

In the United States Court of Federal Claims

No. 11-616C

(Filed Under Seal: August 5, 2013)

(Reissued: August 9, 2013)

Patent case; claim construction for United States Patent No. 5,970,024

THOMAS SMITH,

Plaintiff,

v.

UNITED STATES,

Defendant.

David J. DeToffol, DeToffol & Associates, New York, New York, for plaintiff.

Kirby W. Lee, Attorney, Commercial Litigation Branch, Civil Division, United States Department of Justice, Washington, D.C., for defendant. With him on the briefs were Stuart F. Delery, Acting Assistant Attorney General, and John Fargo, Director, Commercial Litigation Branch, Civil Division, United States Department of Justice, Washington, D.C.

OPINION AND ORDER¹

LETTOW, Judge.

In this patent case, plaintiff, Dr. Thomas Smith, alleges that the United States (“the government”) has infringed Claims 8 and 15 of his U.S. Patent No. 5,970,024 (“the ’024 patent”), and thus is liable for damages under 28 U.S.C. § 1498(a). Compl. ¶ 4; Pl.’s Opening Claim Construction Br. (“Pl.’s Br.”) at 2-3.² This opinion addresses claim construction for terms pertinent to the alleged infringement.

¹Because this opinion and order might have contained confidential or proprietary information within the meaning of Rule 26(c)(1)(G) of the Rules of the Court of Federal Claims (“RCFC”) and the protective order entered in this case, it was initially filed under seal. The parties were requested to review this decision and to provide proposed redactions of any confidential or proprietary information. No redactions were requested.

²Subsection 1498(a) of Title 28 provides in pertinent part:

BACKGROUND

The invention at issue is Dr. Smith's "Ac[osto]-Optic Weapon Location System and Method," which relates to gunfire detection and countermeasure weapon systems. *See* Compl. ¶¶ 20-24; Pl.'s Br. 1-2. Dr. Smith alleges that the government infringed his '024 patent when it specified and contracted with private parties for the Common Remote Operated Weapon System ("CROWS"), which uses acoustic and optic sensor fusion methods. Compl. ¶¶ 21-22; Pl.'s Br. at 2. Dr. Smith avers that his invention combined the benefits of acoustic sensing and optical sensing in the field of weapon detection systems, "while eliminating their disadvantages as discrete systems." Pl.'s Br. at 1-2. According to Dr. Smith, the purpose of the system described in the '024 patent "is to derive as much location information as possible from a hostile, uncooperative target, [and] to allow engagement and/or effective countermeasure deployment by friendly forces employing the [s]ystem." Pl.'s Responding Claim Construction Br. at 1.

On April 30, 1997, Dr. Smith filed an application to patent his method. *See* Def.'s Opening Claim Construction Br. ("Def.'s Br."), Ex. 1 ("'024 patent"), at A2. He was granted the patent on October 19, 1999. *Id.* The patent consists of eighteen claims, two of which, Claims 8 and 15, are the subject of this action. *See* Pl.'s Br. at 3; Def.'s Br. at 4. Claim 8, a claim dependent on Claim 1, not asserted in this action, states:

The weapon localization system according to claim 1 further comprising a display.

'024 patent, Claim 8.

Claim 1 describes:

A weapon localization system adapted to determine the location of hostile weapon fire, said system comprising:

acoustical detection means for detecting energy of a first frequency originating from said hostile weapon fire, and for transmitting a first set of data describing the location of said hostile weapon fire;

optical detection means for detecting energy of a second frequency originating from said hostile weapon fire, and for transmitting a second set of data describing the location of said hostile weapon fire; and

Whenever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner's remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture.

28 U.S.C. § 1498(a).

processing means coupled to said acoustical and said optical detection means, for receiving said first and said second set of data, and for determining whether said location of said first set of data match said location of second set of data and for generating a signal output if said match occurs.

'024 patent, Claim 1.

Claim 15, an independent claim, provides:

A method for determining the location of hostile weapons fire, said method comprising the steps of:

- (a) sensing acoustical energy generated from said hostile weapons fire;
- (b) sensing optical energy generated from said hostile weapons fire;
- (c) calculating a first location using only the sensed acoustical energy;
- (d) calculating a second location using only the sensed optical energy;
- (e) comparing said first and said second locations; and
- (f) providing an output signal only if said first and said second locations match.

'024 patent, Claim 15.

PROCEDURAL HISTORY

Dr. Smith filed suit in this court on September 26, 2011. The parties submitted briefs on claim construction in April and May 2013, and presented arguments at a *Markman* hearing held on May 17, 2013. Of the eight claim terms identified by parties, four have an agreed construction. *See* Joint Proposed Constructions of Claim Terms, ECF No. 17-1. For those four terms, the court accepts the mutually acceptable constructions proffered by the parties. The constructions adopted by the court for the disputed terms of the '024 patent are set forth below, along with the terms agreed by the parties.

DISCUSSION

A. *Standards for Construction*

“The purpose of claim construction is to ‘determin[e] the meaning and scope of the patent claims asserted to be infringed.’” *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008) (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996)). The construction and meaning of claims in a patent are questions of law for the court to address. *Markman*, 517 U.S. at 388-91. The court does not have to construe every term in a patent, but it must construe any term for which claim scope is disputed. *O2 Micro*, 521 F.3d at 1360; *see also Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1207 (Fed. Cir. 2010). The court should first look to the intrinsic evidence of record because “intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language.” *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). Intrinsic evidence consists of the “patent itself, including the

claims, the specification[,] and . . . the prosecution history.” *Id.* (citing *Markman*, 52 F.3d at 979).

In general, to construe claim terms properly, a court should look to the ordinary and customary meanings attributed by those of ordinary skill in the art at the date of the invention, which is the effective filing date of the patent application. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). “That starting point is based on the well-settled understanding that inventors are typically persons skilled in the field of the invention and that patents are addressed to and intended to be read by others of skill in the pertinent art.” *Id.* Courts have recognized, however, that “a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification or file history.” *Vitronics*, 90 F.3d at 1582 (citing *Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575, 1578 (Fed. Cir. 1996); *Hormone Research Found., Inc. v. Genentech, Inc.*, 904 F.2d 1558, 1563 (Fed. Cir. 1990), *cert. dismissed pursuant to Sup. Ct. R. 46*, 499 U.S. 955 (1991)). Accordingly, a court must review the patent’s specification “to determine whether [an] inventor has used any terms in a manner inconsistent with their ordinary meaning.” *Id.*

This comports with the Federal Circuit’s repeated instruction that “[c]laims must be read in view of the specification, of which they are a part.” *Markman*, 52 F.3d at 979 (citing *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 397 (Ct. Cl. 1967)). The specification is “always highly relevant to the claim construction analysis,” and often is “dispositive; it is the single best guide to the meaning of a disputed term.” *Vitronics*, 90 F.3d at 1582. Prosecution history may also be examined, with its principal purpose being to exclude interpretations disclaimed during prosecution. *See Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005); *Vitronics*, 90 F.3d at 1582-83.

Extrinsic evidence, which includes “all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises,” *Markman*, 52 F.3d at 980, is “less significant than the intrinsic record in determining ‘the legally operative meaning of claim language,’” *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc. v. United States Surgical Corp.*, 388 F.3d 858, 862 (Fed. Cir. 2004) (in turn quoting *Vanderlande Indus. Nederland BV v. International Trade Comm’n*, 366 F.3d 1311, 1318 (Fed. Cir. 2004))). It should be considered by the court only when intrinsic evidence cannot resolve ambiguities in the claim language. *Phillips*, 415 F.3d at 1317.

B. *Specific Terms of the Claims Requiring Construction*

Term 1: “Location.”

Plaintiff’s Proposed Claim Construction	Government’s Proposed Claim Construction
Means a position or site occupied or of interest, by some distinguishing feature.	Means the three-dimensional coordinates describing the position of an entity.

Term 1 appears in Claims 8 (by incorporation of Claim 1) and 15, as well as in Claims 2, 7, 9, 10, and 14. Generally, terms should be given the customary meaning attributed to them by persons with ordinary skill in the relevant art, *Phillips*, 415 F.3d at 1313, although a patentee

may choose to be his own lexicographer, as long as the special definition is clearly stated in the patent specification or history, *Vitronics*, 90 F.3d at 1582. A “‘person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which [it] appears, but in the context of the entire patent, including the specification.’ While claim terms are understood in light of the specification, a claim construction must not import limitations from the specification into the claims.” *Douglas Dynamics, LLC v. Buyers Prods. Co.*, 717 F.3d 1336, 1342 (Fed. Cir. 2013) (quoting *Phillips*, 415 F.3d at 1313) (internal citations omitted). Dr. Smith argues that, with respect to Term 1 of the patent, he chose to be his own lexicographer as evidenced by the specification which states: “As used in this [a]pplication, the terms ‘location’ and ‘localization’ each mean the location of an entity (e.g. hostile weapons fire) as well as the processes to locate the firing entity. Thus, these words may be used interchangeably.” ’024 patent, col. 2, lines 52-56; *see also* Pl.’s Br. at 6. Although this statement purports to define Term 1, it merely uses variations of the root word in its description, and thus is too indefinite to be of use in providing the meaning and scope of the term. Instead, the claim construction should delineate and clarify the customary meaning of the term as read in the context of the patent and the specification.

The government’s proffered construction is similarly unhelpful because it incorrectly imports limitations from the specification. The government argues that its definition captures the “three-dimensional aspects of ‘location’” as used in the patent. Def.’s Br. at 7. To support this contention, it cites excerpts of the specification that describe data and locational characteristics that can be determined by acoustical and optical detection systems which may be used in the invention. *See id.*; *see also* ’024 patent, col. 5, lines 11-14 (“Acoustical detection system 24, and more particularly processor or processor means 28, in the preferred embodiment of the invention, determines values such as time of energy arrival, azimuth, elevation/depression angle, arrival angle[,], and trajectory of the incoming acoustic energy.”), col. 6, lines 15-17 (“[O]ptical detection system 32 will determine values such as azimuth, time of occurrence[,], and elevation/depression angle of the incoming energy.”). The government asserts that the use of this language “indicate[s] coordinates in three-dimensional space,” Def.’s Br. at 7, and should limit the use of “location” to describing three-dimensional coordinates. This postulate is disproved by the specification in a number of ways. Among other things, the specification notes that the invention is not limited to use with the detection systems described. *See* ’024 patent, col. 5, lines 31-33, col. 6, lines 20-21. Moreover, the use of “such as” indicates that the locational characteristics listed do not represent all of the possible results that can be obtained from the data the detection systems generate.

Most importantly, the government’s proffered construction does not comport with the language of the claims as read in the context of the specification. Claim 1, which is incorporated by reference in dependent Claim 8, describes an acoustical detection means that transmits “a first set of data describing the location of said hostile weapon fire,” an optical detection means that transmits “a second set of data describing the location of said hostile weapon fire,” and a processing means that determines “whether said location of said first set of data match said location of second set of data and for generating a signal output if said match occurs.” ’024 patent, Claim 1. Claim 15 describes a method in which acoustical energy and optical energy generated from hostile weapons fire are sensed; a first location is calculated using only the sensed acoustical energy; a second location is calculated using only the sensed optical energy;

the two locations are compared; and an output signal is provided “only if said first and said second locations match.” ’024 patent, Claim 15. Nowhere in the claim language is location specifically limited to three-dimensional coordinates. Instead, the claims and the specification contemplate a meaning of Term 1 that encompasses a range of possibilities delineated by a broader set of data. The specification comments that acoustical detection systems by themselves “have a fairly large error in the determination of the location of the hostile weapon.” ’024 patent, col. 1, lines 54-55. The specification compares this problematic result to that provided by the invention, stating that the invention can use

an acoustic system to determine the *general location* of the hostile weapons fire . . . and then us[e] an optical system . . . in order to *further refine the location within the field established* by the acoustic system. In this manner, the relatively notorious “false alarms” associated with the optical systems [can] be minimized since the optical data only from the field of view formed or “fixed” by the acoustical technique [are] reviewed.

Id. at col. 2, lines 23-33 (emphasis added). This phrasing indicates that “location” may refer to a broad area determined by data points, as well as a smaller area indicated by the use of more discriminating data collection methods and analyses.

Indeed, the specification later describes a “second embodiment of the . . . invention . . . [which] includes an acoustical detection system 64, comprising an acoustic processor 68 . . . a microphone array 66; a laser detection system 62, comprising a laser processor and a laser scanner and detector system; a processing means 70 . . .; and an output display means 72.” ’024 patent at col. 8, lines 3-12; *see also id.* Sheet 6, Fig. 9.³ The specification states that the acoustical detection system of the second embodiment “determines the location of the source of the acoustic energy and transmits a first set of data describing such location to processing means 70 and laser processor 60.” *Id.* at col. 8, lines 18-21. According to the specification, the laser processor that is part of the pertinent laser detection system “receives the first set of data [describing the location] from acoustic processor 68, determines the approximate direction to the missile trajectory and source and transmits this information to [a] laser scanner . . . which scans *the area* received from laser processor 60.” *Id.* at col. 8, lines 40-46 (emphasis added). By using “area” to describe the output of the first set of data, the specification illustrates that Term 1 may refer to a relatively broad expanse indicated by the data culled by the invention’s detection systems, and is not cabined to a specific site or position identified by a precise set of three-dimensional coordinates.

For the reasons stated, the court adopts the following construction of Term 1: “location” means **a bounded area indicated by data points that is not necessarily specific to a position defined by three-dimensional coordinates.**

³This embodiment is encapsulated in independent Claim 10, which combines use of acoustic detection means with laser detection means.

Term 2: “Match.”

Plaintiff’s Proposed Claim Construction	Government’s Proposed Claim Construction
Means data equal or similar to another by suitable association, of the “location.”	Means when two separate sets of location data are equal to each other, <i>i.e.</i> , describe the same position.

Term 2 appears in Claim 8 (by incorporation of Claim 1) and Claim 15, as well as in Claims 2, 9, and 10. Again, the government’s proffered construction, which requires the two sets of locational data to describe an identical position, is too narrow and is not supported by the specification. The government is correct, however, in its recognition that “match” is used with reference to *location*, as a careful reading of the claims and specification confirms. Accordingly, the court’s analysis and construction of Term 1, *supra*, bears on the construction of Term 2. Location may refer to a bounded area indicated by data points, and can be broader than a position identified by three-dimensional coordinates. To a person with ordinary skill in the art, then, it follows that the first and second locations of data-bounded areas need not be identical to produce a “match;” an overlap of the first and second locational areas suffices. The specification confirms such a reading. First, the specification provides that a “‘match’ . . . is indicated when a location and time from the first set of data (hereinafter referred to as the ‘acoustic event’) fall within a *predetermined range* of a location and time from the second set of data (hereinafter referred to as the ‘optic event’). If a match is detected, processing means 8 will generate a signal output . . . [i]ndicating that both the acoustic and infrared systems ‘match’ and correspond to a hostile weapons location.” ’024 patent, col. 6, lines 55-63 (emphasis added).⁴ The instruction

⁴Time is thus pertinent to whether a match is found. The specification draws upon the fact that light travels much faster than sound to analyze the data from the sensing means. For example, the specification states for one embodiment that:

[t]he signal output will also indicate whether the acoustic event occurred before the optically sensed event. When the acoustic event occurs before the optically sensed event, the optical event actually represents a subsequent attack from the same location, since optical energy general reaches the observer before acoustic energy and the associated missile. In such a cases, a counter-measure against the incoming missile may be launched.

’024 patent, col. 6, line 67 through col. 7, line 7. The specification elaborates on the use of time to refine location:

To determine the range or distance to the hostile weapons fire, the invention uses a “flash-bang” analysis. In one embodiment, processing means 8 takes the second or optical data and notes the time of its arrival. Then, processing means 8 takes the first or acoustical data which arrives later than the optical data and note[s] the time of this arrival. Then processing means 8 takes the difference between the two times (which is directly proportional to the range) and by a known mathematical algorithm determines the

that a match occurs when data from a first set fall within a predetermined range of data from a second set contemplates that some data points from each of the first and second sets may be excluded and a match can still occur. In addition, the specification summarizes the method for determining the location of hostile weapons fire detailed in Claim 15 and notes that an output signal is provided “if the first location is substantially similar to the second location.” *Id.* at col. 3, lines 51-53. The method of Claim 15 instructs that an output signal is provided “if said first and said second locations match.” *Id.*, Claim 15. That the specification allows for an output signal when the data points comprising each of the first and second locations are substantially similar, even if they are not identical, undermines the government’s proffered construction and supports a modified version of plaintiff’s proposed definition.

For the reasons above, the court adopts the following construction of Term 2: “match” means **an overlap of at least some of the data points describing the first location with some of the data points describing the second location.**

Term 3: “Optical detection means for detecting energy of a second frequency originating from said hostile weapon fire, and for transmitting a second set of data describing the location of said hostile weapon fire.”

Term 3 appears in Claim 1 (and thus Claim 8 by incorporation). The parties agree that “optical detection means” refers to an **electronic device for sensing optical energy.** Joint Proposed Constructions of Claim Terms at 1. The court accepts this mutually agreed construction.

Term 4: “Processing means coupled to said acoustical and said optical detection means, for receiving said first and said second set of data, and for determining whether said location of said first set of data match said location of second set of data and for generating a signal output if said match occurs.”

Term 4 appears in Claim 8, via incorporation of Claim 1. The parties agree that “processing means” refers to an **electronic device that uses an algorithm, mathematical analysis, or stored program control.** Joint Proposed Constructions of Claim Terms at 2. The parties further agree that “signal output” means **a transmitted communication from an electronic device containing information to convey location; or to position a weapon and fire a counter-attack.** *Id.* The court accepts these mutually agreed constructions.

The parties diverge with regard to the meaning of “said first and said second set of data,” a portion of the term which the court will refer to as Term 4.A. The parties’ proffered definitions are:

range. In one example, the difference is multiplied by the speed of sound and this value is used as the range.

Id. at col. 7, lines 30-40.

Plaintiff's Proposed Claim Construction	Government's Proposed Claim Construction
Means the electrical transmissions from acoustical detection means and optical detection means, respectively, containing information from which spatial orientation as to the position of the entity can be rendered.	Means the information describing the position of an entity by three-dimensional coordinates from acoustical detection means and optical detection means, respectively.

Once again, the construction of Term 4.A hinges on the court's construction of Term 1, "location." The language of Claim 1 instructs that the first set of data describes a location and is transmitted from acoustical detection means, while the second set of data describes a location and is transmitted via optical detection means. *See* '024 patent, Claim 1. The specification confirms that both sets of data describe a location, and that the first set is derived from acoustical detection means, with the second set being supplied by optical detection means. *Id.* at col. 3, lines 8-16. The government's proffered construction fails to capture this relationship adequately because it refers to "three-dimensional coordinates" and attempts to use a narrow construction of Term 1 that this court has rejected. *See supra* pp. 5-6. Plaintiff's proposed construction includes a clause, "from which spatial orientation as to the position of the entity can be rendered," which finds limited support in the specification because it would equate "spatial orientation" with "location." It seems preferable not to introduce yet a further variant of the definition of location in deriving the construction of the "said first and second set of data." Those data represent distinct bounded areas delineated through acoustical and optical detection means. Accordingly, the court concludes that Term 4.A, "said first and said second set of data," means **information describing bounded areas indicated by acoustically and optically derived data, which areas are not necessarily specific to a position defined by three-dimensional coordinates.**

Term 5: "Sensing optical energy generated from said hostile weapons fire."

Term 5 appears in Claim 15 and Claim 18. The parties agree that "sensing optical energy" means **detecting optical energy**. Joint Proposed Constructions of Claim Terms at 2. The court accepts this mutually agreed construction.

Term 6: "Calculating."

Term 6 appears in Claim 15 and Claim 18. The parties agree that "calculating" means **determining by algorithm, mathematical analysis, or stored program control**. Joint Proposed Constructions of Claim Terms at 2. The court accepts this mutually agreed construction.

Term 7: "Comparing."

Plaintiff's Proposed Claim Construction	Government's Proposed Claim Construction
Means generating the relative data and information equivalence or difference between two portrayed locations.	Means determining the equivalence or difference between two calculated locations.

Term 7 appears only in Claim 15 and is used in the context of “comparing said first and said second locations” calculated by “sensed acoustical energy” and “sensed optical energy,” respectively. ’024 patent, Claim 15. Claim 15 prescribes the step of “providing an output signal only if said first and said second locations match.” *Id.* The language of the claim indicates that the patentee used a meaning of Term 7 customary to those with ordinary skill in the relevant art: that the difference or equivalence between the bounded areas obtained through the first and second sensing means should be examined and analyzed. Contrary to the government’s assertion that Term 7 involves a determination, this customary meaning does not necessarily encompass a final decision, as “determining” would. Rather, it connotes an assessment of the correlation or differences between locations, after which a decision may be made. The specification’s use of “compare” or “comparing” is also in accord with the customary meaning of Term 7. *See, e.g.*, ’024 patent, col. 3, lines 50-53 (“comparing the first and second locations; and providing an output signal if the first location is substantially similar to the second location”), col. 6, lines 51-54 (“Processing means . . . holds and/or stores all locations from the second set of data for a predetermined period of time and compares these stored locations with locations from the first set of data.”), col. 9, lines 13-16 (“Processing means . . . will then hold all locations from the first set of data for a predetermined period of time and compare with locations from the second set of data.”).

The parties agree that location must be a part of the construction of Term 7; however, both plaintiff and the government add adjectives, “portrayed” and “calculated,” respectively, to modify “location.” The court finds the additions without support from the specification, and thus declines to incorporate them into a construction.

For the stated reasons, the court adopts the following construction for Term 7: “comparing” means **assessing the equivalence, correspondence, or difference between locations.**

Term 8: “Providing an output signal only if said first and said second locations match.”

Term 8 appears in Claim 15. The parties agree that “output signal” means **a transmitted communication from an electronic device containing information to convey location; or to position a weapon and fire a counterattack.** Joint Proposed Constructions of Claim Terms at 3. The court accepts this mutually agreed construction.

CONCLUSION

No extrinsic evidence is necessary for resolution of claim construction. For the reasons detailed above, the terms identified by the parties shall be construed as stated.

It is so ORDERED.

s/ Charles F. Lettow
Charles F. Lettow
Judge