. 1; Paper 6. Additionally, the parties identify the following Patent Trial and Appeal Board cases as involving patents related to the '717 patent: IPR2022-01374 (U.S. Patent No. 7,557,711); IPR2022-01375 (U.S. Patent No. 9,646,182); and IPR2022-01377 (U.S. Patent No. 10,482,293). Pet. 1–2; Paper 6.

C. The '717 Patent

The '717 patent “is directed, in general, to communication systems and, more specifically, to an interrogator, method of discerning metal and radio frequency identification (RFID) objects, and an interrogation system employing the same.” Ex. 1001, 1:23–27. Although the Specification primarily focuses on the interrogation system’s use in a medical environment, the Specification indicates that the system is not limited to use in that environment. *See id.* at 1:42 (“Of particular note is a surgical environment . . .”), 13:27–30 (“[S]uch an interrogation system may be applied to a wide range of applications and environments such as supply chain management systems in retail facilities or security systems in airports, to name a few.”).

According to the Specification,

[S]urgical items must be counted and accounted for before, during and following the conclusion of a surgical procedure. The presently available systems to track the surgical items are laboriously time consuming, costly and in many cases

antiquated. Thus, a medical facility can benefit from systems that more efficiently track surgical items.

Id. at 14:33–39. “[T]he problem associated with the loss of surgical items, especially surgical items retained within patients, is a serious one.” *Id.* at 2:35–37.

An embodiment of an interrogation system is depicted in Figure 4 of the ’717 patent, reproduced below.

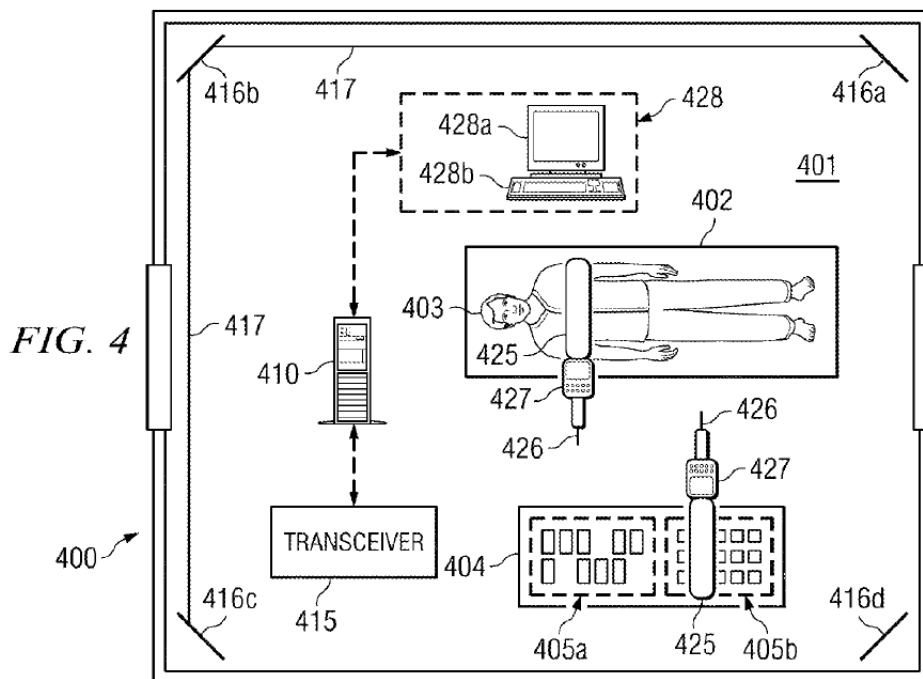


Figure 4 is “a pictorial diagram of an embodiment of an interrogation system, generally designated 400, employable within an operating room of a medical facility and constructed in accordance with the principles of the present invention.” *Id.* at 14:49–53. Shown in the Figure is “an operating table 402 with a patient 403 thereon and a back table 404 that accommodates a plurality of surgical instruments 405a and disposable items 405b (such as sponges).” *Id.* at 14:53–58. Metal objects in an operating room include surgical instruments, surgically implanted metal structures, and disposable sponges having a metal wire that allows for detection by a metal sensing

subsystem. *Id.* at 16:55–61. RFID tags may be applied to surgical metal instruments and disposable items, such as sponges. *Id.* at 17:4–21.

Also depicted in Figure 4 is portable interrogator 425 having internal user interface 427. *Id.* at 14:65–66 (“an interrogator (e.g., a portable interrogator) 425”); *id.* at 15:9 (“the portable interrogator 425”); *id.* at 17:22; Fig. 4. “[T]he interrogator may be affixed to a table (e.g., the back table 404), stand, wall or ceiling within a facility.” *Id.* at 14:66–15:1.

The portable interrogator 425 includes a metal sensing subsystem that provides a first signal having a metal signature representing a presence of a metal object and a radio frequency identification (RFID) sensing subsystem that provides a second signal having a RFID signature representing a presence of a RFID object.

Id. at 15:28–33. Portable interrogator 425 also includes a control and processing subsystem that discerns a presence of objects from signals. *Id.* at 15:46–49. “The portable interrogator 425 still further includes a position sensor that allows a position of the portable interrogator 425 to be determined.” *Id.* at 15:62–65.

The ’717 patent describes an integrated mode of operation that employs a plurality of inputs, including “metal sensing 552, RFID sensing 554, interrogator location observables 556, RFID position markers 558, RFID/metal calibration markers 560, a patient demographics/history database 562, anatomical databases 564, evidence-based medicine databases 566 and RFID and metal object signature databases 568.” *Id.* at 18:27–36 (referring to Figures 5A and 5B). “An adaptive integrating filter 570 processes these inputs to provide a resulting interrogator detected object and location 575.” *Id.* at 18:37–39.

The integrated mode of operation may employ multiscan, coherent signal processing of diverse multiple inputs to achieve

significantly higher detection sensitivities thereby allowing more precise object location and identification. The adaptive integrating filter 570 may be a single adaptive filter, such as a Kalman filter, or it may be more complex to meet a specific patient situation.

Id. at 18:51–58. “A more precise location of the interrogator may be afforded by integrating an instantaneous output of an internal inertial position sensor with RFID position markers 558 placed at predetermined anatomical locations on the patient.” *Id.* at 18:59–62.

D. Illustrative Claim

Of the challenged claims of the ’717 patent, claims 1 and 15 are independent claims. Claim 1, reproduced below, is illustrative.

1. An interrogation system, comprising:
an antenna configured to receive a first signal and a second signal from a first object and a second object, respectively, in close unobstructed proximity; and
a control and processing subsystem configured to discern a presence of said first object and said second object from said first signal and said second signal, respectively, as said first object and said second object moves with respect to said antenna.

Ex. 1001, 29:52–60. Independent claim 15 recites a method of operating an interrogation system that is the same as or substantively similar to that of independent claim 1. *Id.* at 30:52–61.

E. Evidence

Petitioner relies on the following references:

Name	Reference	Exhibit(s)
Garber	US 6,232,870 B1, issued May 15, 2001	1005
Werb	WO 01/06401 A1, published Jan. 25, 2001	1006
Anderson	US 7,151,979 B2, issued Dec. 19, 2006	1007
Martinez	US 7,039,359 B2, issued May 2, 2006	1008
Arndt	US 6,559,645 B2, issued May 6, 2003	1009

Petitioner also relies on the declaration of Dr. Jacob Sharony (Ex. 1002) in support of its arguments, and Patent Owner relies on the declarations of Patrick Kinney (Ex. 2009), Dr. Omid Kia (Ex. 2010), and Joseph C. McAlexander III (Ex. 2011)³ in support of its arguments. The parties also rely on other exhibits as discussed below.

F. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable on the following grounds⁴:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 3, 4, 8–16, 19, 20	102(b)/103	Garber
2	103(a)	Garber, Werb
6, 7, 17, 18	103(a)	Garber, Andersen
1, 3, 4, 8–15, 16, 19, 20	103(a)	Garber, Martinez, Arndt
2	103(a)	Garber, Werb, Martinez, Arndt
6, 7, 17, 18	103(a)	Garber, Andersen, Martinez, Arndt

³ We, in this decision, cite to the exhibit numbers as listed in the official record maintained in the Patent Trial and Appeal Case Tracking System (P-TACTS). Patent Owner improperly labels the declarations as Exhibits 1007 through 1009, respectively. See 37 C.F.R. § 42.63(c) (“Each party’s exhibits must be uniquely numbered sequentially in a range the Board specifies. For the petitioner, the range is 1001–1999, and for the patent owner, the range is 2001–2999.”).

⁴ For purposes of this Decision, we assume the challenged claims have an effective filing date prior to March 16, 2013, the effective date of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), and we apply the pre-AIA versions of 35 U.S.C. §§ 102 and 103. See Pet. 3 (stating that the “earliest possible priority date is March 3, 2003,” and “[t]he application was examined as pre-AIA.”); Prelim. Resp. 41 n.2 (“the Patents claim a priority date that falls before the passage of the AIA”).

II. ANALYSIS

A. Principles of Law

Petitioner bears the burden of persuasion to prove unpatentability of the claims challenged in the Petition, and that burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987); *see also Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1334 (Fed. Cir. 2008) (to anticipate a patent claim under 35 U.S.C. § 102, “a single prior art reference must expressly or inherently disclose each claim limitation”). Moreover, “[b]ecause the hallmark of anticipation is prior invention, the prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)). Whether a reference anticipates is assessed from the perspective of one of ordinary skill in the art. *See Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368–69 (Fed. Cir. 2003) (“‘[T]he dispositive question regarding anticipation [i]s whether *one skilled in the art* would reasonably understand or infer from the [prior art reference’s] teaching’ that every claim element was disclosed in that single reference.” (second and third alterations in original) (quoting *In re Baxter Travenol Labs.*, 952 F.2d 388, 390 (Fed. Cir. 1991))).

Additionally, under the principles of inherency, if the prior art necessarily functions in accordance with, or includes, the claimed limitations, it anticipates. *MEHL/Biophile Int'l Corp. v. Milgraum*, 192 F.3d 1362, 1365 (Fed. Cir. 1999) (citation omitted); *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349–50 (Fed. Cir. 2002).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter 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 having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) any objective evidence of obviousness or non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. The Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (internal quotation marks and citation omitted).

Petitioner, relying on the testimony of Dr. Sharony, contends that:

A person having ordinary skill in the art (“POSITA”) at the time of the alleged invention would have had at least a bachelor’s degree in electrical engineering, computer science,

or a related field and significant experience with detection devices, like RFID and metal detectors.

Pet. 5 (citing Ex. 1002 ¶ 22). Patent Owner, at this stage, does not explicitly address Petitioner's proposal or propose a different definition of the person of ordinary skill in the art.

Based on the present record, we preliminarily determine that the definition offered by Petitioner comports with the qualifications a person would have needed to understand and implement the teachings of the '717 patent and the prior art of record. *Cf. Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art itself may reflect an appropriate level of skill in the art). For purposes of this decision, we apply Petitioner's description of the person of ordinary skill in the art.

C. Claim Construction

We apply the same claim construction standard used in district court actions under 35 U.S.C. § 282(b), namely that articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b) (2021). In applying that standard, claim terms generally are given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner proposes constructions for several claim terms. Pet. 5–15, 64–66. Patent Owner proposes different constructions for some of those

terms. Prelim. Resp. 41–57; *see also id.* at 8–10 (“close unobstructed proximity”). Patent Owner also states agreement with Petitioner’s proposed constructions of “a control and processing subsystem configured to . . .” and “a communication system.” *Id.* at 58. Additionally, the parties, in comparing the prior art to the claims, offer explicit or implied constructions for other terms. *See, e.g.*, Prelim. Resp. 21 (asserting that the “position sensor” of dependent claim 2 is required to be used so as to establish location based on movement of the antenna with respect to the objects).

We address here some of the parties’ proposed claim constructions, and we discuss below, in analyzing the application of the prior art references’ teachings to the claims, the construction of other terms. On this record and for purposes of this decision, we determine that no other claim terms require express construction at this time to resolve the parties’ disputes. At this stage of the proceeding, the Board has not made a final determination as to the construction of any claim term, and the parties may further develop the issues during the trial.

1. “*close unobstructed proximity*”

Independent system claim 1, for example, recites an antenna configured to receive signals from two objects “in close unobstructed proximity.” Ex. 1001, 29:53–55; *see also id.* at 30:54–56 (independent method claim 15 reciting “receiving a first signal and a second signal from a first object and a second object, respectively, in close unobstructed proximity at an antenna”). The parties disagree regarding the meaning of, at least, “unobstructed.”

Petitioner, relying on the testimony of Dr. Sharony, points to the prosecution history of the parent of the ’717 patent and Figure 4 of the ’717 patent, and contends that “a first object and a second object . . . in close

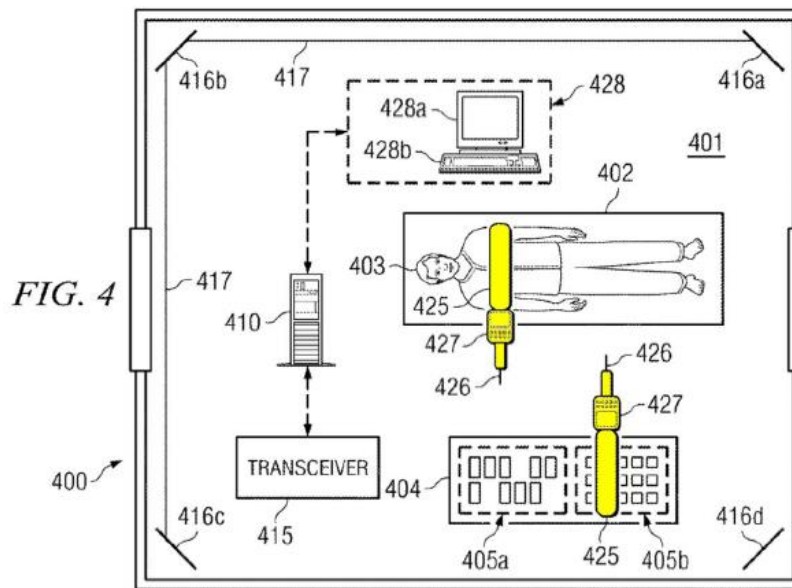
unobstructed proximity” means “a first object and a second object in close proximity *without obstructions to signals* sent by the first and second objects.” Pet. 13–14 (citing Ex. 1001, Fig. 4; Ex. 1002 ¶¶ 61–69; Ex. 1013, 215, 285, 325) (emphasis added).

Patent Owner points to Figure 4 and the Specification’s description thereof and a definition for “obstruct” in a general dictionary, and contends that the subject phrase “means ‘a first object and a second object . . . in close **unblocked** proximity.’” Prelim. Resp. 9 (citing Ex. 1001, 14:53–58, 16:1–7, Fig. 4); *id.* at 58–60 (citing Ex. 2012 (Random House Webster’s Unabridged Dictionary)) (emphasis in original). Patent Owner, quoting the general dictionary, asserts that “‘obstruct’ is defined as ‘to block or close up with an obstacle; make difficult to pass.’” *Id.* at 60 (quoting Ex. 2012).

The parties agree that it is the signals from the objects that are “unobstructed.” See Pet. 14; Prelim. Resp. 59. At first blush, there also does not appear to be a substantive difference between the parties’ proposed constructions for “unobstructed”—namely, “without obstructions to signals” versus “unblocked” signals. However, the parties’ contentions regarding Garber’s application to independent claim 1 indicate a disagreement. As discussed further below, Petitioner contends that Garber’s disclosure of the interrogator reading signals from RFIDs in library books indicates that the signals are unobstructed. See Pet. 17. Patent Owner, on the other hand, agrees that the signals are read but argues, for example, that “[m]ore than likely, the tags are embedded within the articles meaning that the respective tags are completely blocked.” Prelim. Resp. 11; *see also, e.g., id.* at 14–15 (“[T]he RFID device reads the RFID tag . . . It appears that the RFID tags are on the cover of the items facing down toward the base of the

reader(s). . . . Thus, the RFID tags are not in close unblocked proximity.”). Thus, it appears that Patent Owner may be using the term “unblocked” to indicate that there is no material at all between the first and second tags (such as pages or covers of a library book), regardless of whether that material blocks the signals from the tags. We now turn to the intrinsic evidence.

Petitioner asserts, and Patent Owner does not dispute, that “[t]he term ‘unobstructed’ is not used in the specification [of the ’717 patent].” Pet. 13. Both parties rely on Figure 4 of the ’717 patent in support of their respective claim construction arguments. Pet. 13–14; Prelim. Resp. 9–10. Petitioner’s annotated version of Figure 4 is reproduced below.



Ex.1001, Figure 4

Pet. 14. Above is the challenged patent’s Figure 4—“a pictorial diagram of an embodiment of an interrogation system, generally designated 400, employable within an operating room of a medical facility”—with two interrogators 425 annotated in yellow. Ex. 1001, 14:49–52, 14:65–66.

Prior to surgery, portable interrogator 425 may be used to inventory surgical instruments 405a and disposable items 405b (e.g., sponges) on back table 404. *Id.* at 14:56–58, 16:1–7. “Additionally, the portable interrogator 425 may be employed to scan the patient 403 before, during or after closing the surgical procedure.” *Id.* at 16:21–23. “Scanning the patient 403 before the surgical procedure provides location of metal or RFID objects already present in the patient 403.” *Id.* at 16:23–25. “Scanning the patient 403 after concluding the surgical procedure provides a verification that any metal or RFID objects remaining are only those intended.” *Id.* at 16:29–32.

Patent Owner focuses on the inventorying aspect of Figure 4, noting that the portable interrogator may be used to inventory instruments and items on the back table. Prelim. Resp. 9–10. Patent Owner also notes that the interrogator may be affixed to a table, stand, wall, or ceiling. *Id.* at 10 (citing Ex. 1001, 14:53–58). Patent Owner then asserts: “Thus, the plurality of surgical instruments **405a** and disposable items **405b** (the objects) are aligned next to one another on the back table **404** without blocking barriers or structures between them.” *Id.* Patent Owner continues:

Also, rather than moving the portable interrogator **425** with respect to the plurality of surgical instruments **405a** and disposable items **405b**, the plurality of surgical instruments **405a** and disposable items **405b** may be moved with respect to an interrogator affixed, for instance, to a stand. Hence, the objects in the ‘717 Patent are in close unblocked proximity.

Id.

Even if Patent Owner’s characterization of the Specification’s disclosure of the inventorying process is correct, Patent Owner does not explain how its proposed claim construction is consistent with the disclosure, in the same Figure 4 embodiment, of scanning for objects inside

the patient and prior to surgery. To the extent that Patent Owner’s proposed construction of “unobstructed” as meaning “unblocked” is limited to the situation where there is nothing between the objects or the signals do not pass through anything before being read by the interrogator, we do not agree. We decline to conclude, at this preliminary stage, that a person of ordinary skill in the art reading the Specification would understand “unobstructed” so narrowly. *Cf.* Ex. 1001, 5:26–23 (the Background of the Invention section describing a particular RFID product that “has been described in the context of a solution for identifying implanted devices such as pacemakers.”). Such a construction is inconsistent with the Specification’s description of the interrogator being able to read signals of objects within a patient’s body, which would include organs or tissues between the different objects and between the objects and the antenna.

We turn now to the prosecution history. The applicant, during the prosecution of the application that is the parent of the ’717 patent, added the phrase “close proximity” to the antenna limitation and argued that the amendment overcame the Examiner’s prior art reference, Francis, disclosing two RFID tags that, according to the applicant, “must be placed far apart.” Ex. 1013, 181, 187–188. The Examiner again rejected the claims, finding that the same Francis reference disclosed another embodiment where the RFID tags were spaced only a short distance apart. *Id.* at 208. The applicant asserted that, in that embodiment, Francis used “[a] radio frequency (‘RF’) shield 410, such as a metal plate, metal screen or other RF reflective or absorbent material . . . positioned between the RFID tags,” and amended the claim to read “in close unshielded proximity.” *Id.* at 215, 221–222. The applicant asserted that, “because the RF shield 410 blocks substantially all

interrogation signals from the second RFID tag 430 . . . , the RFID interrogator will not detect the second RFID tag 430.” *Id.* at 222. Later in prosecution, the Examiner rejected the claims for failing to have written description support in the Specification for “in close unshielded proximity.” *Id.* at 285. The applicant responded: “The Examiner’s attention is directed to FIGURE 4 and paragraphs 84–96 [of the application] wherein a plurality of objects (such as instruments and disposable items) are clearly illustrated and described in close unshielded proximity.” *Id.* at 300. In the next Office Action, the Examiner maintained the written description rejection, again finding that the Specification does not disclose “in close unshielded proximity.” *Id.* at 309–311. In response, the applicant amended independent claim 1 to replace “unshielded” with “unobstructed.” *Id.* at 325. The Examiner then issued a notice of allowability. *Id.* at 345.

The arguments made by the applicant during prosecution indicate that the terms “unshielded” and later “unobstructed” were added to distinguish the claimed subject matter over prior art having a shield that “blocks substantially all interrogation signals” from an object such that the “interrogator will not detect the [object].” *See id.* at 222. This suggests that “unobstructed” means that there is no structure akin to a shield between the objects that blocks signals to the extent that an object cannot be detected.

For purposes of this decision, we preliminarily construe “unobstructed” as meaning that there is no structure located between the objects that blocks signals from an object to the extent that the object cannot be detected by the antenna of the interrogation system. This determination is preliminary. The parties are encouraged to further address this claim

construction issue in future briefs during the trial, and preferably with a focus on intrinsic evidence.

2. “*sensing subsystem configured to . . .*”

Dependent claim 3 recites:

The interrogation system as recited in claim 1 further comprising a *sensing subsystem configured to* provide said first signal and said second signal having a signature representing said first object and said second object, respectively, from said antenna to said control and processing subsystem.

Ex. 1001, 29:65–30:3 (emphasis added).

Petitioner contends that “sensing subsystem” is a means-plus-function limitation governed by 35 U.S.C. §112 ¶ 6 and, accordingly, is limited to corresponding structure (and equivalents) disclosed in the Specification for performing the recited function. Pet. 5–8. Patent Owner argues that “[t]he claims in which ‘sensing subsystem’ appear disclose a sufficiently definite structure that would be understood by a POSITA to have sufficiently definite meaning as the name for structure, making § 112 ¶ 6 inapplicable.” Prelim. Resp. 42.

The lack of the word “means” in a claim element creates a rebuttable presumption that § 112 ¶ 6 does not apply. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015). “When a claim term lacks the word ‘means,’ the presumption can be overcome and § 112, para. 6 will apply if the challenger demonstrates that the claim term fails to ‘recite sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function.’” *Id.* at 1349 (citation omitted). “Generic terms such as ‘mechanism,’ ‘element,’ ‘device,’ and other nonce words that reflect nothing more than verbal constructs may be used in a claim in a manner that is tantamount to using the word ‘means’

because they ‘typically do not connote sufficiently definite structure’ and therefore may invoke § 112, para. 6.” *Id.* at 1350 (citation omitted).

Petitioner asserts that “system” is a recognized nonce word, and argues that “the purely functional prefix ‘sensing’ does nothing to impart structure to the term ‘subsystem.’” Pet. 6. From this, Petitioner concludes that “sensing subsystem” is governed by § 112 ¶ 6. *Id.* Patent Owner argues that Petitioner has failed to rebut the presumption and that a person of ordinary skill in the art would recognize “sensing subsystem” as the name of sufficiently definite structure. Prelim. Resp. 42. We agree that Petitioner has not overcome the presumption that § 112 ¶ 6 does not apply.

Petitioner’s critical propositions—that “the ‘sensing subsystem’ term is a nonce word” and that “the purely functional prefix ‘sensing’ does nothing to impart structure to the term ‘subsystem’”—is conclusory attorney-argument for which Petitioner points to no adequate evidentiary support. Pet. 5–6; *cf. Williamson*, 792 F.3d at 1349 (“The standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.”); *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996) (“What is important is not simply that a ‘detent’ or ‘detent mechanism’ is defined in terms of what it does, but that the term, as the name for structure, has a reasonably well understood meaning in the art.”).

Patent Owner points to dependent claims 4 and 5, which depend from claim 3 and, respectively, recite an “RFID sensing subsystem” and a “metal sensing subsystem.” Prelim. Resp. 44–45. Patent Owner argues that those claims 4 and 5 support a determination that “sensing subsystem” connotes a known structure rather than a nonce word. *Id.* We, at this stage, find that

argument persuasive, particularly where Petitioner contends that a person of ordinary skill in the art would recognize the recited “RFID sensing subsystem” and “metal sensing subsystem” as sufficiently definite structures. *See* Pet. 10–11.

We preliminarily determine that § 112 ¶ 6 does not apply to “a sensing subsystem configured to provide [the recited two signals] from said antenna to said control and processing subsystem” and that the phrase is not a means-plus-function limitation.

Both parties offer proposed constructions for “sensing subsystem” if the phrase is not deemed to be governed by § 112 ¶ 6. Petitioner’s proposed construction is a “self-contained system for sensing within a larger system” “that performs the function recited in the claim.” Pet. 9, 34. Patent Owner’s proposed construction is “a component configured to detect a signal representing an object and convert from one format to another.” Prelim. Resp. 51.

Petitioner does not explain adequately the reason for including the “self-contained” modifier. *See* Pet. 9. Patent Owner contends that the Specification describes how the disclosed RFID sensing subsystem and metal sensing subsystem convert signals, but does not explain adequately why claim 3 (which recites neither “RFID” nor “metal”) should be limited by that description so as to require some signal format converter. *See* Prelim. Resp. 52–53. We, for purposes of this decision, do not adopt either parties’ proposed construction and decline to require the “sensing subsystem” to be “self-contained” or to have “a component configured to . . . convert from one format to another.”

D. The Alleged Anticipation by and Obviousness over Garber of Claims 1, 3, 4, 8–16, 19, and 20 (Ground 1)

Petitioner alleges that claims 1, 3, 4, 8–16, 19, and 20 of the ’717 patent “are anticipated (or at least rendered obvious) by Garber.” Pet. 15; *see id.* at 15–25 (addressing claim 1). In addition to contending that Garber discloses every limitation of the subject claims and, therefore, is anticipatory, Petitioner contends, *inter alia*, that the recitation in claim 1 regarding a subsystem to discern a presence of objects “as said first object and said second object moves with respect to said antenna” would have been obvious. *Id.* at 22–25; *see also id.* at 33 n.4 (Petitioner contending that a “metal sensing subsystem” would have been obvious). Patent Owner argues that Garber does not teach objects in “close unobstructed proximity.” Prelim. Resp. 8–15.

For the reasons discussed below, we determine that Petitioner has shown a reasonable likelihood that it would prevail in establishing unpatentability of claims 1, 3, 4, 8–16, 19, and 20 as anticipated by and obvious over Garber.

1. Garber (Ex. 1005)

Garber pertains to “RFID devices, including handheld RFID devices, and applications for such devices.” Ex. 1005, 3:25–26. “The devices and applications are described with particular reference to library materials such as books, periodicals, and magnetic and optical media.” *Id.* at 3:29–32.

Garber's Figure 13 is reproduced below.

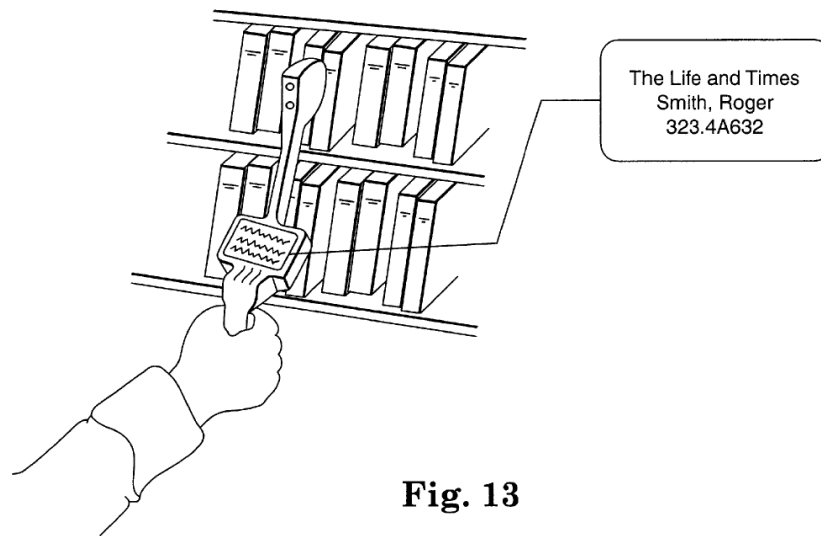


Fig. 13

Figure 13 depicts “[a] hand-held RFID device . . . in which the RFID reader, user interface, power source, antenna, processor, and software are all provided in a single integrated unit.” *Id.* at 15:42–46. According to Garber, the hand-held RFID device preferably includes memory, and the memory may be in the form of a handheld computer. *Id.* at 14:59–67. “The portable computer may include . . . a touch-screen display.” *Id.* at 15:1–2. “[T]he functions or methods described . . . are equally applicable to non-portable RFID devices, and . . . the functions or methods described . . . in reference to non-portable RFID devices are similarly applicable to portable RFID devices.” *Id.* at 14:49–54.

Garber explains that:

An interrogation zone may be established by placing spaced detection panels across the exits from the room in which the tagged articles are located, near a conveyor carrying items to be monitored, or the like. Hand held detection devices may also be used.

Id. at 6:54–58.

Library materials having an RFID tag of [the combination] type could be checked in and out more easily, perhaps without human assistance. That is, the materials would automatically be checked out to a particular patron (who may herself have an RFID tag associated with her library card) when the patron passes through a suitable detection zone, and checked back in when the patron re-enters the library with the materials.

Id. at 10:11–20.

2. *The Allegation that Garber is Defective*

Patent Owner argues that “the teachings of Garber were previously considered by the United States Patent & Trademark Office (the ‘Patent Office’) during the prosecution of the ‘717 Patent.” Prelim. Resp. 5–6. Patent Owner does not allege that the Garber reference itself was before an Examiner. Rather, Patent Owner, under the heading “Other Defects With Zebra’s References,” asserts that certain patents that “were divisional applications of Garber (indirectly or directly)” “were considered by the Patent Office during the prosecution of the ‘717 Patent by being considered during the prosecution of U.S. Patent No. 8,552,869, which is a parent patent/application of the ‘717 Patent.” *Id.* at 33–34; *see also id.* at 6 n.1 (arguing that the Garber divisional applications were considered during the prosecution of an older application in the priority chain of the ‘717 patent). The application that issued as the ‘717 patent is a continuation of a continuation of the application that issued as that ‘869 patent, where the Garber divisional applications purportedly were considered. Ex. 1001, code (63). Patent Owner has not placed in the record of this *inter partes* review evidence indicating how and to what extent the Examiner considered the “teachings of Garber.” *See* Prelim. Resp. 33–34.

Patent Owner further argues that “[t]he Patent Examiner discounted the teachings of Garber with respect to, among other things, *location sensing* leading to a presumption that Garber lacked the requisite understanding of *providing a location of objects* in close unobstructed proximity akin to the claimed subject matter of the ‘717 Patent.” *Id.* at 34 (emphasis added). Again, Patent Owner has not placed in the record of this *inter partes* review or adequately discussed evidence indicating how and to what extent the Examiner considered and purportedly “discounted the teachings of Garber,” thus hampering our ability to assess these arguments. *Id.* at 34. Additionally, the limitation reciting “a position sensor configured . . . to provide a location [of the objects]” is not in the independent claim but is added by dependent claim 2, and Petitioner relies on Werb in combination with Garber, not Garber alone, for that limitation. *See* Pet. 49–57.

Having considered the arguments presented, without supporting evidence, we do not agree with Patent Owner at this stage of the proceeding that Garber is defective as implied by Patent Owner. *See id.* at 33.

3. *The Alleged Anticipation and Obviousness of Claim 1*

a. *An interrogation system, comprising:*

Petitioner contends that, to the extent that the preamble is limiting, Garber discloses an interrogation system. Pet. 15–16. Petitioner asserts that Garber discloses an interrogator in the form of a hand-held RFID device, and points to, *inter alia*, Garber’s description of Figure 4 as depicting “a block diagram of an RFID interrogation system interacting with an RFID tag.” *Id.* at 16 (quoting Ex. 1001, 3:46–47). Patent Owner does not raise any arguments regarding this contention.

- b. an antenna configured to receive a first signal and a second signal from a first object and a second object, respectively, in close unobstructed proximity; and*

Petitioner contends that Garber discloses a hand-held RFID device having an antenna for the RFID reader. Pet. 16–18 (citing Ex. 1005, 15:43–46, 16:11–13, Fig. 13; Ex. 1002 ¶¶ 83–92).

The recited antenna of claim 1 is configured to receive signals from “a first object and a second object . . . in close unobstructed proximity.” Ex. 1001, 29:53–55. Petitioner contends that Garber discloses the identification, by the RFID device, of multiple items (at least first and second objects) in close unobstructed proximity via code signals 202. Pet. 17–18. Petitioner notes that Garber states, “[t]he hand-held RFID device . . . is **capable of identifying multiple items that are within the range** of the device.” *Id.* at 17 (quoting Ex. 1005, 14:40–45) (emphasis and alterations in original). Petitioner further asserts that “Garber also teaches that ‘if items used in the library are first placed on a book cart [in close proximity without obstructions], for example, **the hand-held device could make a single pass by the items on the cart to record them.**’” *Id.* (quoting Ex. 1005, 18:25–27) (emphasis and alterations in original). Petitioner also contends that Garber’s discussion of the possibility of RFID tags being shielded, and thus escaping detection, supports the understanding that Garber’s disclosure of being able to identify multiple RFID tags indicates that there are no obstructions to the RFID signals. *See id.* at 18. Petitioner also contends that Garber discloses detecting two signals produced by RFID tags in an interrogation zone. *See id.* at 19–21 (discussing the “control and processing subsystem” limitation).

Patent Owner argues that Garber does not teach the “close unobstructed proximity” aspect of independent claims 1 and 15. Prelim. Resp. 8–15.

As an initial matter, Patent Owner appears to apply a very narrow construction for “unobstructed.” For the reasons discussed below and above in the claim construction section, we do not agree with Patent Owner to the extent that its proposed construction of “unobstructed” is limited to the situation where signals do not pass through anything before being read by the interrogator.

In the context of the next limitation, which is discussed further below and pertains to the objects “mov[ing] with respect to said antenna,” both parties discuss Garber’s teachings regarding an interrogation zone. See Pet. 19–21; Prelim. Resp. 11. Patent Owner’s characterization of Garber’s disclosure and corresponding arguments regarding the “close unobstructed proximity” are as follows:

An interrogation zone may be established by placing spaced detection panels across the exits from the room in which the tagged articles are located, near a conveyor carrying items to be monitored, or the like. Handheld detection devices may also be used. Garber, Col. 6, Lines 54–58 (Ex. 1002). While tagged articles are monitored through the interrogation zone, Garber does not teach that the tags are in close unblocked proximity. *More than likely, the tags are embedded within the articles meaning that the respective tags are completely blocked.* Also, the reference to the handheld device does not mean the tags are moving with respect to the handheld detection device or that the tags are in close unblocked proximity.

Prelim. Resp. 11 (emphasis added) (citing Garber, Ex. 1005, which Patent Owner identifies as Exhibit No. 1002)). Patent Owner does not offer any reasoning for the conclusory and speculative assertion that it is more than

likely that the tags are completely blocked. *See id.* If, as Patent Owner implies, every article tag is blocked such that it cannot be read by the interrogator, Garber's interrogation zone would not be useful and tagged articles could not be effectively monitored through the interrogation zone.

Patent Owner discusses other teachings of Garber. *See Prelim.*

Resp. 11–15. For example, Patent Owner concedes that Garber discloses:

Library materials having an RFID tag of this type could be checked in and out more easily, perhaps without human assistance. That is, the materials would automatically be checked out to a particular patron (who may herself have an RFID tag associated with her library card) when the patron passes through a suitable detection zone, and checked back in when the patron re-enters the library with the materials. Garber, Col. 10, Lines 11–20 (Ex. 1002). The RFID device can be used to check in and out an item or put an item on hold. Garber, Col. 15, Lines 36–37 (Ex. 1002).

Id. at 11–12 (emphasis added). Patent Owner then concludes, “there is no teaching that the RFID tags on the library materials are in close unblocked proximity.” *Id.* at 12. The basis for this conclusion is unclear where Patent Owner seemingly characterizes Garber as disclosing the reading of signals (which suggests that the signals are “unblocked”) from a plurality of RFID-bearing materials as the patron carries those materials (which suggests that the RFIDs are in close proximity) through a detection zone.

We determine that Petitioner has demonstrated a reasonable likelihood of showing that Garber discloses or teaches “an antenna configured to receive a first signal and a second signal from a first object and a second object, respectively, in close unobstructed proximity.”

- c. a control and processing subsystem configured to discern a presence of said first object and said second object from said first signal and said second signal, respectively, as said first object and said second object moves with respect to said antenna.*

As to the first part of this “control and processing subsystem” limitation, Petitioner contends that:

Garber discloses a control and processing subsystem (e.g., the processor in the hand-held RFID device/computer 108) configured to discern a presence of (e.g., decoding response from tags to identify tagged item) said first object and said second object (e.g., the RFID tags) from said first signal and said second signal (e.g., signals produced by tags/response code signal 202), respectively.

Pet. 21 (citing Ex.1002 ¶¶ 93–99); *see also id.* at 18–21. We understand Patent Owner, at this stage, to not raise any arguments regarding these contentions. *Cf.* Prelim. Resp. 21 (“Garber . . . ascertains a presence of the object within a read range of the RFID device.”).

The subject limitation recites that the subsystem is configured to discern a presence of the objects “as said first object and said second object moves with respect to said antenna.” Ex. 1001, 29:56–60. Petitioner contends that Garber discloses the aspect of the limitation. Pet. 21–22. Specifically, Petitioner contends that Garber discloses the reading of RFID tags in library materials as the patron passes through an interrogation zone, and that Garber discloses that this may be done with either spaced detection panels or handheld detection devices. Pet. 21–22.

In the alternative to the anticipation theory, Petitioner contends that, “[t]o the extent Garber does not explicitly teach this [‘moves with respect to said antenna’] limitation . . . , it would have been obvious to a POSITA to use Garber’s hand-held RFID device to check-out library patrons using

the . . . method disclosed by Garber.” Pet. 22 (citing Ex.1005, 15:36–37). Petitioner further contends that, “[f]or example, a POSITA would appreciate that Garber’s handheld RFID device could be used in any suitable interrogation zone, such as ‘across the exits from the room in which the tagged articles are located, near a conveyor carrying items to be monitored, or the like.’” *Id.* at 23 (quoting Ex.1005, 6:54–58; citing Ex.1002 ¶ 103).

Petitioner further contends that “Garber explicitly discloses that ‘functions and methods’ taught with respect to non-portable RFID devices are also present in Garber’s hand-held RFID device.” *Id.* at 23 (citing Ex.1005, 14:49–54). Petitioner points to Garber’s Figures 10 and 11, and contends that “Garber teaches its non-portable devices also discern a presence of multiple RFID tags based on their RFID signals.” *Id.* at 23 (citing Ex. 1005, 13:26–27, 14:23–25, Figs. 10, 11). Figures 10 and 11 are reproduced below.

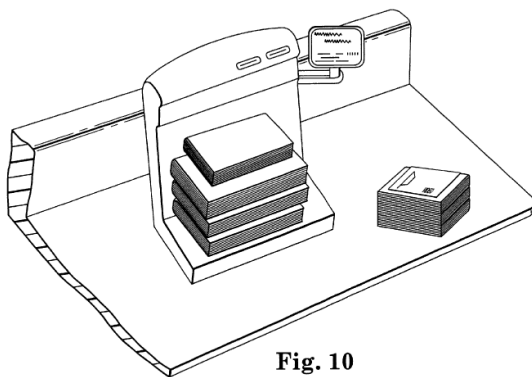


Fig. 10

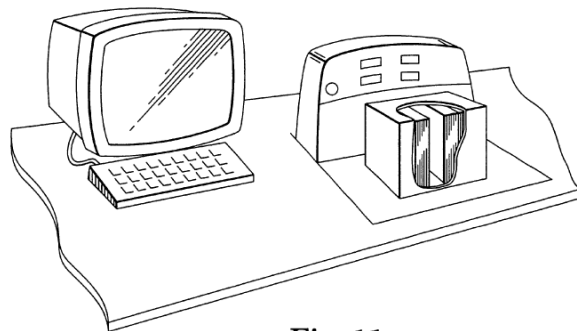


Fig. 11

Figure 10 depicts an embodiment with “an RFID device [that has] the ability to process multiple items at one time.” Ex. 1005, 13:26–27. Figure 11 depicts an embodiment with the “device [having] the ability to verify the content of a package or case having multiple items inside.” Ex. 1005, 14:19–21.

Petitioner, relying on Figure 9, additionally contends that “Garber further discloses its RFID devices can read multiple RFID tags as said first RFID tag and said second RFID tag moves with respect to said antenna.” *Id.* at 24 (citing Ex. 1005, 11:32–34, Fig. 9). We reproduce below Garber’s Figure 9.

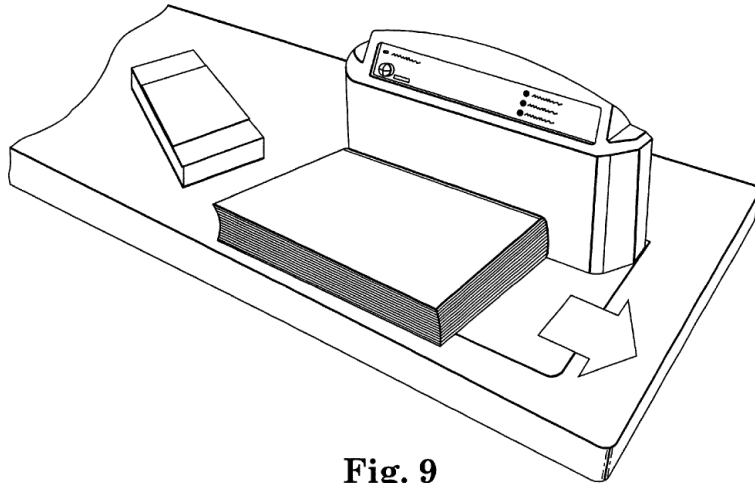


Fig. 9

Figure 9 depicts “an RFID device [that] is equipped to read information from an RFID tag on an item, such as a patron card, book, or other material.” Ex. 1005, 11:32–34. Petitioner asserts that “Figure 9 discloses an RFID tagged library book (said first object) and RFID tagged video tape (said second object) being read as they move with respect to said antenna.” Pet. 24.

Patent Owner argues that, in Figure 10, “[i]t appears that the RFID elements are on the cover of the items facing down toward the base of the reader(s),” and “[i]t is also evident that items are stacked on the base of the reader(s),” “[t]hus, the RFID elements are not in close unblocked proximity and the items are not moving with respect to the antennas of the reader(s) of Garber.” Prelim. Resp. 13 (citing Ex. 2009 (Kinney Decl.) ¶ 33). As to Figure 11, Patent Owner argues that “the RFID tags on the multiple items

within the package are enclosed by the outer casing of the package,” and “[i]t is also evident that package is stacked on the base of the reader(s),” and “[t]hus, the RFID tags on the multiple items are not in close unblocked proximity and the package (including the multiple items) is not moving with respect to the antennas of the reader(s) of Garber.” *Id.* at 14 (citing Ex. 2009 ¶ 35). We acknowledge that the materials in Figures 10 and 11 are not shown moving relative to the RFID reader, but we do not agree that the figures fail to depict materials in close unblocked proximity.

As to Figure 9, Patent Owner does not dispute that the library materials are shown being read as each moves across the reader, but does argue that “the RFID tags are not in close unblocked proximity” because “[i]t appears that the RFID tags are on the cover of the items facing down toward the base of the reader(s).” *Id.* at 14–15 (citing Ex. 2009 ¶ 37). On the present record, we do not find this argument availing, as Patent Owner does not explain adequately how the reading of RFIDs on two adjacent library materials does not disclose or at least suggest RFID tags in close unblocked proximity.

d. Conclusion as to Independent Claim 1

Having considered the parties’ arguments and evidence, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in its challenge to claim 1 as anticipated by or obvious over Garber.

4. Dependent Claim 3

Dependent claim 3 recites:

The interrogation system as recited in claim 1 further comprising a sensing subsystem configured to provide said first signal and said second signal having a signature representing

said first object and said second object, respectively, from said antenna to said control and processing subsystem.

Ex. 1001, 29:65–30:3.

As discussed above in the claim construction section, we preliminarily determine that this is not a means-plus-function limitation governed by 35 U.S.C. § 112 ¶ 6, and we decline to limit the scope as proposed by each party in the event that § 112 ¶ 6 does not apply.

Under its alternative, non-means-plus-function construction, Petitioner contends that “Garber discloses a ‘self-contained system for sensing [e.g., Garber’s RFID device] within a larger system [e.g., Garber’s library book detection system]’ that performs the function recited in the claim.” Pet. 34 (citing Ex. 1002 ¶ 132) (alterations in original); *see id.* at 26–29 (Petitioner’s contentions regarding the function); *see also id.* at 9 (Petitioner’s proposed construction). Petitioner contends that Garber discloses, *inter alia*, an RFID sensing subsystem in the form of an RFID reader having a detector 106 and interrogator 102. *Id.* at 29. Patent Owner does not raise any arguments regarding this contention.

We determine that Petitioner has demonstrated a reasonable likelihood of prevailing in its challenge to claim 3 as anticipated by or obvious over Garber.

5. Independent Claim 15 and Dependent Claims 4, 8–14, 16, 19, and 20

Independent claim 15 recites a method of operating an interrogation system configured the same as or similar to the system of independent claim 1. *See* Ex. 1001, 30:52–61. The remaining challenged claims are all dependent claims. For these claims, Patent Owner does not present arguments beyond those regarding independent claim 1 and discussed above.

Having considered Petitioner’s arguments and evidence, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in its challenges to claims 4, 8–16, 19, and 20 as being anticipated by or obvious over Garber.

E. The Alleged Obviousness of Claim 2 over Garber and Werb (Ground 2)

Petitioner alleges that dependent claim 2 would have been obvious over Garber and Werb. Pet. 49–57. Patent Owner argues that the combination does not teach the recited “position sensor” and that there is a lack of a motivation to combine Garber and Werb. Prelim. Resp. 15–22, 34–37.

1. Werb (Ex. 1006)

Werb pertains to “location and position identification of mobile and stationary assets, such as items warehoused in a storage facility.” Ex. 1006, 1:5–6. Werb explains that a Real Time Locating System (RTLS) has been used to track assets, and some RTLS’s employ RFID tags. *Id.* at 1:10–11, 1:24–28. According to Werb, “a need exists for a more economical, reliable, and flexible system for coverage of extended facilities, and particularly enclosed facilities where the use of Global Positioning System (GPS) is not possible because communication signals from satellites will not penetrate the structures enclosing the facility.” *Id.* at 3:1–5. Werb discloses a mobile tag reader and that, “[b]y communicating with the tags, the mobile tag reader can generate information suitable for determining the absolute position of the tag reader and/or the movable tags,” and “[t]he tag reader may store information about the relative position of assets in its vicinity.” *Id.* at 3:11–17. “The relative and/or absolute positions of the tag reader and the tagged

assets may be determined using a positioning system onboard the tag reader, such as a GPS or an inertial navigation system, or the positions may be determined subsequently by the central controller.” *Id.* at 3:17–20.

“[V]arious off-the-shelf technologies, such as speedometers, compasses, gyroscopes, and inertial motion sensors, may be used by the tag reader 3 or central controller 10 to estimate the position of the tag reader 3.” *Id.* at 13:29–31.

2. Discussion

Claim 2 depends directly from independent claim 1 and adds to that subject matter “a position sensor configured to cooperate with said control and processing subsystem to provide a location of said first object and said second object.” Ex. 1001, 29:61–64.

Petitioner contends that “Garber teaches its control and processing subsystem can provide a location of first and second RFID tags based on ‘location tags’ placed within the library,” but is silent as to the use of a position sensor. Pet. 49–50; *see also id.* at 37–39. Petitioner, relying on the testimony of Dr. Sharony, further contends that it would have been obvious to modify Garber’s interrogator to include Werb’s inertial position sensor. *See id.* at 55–57 (citing, *inter alia*, Ex. 1002 ¶¶ 223–232).

Petitioner asserts that “Werb teaches an RFID mobile tag reader and method for tracking RFID tags to monitor and track the location of assets in a facility.” *Id.* at 54–55. According to Petitioner:

Where GPS is unavailable (e.g., indoors), Werb discloses that “the position of the tag reader 3 **may also be determined and/or predicted**, e.g., by using the speed and time of travel of the tag reader 3 in a known direction, **by using inertial navigation systems...or other devices.**” Ex. 1006, 13:3-6; *see*

also 13:29-31 (“**inertial motion sensors, may be used by the tag reader 3...to estimate the position of the tag reader 3.**”).

Id. at 51. Petitioner also contends that, “[l]ike Werb, the ’717 patent discloses . . . ‘employing an inertial position sensor in the portable interrogator 625.’” *Id.* at 50 n.5 (citing Ex.1001, 20:4–13, 23:19–26). Petitioner further contends that “[t]he Garber-Werb combination thus discloses a position sensor (e.g., inertial motion sensor) configured to cooperate with said control and processing subsystem to provide a location of said first object and said second object.” *Id.* at 52.

Petitioner reasons that:

[A] POSITA would have been motivated to modify Garber based on Werb’s express teachings. Specifically, while Garber does not disclose the use of a position sensor, Werb does, and provides ample motivation to add such a sensor to Garber’s hand-held device. As Werb explains, “[m]onitoring and tracking the location of assets in a facility can be important, for example, for purposes of inventory and process control.” Ex.1006, 1:9-10

Id. at 55. Petitioner also contends that Werb teaches the advantages of using inertial navigation systems when GPS is unavailable, such as inside the library of Garber, and, therefore, it would have been obvious to modify Garber’s handheld device to have a position sensor. *Id.*

Petitioner additionally asserts that the interrogator components described in Garber and Werb, including sensors such as inertial position sensors, were well-known and reasons that “combining Werb’s position sensor with Garber’s hand-held device, as taught by Werb, would have been an obvious combination of prior art elements to yield predictable results.” *Id.* at 56.

Patent Owner makes several arguments against the challenge. We first address Patent Owner's implied claim construction positions regarding the recited "position sensor."

Patent Owner argues that Werb discloses several position sensors and therefore fails to disclose a *single* position sensor. *See, e.g.*, Prelim. Resp. 15–16 ("Werb teaches multiple sensors, not the position sensor as taught in Claim 2 of the '717 Patent."), 22 ("[T]he inertial navigation system [of Werb] is a system with a plurality of different types of sensors, which is contrary to the claim limitation in the '711 Patent of a 'position sensor,' let alone a 'single position sensor.'"⁵). We do not agree with Patent Owner's implied construction of claim 2 as limited to the use of a single position sensor. The pertinent phrase, "comprising a position sensor," does not include the limiting modifier "single" and uses the typically open-ended term "comprising," which suggests that the claim requires at least one sensor but is not limited to only one.

Patent Owner, in light of claim 2 depending directly from independent claim 1, also argues:

Claim 2 of the '717 Patent recites "a position sensor configured to cooperate with said control and processing subsystem to provide a location of said first object and said second object." This, of course, is within the context of an interrogation system as set out in Claim 1, in which the presence of the first and second objects are discerned "as said first object and said second object moves with respect to said antenna." The GPS

⁵ Patent Owner does not provide a citation of the location in the record of the quoted "single position sensor." *See* Prelim. Resp. 22.

disclosed in Werb, however, does not establish a location based on a movement of the GPS with respect to the object.

Prelim. Resp. 21. Accordingly, Patent Owner implicitly argues that claim 2 requires the system to be configured to provide a location based on movement. We disagree. Claim 1 requires the control and processing system to be configured such that it can discern a presence of objects as they move with respect to the antenna, but does not recite a requirement that the presence be established based on movement. Ex. 1001, 29:56–60. Claim 2 recites a sensor merely configured to “cooperate” with the subsystem of claim 1 to provide a location and, in defining how the sensor is configured to function, does not contain movement-related language. See Ex. 1001, 29:61–64. On the current record, we decline to read into claim 2 a requirement that the provided location must be based on movement as Patent Owner implies.

Patent Owner argues that Werb fails to disclose the recited “position sensor.” See Prelim. Resp. 16. Patent Owner specifically argues that “[t]he GPS and inertial navigation system [of Werb] are not practical for the interrogation system of the ’717 Patent and were not contemplated for the recited position sensor,” and that “[a] POSITA would not consider a GPS or an inertial navigation system for the interrogation system of the ’717 Patent.” *Id.* at 22 (citing Ex. 2009 (Kinney Decl.) ¶ 52). Relatedly, Patent Owner argues that there would not have been a motivation to combine the references’ teachings because “[t]he two examples of position sensors onboard the RFID readers of Werb (a GPS and an inertial navigation system . . .) are not practical for the RFID readers of Garber. *Id.* at 35 (citing Ex. 2009 ¶ 57).

It is not clear that Patent Owner is arguing against the combination proposed by Petitioner. We understand Petitioner's proposed combination to be Garber's portable interrogator having a position sensor (*e.g.*, an inertial position sensor). *See, e.g.*, Pet. 52 (“[t]he Garber-Werb combination thus discloses a position sensor (*e.g.*, inertial motion sensor)”; *id.* at 56 (“A POSITA could have combined Werb's position sensor with Garber's hand-held device using known methods, and such position sensor would merely perform the same function—determining location of the RFID reader to calculate a location of RFID tags—as taught by Werb.”). Patent Owner, on the other hand, attacks a combination where a large, complex inertial navigation system would be bodily incorporated into Garber's environment. *See* Prelim. Resp. 35–36 (“At the time of the priority date of the '717 Patent, inertial navigation systems were complex, large-scale navigation systems directed to industrial applications. . . . [A] vehicle is not transporting an inertial navigation system through the library disclosed in Garber compared to the warehouse of Werb.”). Patent Owner does not adequately address Petitioner's contentions regarding the obviousness of using Werb's *position sensor* in Garber's device or Petitioner's assertion that the '717 patent states that an inertial position sensor, like Werb's, may be used in the claimed invention. *See, e.g.*, Ex. 1001, 20:4–7 (“[E]mploying an inertial position sensor in the portable interrogator 625 allows a more precise determination of the presence and location of a RFID or metal object between these two RFID position markers.”), 23:19–20 (“The position sensor 935 may typically be of an inertial type.”).

Patent Owner argues that there would not have been a motivation to combine the teachings because Garber and Werb pertain, respectively, to a

library and a warehouse, and “[t]he disparate environments described in Garber and Werb lead to the application of very different solutions to track the respective assets.” Prelim. Resp. 34–35 (citing Ex. 2009 ¶ 56). At this preliminary stage, we do not agree that the purported disparate environments would preclude a person of ordinary skill in the art from seeing the applicability of Werb’s RFID location determination teachings to Garber’s RFID sensing system.

Patent Owner, citing the testimony of Mr. Kinney, argues that “Werb teaches away from applying an onboard positioning system disclosed therein to a RFID reader of Garber.” Prelim. Resp. 37 (citing Ex. 2009 ¶ 60). Patent Owner’s argument is unavailing as neither Patent Owner nor Mr. Kinney elaborate on the assertion or otherwise explain how Werb, for example, discourages the use of its teachings in Garber. *See DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009) (“A reference does not teach away, however, if it merely expresses a general preference for an alternative invention but does not ‘criticize, discredit, or otherwise discourage’ investigation into the invention claimed.” (quoting *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004))).

Having considered Petitioner’s arguments and evidence, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in its challenges to claim 2 as being obvious over Garber and Werb.

F. The Alleged Obviousness of Claims 6, 7, 17, and 18 over Garber and Anderson (Ground 3)

Petitioner alleges that dependent system claims 6 and 7 and dependent method claims 17 and 18 would have been obvious over Garber and Anderson. Pet. 57–64. Patent Owner argues that the combination fails to teach “multiscan, coherent signal processing” and “an adaptive integrating

filter” and that there is a lack of a motivation to combine Garber and Anderson. Prelim. Resp. 15–33, 37–40.

1. *Anderson (Ex. 1007)*

Anderson “relates to a paper roll that incorporates RFID components and a system for tracking inventory having RFID components in a warehouse environment.” Ex. 1007, 1:7–10. Anderson describes the multipath error problem, explaining:

A warehouse environment is potentially susceptible to multipath errors due to metal or other structures in the warehouse 12 that reflect the electromagnetic waves emitted by the RFID beacons 48. Multipath errors are caused when a radio signal is received directly by an antenna, but then the same signal is received again as it is reflected off an interfering structure.

Id. at 11:22–28.

To address the problem, Anderson explains that “[t]he use of ‘Preprocessing’ filters minimizes the instability effects that multipath may cause by selectively ignoring beacon multipath measurements.” *Id.* at 11:28–30. “Pre-processing filters can be used on radio signals to filter out any erroneous signals.” *Id.* at 11:30–32. “The signals may then be further refined in a Kalman Filter, which is a known multiple-input software filter that can optimally select or reject, in real time, the sensor inputs based on the quality of the respective sensor measurements.” *Id.* at 11:32–36. “The Kalman filter may reject erroneous sensor inputs to calculate the desired output of the position locating system 28 with the location measurement unit 56, and a Kalman filter provides improved overall navigation accuracy.” *Id.* at 11:35–39.

2. *Claims 6 and 17: Multiscan, Coherent Signal Processing*

System claim 6 depends from independent claim 1 and recites “wherein said control and processing subsystem is configured to employ multiscan, coherent signal processing.” Ex. 1001, 30:23–25. Method claim 17 recites that the “discerning” of independent claim 15 “employs multiscan, coherent signal processing.” *Id.* at 31:1–2.

Petitioner asserts that the ’717 patent describes: 1) an integrating mode employing multiscan, coherent signal processing of diverse multiple inputs; 2) that the interrogator uses an adaptive integrating filter to process multiple inputs; and 3) that “adaptive integrating filter 570 may be a single adaptive filter, such as a Kalman filter.” Pet. 57–58 (citing Ex. 1001, 18:37–39, 18:51–58, Fig. 5B). Petitioner, relying on the testimony of Dr. Sharony, contends that, “[l]ike the ’717 patent, Andersen also discloses a computer processor that uses a Kalman filter and performs multiscan, coherent signal processing to improve the quality and accuracy of an RFID system’s measurements.” *Id.* at 58; *see id.* at 59 (citing Ex. 1002 ¶¶ 234–238).

Petitioner reasons that Andersen’s express teachings provide a motivation to modify Garber, contending that, “while Garber does not disclose the use of an adaptive integrating filter, Andersen does, and provides ample motivation to add a Kalman filter to Garber’s hand-held device (i.e., correction of multi scanned signal / multipath errors).” *Id.* at 63 (citing Ex. 1007, 11:25–28, 11:32–36, 12:39–41). Petitioner also contends “the combination is obvious as it yields predictable results,” and that “[a person of ordinary skill in the art] could have combined Andersen’s Kalman Filter with Garber’s hand-held device using known methods, and such a filter would merely perform the same function—resolving errors to improve detection accuracy, which is entirely predictable.” *Id.* at 63–64.

Patent Owner argues that Anderson fails to teach the recited “multiscan, coherent signal processing.” Prelim. Resp. 23. Patent Owner, relying on the testimony of Dr. Kia, asserts that the multiscan, coherent signal processing is different than correcting multipath errors, as disclosed in Anderson. *Id.* at 25–26 (citing Ex. 2010 (Kia Decl.) ¶¶ 21–22). Patent Owner also argues that a Kalman filter is a tool that has uses in many applications and the disclosure in Anderson of “using Kalman filters for a multipath problem does not dictate that a multiscan, coherent signal processing is performed.” *Id.* at 26–27 (citing Ex. 2010 ¶ 23).

For the reasons discussed above, Petitioner has shown a reasonable likelihood that at least one claim of the ’717 patent is unpatentable. Having decided to institute as to at least one challenged claim, we institute on all challenged claims and on all asserted grounds. The parties may address further during trial the disputed issues pertaining to this ground, including whether Anderson discloses multiscan, coherent signal processing.

3. Claims 7 and 18: Adaptive Integrating Filter

System claim 7 recites:

The interrogation system as recited in claim 1 wherein said control and processing subsystem includes *an adaptive integrating filter* and is configured to coordinate a processing of said first signal and said second signal *in conjunction with one of an observable and data to discern said presence* of said first object and said second object.

Ex. 1001, 30:26–31 (emphasis added). Method claim 18 depends directly from independent claim 15 and recites “coordinating a processing of said first signal and said second signal in conjunction with one of an observable and data to discern said presence of said first object and said second object.” *Id.* at 31:3–7.

Petitioner, referring to its contentions for claims 6 and 17 and relying on the testimony of Dr. Sharony, asserts that “Andersen teaches the use of a Kalman filter, i.e., an example of the claimed adaptive integrating filter.” Pet. 59 (citing Ex. 1002 ¶¶ 240–243). Petitioner further contends that Garber discloses relying on “an observable” (in the form of location information) and “data” (in the form of information stored within the handheld device) to determine the presence of RFID tags. *Id.* at 60–61. Petitioner’s proffered reasoning as to why a person of ordinary skill would have been motivated to combine the references’ teachings is the same as discussed above for claims 6 and 17. *See id.* at 62–64.

Patent Owner, similar to its arguments for claims 6 and 17, argues that a Kalman filter can be used for many applications and Anderson’s disclosure of the use of such is not a disclosure of the claim’s recited “adaptive integrating filter.” Prelim. Resp. 31–32. Patent Owner, relying on the testimony of Dr. Kia, argues that “the use of the Kalman filter in the ’717 Patent as an adaptive integrating filter is not the same as—or even analogous to—Andersen’s use of a Kalman filter to address multipath errors.” *Id.* at 32 (citing Ex. 2010 ¶ 30).⁶

For the reasons discussed above, Petitioner has shown a reasonable likelihood that at least one claim of the ’717 patent is unpatentable. Having decided to institute as to at least one challenged claim, we institute on all challenged claims and on all asserted grounds. The parties may address

⁶ Patent Owner proposes constructions for “an observable” and “data,” Prelim. Resp. 60–62, but does not argue that the prior art fails to disclose those claim elements under either party’s proposed construction. *See id.* at 60 (Patent Owner arguing that “observable” should be construed *broadly*, i.e. as encompassing more subject matter, than proposed by Petitioner).

further during trial the disputed issues pertaining to this ground, including whether Anderson discloses an adaptive integrating filter.

G. The Remaining Grounds (Grounds 4–6)

Petitioner contends that claims 1, 3, 4, 8–15, 16, 19, and 20 would have been obvious over Garber, Martinez, and Arndt (Ground 3), that claim 2 would have been obvious over Garber, Werb, Martinez, and Arndt (Ground 5), and that claims 6, 7, 17, and 18 would have been obvious over Garber, Andersen, Martinez, and Arndt (Ground 6). Pet. 64–74.

Petitioner contends that certain claim terms are *not* means-plus-function limitations governed by 35 U.S.C. § 112 ¶ 6. Pet. 9–12, 64; *see, e.g., id.* at 10 (“a POSITA, when reading the patent specification, would appreciate that the prefixes ‘RFID’ and ‘metal’ provide sufficiently definite structure to the term ‘sensing subsystem,’ such that the terms should not be subject to §112¶6.”). Petitioner offers Grounds 4–6 in the alternative and to the extent that the terms are deemed to be means-plus-function limitations. *Id.* at 64. The subject terms are: “RFID sensing subsystem,” “metal sensing subsystem,” “control and processing subsystem,” and “a communications subsystem.” We understand Patent Owner to agree that these terms are not means-plus-function terms. *See, e.g.,* Prelim. Resp. 51–53, 56–57 (arguing that the unadorned “sensing subsystem” is not governed by 112 ¶ 6 and proposing similar constructions for that term and for the RFID and metal “sensing subsystem[s]”); *id.* at 58 (Patent Owner explicitly stating agreement with Petitioner as to the latter two terms). Thus, Grounds 4–6 are premised on claim constructions for which neither party advocates. Accordingly, we do not discuss those grounds further in this decision. Nonetheless, because we institute an *inter partes* review of at least one claim

on another ground, we institute on all challenged claims and on all asserted grounds, including these alternative grounds. 37 C.F.R. § 42.108(a).

III. CONCLUSION

Petitioner has demonstrated a reasonable likelihood of prevailing in showing the unpatentability of at least one of the challenged claims of the '717 patent. At this stage of the proceeding, we have not made a final determination with respect to the patentability of any of the challenged claims.

IV. ORDER

For the foregoing reasons, it is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–4 and 6–20 of the '717 patent is instituted with respect to all grounds of unpatentability set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '717 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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