

United States Court of Appeals for the Federal Circuit

02-1303

APEX INC.,

Plaintiff-Appellant,

v.

RARITAN COMPUTER, INC.,

Defendant -Appellee.

James D. Berquist, Nixon & Vanderhye P.C., of Arlington, Virginia, argued for plaintiff-appellant. With him on the brief were J. Scott Davidson and Donald L. Jackson.

John F. Ward, Ward & Olivo, of New York, New York, argued for defendant-appellee. With him on the brief were John W. Olivo, Jr. and David M. Hill.

Appealed from: United States District Court for the Southern District of New York

Senior Judge Milton Pollack

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Defendant-Appellee.

DECIDED: April 2, 2003

Before NEWMAN, RADER, and GAJARSA, Circuit Judges.
GAJARSA, Circuit Judge.

Plaintiff-Appellant, Apex Inc. ("Apex"), seeks review of the final judgment by the United States District Court for the Southern District of New York holding that United States Patent Nos. 5,884,096 ("the '096 patent"), 5,937,176 ("the '176 patent"), and 6,112,264 ("the '264 patent") (collectively "the patents") were not infringed and dismissing all of Defendant-Appellee's, Raritan Computer, Inc. ("Raritan"), counterclaims without prejudice. Apex Inc. v. Raritan Computer, Inc., 187 F. Supp. 2d 141 (S.D.N.Y. 2002). Because the district court erred as a matter of law in the construction of the disputed claim limitations of the patents, we vacate and remand for further proceedings consistent with this opinion.

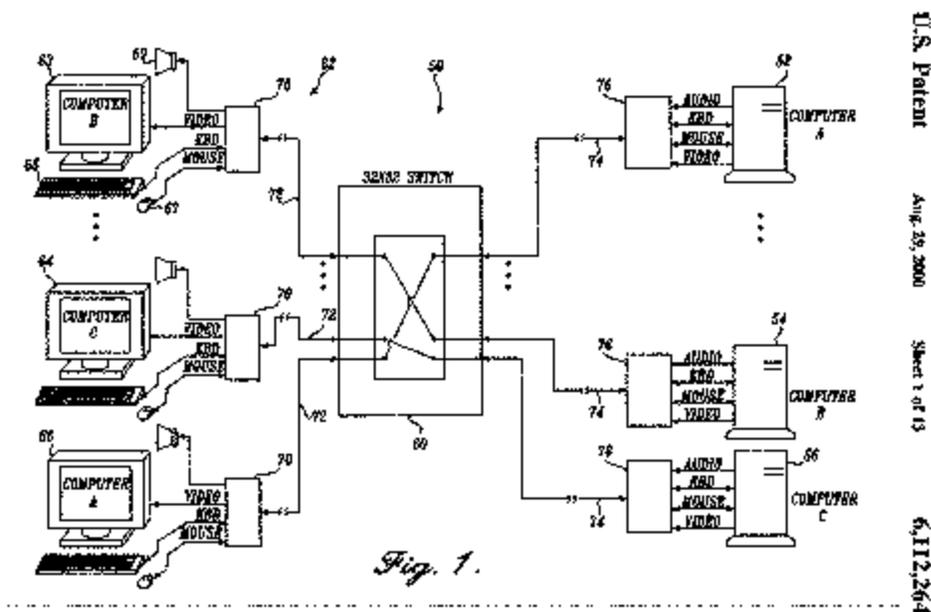
I. BACKGROUND

Apex markets and sells computer switching systems for connecting computer workstations to remote computers. Apex is the owner, by assignment, of the patents at issue. Raritan also markets and sells computer switching systems for connecting computer workstations to remote computers. Raritan's MasterConsole MX4, SMX, II, and MXU2 products ("the MasterConsole products"), and its Paragon products (collectively "the accused products") are at issue.

The '096, '176, and '264 patents are all continuations of a patent application filed on November 12, 1997 that ultimately issued as United States Patent No. 5,721,842 ("the '842

patent"). The '842 patent is not asserted by Apex in this action.

The patents in this action disclose and claim computerized switching systems, known in the art as keyboard, video, mouse ("KVM") switches, that allow centrally located network administrators to operate multiple server computers without requiring a complicated wiring scheme. '096 patent, col.1, ll. 49-65. Figure 1 from the '264 patent provides a general overview of the KVM switches disclosed and claimed in the patents.



The computerized switching system allows for a number of server computers 52, 54, 56 to be coupled to a number of workstations 62, 64, 66. Each workstation includes a video monitor 63, a keyboard 65, and a cursor control device such as a mouse 67. Signals from the keyboard 65 and the mouse 67 are received by a signal conditioning circuit or pod 70. The pod transmits the keyboard and mouse signals over a communication link 72 to a programmable, or central crosspoint, switch 60. After being routed through the switch, the keyboard and mouse signals are retransmitted through another communication link 74 to a pod 76, which is coupled to the remotely-located server computer 52. The pod 76 supplies the keyboard and mouse signals through appropriate connectors to keyboard and mouse input ports of the remote computer, just as if the keyboard 65 and mouse 67 were directly coupled to

the keyboard and mouse input ports. '096 patent, col. 3, ll. 1-18. An important aspect of the invention relates to the use of an on-screen programming display feature that allows the user to select any particular server from any particular workstation. At the user's request, the switch displays a menu of services on the screen of the user's monitor. The user then can select a particular server from the visual menu using a cursor control device or the keyboard.

Apex asserts Raritan's MasterConsole products and Paragon products infringe claims 1, 6, 7, 10, 11, 20, 26 and 32 of the '096 patent and claims 1-10, 14, m and 16 of the '264 patent. Apex also asserts Raritan's Paragon products infringe claim 1 of the '176 patent. Of the claims asserted, claims 1, 6, 10, 11, 20, 26, and 32, of the '096 patent, claim 1 of the '264 patent, and claim 1 of the '176 patent are independent claims.

Before the district court, the parties disputed fourteen claim limitations within various claims of the patents in this action. Each of the contested limitations from the respective patents and claims is reproduced below.

The '096 patent

Claims 1, 11, 20, 26

a programmable switch for routing keyboard and cursor control signals from the workstation to a selected computer and for routing video signals from the selected computer to the video monitor of the workstation;

- a first interface circuit for receiving keyboard and cursor control device signals from the workstation;

an on-screen programming circuit that produces video signals for display on the video monitor;

a second interface circuit disposed between the programmable switch and the selected computer for supplying the keyboard and cursor control device signals routed through the programmable switch to the selected computer

Claim 1

a programmed logic circuit coupled to the first interface that transmits the keyboard and cursor control device signals to the programmable switch and controls the on-screen programming circuit to produce the video signals upon the detection of a predefined input from a user of the workstation, the programmed logic circuit further operating to detect keyboard or cursor control device signals received while the on-screen programming circuit is producing video signals on the video monitor and to control the

programmable switch in response to the keyboard or cursor control device signals detected;

Claims 6-7, 10 and 32

producing overlaid video signals for display on the video monitor of the workstation;

The '176 patent

a plurality of first signal conditioning units coupled to the workstations for receiving electronic signals produced by the keyboard and mouse and for creating a serial data packet that includes the electronic signals;

a central crosspoint switch including a number of bidirectional inputs and outputs, said central crosspoint switch receiving the serial data packets from an input and routing the serial data packet to one or more of said outputs;

a plurality of second signal conditioning units coupled to the remote computer systems, for receiving the serial data packets transmitted on one of the plurality of second communication links switch and for supplying the data packets to a keyboard and mouse input of the remote computer, the plurality of second signal conditioning units receiving video signals produced by the remote computer systems and transmitting the video signals to the central switch on one of the plurality of second communication links;

The '264 patent

a computer-side interface for simultaneously physically connecting to independent, dedicated cables of respective keyboard and analog video outputs of plural computers;

a user-side interface for physically connecting to a first set of independent, dedicated cables of a first keyboard and an analog video input of a first monitor;

an analog video overlay image generating circuit, disposed between the computer-side interface and the user-side interface, for producing an analog overlay video signals internal to the switching system; and

an analog video overlay circuit, disposed between the computer-side interface and the user-side interface, for combining (1) a portion of the analog video signals received by the analog video receiving circuit and (2) the analog overlay video signals generated internally to the switching system to form a combined analog signal that is output to the first monitor via the user-side interface.

After a seven-day bench trial, the district court construed all fourteen of the disputed limitations as follows.

Means-plus-function limitations

The district court held that the limitations including the terms "first interface circuit," "on-screen programming circuit," "programmed logic circuit," "second interface circuit," "first signal conditioning unit," "second signal conditioning unit," "computer-side interface," "user-side interface," "analog video overlay image generating circuit," and "analog video overlay circuit" were all means-plus-function limitations. Apex, 187 F. Supp. 2d at 160. Despite Apex's contentions that the disputed limitations contained additional adjectives that, as a whole, further qualify and describe the particular structure recited, id. at 158, the district court determined that the claim limitations "using the words 'circuit,' 'interface,' and 'units' do not simply by the use of these words connote sufficient structure to perform the relevant functions recited in the element." Id. at 160-63.

"Serial data packet"

The district court interpreted the term "serial data packet" as "one that can, but need not, include both keyboard and mouse signals." Id. at 161. As support for this interpretation, the district court first looked to the language of the claims which stated as follows:

a plurality of first signal conditioning units coupled to the workstations for receiving electronic signals produced by the keyboard and mouse and for creating a serial data packet that includes the electronic signals.

Id. at 154; '176 patent, col. 13, ll. 59-62. The district court then looked to the written description which it contended supported this interpretation with the statement:

The CPU 80 then reads the digitally buffered keyboard and mouse signals from the keyboard mouse interface 82 and converts the signals into a data packet that is transmitted to the remote computer.

Apex, 187 F. Supp. 2d at 155. Lastly, the district court looked to the prosecution history relying on the examiner's reasons for allowance which stated:

The prior art of record does not teach nor fair [sic] suggest the system arrangement as claimed with circuitry for creating serial data packet from keyboard and mouse electronic signals, and crosspoint switch for connecting keyboard/mouse/video monitor from a number of workstations to plurality of remote computer systems.

Id.

"Overlay" and "overlaid video signals"

The district court interpreted the terms "overlay" and "overlaid video signals" to "require the ability to place two separate images (or video signals) on top of one another such that they would both be at the same spot on the screen at the same time." Id. at 156. As support for this interpretation, the district court relied on the prosecution history of the '842 patent (the first patent in the priority chain of the patents). Specifically, the district court relied upon the preamble of a claim in the Second Preliminary Amendment in the '193 application on January 14, 1997 which recited a "circuit for producing video signals over video signals that are produced by a remote computer." Id. The district court held "[w]ithout question, this indicates that Plaintiff understood that 'overlay' means having the ability to physically place one signal over another." Id.

In light of its claim construction, the district court found that none of the accused products infringes any of the asserted claims in the patents literally or under the doctrine of equivalents. The district court simply stated that there is no infringement of the patents because "the accused devices do not, but must, embody every element of any of the claims as properly interpreted." Id. at 170. Apex timely appealed the district court's final judgment and we have jurisdiction over this appeal pursuant to 28 U.S.C. § 1295(a)(1).

II. DISCUSSION

A. Standard of Review

A determination of infringement requires a two-step analysis. "First, the court determines the scope and meaning of the patent claims asserted . . . [and second,] the properly construed claims are compared to the allegedly infringing device." Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454, 46 USPQ2d 1169, 1172 (Fed. Cir. 1998) (en banc) (citations omitted). Step one, claim construction, is a question of law, Markman v. Westview Instruments, Inc., 52 F.3d 967, 979, 34 USPQ2d 1321, 1329 (Fed. Cir. 1995) (en banc), aff'd, 517 U.S. 370 (1996), that we review de novo, Cybor, 138 F.3d at 1456, 46 USPQ2d at 1172. "Whether the language of a claim is to be interpreted according to 35 U.S.C. § 112, ¶ 6, i.e., whether a claim limitation is in means-plus-function format, is a matter of claim construction and is thus a question of law, reviewed de novo." Kemco Sales, Inc. v. Control Papers Co., Inc., 208 F.3d 1352, 54 USPQ2d 1308, 1312 (Fed. Cir. 2000).

Step two, comparison of the claim to the accused device, requires a determination that every claim limitation, or its equivalent, be found in the accused device. Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 29 (1997). Those determinations are questions of fact, Bai v. L & L Wings Inc., 160 F.3d 1350, 1353, 48 USPQ2d 1674, 1676 (Fed. Cir. 1998), reviewed for clear error, Ultra-Tex Surfaces, Inc. v. Hill Bros. Chem. Co., 204 F.3d 1360, 1363, 53 USPQ2d 1892, 1895 (Fed. Cir. 2000). "A finding is 'clearly erroneous' when although there is evidence to support it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed." Amhil Enters. Ltd. v. Wawa Inc., 81 F.3d 1554, 1562, 38 USPQ2d, 1471, 1476 (quoting United States v. United States Gypsum Co., 333 U.S. 364, 395 (1948)).

B. Claim Construction

When construing the claims, we begin with an examination of the intrinsic evidence, i.e., the claims, the other portions of the written description, and the prosecution history (if any, and if in evidence). Gart v. Logitech, Inc., 254 F.3d 1334, 1339, 59 USPQ2d 1290, 1293-94 (Fed. Cir. 2001). Additionally, dictionary definitions may be consulted in establishing a claim term's ordinary meaning. Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202, 64 USPQ2d

1812, 1818 (Fed. Cir. 2002). In analyzing the intrinsic evidence, we start with the language of the claims and engage in a "strong presumption" that claim terms carry their ordinary meaning as viewed by one of ordinary skill in the art. Tate Access Floors, Inc. v. Interface Architectural Resources, Inc., 279 F.3d 1357, 1369, 61 USPQ2d 1647, 1656 (Fed. Cir. 2002); CCS Fitness Inc. v. Brunswick Corp., 288 F.3d 1359, 1366, 62 USPQ2d 1658, 1662 (Fed. Cir. 2002) (stating there is a "heavy presumption" that claim terms carry their ordinary meaning as viewed by one of ordinary skill in the art). Courts may also review extrinsic evidence to assist them in comprehending the technology in accordance with the understanding of skilled artisans and as necessary for actual claim construction. Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1309, 51 USPQ2d 1161, 1168 (Fed. Cir. 1999). Extrinsic evidence may not be relied upon, however, to vary or contradict the clear meaning of terms in the claims. Markman, 52 F.3d at 981, 34 USPQ2d at 1331.

1. Means-plus-function limitations

Title 35, section 112, paragraph 6 of the United States Code provides that:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112, ¶ 6 (2000). Such limitations are generally known as "means-plus-function" or "step-plus-function" limitations. Through use of means-plus-function limitations, patent applicants are allowed to claim an element of a combination functionally, without reciting structures for performing those functions. Envirco Corp. v. Clestra Cleanroom, Inc., 209 F.3d 1360, 1364, 54 USPQ2d 1449, 1452 (Fed. Cir. 2000).

It is well settled that "[a] claim limitation that actually uses the word 'means' invokes a rebuttable presumption that § 112, ¶ 6 applies. By contrast, a claim term that does not use 'means' will trigger the rebuttable presumption that § 112, ¶ 6 does not apply." CCS Fitness, 288 F.3d at 1369, 62 USPQ2d at 1664. "[T]he term 'means' is central to the analysis." Personalized Media Communications v. Int'l Trade Comm'n, 161 F.3d 696, 703, 48 USPQ2d 1880, 1886 (Fed. Cir. 1998).

From a procedural standpoint, this presumption "imposes on [Raritan] the burden of going forward with evidence to rebut . . . the presumption, but does not shift to such party the burden of proof in the sense of the risk of nonpersuasion, which remains throughout the trial upon the party on whom it was originally cast." Fed. R. Evid. 301. Raritan can rebut this

presumption "if it demonstrates that the claim term fails to 'recite sufficiently definite structure' or else recites a 'function without reciting sufficient structure for performing that function.'" CCS Fitness, 288 F.3d at 1369, 62 USPQ2d at 1665 (quoting Watts v. XL Sys., Inc., 232 F.3d 877, 880, 56 USPQ2d 1836, 1838 (Fed. Cir. 2000)). This burden must be met by a preponderance of the evidence. A.C. Aukerman Co. v. R.L. Chaides Constr. Co., 960 F.2d 1020, 1045, 22 USPQ2d 1321, 1332 (Fed. Cir. 1992) ("In civil cases litigants are generally required to prove facts by a preponderance of the evidence.") If the party who must bring forth evidence fails to proffer sufficient evidence to meet its burden, the presumption, either for or against the application of § 112, ¶6, prevails.

This presumption can collapse when a limitation lacking the term "means" nonetheless relies on functional terms rather than structure or material to describe performance of the claimed function. Micro Chem., Inc. v. Great Plains Chem. Co., 194 F.3d 1250, 1257, 52 USPQ2d 1258, 1263 (Fed. Cir. 1999). Conversely, when a claim uses the term "means," the focus is on whether the claim term recites no function corresponding to the means or recites sufficient structure or material for performing that function. Rodime PLC v. Seagate Tech., Inc., 174 F.3d 1294, 1302, 50 USPQ2d 1429, 1434 (Fed. Cir. 1999).

"To help determine whether a claim term recites sufficient structure, we examine whether it has an understood meaning in the art." Watts, 232 F.3d at 880-81, 56 USPQ2d at 1838. As an aid in making this determination, this court inquires into whether the "term, as the name for the structure, has a reasonably well understood meaning in the art," keeping in mind that a claim term "need not call to mind a single well-defined structure" to fall within the ambit of § 112, ¶ 6. Greenberg v. Ethicon Endo-Surgery, Inc., 91 F.3d 1580, 1583, 39 USPQ2d 1783, 1786 (Fed. Cir. 1996) (holding that "detent mechanism" limitation was not a means-plus-function limitation). "[T]he fact that a particular [claim term] is defined in functional terms is not sufficient to convert a claim [limitation] into a 'means for performing a specified function' within the meaning of 112(6)." Id.

As an initial matter, none of the claim limitations asserted by Raritan to be means-plus-function limitations contains the term "means," which, as noted, is central to the analysis. While the district court correctly acknowledged this fact and stated that the limitations were presumed not to be means-plus-function limitations, it nevertheless determined that all but two of the limitations were means-plus-function limitations. In doing so, the district court erred as a matter of law. The primary source of this error lies in the district court's reliance on single words of the limitations, e.g., "circuit," as opposed to the limitations as a whole, e.g., "a first

interface circuit for receiving keyboard and cursor control device signals from the workstation." See United States v. Telectronics, Inc., 857 F.2d 778, 781, 8 USPQ2d 1217, 1220 (Fed. Cir. 1988) (holding that district court's interpretation of the term "avoid" based on the dictionary definition without regard to the rest of the limitation was error).

a. "circuit" limitations

The "circuit" limitations are contained in the asserted claims of the '096 and '264 patents as identified in section I, supra. Initially, all the claim limitations at issue lack the term "means," accordingly, we presume that § 112 ¶ 6 does not apply. CCS Fitness, 288 F.3d at 1369, 62 USPQ2d at 1664. We next must determine whether Raritan has shown that the limitation, as understood by one of ordinary skill in the art, demonstrates that the claim term fails to recite sufficiently definite structure or else recites a function without reciting sufficient structure for performing that function. Id. In the absence of sufficient evidence, the presumption stands. Raritan failed to meet this evidentiary burden.

The threshold issue for all the limitations involving the term "circuit" is whether the term itself connotes sufficient structure to one of ordinary skill in the art to perform the functions identified by each limitation. The district court determined this term, by itself, did not connote sufficient structure and prematurely ended its analysis at this threshold issue. While we do not find it necessary to hold that the term "circuit" by itself always connotes sufficient structure, the term "circuit" with an appropriate identifier such as "interface," "programming" and "logic," certainly identifies some structural meaning to one of ordinary skill in the art.

The term "circuit" is defined as "the combination of a number of electrical devices and conductors that, when interconnected to form a conducting path, fulfill some desired function." Dictionary of Computing, 75 (4th ed. 1996). **[1]**

In light of this definition, it is clear that the term "circuit," by itself connotes some structure. In the absence of any more compelling evidence of the understanding of one of ordinary skill in the art, the presumption that § 112, ¶ 6 does not apply is determinative. Raritan's evidence consisted of district court decisions addressing the meaning of the term "circuit means" and Apex's description of the preferred embodiments in the specification. We find that this evidence is not sufficient to rebut the § 112, ¶ 6 presumption. This evidence fails to show by a preponderance of the evidence that one of ordinary skill in the art believes the term does not recite sufficiently definite structure.

Moreover, claims are interpreted in light of the specification and with the knowledge of one of ordinary skill in the art. Vitronics Corp. v. Conceptoronic, Inc., 90 F.3d 1576, 1582, 39

USPQ2d 1573, 1576-77 (Fed. Cir. 1996). The written description discloses only the preferred embodiments of the various circuit limitations and does not use these terms "in a manner clearly inconsistent with the ordinary meaning" as understood by one of ordinary skill in the art. Tex. Digital, 308 F.3d at 1204, 64 USPQ2d at 1819 (stating if the specification uses the words in a manner clearly inconsistent with the ordinary meaning of a dictionary definition, the inconsistent dictionary definition must be rejected).

The prosecution history also does not suggest that the ordinary meaning of the term "circuit" does not apply. Lastly, the expert testimony submitted by Raritan, including the testimony of Drs. Hoff and Liaw shows only that the term "circuit" is understood by one of ordinary skill in the art as a very broad term and that one of the accused products included several of the circuit elements.

Moreover, every use of the term in the asserted claims includes additional adjectival qualifications further identifying sufficient structure to perform the claimed functions to one of ordinary skill in the art. See Personalized Media, 161 F.3d at 705, 48 USPQ2d at 1888 ("An adjectival qualification ('digital') placed on an otherwise sufficiently definite structure ('detector') does not make the sufficiency of that structure any less sufficient for purposes of § 112, ¶ 6. Instead, it further narrows the scope of those structures covered by the claim and makes the term more definite."). The district court therefore erred in its interpretation of all the limitations as means-plus-function limitations by failing to consider the limitations as a whole.

While this court is plainly aware that claim construction is a question of law, we decline to construe every claim limitation because the record has not been sufficiently developed. As is the case with other aspects of patent law, e.g. obviousness, a proper determination of whether the claim limitations should be construed as means-plus-function limitations requires an understanding of one of ordinary skill in the art. In this situation, it is appropriate to look to extrinsic evidence, including but not limited to dictionaries and expert testimony to assist the trier of fact in understanding the evidence. Greenberg, 91 F.3d at 1583, 39 USPQ at 1786. In particular, the record should reflect the ordinary meaning of the claim limitations, as a whole, and whether these limitations suggest sufficiently definite structure to one of ordinary skill in the art. Despite this need for further development, the record does contain sufficient evidence to address the "first interface circuit" and "second interface circuit" limitations.

The relevant definition of the term "interface" is: "[t]he signal connection and associated control circuits that are used to connect devices." Dictionary of Computing, 250 (4th ed.

1996). Moreover, an "interface circuit" is defined as "a circuit that links one type of logic family with another or with analog circuitry." Rudolf F. Graf, Modern Dictionary of Electronics, 385 (7th ed. 1999). This dictionary definition specifically provides several examples of an interface circuit, including a line driver and analog to digital converters. Thus, the ordinary meaning of this term connotes specific structures to one of ordinary skill in the art. The written description and prosecution history provide no evidence that the inventors intended the term "interface circuit" to have a meaning contrary to this ordinary meaning. Raritan relies solely on its arguments that the term "interface circuit" is a generic term and that the written description, by only showing one embodiment, clearly sets forth a limited definition of "interface circuit." We reject Raritan's classic attempt to limit the scope of a claim limitation to the preferred embodiment. See Comark Communications, Inc. v. Harris Corp., 156 F.3d 1182, 48 USPQ2d 1005 (Fed. Cir. 1998).

Because Raritan has failed to rebut the presumption that § 112, ¶ 6 does not apply, we hold that the terms "first interface circuit" and "second interface circuit" are not means-plus-function limitations. The term "interface circuit" means any circuit that links one type of logic system with another.

The district court should conduct a similar analysis with respect to the remaining "circuit," "interface," and "unit" limitations. Upon remand, the district court must determine the ordinary meaning of these limitations and whether this ordinary meaning defines sufficiently definite structure. Raritan has the burden of going forward with evidence to prove that § 112, ¶ 6 applies. Raritan must prove by a preponderance of the evidence that the limitations, as a whole, do not connote sufficiently definite structure to one of ordinary skill in the art. We decline to conduct this analysis for the district court because the record is underdeveloped as to the ordinary meaning of these limitations as a whole and construing the claims based on this limited record could be prejudicial to the parties.

2. "Serial data packet"

The district court interpreted the term "serial data packet" in the claims of the '176 patent as "one that can, but need not, include both keyboard and mouse signals." The district court determined that the specification and Examiner's Reasons for Allowance of the '176 patent "required" the serial data packet to be capable of including both keyboard and mouse signals. The Examiner's Reasons for Allowance stated:

The prior art of record does not teach nor fair [sic] suggest the system arrangement as claimed with circuitry for creating serial

data packet from keyboard and mouse electronic signals, and crosspoint switch for connecting keyboard/mouse/video monitor from a number of workstations to plurality of remote computer systems.

This standard reason for allowance, however, states only that the prior art does not teach or suggest the claimed system arrangement. This reason for allowance merely summarizes the claimed invention and fails to specifically state that patentability is based on the serial data packet including both keyboard and mouse signals.

According to claim 1, a serial data packet "includes the electronic signals." The electronic signals are produced by the keyboard and mouse. A "data packet" is defined as "a unit of information transmitted as a whole from one device to another on a network." Microsoft Computer Dictionary, (4th ed. 1999). This definition suggests that a data packet, contrary to the district court's decision, need not be capable of including both keyboard and mouse signals.

Moreover, claims are interpreted in light of the written description and with the knowledge and understanding of those of ordinary skill in the art. Vitronics, 90 F.3d at 1582, 39 USPQ2d at 1576-77. Nothing in the written description suggests that a keyboard signal must accompany a mouse signal. In fact, while the district court interpreted "serial data packet" to require the capability of including both keyboard and mouse signals, it recognized that the packet could include only mouse or only keyboard signals. In other words, the district court recognized that one of ordinary skill in the art would understand that a signal data packet includes a mouse signal, a keyboard signal, or both. The prosecution history does not evidence a need to depart from the ordinary meaning supported by the written description. Accordingly, the term should be given its ordinary meaning. Inverness Med. Switz. Gmbh v. Princeton Biomeditech Corp., 309 F.3d 1365, 64 USPQ2d 1926 (Fed. Cir. 2002). The ordinary meaning of serial data packet is a unit of information transmitted as a whole from one device to another on a network that includes a keyboard signal, a mouse signal, or both. Therefore, we reverse the district court's claim construction of the term "serial data packet."

3. Overlay/overlaid

The district court interpreted the terms "overlay" and "overlaid video signals" to "require the ability to place two separate images (or video signals) on top of one another such that they would both be at the same spot on the screen at the same time." (emphasis added). As support for this interpretation, the district court relied on the prosecution history of the '842 patent, the parent of the first patent in the priority chain of the patents. Specifically, the district

court relied upon the preamble of a claim in the Second Preliminary Amendment in the '193 application on January 14, 1997, which recited a "circuit for producing video signals over video signals that are produced by a remote computer." The district court held "[w]ithout question, this indicates that Plaintiff understood that 'overlay' means having the ability to physically place one signal over another."

Turning first to the claim language, the plain language of the limitations do not require display of two separate images at the same time. Instead, the language requires circuitry for producing "overlay" or "overlaid" signals. Again, claims are to be interpreted in light of the written description and with the knowledge and understanding of those of ordinary skill in the art. Vitronics, 90 F.3d at 1582, 39 USPQ2d at 1576-77. The Microsoft Computer Dictionary cites the definition of the term "overlay" as:

1. In computer graphics, to superimpose one graphic image over another.
2. In video, to superimpose a graphic image generated on a computer over video signals, either live or recorded.

This definition does not require simultaneous display of two separate video images, as the district court required.

The written description supports the ordinary meaning by providing numerous methods for displaying "overlaid" images in accordance with the present invention. '176 patent, col. 12, l. 39 – col. 13, l. 12. The prosecution history, contrary to the district court's decision, does not limit the ordinary meaning of the terms "overlay" and "overlaid." The district court looked to the prosecution history and determined that language in the preamble of a preliminary amendment of a grandparent application required a narrowed construction of the terms "overlay" and "overlaid." This single instance of "evidence" does not overcome the presumption that claim language takes on its ordinary meaning.

In short, nothing appears within the written description or the prosecution history that limits the ordinary meaning of the terms "overlay" or "overlaid" as the district court held. The terms "overlay" and "overlaid" have their ordinary meanings, to superimpose one graphic image over another. They do not require the two images to be present on the same spot on the monitor at the same time. Therefore, we reverse the district court's claim construction of the term "serial data packet."

4. "Switch"

The district court interpreted the term "switch" in as a device that opens or closes a circuit to form a direct path between inputs and outputs. The district court adopted this narrow interpretation at the behest of Raritan, without explanation. In the art of networking, the

ordinary meaning of the term "switch" is "a device capable of forwarding packets directly to the ports associated with particular network addresses." Microsoft Computer Dictionary, (4th ed. 1999). According to the written description of the patents in suit, a signal conditioning unit receives mouse and keyboard signals from a workstation. The signal conditioning unit generates a serial data packet and sends the mouse/keyboard packet to a central crosspoint switch. The central crosspoint switch routes the data packet to another signal conditioning unit coupled to the remote server that decodes the mouse/keyboard packet. '176 patent, col 1, ll. 54-64. The written description discloses one embodiment of this "crosspoint switch" or "programmable switch." Id. at col. 6, ll. 15-61. This switch includes a master CPU and a number of input and output cards for transmitting and receiving signals. The written description does not limit the term switch to a device that opens or closes a circuit to form a direct path. Nothing was identified in the prosecution history to suggest this direct path. Thus, properly construed, a "programmable switch" or "crosspoint switch" is a programmable device capable of forwarding packets from one computer/workstation/server to another. Therefore, we reverse the district court's claim construction of the term "switch."

Lastly, Raritan argues that even if the claim limitations are not found to be means-plus-function limitations, the limitations are still limited to the only embodiment disclosed in the written description. We disagree. As support for its argument, Raritan states that "Apex has admitted that the preferred embodiment of its patents is nothing more than the invention itself." The record clearly shows that Apex made no such "admission." The evidence Raritan cites to, the trial testimony of one of the inventors of the patents, Danny Lynn Beasley, instead suggests that the overall concept of using an on-screen display in conjunction with KVM switches to facilitate management of various servers or workstations from various computers was believed to be novel. The testimony in no way suggests that the particular embodiment described in the patents is the entire invention.

Raritan further attempts to limit the claims to the preferred embodiment by stating that "since, the Apex patents do not teach any alternatives, the patent-in-suit [sic] must therefore be limited to this one embodiment." This is not the law. While it is true that a court may limit the meaning of a claim term if the patentee clearly set forth a definition of the claim term in the written description, see e.g., Johnson Worldwide Assocs., Inc. v. Zebco Corp., 175 F.3d 985, 990, 50 USPQ2d 1065, 1068-69 (Fed. Cir. 1998), such is clearly not the case here. The description of the preferred embodiment is one particular example of the claimed invention that is consistent with the ordinary meaning of the claim terms as we currently understand them.

Claim terms take on their ordinary and accustomed meanings

unless the patentee demonstrated an intent to deviate from the ordinary and accustomed meaning of a claim term by redefining the term or by characterizing the invention in the intrinsic evidence using words or expressions of manifest exclusion or restriction, representing clear disavowal of claim scope.

Teleflex, Inc. v. Ficosa North America Corp., 299 F.3d 1313, 1327, 63 USPQ2d 1374, 1382 (Fed. Cir. 2002) (emphasis added). The written description contains no "words or expressions of manifest exclusion or restriction, representing clear disavowal of claim scope."

C. Infringement

The second step of the infringement analysis is comparing the properly construed claims with the allegedly infringing devices. Cybor, 138 F.3d at 1467, 46 USPQ2d at 1184. This comparison is a question of fact, id., that we review for clear error. Ultra-Tex Surfaces, 204 F.3d at 1360, 53 USPQ2d at 1895.

In light of its claim construction, the district court found that none of the accused products infringe any of the asserted claims in the patents literally or under the doctrine of equivalents. The district court simply stated that there is no infringement of the patents because "the accused devices do not, but must, embody every element of any of the claims as properly interpreted." Based on the errors in claim interpretation as discussed, and the further development of the evidence to determine the ordinary meaning of a number of the disputed claim limitations, we vacate the district court's infringement determination. Upon remand, the district court should conduct an infringement analysis consistent with the precedents of this court. In particular, the district court should provide an analysis under both literal infringement and infringement under the doctrine of equivalents. See Lear Siegler, Inc. v. Sealy Mattress Co., 873 F.2d 1422, 1425, 10 USPQ2d 1767, 1770 (Fed. Cir. 1989) (holding that infringement analysis under the doctrine of equivalents requires a separate analysis from literal infringement – "[t]he evidence and argument concerning the doctrine [of equivalents] cannot merely be subsumed in plaintiff's case of literal infringement.").

III. CONCLUSION

Accordingly, we vacate the district court's grant of summary judgment of non-infringement and remand for further proceedings consistent with this opinion.

VACATED AND REMANDED

IV. COSTS

Costs to appellant.

[1] Several courts have determined that the term "circuit" connotes sufficiently definite structure to those skilled in the art. See Nilssen v. Magnetek, Inc., 1999 WL 982966, * 9 (N.D. Ill. 1999) (considering term "circuit means"); CellNet Data Sys., Inc. v. Itron, Inc., 17 F. Supp. 2d 1100, 1109 (N.D. Cal. 1998) (same); Database Excelleration Sys. Inc. v. Imperial Technology Inc., 48 USPQ2d 1533, 1537 (N.D. Cal. 1998) (considering term "control circuit"); but see Nilssen v. Motorola, Inc., 80 F. Supp. 2d 370 (N.D. Ill. 2000) (holding that the term "circuit" is so generic that by itself it conveys no structure at all).