United States District Court,
S.D. New York.

APEX INC,
Plaintiff.
v.
RARITAN COMPUTER, INC,
Defendant.

No. 01 CIV 4435(MP)

Feb. 25, 2002.

Owner of patents for using on-screen display to control computer switching system sued competitor for infringement. The District Court, Milton Pollack, Senior District Judge, held that: (1) called-for serial data packet was one in which keyboard and mouse electronic signals could be combined into single keyboard/mouse data packet; (2) called-for video signal overlays meant placement of two separate images on top of one another such that they would both be at same spot on screen at same time; (3) various circuits, interfaces, and conditioning units called for in patent were means-plus-function elements; and (4) accused devices were not infringing.

Judgment for defendants.

5,732,212. Cited As Prior Art.

Nixon & Vanderhye P.C. (James D. Berquist, J. Scott Davidson, Donald L. Jackson, of counsel), Arlington, VA, Friedman, Wittenstein & Hochman, P.C. (Stuart I. Friedman and Paul S. Grossman, of counsel), New York, for Plaintiff.

Ward & Olivio (John W. Olivio, Jr. John F. Ward, David M. Hill, of counsel), New York, for Defendant.

FINDINGS AND CONCLUSIONS

MILTON POLLACK**, Senior District Judge.**

I. Preliminary

A. *The Parties*

Plaintiff Apex is a Washington corporation, having its principal place of business in Redmond, and is the successor company of Apex PC Solutions., a wholly owned subsidiary of Avocent Corporation of Huntsville, AL.

Defendant Raritan is a New Jersey corporation, having its principal place of business in Somerset, NJ.

Plaintiff and Defendant both market and sell computer switching systems for connecting computer

workstations to remote computers.

B. ***Procedural History***

On May 23, 2001 Plaintiff Apex, Inc. ("Apex") filed this action accusing Defendant Raritan Computer, Inc. ("Raritan") of making, using, offering to sell, selling, or importing products that infringe one or more claims of U.S. Patents Nos. 5,884,096 ("the '096 patent"), 6,112, 264 ("the '264 patent"), and 5,397,176 ("the '176 patent") (collectively, "the patents-in-suit") under 35 U.S.C. s.s. 271 and 281-285 (Compl., para.para. 8-28) and seeks damages pursuant to 25 U.S.C. s. 283, as well as declaratory and injunctive relief (Compl. at 6). Plaintiff also asserts that Raritan's infringement of these patents has been willful, and therefore asks the Court to award treble damages under 35 U.S.C. s. 284. Finally, Plaintiff seek fees pursuant to 35 U.S.C. s. 284, costs pursuant to 35 U.S.C. s. 284, and prejudgement and post-judgement interest.

Defendant Raritan denies all charges of infringement and asserts that all the patents-in-suit are invalid pursuant to 35 U.S.C. s.s. 101-103 and 112. Defendant further asserts that Plaintiffs are estopped from including the accused products within the scope of the issued patent claims. Defendant also accuses Apex of having brought this action knowing that its patent claims are invalid and are not infringed and therefore requests a finding of an "exceptional case" and an award of attorney's fees. Finally Defendant asserts that Plaintiff's claims for relief are barred by the doctrines of latches, waiver, unclean hands, and estoppel.

On November 13, 2001, this Court denied Plaintiff's motion for an Order pursuant to 35 U.S.C. s. 283 preliminarily enjoining Defendant from making, selling, using, or importing one of Defendant's products which is known as the "Paragon Switch System," and which is the subject of this action. The decision was partially based on (1) Defendant's agreement not to make any offer or sales of its Paragon product to Compaq Computer Corporation, a significant Customer of Plaintiff, through completion of a trial on the merits in this case, (2) the delay of plaintiff in seeking an injunction, and (3) the scheduling of an early trial on January 14, 2001.

A seven-day trial took place as scheduled.

C. ***The Patents***

1. Background

The '096, '176, and '264 patents, which are asserted in this action, all derive from a common parent application that was filed with the U.S. PTO on August 25, 1995 and resulted in the issuance of United States Patent No. 5,721,842 (the " '842 patent"), which is not asserted here. The patents-in-suit all pertain to computer switching systems that make use of an on-screen display for controlling the switching system and to obviate the need for manual switching. All of the patents-in-suit are now wholly owned by Apex.

2. Prosecution Histories of the Patents-in-Suit

i. The '096 Patent

The '096 patent issued on March 16, 1999, based on Application Serial No. 08/969,723 ("the '723 application") filed November 12, 1997, which is a continuation of Application Serial No. 08 519,193 ("the '193 application"), filed August 25, 1995 (now the '842 patent.)

The '723 application was filed with eight (8) claims. A Preliminary Amendment cancelling original claims 1-8 and adding new claims 9-10 was filed on November 12, 1997.

On February 10 and May 27, 1998, Apex filed Information Disclosure Statements ("IDS") bringing certain

prior art references to the attention of the United States Patent and Trademark Office ("USPTO"). Also on May 27, 1998, Apex filed a second Preliminary Amendment in which claims 9-10 were cancelled and new claims 11-37 were added, with claims 11, 20, 26 and 32 being the only independent claims. No substantive remarks were provided by Apex.

In the first Office Action dated September 28, 1998, claims 11-37 were rejected under the judicially created doctrine of obviousness-type double-patenting in view of Apex's '842 patent. On October 22, 1998, Apex filed a Terminal Disclaimer to obviate this rejection, and filed another IDS. Apex also submitted an Amendment cancelling claim 36, amending claims 12-14, 21-23, 27-29, 33-35 and 37, and adding new claims 38-43, without remarks.

On November 12, 1998, the Examiner issued a Notice of Allowability, which did not contain any Examiner's Statement of Reasons for Allowance. The same day, Apex mailed still another Supplemental IDS citing over 100 prior art references, including for the first time Perholtz *et al*. United States Patent No. 5,732,212 ("the Perholtz patent").

On December 4, 1998, the Examiner indicated that he had reviewed the newly cited references and issued a Supplemental Notice of Allowability, again without any Statement of Reasons for Allowance.

On February 3, 1999, a Protest against the issuance of the '096 patent was filed by Cybex Computer Products Corporation. Specifically, Cybex asked that the Examiner be given an opportunity to carefully consider the Perholtz patent. Apex opposed the Protest, and on June 30, 1999, the USPTO dismissed the Protest as untimely.

On March 16, 1999, the '096 patent issued with thirty-two (32) claims.

ii. The '176 Patent

The '176 patent issued on August 10, 1999, based on Application Serial No. 08 970,168 ("the '168 application") filed November 12, 1997, which is a continuation of the '842 patent. The '168 application was filed with eight (8) claims.

On February 12, 1998, Apex filed an IDS citing additional prior art references to the USPTO.

On September 22, 1998, the Examiner issued a Notice of Allowability allowing all of the originally filed claims. The Notice of Allowability contained the Examiner's Statement of Reasons for Allowance, which stated:

"the prior art of record does not teach nor fair 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."

On December 3, 1998, in an interview with Apex's representative, the Examiner rejected all of the pending claims on the basis of double-patenting in view of the '842 patent. To overcome this rejection, Apex filed a Terminal Disclaimer on December 7, 1998.

On December 16, 1998 (after allowance of the pending claims), Apex filed an Amendment cancelling Claims 2 and 3 and amending Claim 1 to "conform the claims to those pending in corresponding foreign applications."

On August 10, 1999, the '176 patent issued with six (6) claims.

iii. ***The*** '264 Patent

The '264 patent issued on August 29, 2000 based on Application Serial No. 09 244,947 ("the "7 application") filed February 4, 1999, which is a continuation of Application Serial No. 08/969,723 filed November 12, 1997 (now the '096 patent), which is a continuation of the '842 patent. The "7 application was filed with eight (8) claims. Claim 1 was the only independent claim, and Claim 8, which depended from Claim 1, contained the limitation for an OSD circuit (*i.e.,* an "on-screen programming circuit") in the first signal conditioning unit.

During an Examiner interview on June 1, 1999, Apex's representative discussed with the Examiner the patentability of the pending claims (*i.e.,* Claims 1-8). In an Interview Summary Report dated June 3, 1999, the Examiner noted that the Perholtz patent was discussed and recorded that the "distinguished feature of the present invention over Perholtz-analog overlay done within the central switch."

Two weeks later, on June 16, 1999, Apex filed a Preliminary Amendment. In its Remarks, Apex stated that "[a]lthough no agreement was reached on the patentability of the proposed claims. Applicant's representative discussed that the claims are distinguishing from the invention of the '212 patent. It is believed that the pending claims are patentably distinct from any claim that can be presented in the '212 patent." In other words, the Examiner and Apex's representative did not agree on the patentability of Claims 1-8, so Apex cancelled Claims 1-8. New Claims 9-25 provided for the location of the analog overlay "disposed between the computer-side interface and the user-side interface."

On August 25, 1999, an Office Action was provided, rejecting claims 9-25 under the judicially created doctrine of obviousness-type double-patenting in view of both the '842 and '096 patents. In response, on December 20, 1999, Apex filed a Request for Reconsideration in which it argued that its "claims are patentably distinct from the original claims" as being directed at analog circuits as opposed to generic circuits of the prior patents. On April 10, 2000, the Examiner issued a Notice of Allowability without any Statement of Reasons for Allowance.

On August 29, 2000, the '264 patent issued with seventeen (17) claims.

D. ***The Accused Products***

Apex accuses five Raritan products of infringement. These are: Raritan's MasterConsole MX4 ("MX4") Raritan's MasterConsole SMX ("SMX") Raritan's MasterConsole II ("MC II") Raritan's MasterConsole MXU2 ("MXU2") (Collectively, "MasterConsole products"): and Raritan's Paragon ("Paragon" or "Paragon system").

Apex asserts that the Paragon and all of the MasterConsole products infringe the following claims in the patents-in-suit which all relate to computer switching systems featuring on-screen video display for control of switching: Claims 1,6, 7, 10, 11, 20, 26, and 32 of the '096 patent and Claims 1-10, 14, and 16 of the '264 patent. Apex asserts that the Paragon further infringes Claim 1 of the '176 patent.

II. Disputed Constructions

The elements of the asserted claims the construction of which is in dispute in this action are set forth below (disputed limitation emphasized):

A. Claims 1, 11, 20 and 26 of the '096 patent **each require:**

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.
B. Claims 1, 11, 20 and 26 of the '096 patent **each require:**

a *first interface circuit* for receiving keyboard and cursor control device signals from the workstation.
C. Claims 1, 11, 20 and 26 of the '096 patent **each require:**

an *on-screen programming circuit* that produces video signals for display on the video monitor.
D. Claims 1, 11, 20 and 26 of the '096 patent **each require:**

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.
E. Claim 1 of the '096 patent **requires:**

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.
F. Claims 6-7, 10 and 32 of the '096 patent **each require:**

producing *overlaid video signals* for display on the video monitor of the workstation.
G. All of the claims of the '176 patent **require:**

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.
H. All of the claims of the '176 patent **require:**

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.
I. All of the claims of the '176 patent **require:**

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.
J. All of the claims of the '264 patent **require:**

a *computer-side interface* for simultaneously physically connecting to independent, dedicated cables of respective keyboard and analog video outputs of plural computers.
K. All of the claims of the '264 patent **require:**

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.
L. All of the claims of the '264 patent **require:**

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.

M. All of the claims of the '264 patent **require:**

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.

III. Rival Contentions

A. *The Parties' Arguments*

Each party urges that the Court's construction of the claim elements be informed by the following as set forth by each party:

Defendant's	*Plaintiff's*
1. Means Plus Function Terms	1. No Means Plus Function Terms
Of the terms above, Defendant contends that the terms *programmable switch* ('096 patent), *first interface circuit* ('096 patent), *on-screen programming circuit* ('096 patent), *programmed logic circuit* ('096 patent), *second interface circuit* ('096 patent), *first signal conditioning units* ('176 patent), *second signal conditioning units* ('176 patent), *computer-side interface* ('264 patent), *user-side interface* ('264 patent), *analog video overlay image generating circuit* ('264 patent), and *analog video overlay circuit* ('264 patent) do not connote sufficient structure without reference to the patent. Defendant claims, therefore, that these terms should be construed as means-plus-function terms under section 112, paragraph 6, and are structurally limited to embodiments disclosed in the patent specification and equivalents.	Plaintiff contends that, in the present case, none of the claims in the '096, the '264 or the '176 patents use the word "means." Therefore, there is a presumption that none of the elements of those claims are means-plus-function elements subject to s. 112, 6. *See, e.g., Personalized Media Communs., L.L.C. v. ITC,* 161 F.3d 696, 703-04 (Fed.Cir.1998). Plaintiff further contends that the elements using the word "circuit," are not means-plus-function elements. In this regard. Plaintiff cites *CellNet Data Systems, Inc. v. Itron, Inc.,* 17 F.Supp.2d 1100 (N.D.Cal.1998), which held that the term "circuit means" is a structural term that does not invoke s. 112, 6. Thus, Plaintiff claims the term "circuit means" (or simply "circuit") is a structural term having a well-understood meaning to those skilled in the electronics art. Plaintiff also contends that the claim elements using the terms "interface" and "units" are not devoid of structure requiring resort to s. 112, 6. In support, plaintiff contends that these terms have not been redefined or used in any unusual way by the patentee, and cites the Merriam-Webster dictionary, which defines "interface" as "the place at which independent and often unrelated systems

meet and act on or communicate with each other." MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (10 ed.), p. 610. Plaintiff further contends that the plain and ordinary meaning of "Units" connotes a device.

Moreover, Plaintiff contends that the "circuit," "unit" and "interface" claim elements also contain adjectives which further qualify and describe the particular circuit structure recited. Thus, for example, Plaintiff contends that the "on-screen programming circuit" element is structurally more defined than if the claim-drafter had simply chosen the word "circuit," and that the same analysis holds true for the other "circuit" "unit" and "interface" elements recited in the '096, the '264 and the '176 patent claims.

Finally, Plaintiff contends that, as to those claim elements where the claim also describes the location of the structure for performing the function, or how that structure is connected to other structure in the claim, the sufficiency of the structural recitation is buttressed. Plaintiff cites *Rodime PLC v. Seagate Tech., Inc.,* 174 F.3d 1294, 1303 (Fed.Cir.1999) and *Cole v. Kimberly-Clark Corp.,* 102 F.3d 524, 531 (Fed.Cir.1996), for this proposition.

Plaintiff asserts that, consequently, none of the elements of the patents-in-suit are means-plus-function elements that incorporate limitations from the patent specifications.

2. "Overlaid" Means Laid on Top Of

Defendant contends that wherever in the claims elements the word "overlay" or "overlaid" is used, the ordinary meaning of the term requires that that one signal be laid on top of another on a pixel by pixel basis such that two data signals be displayed "at the same spot on the same screen at the same time."

2. "Overlaid" Means Placed on Screen at Same Time

Plaintiff contends that, of the term "overlay" or "overlaid", the plain and ordinary meaning only requires the possibility that two distinct sources of video data "can" be placed on the screen at the same time such that one image will appear to spread over or cover the other video images.

Plaintiff contends that this is supported by the specification of each of the patents in suit. Particularly, the table at the end of column 12 describes at least seven different ways of displaying the OSD and computer video- (1) system video displayed only, (2) OSD video displayed only, (3) OSD with transparent characters, (4) computer video with solid OSD characters, (5) computer video with transparent OSD characters and solid OSD windows, (6) computer video with opaque OSD characters and windows, and (7) computer video with transparent OSD characters and opaque OSD windows.

	Plaintiff further points to column 12, lines 26-38 of the specification of the patents in suit, which describes at least three other ways of displaying the OSD and computer video-for any pixel, (1) only OSD video can be displayed, (2) only computer video can be displayed, and (3) both OSD and computer video can be displayed.
3. Data Packets Includes Both Keyboard and Mouse Signals	3. Data Packets Need Not Include Both Keyboard and Mouse Signals
Defendant argues that wherever in the claims the term "serial data packet" is used, the claims of the '176 patent and the specifications of the patents-in-suit all require that keyboard and mouse electronic signals be combined into a "keyboard mouse data packet," that includes both signals and that the Examiner in the Statement of Reasons for Allowance in the prosecution history of the '176 patent so limited such claims, and also so limited the entire invention.	Plaintiff contends that language limiting the serial data packets to packets containing both keyboard and mouse data does not appear in the claims, and that the Examiner simply stated the that the system "as claimed" was not taught or suggested by the prior art.
	Plaintiff further contends that, taken as a whole, the claim language of claim 1 of the '176 patent compels the Court to find that *a data packet* created by the first signal conditioning units actually represents more than the one packet specifically required by the claim because the claim language clearly uses one or more data packets interchangeably, and that therefore each data packet does not contain both mouse a keyboard signals. Finally, Plaintiff contends that, practically, a workstation user will rarely, if ever, enter keyboard data and mouse data at precisely the same moment. Therefore, keyboard and mouse data will rarely be received at the same time. Plaintiff also attempts to point out that the '176 patent specification describes this very situation and that same concept is embodied in claim 1 of the '176 patent

B. *Claims Elements Constructions (Disputed)*

Defendant's	*Plaintiff's*
1. *Programmable switch:* a device that opens or closes a circuit to form a direct path between inputs and outputs requiring four pairs of wires for transmission of commands and data, and comprises at least a central processing unit, a number of input, switch and output cards, and analog and digital backplanes.	1. *Programmable switch:* a[ny] circuit or device that routes signals such as keyboard, cursor control device (mouse) and/or video signals between a device such as a workstation and one of a plurality of other devices, such as computers.
2. *First interface circuit:* the keyboard mouse interface	2. *First interface circuit:* an[y] interface circuit including a

shown in Figure 2 of the patents in suit.	circuit at the boundary of two devices, subsystems or circuits that allow signals to cross that boundary.
3. *On-screen programming circuit:* the circuit shown in Figure 12A of the patents in suit.	3. *On-screen programming circuit:* a[ny] circuit that, independently of the workstations and the selected computers, produces video signals for display on a video monitor screen.
4. *Second interface circuit:* the keyboard mouse interface shown in Figure 3 of the patents in suit.	4. *Second interface circuit:* an[y] interface circuit including a circuit at the boundary of two devices, subsystems or circuits that allow signals to cross that boundary.
5. *Programmed logic circuit:* a circuit comprising at least a central processing unit, a QUAD UART, and differential line drivers receivers as shown in Figure 2 of the patents in suit	5. *Programmed logic circuit:* a[ny] circuit that contains the logic elements for manipulating data and/or making decisions based on a series of instructions.
6. *Overlaid video signals:* video signals generated within the central switch from a first source that are "laid or spread over or across" or on top of video signals generated from a second source (*i.e.,* the video signal from the first source is laid on top of the video signal from the second source on a pixel-by-pixel basis).	6. *Overlaid video signals:* video signals that appear on the video monitor of a workstation in combination with or in conjunction with video signals received from another source, where *Video Signals* are signals that can directly control a video monitor such as red, green, blue, horizontal sync, and or vertical sync signals.
7. *First signal conditioning unit:* the first pod shown in Figure 2 of the patents in suit comprising at least at least a keyboard mouse interface, a central processing unit, differential line drivers receivers and a synchronization signal extract circuit.	7. *First signal conditioning unit:* a [ny] unit that receives signals such as mouse and keyboard signals, creates serial data packets that include the mouse and keyboard signals, and transmits them from a workstation toward a switch.
8. *A serial data packet:* a single data packet comprising at least keyboard and mouse electronic signals.	8. *A Serial data packet:* number[s] of packets containing keyboard and/or mouse data signals, but with no one packet necessarily containing both.
9. *Central crosspoint switch:* a device that opens or closes a circuit to form a direct path between inputs and outputs requiring four pairs of wires for transmission of commands and data, and comprises at least a central processing unit, a number of input, switch and output cards, and analog and digital backplanes.	9. *Central crosspoint switch:* a[ny] device that routes signals from one or more inputs to one or more outputs, such as keyboard and mouse signals, and as to which the routing can be changed, and that interchanges or exchanges serial data packets.
10. *Second signal conditioning unit:* the second pod shown in Figure 3 of the patents in suit, and comprises at least a keyboard mouse interface, a central processing unit, differential line drivers receivers and a synchronization signal combine circuit.	10. *Second signal conditioning unit:* a[ny] unit that receives serial data packets and supplies them to a remotely located computer, and that receives video signals produced by remote computer systems and transmits the video signals toward a switch.

11. *Computer side interface:* the second pod shown in Figure 3 of the patents in suit, and comprises at least a keyboard mouse interface, a central processing unit, differential line drivers receivers and a synchronization signal combine circuit..	11. *Computer-side interface:* an[y] interface on the computer-side of the switching system.
12. *User-side interface:* the first pod shown in Figure 2 of the patents in suit comprising at least at least a keyboard mouse interface, a central processing unit, differential line drivers receivers and a synchronization signal extract circuit.	12. *User-side interface:* an[y] interface on the workstation-side of the switching system.
13. *Analog video overlay image generating circuit:* the portion of the circuit shown in Figure 12A of the patents in suit that produces the internal video signals within the central switch, and comprises at least an on-screen processor, a horizontal and vertical synchronization signal generator, a synchronization signal switch and a synchronization polarizer, and whereby *Overlay* means to lay or spread over or across or on top of (*i.e.,* the video signal from the first source is laid on top of the video signal from the second source on a pixel-by-pixel basis), and where this function must be performed within the central switch.	13. *Analog video overlay image generating circuit:* an[y] interconnected combination of electrical devices and conductors that generates video images that, when displayed on a video monitor with other video images, will appear to spread over or cover the other video images.
14. *Analog video overlay circuit:* the portion of the circuit shown in Figure 12A of the patents in suit that combine a portion of the analog video signals from analog video receiving circuit and the analog video signals generated by the analog video overlay image generating circuit, and comprises at least an overlay control logic circuit and a set of six tri-state buffers, and whereby *Overlay* means to lay or spread over or across or on top of (*i.e.,* the video signal from the first source is laid on top of the video signal from the second source on a pixel-by-pixel basis), and where this function must be performed within the central switch.	14. *Analog video overlay circuit:* an[y] interconnected combination of electrical devices and conductors that processes analog overlay video signals with other video signals to create an image for display on a video monitor where the overlay video signals appear on the video monitor to spread over or cover the other video signal.

IV. Applicable Principles for Construction

A. *Generally*

[1] Patent infringement claims require a two-step analysis: First, a claim must be properly construed to determine its scope and meaning. The first step is a question of law. Markman v. Westview Instruments, 52 F.3d 967 (Fed.Cir.1995) (en banc), *aff'd*. 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). Second, the properly construed claims must be compared to the accused device(s). This second determination is a question of fact. *Id*.

[2] For each of the claims asserted, the Court must determine the meaning of the claim, but only to the

extent necessary to resolve the controversy. *Vivid Techs. v. American Science & Eng'g,* 200 F.3d 793, 803 (Fed Cir.1999). The accused products herein will be held not to infringe any of the asserted claims. Therefore, the Court only construes those claim elements, and considers only those of the parties' contentions, that are necessary to this result.

[3] [4] It is well-settled that, in interpreting an asserted claim, the court should look first to the intrinsic evidence of record, *i.e.,* the patent itself, including the claims, the specification and, if in evidence, the prosecution history. *See* Markman, 52 F.3d at 979. Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996). *See* Renishaw PLC v. Marposs Societa', per Azioni, 158 F.3d 1243, 48 USPQ2d 1117, 1120-21 (Fed.Cir.1998).

[5] First, the initial step is to look to the words of the claims themselves, both asserted and non-asserted, to define the scope of the patent invention. Vitronics Corp., 90 F.3d at 1582. An examination of a patent claim requires a review of the precise words chosen by the patentee(s). Words in a claim are usually given their ordinary meaning. Where a technical term is used in a patent claim, such a term is interpreted as having the meaning that it would be given by persons skilled in the field of the alleged invention.

[6] [7] Second, it is necessary to review the specification to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning. Vitronics Corp., 90 F.3d at 1582. The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication. Id. at 1582. " 'Claims must be read in view of the specification, of which they are a part.' " Id. at 1582 (quoting Markman, 52 F.3d at 979). The specification is always highly relevant to the claim construction analysis, and usually, it is dispositive; it is the single best guide to the meaning of a disputed term. *Id.*

[8] [9] The drawings or figures of the patent are considered with the specification in interpreting claim language. Wright Med. Tech., Inc. v. Osteonics Corp., 122 F.3d 1440, 1443 (Fed.Cir.1997). The claim interpretation being asserted by a patentee must be supported in the specification in order to comply with the written description requirement under 35 U.S.C. s. 112, para. 1 (1984), which states, in relevant part: "The specification shall contain a written description of the invention ... in such full, clear, concise, and exact terms as to enable any person skilled in the art ... to make and use the same."

[10] Third, the court may also consider the prosecution history of the patent, if, as here, it is in evidence. Vitronics Corp., 90 F.3d at 1582. The relevant prosecution history to be examined for claim construction includes the prosecution histories of all patents from which the patent in suit is a continuation. *Mark I Mktg. Corp.,* 66 F.3d at 291; Abtox Inc. v. Exitron Corp., 122 F.3d 1019, 1027 (Fed.Cir.1997) (prosecution history of parent application relevant to determining claim scope of patent in suit); Jonsson v. Stanley Works, 903 F.2d 812, 819 (Fed.Cir.1990) (claims interpreted in light of the prosecution of a related application having the same parent).

[11] [12] [13] If analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term, it is improper to rely on extrinsic evidence, Vitronics Corp., 90 F.3d at 1583. Extrinsic evidence is that evidence which is external to the patent and file history, such as expert testimony, inventor testimony, dictionaries, and technical treatises and articles. Id. at 1584. Extrinsic evidence in general, and expert testimony in particular, may be used only to help the court come to the proper understanding of the claims; it may not be used to vary or contradict the claim language. *Id.*

B. *As Related to "Serial Data Packets"*

[14] The Court concludes that the wording of the claims of the '176 patent and the specifications of the

patents-in-suit all require that a serial data packet is such that keyboard and mouse electronic signals *could* be combined into a single "keyboard/mouse data packet".

In this regard, Claim 1 of the '176 patent states the following limitation:

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* (emphasis added).

Moreover, the specification of the patents in suit refers, at col. 1, lns. 55-65, to the data packet as the keyboard mouse packet, and further explains, at col. 3, lns. 45-49, that:

[t]he 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 (emphasis added).

The prosecution history of the '176 patent, more than simply being consistent with the above conclusion, requires it. In this regard, In the '176 patent, the Examiner issued a Statement of Reasons for Allowance that stated:

[t]he prior art of record does not teach nor fair 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 (emphasis added).

Although the Court concludes that a data packet is such that keyboard and mouse electronic signals could be combined into a single "keyboard/mouse data packet," the Court does not accept an interpretation that every data packet must always include both signals. The '176 patent specifically states that byte 96 in Figure 2A identifies the type of data in the packet ('176 patent, col. 3, lines 53-55). If the packet always included both signals, then there would be no need to specify the type of data in the packet. Further, common-sense dictates that while a serial data packet may contain both types of signals, it may also contain only keyboard or only mouse data. In this regard, a workstation user will normally not enter keyboard data and mouse data at precisely the same moment, Therefore, the packet will in most instances contain only mouse or only keyboard signals, but may contain both on occasion. In fact, the '176 patent specification, at col. 3, lines 43-49, describes this very situation:

As the user moves the mouse or types on the keyboard, the keyboard/mouse interface 82 generates an interrupt signal that is fed to the CPU 80. 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.

Thus, as a conclusion to be made, the claims and specification, as worded, and the prosecution history require the conclusion reached by the Court that a serial data packet as recited in the claims, is one that can, but need not, include both keyboard and mouse signals. (As we shall see, the accused products cannot create such data packets as are recited in the claims- *i.e.,* those that can include both keyboard and mouse signals).

C. *As Related to "Overlay" and "Overlaid Video Signals"*

[16] All of the overlay claims either contain the limitation of "producing *overlaid video signals* for display

on the video monitor (emphasis added)" or otherwise incorporate the term *overlay* or *overlaid* in an element. The Court concludes that to one of ordinary skill in the art, the plain or accustomed meaning of "overlaid" would 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.

While Plaintiff attempts to convince the Court that *overlay* only requires the *appearance* that one image or signal be spread over or covers the other, the intrinsic evidence shows that even the Plaintiff knows otherwise.

In this regard, the prosecution history of the '842 (grandfather patent) shows that, in the Second Preliminary Amendment in the '193 application on January 14, 1997, Plaintiff entered twelve (12) new claims. Although the entry was later canceled, the then-new claim 26, in the preamble, recited "A circuit for producing video signals over video signals that are produced by a remote computer." Without question, this indicates that Plaintiff understood that "overlay" means having the ability to physically place one signal over another.

Thus, as a conclusion to be made, the claims, as worded, and the prosecution history resolve the question of the conclusion to be made by the Court that *Overlaid Video Signals* or *Overlay* as recited in the claims, calls for the ability to place two separate images (or video signals) one on top the other such that they would both be at the same spot on the screen at the same time. (As we shall see, the accused products cannot produce such *overlaid video signals* or perform *overlay* as recited in the claims- *i.e.,* in that they cannot lay or spread over or across or on top of each other two different video signals).

D. *Means-Plus-Function*

As is typical in a patent case, here Defendant disputes the meaning of some fourteen claims terms, arguing, that many of these terms are a means-plus-function elements per 35 U.S.C. s. 112, and should be limited to the structure disclosed in the preferred embodiment and its equivalents in accordance with Paragraph 6. Therefore the Court here determines, as to each of these elements, whether Section 112, Paragraph 6 applies.

35 U.S.C. s. 112, para. 6 (1984) provides as follows:

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.

[17] [18] A means-plus-function limitation contemplated by 35 U.S.C. s. 112, para. 6 recites a function to be performed rather than definite structure or materials performing that function. Chiuminatta Concrete Concepts v. Cardinal Indus., 145 F.3d 1303, 1307 (Fed.Cir.1998). For a means-plus-function limitation to read literally on an accused device, the device must employ means identical to or the equivalent of the structures, material, or acts described in the patent specification or the drawings. Consequently, whether a claim term is a means-plus-function element to which Paragraph 6 applies is often dispositive in an infringement suit.

[19] "[I]f the word 'means' appears in a claim element in combination with a function, it is presumed to be a means-plus-function element ..." *Al-* Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1318 (Fed.Cir.1999). The presumption is overcome if (1) the claim element that uses the word 'means' recites no function corresponding to the means or (2) if the claim element recites sufficient structure or material for performing the claimed function. *Rodime PLC,* 174 F.3d at 1302.

[20] Conversely, a claim element without the word "means" is presumed to not be a means-plus-function

element and not subject to Paragraph 6. Micro Chem. Inc. v. Great Plains Chem. Co., 194 F.3d 1250, 1257 (Fed.Cir.1999). However, that presumption is overcome where the element "nonetheless relies on functional terms rather than structure or material to describe performance of the claimed function." *Id*. A central inquiry under this formulation is to ascertain what structure is necessary to perform the function specified in the claim element. "In deciding whether either presumption has been rebutted the focus remains on whether the claim as properly construed recites sufficient definite structure to avoid the ambit of s. 112, para. 6." *Personalized Media,* 161 F.3d at 704.

Here, none of the disputed elements in the claims uses the word "means." To begin with, the Court presumes that none of the elements are expressed in means-plus-function language and that Paragraph 6 does not apply to any. Thus, for each element claimed by Defendant to be a means-plus-function element, the Court endeavors to determine whether the presumption that Paragraph 6 does not apply has been rebutted. In making this determination, the Court may examine the relevant intrinsic evidence and any relevant extrinsic evidence. *Id*. at 704-05.

[21] However, after examining such evidence, the Court concludes that for each of the elements *first interface circuit* ('096 patent), *on-screen programming circuit* ('096 patent), *programmed logic circuit* ('096 patent), *second interface circuit* ('096 patent), *first signal conditioning units* ('176 patent), *second signal conditioning units* ('176 patent), *computer-side interface* ('264 patent), *user-side interface* ('264 patent), *analog video overlay image generating circuit* ('264 patent), and *analog video overlay circuit* ('264 patent), the presumption that the element is not a means-plus function element is rebutted.

For each of these terms, the element recites a function or functions corresponding to the means. Further, for each of these terms, other than the term itself, the respective claim does not attempt to recite any structure or material for performing the respective function(s) recited. Thus, the question in each case is whether the recited term in the respective claim element itself connotes a definite structure sufficient to perform the respective recited function.

Plaintiff asserts that elements using the words "circuit," "interface," and "units" are not means-plus-function elements simply because these words are structural terms having a well-understood meaning to those skilled in the electronics art. The Court disagrees with this assessment.

Plaintiff refers the Court to *CellNet Data* for the proposition that "those skilled in the art would understand the term 'circuit means' [and therefore the word 'circuit'] as a structural rather than a means-plus-function element." 17 F.Supp.2d at 1107. In that case, the Court's conclusion rested on the dictionary definition of "circuit" as connoting "the combination of a number of electrical devices and conductors that, when connectedtogether to form a conducting path, fulfill a desired function." *Id*. This Court is not persuaded by the Court's conclusion in *CellNet Data* because to the degree that the term "circuit" connotes any structure, this Court finds it too generic, as the inquiry is not whether a term has a commonly understood definition (as one that may be found in a dictionary), but rather whether the commonly understood definition, if one exists, connotes sufficient structure. In this regard, the Court agrees with the Court's view of the word "circuit" in Nilssen v. Motorola, 80 F.Supp.2d 921 (E.D.Ill.2000), where the Judge stated: "it takes no electronic sophistication at all to understand that electrical circuits are virtually infinite in number. It is not that 'circuit' is non-generic-it is rather that it is so generic that by itself it conveys no structure at all." Id. at 929.

Plaintiff contends that the term "units" is similarly not devoid of structure requiring resort to paragraph 6. The Court concludes that this is even a more generic term than "circuit." At Plaintiff's urging, the Court again looks to Merriam-Webster's dictionary, which, in one instance defines "unit" as "a piece or complex of apparatus serving to perform one particular function." MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (10 ed.). Plaintiff argues that this connotes a device. The Court agrees that this is *a* device,

but how much more generic can one get? If one could circumvent paragraph 6 in a claim element where no structure was recited by simply replacing the word "means" with the word "device" or with the word "unit," a claim element would rarely, if ever, be construed as a means-plus-function element. The Court does not accept that such an easy method of escaping the coverage of paragraph 6 is permitted. Without more, the term "units" does not connote any structure.

The word "interface," where it is used, also does not connote sufficient structure to perform the functions recited. Merriam -Webster's dictionary defines the word as "the place [or point] at which independent and often unrelated systems meet and act on or communicate with each other." This is hardly connotive of structure since the point or the place of interaction or communication is hardly a structural device. Plaintiff provides an additional definition from Merriam-Webster's dictionary: "the means by which interaction or communication is achieved at an interface." The Court finds that this definition can be recast as follows "the means by which interaction or communication is achieved at a point at which independent and often unrelated systems meet and act on or communicate with each other." The word "interface" does not, without more, connote a structure or a set of structures.

Thus, the Court concludes that claim elements 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.

Plaintiff further contends that the "circuit," "unit" and "interface" claim elements also have adjectives which further qualify and describe the particular structure recited. Thus, Plaintiff contends that for example, the *on-screen programming circuit* is structurally more defined than if the claim drafter has simply chosen the word "circuit," and that the same analysis holds true for other such elements in the patent claims.

The Court disagrees and concludes that any adjectives qualifying the word's "circuit," "unit" and "interface" in the claim elements, with the exception of *programmed logic,* do not furnish any small semblance of definite structure to the otherwiseindefinite words. On the contrary, each adjective simply recites a function of the element or its general location: *first interface, on-screen programming, second interface, first signal conditioning, second signal conditioning, computer-side, user-side, analog video overlay image generating,* and *analog video overlay*.

Thus for example, to determine whether the adjective " *on-screen programming* " saves the term "circuit" from the providence of indefiniteness, the Court considers, at Plaintiff's suggestion, the dictionary definitions of these terms. Merriam-Webster's dictionary defines the term "program" as "a plan for the programming of a mechanism (as a computer)" or as "a sequence of coded instructions that can be inserted into a mechanism (as a computer)." It defines the term "screen" as "the surface on which the image appears in an electronic display (as in a television set, radar receiver, or computer terminal)." However, neither of these definitions connotes any structure in the instant context. While the term "screen" would ordinarily sufficiently connote structure, the term "on-screen programming circuit" uses the word "on-screen" to describe the function that the circuit performs, rather than use the word "screen" in its structural capacity. The term "programming" also describes a function, that of producing "a sequence of coded instructions". In all, the terms "on-screen programming" do little more than describe the recited function in this claim element, that of "produc[ing] video signals for display on the video monitor." Consequently, this element is a means-plus-function element. The qualifiers *first interface, second interface, first signal conditioning, second signal conditioning, computer-side, user-side, analog video overlay image generating,* and *analog video overlay* fare no better.

[22] As to the *programmed logic circuit,* it does connote some structure, albeit insufficient in the instant circumstance. In this regard, Claim 1 of the '096 patent requires that this circuit perform; the stated functions of "transmit[ing] the keyboard and cursor control device signals to the programmable switch;" "control[ing]

the on-screen programming circuit to produce the video signals upon the detection of a predefined input from a user of the workstation;" "detect[ing] keyboard or cursor control device signals received while the on-screen programming circuit is producing video signals on the video monitor"; and "control[ing] the programmable switch in response to the keyboard or cursor control device signals detected."

The term "program" was discussed above, and we concluded that it does not connote sufficient structure by itself. Here however, the claim recites the additional term "logic." At plaintiff suggestion, the Court looks to the *McGraw Hill Dictionary of Scientific and Technical Terms,* which provides a definition of logic as a "[g]eneral term for the various the various types of gates, flip-flops, and other on/off circuits used to perform problem functions in a digital computer." This definition suggests that the term logic circuit evokes a meaning to those skilled in the electrical arts connotive of various structures. Particularly, the term at the very least suggests that it is a type of "on/off circuit." Even though quite a number of circuits could perform all of the stated functions, in each case, the term "logic circuit" while it does not specifically evoke a particular structure, conveys to one skilled in the art a variety of structures known as "on/off circuits." Further, while the term "program" itself connotes no structure, in this case, the adjective "programmed" serves to further limit the type of logic circuits that satisfy the claim to those that make decisions based on " a sequence of coded instructions."

Nonetheless, an on/off circuit that makes decisions based on a sequence of coded instructions is still way too imprecise of a structural character to support the ambitious program of the four functions stated, as nearly a limitless array of such circuits could be concocted. As, Laitram v. Rexnord, Inc., 939 F.2d 1533 (Fed.Cir.1991), emphasizes, the "recitation of some structure in a means plus function element does not preclude the applicability of section 112(6)." *Id*. at 1536. Hence, the Court concludes that with regard to this element, the presumption that Paragraph 6 does not apply is rebutted.

Certain of the "circuit," "unit", and "interface" claims elements recite position within the system. The Court must say that these additional location limitations do not save the otherwise functional elements from the applicability of paragraph 6. For example, Claims 1, 11, 20 and 26 of the '096 patent each require *second interface circuit* to be "disposed between the programmable switch and the selected computer." Plaintiff argues that "[t]he sufficiency of the structural recitation is buttressed where the claim also describes where the structure for performing the function is located, or how the structure is connected to other structure in the claim." Plaintiff cites *Rodime PLC,* 174 F.3d at 1303 ("The claim also recites the specific location and interconnection of these structural sub-elements"), and *Cole,* 102 F.3d at 531 ("The claim describes not only the structure that supports the tearing function, but also its location ... and extent ...."') for this proposition. This Court would note, however, that, in *Rodime PLC,* "the claim provide[d] a list of the structure underlying the means .... a pivot shaft ... a positioning arm ... a bearing assembly ... a stepper motor." *Rodime,* 174 F.3d at 1303. Similarly, in *Cole,* the claim "describe[d] the structure supporting the tearing function (*i.e.,* perforations)." *Cole,* 102 F.3d at 531. Here however, no sufficient structure is described for any of the relevant claim elements. Therefore there is no structural recitation to be buttressed.

In conclusion, all of the "circuit," "unit", and "interface" claim elements are means-plus-function elements, limited to the structures disclosed in specification and drawings for performing the relevant function or functions, and their equivalents. (As we shall see, the accused products do not contain any of these claim elements- *i.e.,* in that no product contains all the limitations of any of these elements, as imposed by the specification and the drawings).

V. The Court's Construction of the Disputed Items

[23] [24] Based on the foregoing principles and reasoning, the Court has construed the disputed claim terms as follows:

A. *Programmable Switch* is a programmable device that opens or closes a circuit to form a direct path between inputs and outputs.

B. *First interface circuit* is a means-plus-function element. The '096 patent specification does not expressly disclose a *first interface circuit,* but rather discloses a structure corresponding to the *first interface circuit* limitation at col. 3, lns. 41-45, and is shown in Figure 2 as element 82 *Keyboard/Mouse Interface*. The Court construes the *first interface circuit* required by claims 1, 11, 20 and 26 of the '096 patent to cover only the *Keyboard/Mouse Interface* disclosed at col. 3, lns. 41-45 and figure 2 as element 82, which is a separate and distinct unit that performs some interface function, and its equivalents.

C. *On-Screen Programming Circuit* is a means-plus-function element. The '096 patent specification discloses the *on-screen programming circuit* limitation at col. 10, ln. 66 through col. 13, ln. 13, and is shown in Figures 2 and 12A as element 99. The Court construes the *on-screen programming circuit* required by Claims 1, 11, 20 and 26 of the '096 patent to cover only the structure disclosed at col. 10, ln. 66 through col. 13, ln. 13, and in Figures 2 and 12A as element 99, and its equivalents.

D. *Second interface circuit* is a means-plus-function element. The '096 patent specification does not expressly disclose a *second interface circuit,* but rather discloses a structure corresponding to the *second interface circuit* limitation at col. 5, lns. 13-27, and is shown in Figure 3 as element 134 also named *Keyboard/Mouse Interface*. The Court construes the *first interface circuit* required by claims 1, 11, 20 and 26 of the '096 patent to cover only the *Keyboard/Mouse Interface* disclosed at col. 3, lns. 41-45 and figure 2 as element 82, which is a separate and distinct unit that performs some interface function, and its equivalents.

E. *Programmed logic circuit* is a means-plus-function element. The '096 patent specification does not expressly disclose a *programmed logic circuit,* but rather discloses a structure corresponding to the *programmed logic circuit* limitation at col. 3, lns. 38-49, col. 3, ln. 65 through col. 4, ln. 12, which is shown in Figure 2 as at least the combination of elements 80(a central processing unit), 84 (a QUAD UART), 84a-d (four leads) and 88 (differential line drivers receivers). The Court construes the *programmed logic circuit* required by Claims 1, 11, 20 and 26 of the '096 patent to cover only the structure disclosed col. 3, lns. 38-49, col. 3, ln. 65 through col. 4, ln. 12, and in Figure 2 as at least the combination of a central processing unit, a QUAD UART, four leads and differential line drivers receivers, and this structures equivalents.

F. *Overland video signals* are video signals from a first source that are "laid or spread over or across" or on top of video signals generated from a second source such that the video signal from the first source could be laid on top of the video signal from the second source on a pixel-by-pixel basis.

G. *First signal conditioning units* is a means-plus-function element. The '196 patent specification discloses the *first signal conditioning units* limitation at col. 3, lns. 6-10 and 30-49, which is shown in Figures 1 and 2 as element 70. The Court construes the *first signal conditioning units* required by '196 patent to cover only the structure disclosed at col. 3, lns. 6-10 and 30-49, and in Figures 1 and 2 as element 70, comprising at least at least a keyboard/mouse interface, a central processing unit, differential line drivers/receivers and a synchronization signal extract circuit.

H. A *serial data packet* a single data packet that is capable of including at least both keyboard and mouse electronic signals.

I. *Central crosspoint switch* is a centrally located device that includes a number of bidirectional inputs and outputs and opens and closes a circuit to form a direct path between them.

J. *Second Signal conditioning Units* is a means-plus-function element. The '176 patent specification

discloses the second signal conditioning units limitation at col. 1, lns. 60-65, col.3, lns. 11-18 and col. 5, ln. 13 through col. 6, ln. 14, and is shown in Figures 1 and 3 as element 76. The Court construes the *second signal conditioning units* required by '196 patent to cover only the structure disclosed at col. 1, lns. 60-65, col.3, lns. 11-18 and col. 5, ln. 13 through col. 6, ln. 14, and in Figures 1 and 3 as element 76, comprising at least a keyboard/mouse interface circuit, a central processing unit, differential line drivers/receivers and a synchronization signal combine circuit.

K. *Computer-side interface* is a means-plus function element. The '264 patent specification does not expressly disclose a computer-side interface, but rather discloses a structure corresponding to the computer-side interface limitation at col. 1, lns. 60-65, col.3, lns. 11-18 and col. 5, ln. 13 through col. 6, ln. 14, and in Figures 1 and 3 as element 76. The Court construes the *computer-side interface* required by '264 patent to cover only the structure disclosed at col. 1, lns. 60-65, col.3, lns. 11-18 and col. 5, ln. 13 through col. 6, ln. 14, and in Figures 1 and 3 as element 76, comprising at least a keyboard/mouse interface circuit, a central processing unit, differential line drivers/receivers and a synchronization signal combine circuit.

L. *User-side interface* is a means-plus function element. The '264 patent specification does not expressly disclose a computer-side interface, but rather discloses a structure corresponding to the computer-side interface limitation at col. 3, lns. 6-10 and 30-49, which is shown in Figures 1 and 2 as element 70. The Court construes the user-side interface required by '264 patent to cover only the structure disclosed at col. 3, lns. 6-10 and 30-49, and in Figures 1 and 2 as element 70, comprising at least at least a keyboard/mouse interface, a central processing unit, differential line drivers/receivers and a synchronization signal extract circuit.

M. Analog video overlay image generating circuit is a means-plus function element. The '264 patent specification does not expressly disclose an analog video overlay image generating circuit, but rather discloses a structure corresponding to the analog video overlay image generating circuit limitation at col. 11, ln. 2 through col. 12, ln 18, and is shown in Figure 12A as at least the combination of elements 358 (internal sync generator), 360 (sync switch), 362 (sync polarizer) and 364 (on-screen processor). The Court construes the *analog video overlay image generating circuit* required by the '264 patent, as the structure disclosed at col. 11, ln. 2 through col. 12, ln 18, and in Figure 12A as at least the comprising an internal sync generator (element 368); a sync switch (element 364); a sync polarizer (element 362); and 364 (an on-screen processor). The Court further construes this element as producing analog (as opposed to digital) overlay images, where *overlay* means to lay or spread over or across or on top of such that the video signal from the first source could be laid on top of the video signal from the second source on a pixel-by-pixel basis.

N. *Analog video overlay circuit* is a means-plus function element. The '264 patent specification does not expressly disclose an analog video overlay circuit, but rather discloses a structure corresponding to the analog video overlay circuit limitation at col. 12, ln. 15 through col. 13, ln 3 and at the table at the bottom of column 12, and is shown in Figure 12A as at least the combination of elements 352, 354, 356 (tri-state buffers), 366 (overlay control logic circuit), and 368, 370 and 372 (tri-state buffers). The Court construes the *analog overlay circuit* required by the '264 patent, as the structure disclosed at col. 12, ln. 15 through col. 13, ln 3, at the table at the bottom of col. 12, and in Figure 12A as at least the comprising two sets of three tri-state buffers (elements 352, 354, 356 and 368, 370 and 372) an overlay control logic circuit (element 366). The Court further construes this element as overlaying a portion of the analog video signals from analog video receiving circuit and the analog video signals generated by the analog video overlay image generating circuit analog overlay image, where *overlay* means to lay or spread over or across or on top of such that the video signal from the first source could be laid on top of the video signal from the second source on a pixel-by-pixel basis.

VI. Findings of Fact

A. ***Raritan's Paragon System***

1. The Paragon system DOES NOT have a programmable switch. A programmable switch is defined according to the patents-in-suit as a programmable device that opens or closes a circuit to form a direct path between inputs and outputs. Instead, the Paragon system contains a matrix switching unit ("MSU") that contains no path set up between its inputs and outputs.
2. The Paragon system DOES NOT contain a first interface circuit. A first interface circuit is defined according to the patents-in-suit as the keyboard/mouse interface disclosed at col. 3, lns. 41-45 shown Figure 2 as element 82 of the patents-in-suit, a separate unit for receiving and conditioning keyboard and cursor control device signals from the workstation, and performing some interface function. Instead, the Paragon system merely comprises connectors and wires, not an interface circuit, such as the keyboard/mouse interface circuit.

3. The Paragon system DOES NOT contain an on-screen programming circuit. An on-screen programming circuit is defined according to the patents-in-suit as the circuit disclosed at col. 10, ln. 66 through col. 13, ln. 13, and shown in Figures 2 and 12A of the patents in suit as element 99 that produces video signals internal to the central switch, and combines these internally generated video signals with a portion of the video signals from the remote computer. Instead, the Paragon system only contains an on-screen processor (*e.g.,* a Myson MTV018 chip), which does not comprise all of the circuitry nor can it perform all the functions of the claimed on-screen programming circuit.

4. The Paragon system DOES NOT have a programmed logic circuit. A programmed logic circuit is defined according to the patents-in-suit as a circuit that transmits the keyboard and cursor control device signals to the programmable switch, controls the on-screen programming circuit to produce the video signals upon the detection of a predefined input from a user of the workstation, operates to detect keyboard or cursor control device signals received while the on-screen programming circuit is producing video signals on the video monitor, and controls the programmable switch in response to the keyboard or cursor control device signals detected, the programmed logic circuit comprising at least a central processing unit, a quad UART, and differential line drivers/receivers as shown in Figure 2 of the patents in suit. The Paragon system merely contains a central processing unit.

5. The Paragon system DOES NOT contain a second interface circuit. A second interface circuit is defined according to the patents-in-suit as the keyboardmouse interface disclosed at col. 5, lns. 13-27, and shown in Figure 3 as element 134, a separate and distinct unit for supplying the keyboard and cursor control device signals routed through the programmable switch to the selected computer. Instead, the Paragon system comprises a central processing unit, not an interface circuit, keyboard mouse interface circuit, for directly supplying keyboard and cursor control device signals to a selected computer.

6. The Paragon system DOES NOT have a programmed microprocessor coupled to a first interface circuit. A programmed microprocessor is defined according to the patents-in-suit as any known device that is capable of transmitting the keyboard and cursor control device signals to the programmable switch, controlling the on-screen programming circuit to produce the video signals, detecting keyboard or cursor control device signals, and controlling the programmable switch. Although the Paragon system contains a central processing unit, it does not have a first interface circuit as discussed above nor does it have any interface circuitry that is separate and distinct from the central processing unit.

7. The Paragon system DOES NOT have a processor coupled to a first interface circuit. A processor is defined as any known device that is capable of transmitting the keyboard and cursor control device signals to the programmable switch, controlling the on-screen programming circuit to produce the video signals, detecting keyboard or cursor control device signals, and controlling the programmable switch. Although the Paragon system contains a central processing unit, it does not have a first interface circuit as discussed

above nor does it have any interface circuitry that is separate and distinct from the central processing unit.

8. The Paragon system CANNOT produce overlay video signals or overlaid video signals. Overlay or overlaid video signals are defined according to the patents-in-suit as laid or spread over or across or on top of video signals generated from a second source such that the video signal from the first source could is laid on top of the video signal from the second source on a pixel-by-pixel basis. Instead, the Paragon system is only capable of selecting one video signal from one video source at a given time for display on the video monitor. That is, the Paragon system cannot combine or overlay (*i.e.*, lay or spread over or across or on top of) the video signal from a first source on top of the video signal from a second source on a pixel-by-pixel basis.

9. The Paragon system DOES NOT contain a first signal conditioning unit. A first signal conditioning unit is defined according to the patents-in-suit as a device 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, where each single serial data packet is capable of including both the keyboard and mouse electronic signals, the device covering only the structure disclosed at col. 3, lns. 6-10 and 30-49, and in Figures 1 and 2 as element 70, and thus comprising at least a keyboard/mouse interface circuit, a central processing unit, differential line drivers/receivers and a synchronization signal extract circuit.Instead, the Paragon system contains a user station ("UST") which does not comprise at least the keyboard/mouse interface circuit, nor can it create a single serial data packet including both the keyboard and mouse electronic signals.

10. The Paragon system DOES NOT create any serial data packets, where a serial data packet is defined according to the patents-in-suit as one that is capable of containing both keyboard and mouse electronic signals. Instead, the keyboard, mouse and numerous other signals in the Paragon system are always in separate and distinct packets.

11. The Paragon system DOES NOT have a central crosspoint switch. A central crosspoint switch is defined according to the patents-in-suit as a device that includes a number of bidirectional inputs and outputs and opens and closes a circuit to form a direct path between them. Instead, the Paragon product contains a sophisticated MSU that contains no path set up between its inputs and outputs.

12. The Paragon system DOES NOT contain a second signal conditioning unit. A second signal conditioning unit is defined according to the patents-in-suit as a device for receiving serial data packets from the central switch, for supplying serial data packets to a keyboard and mouse inputs of the remote computer, for receiving video signals produced by the remote computer systems and for transmitting the encoded video signals to the central switch, the device covering only the structure disclosed at col. 1, lns. 60-65. col.3, lns. 11-18 and col. 5, ln. 13 through col. 6, ln. 14, and in Figures 1 and 3 as element 76, and thus comprising at least a keyboard mouse interface circuit, a central processing unit, differential line drivers receivers and a synchronization signal combine circuit. Instead, the Paragon system contains a computer interface module ("CIM") which does not comprise at least the keyboard mouse interface circuit.

13. The Paragon system DOES NOT contain a computer-side interface. A computer-side interface is defined according to the patents-in-suit as the A *computer-side interface* is defined according to the patents-in-suit as the second signal conditioning circuit or pod 76 disclosed in the '264 patent for simultaneously physically connecting to independent, dedicated cables of respective keyboard and analog video outputs, the device comprising at least a keyboard/mouse interface circuit, a central processing unit, differential line drivers/receivers and a synchronization signal combine circuit. Instead, the Paragon system contains a computer interface module ("CIM") which does not comprise at least the keyboard/mouse interface circuit.

14. The Paragon system DOES NOT contain a user-side interface. A user-side interface is defined according to the patents-in-suit as the first signal conditioning circuit or pod 70 disclosed in the '264 patent, which is a device for physically connecting to a first-set of independent, dedicated cables of a first keyboard and an analog video input of a first monitor, the device comprising at least a keyboard/mouse interface circuit, a central processing unit, differential line drivers/receivers and a synchronization signal extract circuit.. Instead, the Paragon system contains a user station ("UST") which does not comprise at least the keyboard/mouse interface circuit.

15. The Paragon system DOES NOT have an analog video overlay image generating circuit. An analog video overlay image generating circuit is defined according to the patents-in-suit as the portionas the structure disclosed at col. 11, ln. 2 through col. 12, ln 18, and in Figure 12A of the patents-in-suit as comprising at least an on-screen processor, a horizontal and vertical synchronization signal generator, a synchronization signal switch and a synchronization polarizer, that produces analog overlay video signals internal to the switching system, where *overlay* means to lay or spread over or across or on top of such that the video signal from the first source can be laid on top of the video signal from the second source on a pixel-by-pixel basis. As discussed above, the Paragon system cannot produce overlay or overlaid video signals. Further, although the Paragon system contains an on-screen processor, it does not contain the additional circuitry required to perform the function of the analog video overlay image generating circuit of producing overlaid video signals.

16. The Paragon system DOES NOT contain an analog video overlay circuit. An analog video overlay circuit is defined according to the patents-in-suit as the structure disclosed at col. 12, ln. 15 through col. 13, ln 3, at the table at the bottom of col. 12, and in Figure 12A as at least the comprising two sets of three tri-state buffers and an overlay control logic circuit, where the analog video overlay circuit perform the function of overlaying a portion of the analog video signals from analog video receiving circuit and the analog video signals generated by the analog video overlay image generating circuit analog overlay image, and where overlay means to lay or spread over or across or on top of such that the video signal from the first source can be laid on top of the video signal from the second source on a pixel-by-pixel basis. The Paragon system is incapable of combining or overlaying the internally generated video signals with or on top of a portion of the video signals from the selected computer (*i.e.*, the Paragon system can only select one video signal or the other for display on the video monitor). Neither does the Paragon system contain the circuitry required to perform the video combining function of the analog video overlay circuit.

B. ***Raritan's MasterConsole Systems***

1. The MasterConsole products DO NOT have a programmable switch. A programmable switch is as defined above. Instead, the MasterConsole products merely contain plain switches.
2. The MasterConsole products DO NOT have a first interface circuit. A first interface circuit is as defined above. The MasterConsole products contain only connectors and wires which perform no interface function.

3. The MasterConsole products DO NOT have an on-screen programming circuit. An on-screen programming circuit is as defined above. Instead, the MasterConsole products contain an on-screen processor (*e.g.*, a Motorola chip. part number MC141543), which does not comprise all of the circuitry nor can it perform the functions of the claimed on-screen programming circuit.

4. The MasterConsole products DO NOT have a programmed logic circuit coupled to a first interface circuit. A programmed logic circuit, coupled to and first interface circuit are as defined above. The MasterConsole products do not have a first interface circuit as discussed above, and thus cannot be coupled to a programmed logic circuit. Instead, the MasterConsole products merely contain a central processing unit, and do not have any interface circuitry separate and distinct from the central processing unit.

5. The MasterConsole products DO NOT have a second interface circuit. A second interface circuit is as defined above. Instead, the MasterConsole products merely comprises connecters and wires, not an interface circuit, such as the keyboard/mouse interface.

6. The MasterConsole products DO NOT have a programmed microprocessor coupled to a first interface circuit. A programmed microprocessor, coupled to and first interface circuit are as defined above. The MasterConsole products do not have a first interface circuit as discussed above, and thus cannot be coupled to a programmed microprocessor. Instead, the MasterConsole products merely contain a central processing unit, without any interface circuitry separate and distinct from the central processing unit.

7. The MasterConsole products DO NOT have a processor coupled to a first interface circuit. A processor, coupled to and first interface circuit are as defined above. The MasterConsole products DO NOT have a first interface circuit as discussed above, and thus cannot be coupled to any processor. Instead, the MasterConsole products merely contain a central processing unit, without any interface circuitry separate and distinct from the central processing unit.

8. The MasterConsole products DO NOT have a *processor coupled to a first interface circuit*. A *processor, coupled to* and *first interface circuit* are as defined above. The MasterConsole products DO NOT have a *first interface circuit* as discussed above, and thus cannot be *coupled to* any *processor*. Instead, the MasterConsole products merely contain a central processing unit, without any interface circuitry separate and distinct from the central processing unit.

9. The MasterConsole products CANNOT produce overlay video signals or overlaid video signals. Overlay or overlaid video signals are as defined above. The MasterConsole products are only capable of selecting one video signal from one video source at a given time for display on the video monitor. That is, the MasterConsole products cannot combine or overlay (*i.e.,* lay or spread over or across or on top of) the video signal from a first source on top of the video signal from a second source on a pixel-by-pixel basis.

10. The MasterConsole products DO NOT contain a *computer-side interface*. A *computer-side interface* as defined above is element 76 in Figures 1 and 3 of the patents-in-suit, which show it is its own separate and distinct unit. None of the MasterConsole products comprise a two- or three-component structure. Instead, the MasterConsole products are all single-component devices (*i.e.,* a single switch box). Therefore, there is no separate and distinct computer-side interface.

11. The MasterConsole products DO NOT contain a *user-side interface*. A *user-side interface* as defined above is element 70 in Figures 1 and 2 of the patents-in-suit. None of the MasterConsole products comprise a two- or three-component structure. Instead, the MasterConsole products are all single-component devices (*i.e.,* a single switch box). Therefore, there is no separate and distinct user-side interface.

12. The MasterConsole products DO NOT have an analog video overlay image generating circuit. An analog video overlay image generating circuit is as defined above. Also, as discussed above, the MasterConsole products cannot produce overlay or overlaid video signals. Further, although the MasterConsole products contain an on-screen processor, none of the MasterConsole products contain the additional circuitry required to perform the overlay function of the analog video overlay image generating circuit.

13. The MasterConsole products DO NOT contain an analog video overlay circuit. An analog video overlay circuit is as defined above. The MasterConsole products are incapable of combining the internally generated video signals with or overlaying the internally generated video signals on top of a portion of the video signals from the selected computer (*i.e.,* the MasterConsole products can only select one video signal or the

other for display on the video monitor). That is, the MasterConsole products DO NOT contain the circuitry required to perform the video combining function of the analog video overlay circuit.

VII. Conclusions

A. *The Paragon*

[25] 1. The Paragon system DOES NOT have the *programmable switch* required by Claims 1, 6-7, 11, 20 and 26 of the '096 patent. Therefore, the Paragon system cannot infringe these claims, either literally or under the doctrine of equivalents.

2. The Paragon system DOES NOT have the *first interface circuit* required by Claims 1, 11, 20 and 26 of the '096 patent. Therefore, the Paragon system cannot infringe these claims, either literally or under the doctrine of equivalents.

3. The Paragon system DOES NOT contain the *on-screen programming circuit* required by Claims 1, 11, 20 and 26 of the '096 patent. Therefore, the Paragon system cannot infringe these claims, either literally or under the doctrine of equivalents.

4. The Paragon system DOES NOT have the *programmed logic circuit coupled to a first interface circuit* required by Claim 1 of the '096 patent. Therefore, the Paragon system cannot infringe this claim, either literally or under the doctrine of equivalents.

5. The Paragon system DOES NOT contain the *second interface circuit* required by Claims 1, 11, 20 and 26 of the '096 patent. Therefore, the Paragon system cannot infringe these claims, either literally or under the doctrine of equivalents.

6. The Paragon system DOES NOT contain the *programmed microprocessor coupled to a first interface circuit* required by Claims 11 and 20 of the '096 patent. Therefore, the Paragon system cannot infringe these claims, either literally or under the doctrine of equivalents.

7. The Paragon system DOES NOT contain the *processor coupled to a first interface circuit* required by Claim 26 of the '096 patent. Therefore, the Paragon system cannot infringe this claim, either literally or under the doctrine of equivalents.

8. The Paragon system CANNOT produce the *overlay video signals* or *overlaid video signals* required by Claims 6-7, 10 and 32 of the '096 patent. Therefore, the Paragon system cannot infringe these claims, either literally or under the doctrine of equivalents.

9. The Paragon system DOES NOT contain the *first signal conditioning unit* required by the claims of the '176 patent. Therefore, the Paragon system cannot infringe the claims of the '176 patent, either literally or under the doctrine of equivalents.

10. The Paragon system DOES NOT contain the *central crosspoint switch* required by the claims of the '176 patent. Therefore, the Paragon system cannot infringe the claims of the '176 patent, either literally or under the doctrine of equivalents.

11. The Paragon system DOES NOT contain the *second signal conditioning unit* required by the claims of the '176 patent. Therefore, the Paragon system cannot infringe the claims of the '176 patent, either literally or under the doctrine of equivalents.

12. The Paragon system DOES NOT create *a serial data packet,* as required by the claims of the '176 patent. Therefore, the Paragon system cannot infringe the claims of the '176 patent, either literally or under the doctrine of equivalents.

13. The Paragon system DOES NOT contain the *computer-side interface* required by Claims 1-10, 14 and 16 of the '264 patent. Therefore, the Paragon system cannot infringe these claims, either literally or under the doctrine of equivalents.

14. The Paragon system DOES NOT contain the *user-side interface* required by Claims 1-10, 14 and 16 of the '264 patent. Therefore, the Paragon system cannot infringe these claims, either literally or under the doctrine of equivalents.

15. The Paragon system DOES NOT contain the *analog video overlay image generating circuit* required by Claims 1-10, 14 and 16 of the '264 patent. Therefore, the Paragon system cannot infringe these claims, either literally or under the doctrine of equivalents.

16. The Paragon system DOES NOT contain the *analog video overlay circuit* required by Claims 1-10, 14 and 16 of the '264 patent. Therefore, the Paragon system cannot infringe these claims, either literally or under the doctrine of equivalents.

B. *The MasterConsole Products*

1. The MasterConsole products DO NOT have the programmable switch required by Claims 1, 6-7, 11, 20 and 26 of the '096 patent. Therefore, the MasterConsole products cannot infringe these claims, either literally or under the doctrine of equivalents.
2. The MasterConsole products DO NOT have the first interface circuit required by Claims 1, 11, 20 and 26 of the '096 patent. Therefore, the MasterConsole products cannot infringe these claims, either literally or under the doctrine of equivalents.

3. The MasterConsole products DO NOT have the on-screen programming circuit required by Claims 1, 11, 20 and 26 of the '096 patent. Therefore, the MasterConsole products cannot infringe these claims, either literally or under the doctrine of equivalents. Therefore, the MasterConsole products cannot infringe these claims, either literally or under the doctrine of equivalents.

4. The MasterConsole products DO NOT contain the programmed logic circuit coupled to a first interface circuit required by Claim 1 of the '096 patent. Therefore, the MasterConsole products cannot infringe this claim, either literally or under the doctrine of equivalents.

5. The MasterConsole products DO NOT have the second interface circuit required by Claims 1, 11, 20 and 26 of the '096 patent. Therefore, the MasterConsole products cannot infringe these claims, either literally or under the doctrine of equivalents.

6. The MasterConsole products DO NOT contain the programmed microprocessor coupled to a first interface circuit required by Claims 11 and 20 of the '096 patent. Therefore, the MasterConsole products cannot infringe these claims, either literally or under the doctrine of equivalents.

7. The MasterConsole products DO NOT contain the processor coupled to a first interface circuit required by Claim 26 of the '096 patent. Therefore, the MasterConsole products cannot infringe this claim, either literally or under the doctrine of equivalents.

8. The MasterConsole products cannot produce overlay video signals or overlaid video signals required by

Claims 6-7, 10 and 32 of the '096 patent. Therefore, the MasterConsole products cannot infringe these claims, either literally or under the doctrine of equivalents.

9. The MasterConsole products DO NOT contain the computer-side interface required by claims 1-10, 14 and 16 of the '264 patent. That is, no MasterConsole product is a two- or three-component structure. Therefore, the MasterConsole products cannot infringe these claims, either literally or under the doctrine of equivalents.

10. The MasterConsole products DO NOT contain the user-side interface required by claims 1-10, 14 and 16 of the '264 patent. Therefore, the MasterConsole products cannot infringe these claims, either literally or under the doctrine of equivalents.

11. The MasterConsole products DO NOT have the analog video overlay image generating circuit required by claims 1-10, 14 and 16 of the '264 patent. Therefore, the MasterConsole products cannot infringe these claims, either literally or under the doctrine of equivalents.

12. The MasterConsole products DO NOT contain the analog video overlay circuit required by claims 1-10, 14 and 16 of the '264 patent. Therefore, the MasterConsole products cannot infringe these claims, either literally or under the doctrine of equivalents.

VIII. Ruling

There is no literal infringement of the patents in suit nor under the doctrine of equivalents; the accused devices do not, but must, embody every element of any of the claims as properly interpreted.

Defendant is entitled to judgment in its favor on the ground of non-infringement of the patents in suit; and no evidence having been, or needing to be, taken in the circumstances herein on the defendant's cross claims, the same are hereby dismissed, without prejudice, and the Clerk of the Court shall mark this action closed and all pending motions denied as moot.

The foregoing shall constitute the Findings of Fact and Conclusions of Law pursuant to Rule 52(a) Fed.R.Civ.P. and Judgment accordingly shall be entered pursuant to Rule 58(c) Fed.R.Civ.P.

So ORDERED.