United States District Court, D. Minnesota.

COGNEX CORPORATION,

Plaintiff.

v.

VCODE HOLDINGS, INC., VData LLC, Acacia Research Corporation, and Veritec Inc, Defendants.

Civ. No. 06-1040 (JNE/JJG)

Oct. 9, 2007.

James T. Nikolai, Esq., and Peter G. Nikolai, Esq., Nikolai & Mersereau, and Kevin Gannon, Esq., and Thomas C. O'Konski, Esq., Cesari & McKenna, LLP, appeared for Plaintiff Cognex Corporation.

Edward E. Castro, Jr., Esq., and Steven Hartsell, Esq., Friedman, Suder & Cooke, and Lora Esch Mitchell, Esq., Fredrikson & Byron, PA, appeared for Defendants VCode Holdings, Inc., VData LLC, Acacia Research Corporation, and Veritec Inc.

ORDER

JOAN N. ERICKSEN, United States District Judge.

Cognex Corporation brought this action against VCode Holdings, Inc., VData LLC, Acacia Research Corporation, and Veritec Inc., (collectively, Defendants) for a declaratory judgment of non-infringement, invalidity, and unenforceability of United States Patent No. 5,612,524 (filed Mar. 18, 1997) ('524 Patent) and alleging claims for violations of the Minnesota Uniform Deceptive Trade Practices Act, Minn.Stat. s.s. 325D.43-.48 (2006). Cognex also asserts a claim for defamation against Acacia. VCode and VData filed a counterclaim against Cognex for infringement of the '524 Patent. The case is before the Court on the parties' request for construction of disputed claim terms pursuant to Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996).

This case involves a two-dimensional symbol system, akin to a bar code, that can be detected in a variety of orientations. The '524 Patent describes the invention as a symbol, a system for capturing the image of the symbol, a system for reading and decoding the symbol and displaying the decoded contents, and a device that can produce symbols on a substrate associated with an object, such as a label. FN1 The ' 524 Patent presents the following general depiction:

FN1. The '524 patent includes the following information in the "Summary of the Invention": It is the object of the present invention to provide a symbol that can be detected in any orientation without re-orientation of the image data.

It is another object of the present invention to provide a symbol that does not require a preferred direction of

scanning.

It is an additional object of the present invention to provide a symbol that increases information density. The above objects can be accomplished by a symbol that includes a rectilinear array of data cells surrounded by other data cells forming one or more orientation borders. A system is also included that captures an image of the symbol, determines symbol orientation, decodes the contents of the symbol and outputs the decoded contents to a display or other device.

'524 Patent, col.2, ll.1-24.



'524 Patent at [57]. The parties prepared a joint claim construction statement, and each side submitted an opening brief and a response brief on claim construction issues. The Court held a *Markman* hearing on September 7, 2007.

I. LEGAL PRINCIPLES

A. General claim construction principles

Patent claim construction is a matter of law for the court. Markman v. Westview Instruments, Inc., 52 F.3d 967, 970-71 (Fed .Cir.1995), *aff'd*, 517 U.S. 370 (1996). The principles of claim construction are well known. Proper claim construction requires an examination of the intrinsic evidence of the record, including the claims, the specification, and, if in evidence, the prosecution history. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996). The starting point for claim construction is a review of the words of the claims themselves. Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed.Cir.2005) (en banc), *cert. denied*, 126 S.Ct. 1332 (2006); Vitronics, 90 F.3d at 1582. The words of a claim are generally given their ordinary and customary meaning-the meaning that the term would have to a person of ordinary skill in the art at the time of the invention. Phillips, 415 F.3d at 1312-13. The claims must be read in view of the specification, which is always highly relevant to claim construction. Id. at 1315. The court may not, however, import limitations found only in the specification. Id. at 1323; Electro Med. Sys. v. Cooper Life Scis., Inc., 34 F.3d 1048, 1054 (Fed.Cir.1994). The court should also consider the patent's prosecution

history, and in its discretion, may also consider extrinsic evidence. Phillips, 415 F.3d at 1317-18.

B. Principles of construction of means-plus-function limitations

Means-plus-function limitations are interpreted according to 35 U. S.C. s. 112, para. 6 (2000), which "allows a patentee to recite a function to be performed as a claim limitation rather than reciting structure or materials for performing that function." Omega Eng'g, Inc. v. Raytek Corp., 334 F.3d 1314, 1321 (Fed.Cir.2003). The court's construction of a means-plus-function limitation follows a two-step approach. *Id.* First, the court "must identify the claimed function, staying true to the claim language and the limitations expressly recited by the claims." *Id.* (citation omitted). Once these functions are identified, the court must "ascertain the corresponding structures in the written description that perform those functions." *Id.* "A disclosed structure is corresponding 'only if the specification or the prosecution history clearly links or associates that structure to the function recited in the claim.' " *Id.* (quoting B. Braun Med., Inc. v. Abbott Labs., 124 F.3d 1419, 1424 (Fed.Cir.1997)). "[T]he structure must be necessary to perform the claimed function." *Id.*

Whether certain claim language invokes 35 U.S.C. s. 112, para. 6 is a question of law. Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n, 161 F.3d 696, 702 (Fed.Cir.1998). The court presumes that an applicant's use of the term "means" in a claim limitation was intended to convey a means-plus-function limitation under s. 112, para. 6. Sage Prods., Inc. v. Devon Indus., Inc., 126 F.3d 1420, 1427 (Fed.Cir.1997). This presumption is rebuttable if the properly construed claim limitation itself recites sufficiently definite structure to perform the claimed function. Id. at 1427-28. In determining whether a claim limitation recites sufficient structure, the court inquires into whether the "term, as a name for structure, has a reasonably well understood meaning in the art." Watts v. XL Sys., Inc., 232 F.3d 877, 880-81 (Fed.Cir .2000) (quotations omitted).

II. CLAIM CONSTRUCTION

The parties' joint claim construction statement proposed that the Court construe eight terms that appear in various claims in the '524 Patent. The parties agree that where a claim term or phrase occurs in multiple claims of the '524 Patent, it should be given the same meaning in every claim in which it appears.

A. "symbol information for uniquely identifying the symbol"/"symbol information"

In the joint claim construction statement, the parties presented a single construction for the claim terms "symbol information for uniquely identifying the symbol" and "symbol information." Defendants, for the first time at oral argument, argued that these two terms should be construed separately. The Court rejects this new argument and construes these terms together as they were presented in the joint claim construction statement. Cognex argues that these terms should be construed as "information in the data field of the symbol that is different for and unique to each symbol in the nature of an electronic fingerprint." Defendants believe the inclusion of "electronic fingerprint" is not appropriate and proffer "information within a symbol that uniquely identifies the symbol."

The '524 Patent is directed to "an identification symbol system for an object." '524 Patent, claim 1. The language of the claims and of the specification teaches that a symbol, formed on or affixed to substrate associated with the object, can be used to identify the object, and that the rectilinear data matrix design of the symbol system provides flexibility in the number of different and unique symbols available in an application of the symbol identification system. There is no dispute between the parties that the '524 Patent

teaches that symbols are unique within a specific application of the symbol system, and that the '524 Patent does not teach that symbols must be unique across applications of the symbol identification system. Thus, the Court concludes that there is no need for the inclusion of the term "electronic fingerprint" in the construction of the disputed terms. The Court construes the terms "symbol information for uniquely identifying the symbol" and "symbol information" as "information within a symbol that uniquely identifies the symbol."

B. "computer readable orientation means"

The parties agree that this term is a means-plus-function limitation subject to 35 U.S.C. s. 112, para. 6. The parties further agree that the recited function is "providing orientation information from a substantially omni-directional three-dimensional orientation of capture." The parties disagree on the corresponding structure. Their disagreement concerns whether "and" or "or" is the appropriate conjunction for the construction of the corresponding structure. Cognex argues the proper construction is "computer readable borders, cells, *and* cell patterns that indicate the orientation of a symbol." Defendants propose "computer readable borders, cells, *or* cell patterns that indicate the orientation of a symbol."

The language of claim 1 indicates that a symbol includes a border that is capable of providing orientation information, and the specification describes a method for determining the orientation of a symbol by the information contained in an orientation border. However, the '524 Patent does not teach that the border *must* be used to determine orientation. In fact, the specification describes an alternative method for determining the symbol's orientation that does not include the use of information provided in an orientation border.

It is also possible to determine the orientation of a symbol if the internal data field for a particular application has a unique internal cell pattern for each symbol used in the application. To determine orientation once the data values in the internal field are known, the data from the sampled symbol would be compared to all the possible identification symbols in the particular application in each of their possible orientations. A match would identify the symbol and the orientation.

'524 Patent, col.6, 11.8-12, 44-52.

The Court concludes that "or" is the proper conjunction, and adopts Defendants' proposed construction of the corresponding structure. *See* Ishida Co. v. Taylor, 221 F.3d 1310, 1316 (Fed.Cir.2000) (stating that the "[d]isclosed structure [of a means-plus-function limitation] includes that which is described in a patent specification, including any alternative structures identified" (quotations omitted)). Accordingly, the corresponding structure of the recited function "providing orientation information from a substantially omnidirectional three-dimensional orientation of capture" is "computer readable borders, cells, or cell patterns that indicate the orientation of a symbol."

C. "providing orientation information from a substantially omni-directional three-dimensional orientation of capture"

The term "providing orientation information from a substantially omni-directional three-dimensional orientation of capture" appears in numerous claims in the '524 Patent. Both parties cite to the file history of the '524 Patent in proposing constructions of this phrase. Cognex offers the following: "providing information that allows the symbol to be captured in substantially any orientation (up to 360 degrees of rotation) about an axis perpendicular to the plane of the symbol itself and with substantially any angle of tilt of the data field relative to that axis." Cognex contends language of rotation and tilt properly clarify the

limitation that orientation information provided by the symbol must allow capture of the symbol both at substantially any angle or rotation of the symbol in a plane perpendicular to the axis of the camera imaging it and at substantially any angle of tilt of the plane of the symbol relative to that axis. Defendants argue Cognex's proposed construction improperly focuses on portions of the file history relating to the capture of the symbol to be acquired, and assert that the capture function is different from providing orientation information, the term that is at issue here. Citing to the file history, Defendants argue the term "omni-dimensional" is specifically defined in the prosecution history of the '524 Patent as meaning "any direction" and propose the following construction: "providing orientation information from substantially any direction of capture in three dimensions."

The Court concludes that the ordinary and customary meaning of the term "omni-directional threedimensional" is "any direction." *See* Phillips, 415 F.3d at 1312-13; Vitronics, 90 F.3d at 1582 (citing Hoechst Celanese Corp. v. BP Chems. Ltd., 78 F.3d 1575, 1578 (Fed.Cir.1996) (holding that a "technical term used in a patent document is interpreted as having the meaning that it would be given by persons experienced in the field of the invention, unless it is apparent from the patent and the prosecution history that the inventor used the term with a different meaning")). The Court's determination is reinforced by the prosecution history cited by Defendants. In a preliminary amendment to the '524 Patent dated May 3, 1995, the patentee, in distinguishing the invention over a prior art reference, remarked to the Patent Office: "The present invention also includes this ability to provide three dimensional orientation information in an 'omnidirectional' or from 'any direction' of capture." Accordingly, the Court construes this disputed term as "providing orientation information from substantially any direction of capture."

D. "a device for capturing the symbol, identifying the object from the symbol information"

Defendants present an email dated June 27, 2007, in which counsel for Cognex agrees to the following construction of this limitation: "a device that captures symbol image and identifies an object upon which the symbol is affixed, attached, etched, and/or engraved from the information contained within the symbol." Cognex now seeks to append the following phrase to the agreed-upon construction: ", regardless of whether or not the device can do this at substantially any orientation of capture."

The Court declines to adopt Cognex's proposed amendment. The language of the agreed construction is derived from the language of the '524 Patent claims. *See*, *e.g.*, '524 Patent, claim 1 ("a device for capturing the symbol, identifying the object from the symbol information"). The Court finds no justification in the language of the claims or the specification for the addition of the orientation-related language proposed by Cognex. The Court construes this disputed term as "a device that captures symbol image and identifies an object upon which the symbol is affixed, attached, etched, and/or engraved from the information contained within the symbol."

E. "image capture means for obtaining image data"

The parties agree that this term is a means-plus-function limitation subject to 35 U.S.C. s. 112, para. 6. Defendants concede that the recited function, as construed by Cognex in the joint claim construction statement, is the proper construction. Thus, the Court concludes that the recited function for the term "image capture means for obtaining image data" is "obtaining image data representing an image field included in a symbol." The parties also agree that the construction of the corresponding structure should include "a two dimensional reader, camera, video camera, line scan image device, or other imaging device with sufficient resolution to discern the individual data cells." The disagreement between the parties is over Defendants' proposed inclusion of the phrase "or equivalent structures" in the construction of the corresponding

structure.

35 U.S.C. s. 112, para. 6 provides that means-plus-function claims "shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." Pursuant to the directives of this Patent statute, the Court construes the corresponding structure for this means-plus-function limitation as "a two dimensional reader, camera, video camera, line scan image device, or other imaging device with sufficient resolution to discern the individual data cells, or other equivalent imaging device." *See* ' 524 Patent, col.4, ll.62-67, col.5, ll .8-10, col.7, ll.25-44.

F. "determine a timing of the data cells"

The term "determine a timing of the data cells" appears in claim 28 of the '524 Patent. In its responsive memorandum, Cognex agreed to Defendants' construction of this term. Thus, the Court construes this terms as "determining the size and spacing of the data cells."

G. "decoding means for processing the image data to identify the border, determine orientation and timing information from the border and sample the data cells"

The parties agree that this term is a means-plus-function limitation subject to 35 U.S.C. s. 112, para. 6. In light of the parties' agreement on the construction of the term "determine a timing of the data cells" discussed above, the Court concludes the parties are now also in agreement that the construction of the recited function of this decoding limitation is "processing the image data to identify the border, determine orientation and the size and spacing of the data cells from the border and the sample data cells." The Court adopts this construction.

The parties disagree on the corresponding structure for the recited function. However, the dispute between the parties is limited to the construction of the portion of the corresponding structure relating to the decoding means associated with the phrase "determine orientation" and the inclusion of the final phrase regarding other image recognition techniques. FN2

FN2. At the *Markman* hearing, Defendants proposed the following construction for the corresponding structure of the recited function:

A computer, microcomputer, or single chip microcomputer programmed to process an algorithm or source code in order to process data by:

(1) searching for an edge of the symbol;

- (2) determining the orientation of the symbol by either
- (a) locating three corners of the symbol,
- (b) using standard slope formulas, or
- (c) using rotational decomposition algorithms;

(3) calculating the size and spacing of the data cells within the symbols; and

(4) sampling the data cells.

Other image recognition techniques, i.e., equivalent structures, may be used to determine any of the above information from the captured image.

Cognex agreed with all parts of this construction except subpart (2) and the inclusion of the final phrase regarding other image recognition techniques.

The Court first turns to the parties' dispute over the corresponding structure associated with the phrase "determine orientation." Cognex contends the '524 Patent teaches that the decoding process means for determining symbol orientation always involves locating three of the corners of the symbol, and that the methods utilized in determining symbol orientation are dependent on whether or not the symbol is in a plane parallel to the image capture plane. FN3 Thus, Cognex proposes that the Court construe the decoding process means for determining symbol orientation as follows:

FN3. Cognex contends that a symbol is "in a plane parallel to the image capture plane" as stated in the specification, "when and only when the symbol plane is perpendicular to axis of the camera imaging the symbol."

When the symbol is in a plane perpendicular to camera axis: microcomputer 42 of Fig. 4 programmed to run the decoding algorithm of Fig. 5 to locate three corners of the symbol and using the three corners in standard slope formulas. When the symbol is not in a plane perpendicular to the camera axis and when the symbol is a known size: microcomputer 42 of Fig. 4 programmed to run the decoding algorithm of Fig. 5 to locate three corners in standard slope formulas and using the three corners in standard slope formulas and using the three corners in standard slope formulas and well known rotational decomposition algorithms common in the graphic industry.

Defendants argue that the three corners method for determining symbol orientation is but one of the methods that the '524 Patent teaches and that the specification also describes alternative methods for accomplishing the process of decoding orientation information, including the use of slope formulas and well-known rotational decomposition algorithms common in the graphics industry. Defendants propose the following construction for the structure associated with the decoding process means for determining symbol orientation:

(2) determining the orientation of the symbol by either

- (a) locating three corners of the symbol,
- (b) using standard slope formulas, or
- (c) using rotational decomposition algorithms;

The Court declines to fully adopt either party's proposed construction, and concludes that the specification teaches a construction that includes some elements of both constructions. The specification of the '524 Patent provides the following:

The orientation of the symbol **10** with respect to a reference system can be determined using known graphics techniques when the location of the three corners are known.... Alternatively, using standard slope formulas, the border **16** can provide information defining the rotation or orientation of a symbol **10** in a plane parallel to the image capture plane using the following equation:

S12=(Y2-Y1)/(X2-X 1)

where S12 is the slope relative to a reference axis. The values of S12 can be verified using the following equations:

S13=(Y3-Y1)/(X3-X 1)

S12=1/S13

where S13 is the slope of a border line perpendicular to S12.

Because of the rectangular nature of the symbol border **16**, well known rotational decomposition algorithms common in the graphics industry can also be used to determine the three dimensional orientation of the symbol, as illustrated in **FIG. 3**, where the angles Ax, Ay and Az define the three-dimensional orientation (yaw, pitch and roll) of the symbol **10**. With the origin defined by horizontal coordinates Ho, Vo the three dimensional orientation of each portion of the symbol can be defined by the angle it forms with respect to reference axes in accordance with the following equations:

H=XcosAxCosAyzCOSAzHo

V=XsinAxYsinAyzsinAz=Vo

Using these formulas, along with the slope formulas previously discussed it is possible to determine the location of any data cell in the image. The present invention thereby allows omni-directional, three-dimensional orientation of capture for the symbol **10...** The symbol illustrated in **FIG. 3** must be of a known size to allow the known triangulation algorithms to operate properly.



'524 Patent, col.3, 1.44 to col.4, 1.20 and fig.3.

The Court concludes that the specification of the '524 Patent teaches three methods for determining symbol orientation. First, the specification indicates that one method for determining orientation is through known graphics techniques when the location of three corners of the symbol is known. *See* ' 524 Patent, col.3, ll.44-46. Next, the specification teaches that "[a]lternately," standard slope formulas can be utilized to determine symbol orientation when the symbol is "in a plane parallel to the image capture plane." *See* '524 Patent, col.3, ll.49-62. The specification also provides an algorithm, illustrated in Figure 5, for locating the edges and corners of a symbol when the image plane and the symbol plane are in parallel, resulting in a two-dimensional image capture. *See* '524 Patent, col.5, ll.15-24. Source code that can perform this operation is also identified in the specification and is included in an Appendix to the '524 Patent. Finally, a third method for determining orientation is described when the specification teaches that well-known rotational decomposition algorithms can be utilized to determine three-dimensional symbol orientation. *See* '524 Patent, col.3, l.63 to col.4, l.9. According to the teaching of the specification, the rotational decomposition algorithm method can only be utilized when the symbol illustrated in Figure 3 is of a known size. *See* '524 Patent, col.4, ll.20-22.

The Court rejects any suggestion that the specification teaches that the rotational decomposition algorithms must be used in concert with standard slope formulas to determine symbol orientation when the symbol is not in a plane parallel to the image capture plane. The specification teaches that the combination of rotational decomposition algorithms and standard slope formulas permits the determination of the location of any data cell in the image, a function concerned with the decoding process of reading the substantive contents of data cells in a symbol and not associated with the decoding process of determining symbol orientation. *See* '524 Patent, col.4, ll.11-15.

The Court also declines to adopt Defendants' inclusion of the phrase "[0]ther image recognition techniques, i.e., equivalent structures, may be used to determine any of the above information from the captured image" in the corresponding structure of the recited function. While limiting corresponding structures to only the preferred embodiments is contrary to law, *see* Phillips, 415 F.3d at 1323, "[i]n a means-plus-function claim

in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm." WMS Gaming Inc. v. Int'l Game Tech., 184 F.3d 1339, 1348-49 (Fed.Cir.1999); *see also* Harris Corp. v. Ericsson, Inc., 417 F.3d 1241, 1253-54 (Fed.Cir.2005) ("[a] computer-implemented means-plus-function term is limited to the corresponding structure disclosed in the specification and equivalents thereof, and the corresponding structure is the algorithm"). In other words, the corresponding structure of the computer-implemented means-plus-function limitation at issue here cannot merely be recited as "other image recognition techniques." *See* WMS Gaming, 184 F.3d at 1348-49.

The specification of the '524 Patent expressly describes a processor or microprocessor programmed to carry out algorithms or source code for processing the image data of a symbol. *See* '524 Patent, col.4, ll.35-37. Pursuant to *WMG Gaming* and *Harris*, the corresponding structure is limited to a microprocessor programmed to perform those disclosed algorithms and source code, and equivalents thereof. Thus, the corresponding structure for the recited function "processing the image data to identify the border, determine orientation and the size and spacing of the data cells from the border and the sample data cells" is:

A computer, microcomputer, or single chip microcomputer programmed to process an algorithm or source code in order to process data by:

(1) searching for an edge of the symbol;

(2) determining the orientation of the symbol by either

(a) using known graphics techniques when the location of three corners of the symbol is known,

(b) using standard slope formula or the algorithm illustrated in Fig. 5 when the symbol is in a plane parallel to the image capture plane, or

(c) using well-known rotational decomposition algorithms when the symbol plane and the image capture plane are not in a plane parallel to the image capture plane and the size of the symbol is known;

(3) calculating the size and spacing of the data cells within the symbols; and

(4) sampling the data cells;

or, other equivalent structures.

H. "scanning a symbol comprising of a data field of information data cells and orientation means for indicating an orientation of the field"

The disputed phrase "scanning a symbol comprising of a data field of information data cells and orientation means for indicating an orientation of the field" appears in claim 27 of the '524 Patent. The parties contend that this is a step-plus-function limitation subject to 35 U.S.C. s. 112, para. 6, but disagree on how much of the disputed phrase is subject to section 112, para. 6. FN4 The Court rejects the parties' arguments in this regard and concludes that the disputed phrase is not subject to construction under the provisions of 35 U.S.C. s. 112, para. 6.

FN4. Similar to means-plus-function limitations, step-plus-function limitations are construed pursuant to 35 U.S.C. s. 112, para. 6. *See* O.I. Corp. v. Tekmar Co., 115 F.3d 1576, 1581 (Fed.Cir.1997). The term "steps" refers to the generic description of elements of a process, and the term "acts" refers to the implementation of such steps.

Claim 27 of the '524 Patent provides as follows:

A decoding process, comprising the steps of: (a) scanning a symbol comprising a data field of information data cells and orientation means for indicating an orientation of the field; (b) identifying the location of the data cells; and (c) decoding the symbol from the located cells.

The phrase "comprising a data field of information data cells and orientation means for indicating an orientation of the field" in the disputed phrase modifies the word "symbol." Thus, use of the term "orientation means" does not describe a step in the decoding process structure; it merely describes the components of the symbol to be scanned in the scanning step of the decoding process. *See* O.I. Corp. v. Tekmar Co., 115 F.3d 1576, 1581 (Fed . Cir.1997) (holding that the step of "passing the analyte slug through a passage" was not subject to section 112, para. 6 because the term "passage" referred to the place where the recited function occurs rather than the structure that accomplishes the function). Consequently, the disputed phrase's use of the word "means" does not raise a rebuttable presumption in favor of interpretation pursuant to 35 U.S.C. s. 112, para. 6. *See* Sage Prods., 126 F.3d at 1427. Pursuant to the ordinary and customary meanings of the language used in claim 27, the decoding process includes (a) scanning a symbol; (b) identifying the location of the data cells; and (c) decoding the symbol from the located cells. The two-step construction method applicable to means-plus-function limitations pursuant to section 112, para. 6 are inapplicable here. Instead, the Court gives the terms of the disputed phrase is "scanning a symbol."

III. CONCLUSION

Based on the files, records and proceedings herein, and for the reasons stated above, IT IS ORDERED THAT the disputed claim terms shall be construed as set forth in this Order.

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