

United States District Court,
N.D. California, San Jose Division.

AVAGO TECHNOLOGIES GENERAL IP PTE, et al,
Plaintiffs.

v.
ELAN MICROELECTRONICS CORPORATION,
Defendant.

No. C 04-05385 JW

Aug. 18, 2006.

Alan J. Heinrich, Jonathan Philip Steinsapir, Morgan Chu, Richard Elgar Lyon, III, Samuel Kai Lu, Irell & Manella LLP, Los Angeles, CA, for Plaintiffs.

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ORDER FOLLOWING CLAIM CONSTRUCTION PROCEEDINGS; SETTING CASE MANAGEMENT CONFERENCE

JAMES WARE, District Judge.

I. INTRODUCTION

Plaintiff Avago Technologies General IP ("Avago") alleges infringement by Defendant Elan Microelectronics ("Elan") of U.S. Patent Nos. 6,433,780 ('780 patent) and 5,786,804 ('804 patent). Jurisdiction is proper pursuant to 28 U.S.C. s. 1338(a), and venue is proper pursuant to 28 U.S.C. s. 1391(b)(1). The Court conducted a claims construction hearing on May 9, 2006. This Order sets forth the Court's construction of the terms and phrases at issue.

II. BACKGROUND

Agilent Technologies initiated this suit against Elan for infringement of the '780 patent, entitled "Seeing Eye Mouse of a Computer System," and the '804 patent, entitled "Method and System for Tracking Attitude." At the time the action was filed, the '780 patent and the '804 patents were assigned to Agilent. Agilent transferred and assigned its entire right, title, and interest in the '780 patent and the '804 patent to Avago, a Singapore company, during the course of this litigation (Stipulation and Order, Docket Item No. 57.)

According to its papers, Elan is a Taiwanese corporation that researches, develops, and markets integrated circuits used in a variety of third-party electric products. Elan's optical mouse controllers are currently included in the products of a number of brands marketing optical mice.

In related case, *PixArt v. Agilent*, No. 03-4871 (" *PixArt* "), the Court issued an Order (" *PixArt* Order") construing a number of terms in the '780 patent. Some of the terms construed in the *PixArt* Order are currently in dispute. On July 14, 2006, the parties in *PixArt* filed a stipulated dismissal pursuant to settlement.

III. STANDARDS

Claim construction is purely a matter of law, to be decided exclusively by the Court. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 387 (1996). Claims are construed from the perspective of a person of ordinary skill in the art at the time of the invention. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 986 (Fed.Cir.1995). To determine the meaning of the claim terms, the Court's primary focus should be on the intrinsic evidence, that is, the claims, the specification, and, if in evidence, the prosecution history. *Primos, Inc. v. Hunter's Specialties, Inc.*, 451 F.3d 841, 847-48 (Fed.Cir.2006). In assessing the intrinsic evidence, the Court must look first to the words of the claims themselves. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.1996). These words are to be given their ordinary and customary meaning unless it is clear from the specification and prosecution history that the inventor used the term with a different meaning. *Id.* The claims should be interpreted consistently with the specification. *See Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed.Cir.1998).

Where intrinsic evidence alone resolves any ambiguity in a disputed claim term, it is improper to rely on evidence external to the patent and file history. *Vitronics*, 90 F.3d at 1583, 1585. However, extrinsic evidence may be considered where intrinsic evidence is insufficient to enable the court to construe disputed claim terms. *Id.* at 1585. Common sources of extrinsic evidence include expert testimony, inventor testimony, dictionaries, and technical treatises and articles. *Id.* at 1584.

IV. DISCUSSION

A. '780 Patent

Elan, not present at the *Markman* hearing in *PixArt*, asks that this Court revisit two of the constructions in the *PixArt* Order. Because claim construction is a matter of law, the Court considers the parties' arguments in its construction of the disputed terms in this litigation. *See Cybor Corp. v. FAS Techs.*, 138 F.3d 1448, 1451 (Fed.Cir.1998). Patent citations in this section refer to the '780 patent unless otherwise indicated.

Claim 4 of the '780 patent reads in its entirety as follows:

4. A hand held pointing device for a computer system, the pointing device comprising: a housing having a bottom surface that moves against a work surface; the housing also having a top surface shaped to receive the human hand; the housing also having a skirt connecting a perimeter of the bottom surface with the top surface; the housing also having a first axis extending generally in the direction from where the heel of the hand rests on the top surface to where the middle finger rests on the top surface, and a second axis perpendicular to the first, both axes parallel to the bottom surface; an aperture in the bottom surface; a source of illumination mounted within the interior of the housing, proximate the aperture, that illuminates a portion of the work surface opposite the aperture and having surface height irregularities forming a micro texture with feature sizes in the range of about five to five hundred microns, the illumination producing a pattern of highlights upon surface height irregularities that extend out of the desktop surface and that intercept the illumination and of shadows upon surface height irregularities that extend into the desktop

surface and whose illumination is blocked by adjacent surface height irregularities that are illuminated; an optical motion detection circuit mounted within the interior of the housing and optically coupled to the pattern of highlights and shadows from the surface height irregularities of the illuminated portion of the work surface, the optical motion detection circuit producing motion signals indicative of motion in the directions along the first and second axes and relative to the surface height irregularities of the illuminated portion of the work surface; wherein the optical motion detection circuit comprises a plurality of photo detectors each having an output, a memory containing a reference frame of digitized photo detector output values and a sample frame of digitized photo detector output values obtained subsequent to the reference frame, and further wherein a plurality of comparison frames, each being a shifted version of one of the reference frame or the sample frame, is correlated with the other of the reference frame or the sample frame to produce a corresponding plurality of correlation values and ascertain motion in the directions along the first and second axes; and an arithmetic comparison mechanism coupled to the plurality of correlation values, and wherein the motion signals are not output to the computer system whenever a correlation surface described by the plurality of correlation values fails to exhibit a selected curvature.

1. "a plurality of comparison frames, each being a shifted version of one of the reference frame or the sample frame, is correlated with the other of the reference frame or the sample frame to produce a corresponding plurality of correlation values and ascertain motion in the directions along the first and second axes"

In *PixArt*, the Court did not construe the entire phrase, but instead referred the parties to the Court's construction of "frame" as "a single image in a sequence of images" and "the correlation being upon the values in all memory array locations that correspond to overlap between the comparison frame and the other of the reference frame or sample frame" as "the operation of comparing at least one shifted sample frame or at least one shifted reference frame with the other of a reference frame or a sample frame being upon all of the values stored in memory that correspond to the area shared between the frames. The comparison provides the degree to which the frames are related. The values that are being compared are numerical representations of the digitized photo detector outputs." Avago proposes that the claim language should be construed as "at least two frames, each generated by shifting a sample frame or a reference frame, are compared with the other of a reference frame or a sample frame to provide the degree to which the frames are related. Such correlations produce numerical representations of the degree of similarity between the frames. Such correlations are also used to ascertain motion in the directions along the first and second axes. A frame refers to a single image in a sequence of images." Elan proposes the following construction: "At least two different comparison frames (images captured by the complete array of photodetectors subsequent to a first image captured by a complete array of photodetectors) compared to either the reference frame (first image) or sample frame (subsequent image) to produce a corresponding number of correlation values and ascertain motion along either axis. Each comparison frame being shifted from the first image or subsequent images with some offset within the array."

Elan's proposed definition of "comparison frames" as "images captured by the complete array of photodetectors subsequent to a first image captured by a complete array of photodetectors" is not supported by the specification. As detailed in the specification, the device may track movement "by comparing a newly captured sample frame with a previously captured reference frame to ascertain the direction and amount of movement," and this comparison may be accomplished by the use of comparison frames where "the comparison frames are temporarily shifted versions of the sample frame." Col. 3, ll. 59-65-Col. 4, ll. 29-33. In this embodiment, the comparison frames are not limited to the image captured by the complete array of photodetectors-rather, the comparison frames may be the product of an internal operation so that what is

captured by the array of photodetectors (a reference frame or a subsequent sample frame) may be correlated to the comparison frame, or the comparison frames may be correlated with each other.

Furthermore, Elan's definition of comparison frames excludes the prediction function disclosed in the specification: "For a hand held mouse, several successive collections of comparison frames can usually be obtained from the (16x16) reference frame taken at t_0 ... This shifting to accommodate prediction throws away, or removes, some of the reference frame, reducing the size of the reference frame." Col. 5, ll. 14-25. In the prediction operation the comparison frame is derived from the reference frame and is thus neither a complete image, nor technically, an image captured by the array of photosensors.

Accordingly, the Court construes "a plurality of comparison frames, each being a shifted version of one of the reference frame or the sample frame, is correlated with the other of the reference frame or the sample frame to produce a corresponding plurality of correlation values and ascertain motion in the directions along the first and second axes" as **"at least two frames, each generated by shifting a sample frame or a reference frame, are compared with the other of a reference frame or a sample frame to provide the degree to which the frames are related. Such correlations produce numerical representations of the degree of similarity between the frames. Such correlations are also used to ascertain motion in the directions along the first and second axes. A frame refers to a single image in a sequence of images."**

2. "arithmetic comparison mechanism coupled to the plurality of correlation values, and wherein the motion signals are not output to the computer system whenever a correlation surface described by the plurality of correlation values fails to exhibit a selected curvature"

In the PixArt litigation, the Court construed this claim language to mean: "a device that executes an algorithm which determines a surface shape by plotting the multiple correlation values and that blocks the transmission of motion data to the computer system if the result of the algorithm is that the surface shape is not a suitable curvature." Avago primarily takes issue with the word "plotting" in this Court's construction. Avago proposes that the claim language above be construed as "logic that performs arithmetic comparison operations and that receives correlation values. Wherein signals indicative of actual motion in the directions along the first and second axes and relative to the work surface height irregularities of the illuminated portion of the work surface are not communicated to the computer system whenever the mathematical surface produced or described by the various correlation values does not meet a particular criteria with respect to its curve or shape. This mathematical surface is a mathematical abstraction insofar as it is merely a mathematical representation of the distribution of correlation values." Elan contends that "arithmetic comparison mechanism coupled to the plurality of correlation values" is impossible to construe because the "arithmetic comparison mechanism" bears no relationship with any other element of the claim and there is no explanation as to how this mechanism is "coupled" to correlation values. Elan construes the remainder of the claim language as "motion signals are not output to the computer whenever the surface shape described by the plotting of the multiple correlation values fails to exhibit a predetermined curvature of the plotted correlation values."

As to a mechanism being "coupled" to a "plurality of values" the Court invites the parties to stipulate to a construction or present evidence with respect to this relationship. As to the remainder of the claim language, to the extent that the parties interpret the Court's use of "plotting" in its previous construction as "forming an actual graphical representation of the correlation values," such "plotting" is not required by the specification. At a rudimentary level, the Court understands the equation $y = 2x$ to be a linear equation without using graph paper and a ruler. The Court declines to further construe the phrase.

3. "source of illumination"

Avago submits that "source of illumination" does not require construction and that the ordinary meaning should apply. Elan proposes that "source of illumination" be construed as "a device that provides illumination at a grazing angle."

As detailed in Claim 4, the source of illumination "illuminates a portion of the work surface opposite the aperture" thus "producing a pattern of highlights upon surface height irregularities." Just as the shadows cast by the sun decrease in length as the sun approaches noon, illumination directly perpendicular to the work surface micro texture would be unlikely to produce a "pattern of highlights and shadows from the surface height irregularities of the illuminated portion of the work" required by Claim 4.

Elan argues that inherent in the illumination disclosed in Claim 4, is the concept of grazing angle, and thus the angle of incidence must be between 5 and 20 degrees. In support of its position Elan relies on the following line in the specification: "A surprisingly wide variety of surfaces create a rich collection of highlights and shadows when illuminated with a suitable angle of incidence. That angle is generally low, say, on the order of five to twenty degrees, and we shall term it a 'grazing' angle of incidence" and argues that anything outside 5 to 20 degrees therefore must not be suitable by the terms of the specification.

A comparison of Claim 1 with Claim 4 indicates that a particular angle limitation should not be included in the construction of Claim 4. Claim 1 specifies "an angle of incidence in the range of about five to twenty degrees," whereas Claim 4 contains no such limitation. The plain language of Claim 4 requires that the source of illumination produce a pattern of highlights and shadows, and Elan may very well be correct that nothing outside of a 5-20 degree range will produce such a pattern, but that is a question of fact for future determination. The Court declines to construe "source of illumination" in Claim 4 as requiring an angle. The Court declines to further construe the phrase at this time.

4. "illumination producing a pattern of highlights"

Avago submits that this phrase does not require construction and that the ordinary meaning applies. Elan proposes that "illumination producing a pattern of highlights" be construed to mean "the arrangement of highlights produced by the source of illumination as a result of its unique grazing angle." Based on the Court's determination that the claim should not be limited to a particular "grazing angle," the Court declines to further construe the phrase "illumination producing a pattern of highlights."

B. '804 Patent

The parties agree that the '780 patent is a continuation-in-part of the '804 patent. However, because "[t]he proper claim construction is the ordinary and customary meaning ... that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application," *LG Elec., Inc. v. Bizcom Elec., Inc.*, 453 F.3d 1364, 1375 (Fed.Cir.2006) (internal quotation omitted), the Court may not simply permit intrinsic evidence regarding terms of the '780 patent to have the same weight as the specification and the prosecution history of the '804 patent itself.

Claim 14 of the '780 patent reads in its entirety as follows:

14. A method of controlling movement of a cursor of a video display comprising steps of:

providing a hand-holdable device having a two-dimensional array of photosensors;

tracking movement of said device relative to a region of an environment in which said device resides, including substeps of:

(a) periodically forming largely overlapping images of a field of view of said array;

(b) storing a first image as a reference image;

(c) correlating said images such that changes in location of characteristics of said region within successive images are computationally recognized;

in response to said substeps (a), (b) and (c), forming a cursor-control signal that corresponds to computational recognition of said changes in location; and transmitting said cursor-control signal to said video display.

Patent citations in this section refer to the '804 patent unless otherwise indicated.

At this time, the Court is only being asked to construe Claim 14, which is an independent claim. Claim 14 is a method claim that requires use of a "hand-holdable device having a two-dimensional array of photosensors." The parties have not asked for construction of this "device." The Court invites the parties to stipulate to a construction or provide evidence with respect to any construction of the phrase "hand-holdable device having a two-dimensional array of photosensors."

1. "tracking movement of the device relative to a region of an environment in which said device resides"

Avago proposes that the above phrase be construed as "tracking movement relative to features in the environment where the device operates." Elan proposes the following construction: "Tracking changes in the position and angular orientation of the device in a three-dimensional environment."

Claim 14 is not limited to a device that tracks angular rotation. The written description describes translating pitch as vertical movement, and yaw as horizontal movement, but then states that "[i]n this embodiment, translational movement of the device may also be detected and utilized, so that vertical and horizontal movement of the device translates to a corresponding vertical or horizontal movement of the screen cursor." Col. 4, ll. 15-21. Furthermore, the doctrine of claim differentiation suggests that the Court should not construe Claim 14 as limited to angular movement, as Claim 15 specifically adds the limitation of angular movement.

The remainder of the contested claim language, "environment in which said device resides," refers to a three-dimensional environment. The plain and ordinary meaning of "environment" is as three-dimensional space—unlike a point, a line, or a plane. Furthermore, "environment" as used in the claim language is specified as that "*in which* said device resides." Claim 14 (emphasis added). The residence of the device is distinguishable in the plain and ordinary lexicon from a planar surface *on which* the device operates. Such a distinction is also supported by the patent's description of the problem the invention was intended to solve: "The concern is that there may not be a suitable planar operating surface that is convenient to the operator." Col. 1, ll. 63-65.

Avago argues that the device may not be limited to necessarily being capable of operating in three dimensions. Whether the device claimed by Claim 14 operating in only two dimensions would infringe on a device that is capable of operating in three dimensions is a question for a later stage in this litigation. For the purposes of construing the claims in this patent in light of the specification, "environment in which said device resides" means "**the three-dimensional space in which said device may operate,**" and thus, "tracking movement of the device relative to a region of an environment in which said device resides" is construed to mean "**tracking movement of the device relative to a region of the three-dimensional space in which said device may operate.**"

2. "periodically forming largely overlapping images of a field of view of said array"

Avago proposes that "periodically forming largely overlapping images of a field of view of said array" be construed as "images of a field of view of the photosensor array are formed at regular intervals of time. The images overlap such that there are features in common in successive images." Elan submits that "periodically forming largely overlapping images," is impossible to construe because "largely overlapping images" is indefinite. As to the remainder of the claim language, Elan proposes that "a field of view of said array" means "an area of the three-dimensional environment in which the device resides that can be viewed by the array."

The Court does not find "largely" to be indefinite simply because there is no specific quantity by which the images must overlap. As construed consistent with its plain and ordinary meaning, "largely" provides sufficient guidance to a person of ordinary skill in the art. Based on the Court's determination that the device disclosed in Claim 14 is one which may operate in a three-dimensional environment, the Court declines to further construe this phrase.

3. "storing a first image as a reference image"

Agilent construes the above phrase as "storing a first set of pixel values, in which each pixel value is indicative of light intensity received at a particular photosensor at a specific time." Elan submits that the phrase, properly construed, means "storing a first set of pixel values representing a field of view of the array as the reference image."

The method by which a reference image is acquired is detailed in the '804 patent: "The two-dimensional array of photosensors is used to acquire a reference frame for tracking attitude of the device." Col. 3, ll. 28-30. The patent also describes the optics of the photosensors that acquire the reference frame: "While not critical, the device includes optics which provide a focus nominally at infinity, intentionally presenting an off-sharp image to the array of photosensors." Col. 3, ll. 35-38. The remainder of the written description similarly includes a disclosure of the reference image as captured by an array of photosensors. Absent any other indication that the reference image could be acquired by any other means, the Court reads the claims in light of the specification and construes "storing a first image as a reference frame" as "**storing a first set of pixel values representing that which is captured by the array of photosensors as the reference image.**"

4. "correlating said images such that changes in location of characteristics of said region within successive images are computationally recognized"

Avago submits that the above claim language means "comparing an arrangement of pixel values from the

first image with an arrangement of pixel values from the second image. The comparison mathematically detects changes in location of common features of the environment in the successive images." Elan proposes the following construction: "Comparing the first set of pixel values with one or more subsequent sets of pixel values to recognize calculated changes in location of features viewed by the array within the three-dimensional environment in the first set of pixel values with relation to features in one or more subsequent sets of pixel values." Given the Court's determination that Claim 14 discloses a device capable of tracking changes in a three-dimensional environment, further construction of this term is unnecessary.

V. CONCLUSION

The parties shall meet and confer to develop a joint case management statement, which shall be filed no later than September 8, 2006. The Court will conduct a case management conference on September 18, 2006 at 10:00 a.m.

N.D.Cal., 2006.

Avago Technologies General IP PTE v. Elan Microelectronics Corp.

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