IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CIENA CORPORATION, a Delaware Corporation, and CIENA PROPERTIES, INC., a Delaware Corporation,	:	
Plaintiffs,	:	
v.	:	Civil Action No. 00-662-JJF
CORVIS CORPORATION, a Delaware Corporation,	:	
Defendant.	:	

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O P I N I O N

September 9, 2004

Wilmington, Delaware

Farnan, District Judge.

This action was brought by CIENA Corporation and CIENA Properties, Inc. (collectively, "CIENA") against Corvis Corporation ("Corvis") for infringement of United States Patent Nos. 5,938,309 (the "'309 patent"); 5,784,184 (the "'184 patent"); 5,504,609 (the "'609 patent") and 5,557,439 (the "'439 patent"). This action was tried before three different juries with one jury hearing the issue of infringement, one jury hearing the issue of validity and a third jury hearing a retrial of CIENA's claim of infringement of the '609 Patent. The first jury returned a verdict of infringement of the '309 Patent and non-infringement of the '439 and '184 Patents. The first jury could not reach a decision with respect to the '609 patent necessitating a retrial before a third jury. The second jury considering the issues of validity found that the '439 and '309 patents were valid. On retrial of CIENA's claims for infringement of the '609 patent, the third jury returned a verdict of infringement.

In addition to the defense of invalidity tried before the second jury, Corvis also asserted the defense of the reverse doctrine of equivalents during the first and third infringement trials. Over Corvis' objection, the Court determined that this defense should be removed from the jury's consideration and tried before the Court. This Opinion constitutes the Court's findings

of fact and conclusions of law regarding the application of the reverse doctrine of equivalents.

BACKGROUND

I. The Technology Generally

The patents-in-suit generally relate to optical communications systems which carry plural optical signals of different wavelengths simultaneously. '609 patent, col. 1, ll. 5-8; '309 patent, col. 1, ll.5-10. One of the difficulties with optical communication systems is that they are configured to carry an optical channel of only a single wavelength over one or more optical waveguides. '609 patent, col. 1, ll. 22-24; '309 patent, col. 1, ll. 24-26. Wavelength division multiplexing ("WDM") is an approach for increasing the capacity of the existing fiber optic network without having to lay additional fiber optic cables which are very expensive. '609 patent, col. 1, ll. 38-42; '309 patent, col. 1, ll. 42-44. In a WDM system, plural optical signal channels are carried over a single waveguide with each channel being assigned a particular wavelength. '609 patent, col. 1, ll. 42-44; '309 patent, col. 1, ll. 44-46. The technology of a WDM system increases wavelength capacity over a single fiber by permitting the transmission of closely spaced wavelengths.

To make WDM systems compatible with existing networks, signals from a received transmission wavelength from a customer

need to be converted to a specific channel wavelength within the WDM system. '609 patent, col. 1, ll. 49-52; '309 patent, col. 1, ll. 51-54. WDM systems that employ many channels are referred to as dense WDM, where channel spacings are about one nanometer or less. '609 patent, col. 1, ll. 53-55; '309 patent, col. 1, ll. 54-56. There were problems associated with the conversion technology available in the industry, because it broadened the spectral line width of the optical carrier and had difficulty handling different data rates from optical channels. '609 patent, col. 2, ll. 7-15; '309 patent, col. 1, l. 63-col.2, l. 6. Thus, there was a need for improved WDM optical communications systems. The '609 and '309 patents address various aspects of such improved systems and teach how the WDM signal is transmitted and amplified so that it will reach the proper destination and how the wavelengths are combined and separated out so that the proper signal is processed and sent to the appropriate customer.

A. The '609 Patent

The invention described in the'609 patent is an attempt to provide an improved WDM optical communication system which can receive incoming optical transmission signals and place information from those signals onto optical channels within the WDM system. '609 patent, col. 2, ll. 28-31. The system in the '609 patent uses a series of optical remodulators to take the input signals from the various optical transmitters and output

the information onto optical channels within the channel plan of the WDM optical system. '609 patent, col. 2, l. 28-col.3, l. 5.

The jury concluded that Corvis' fiber optic communications system known as the CorWave literally infringed independent claim 6 and dependent claims 7 and 8 of the '609 patent.

In full, claim 6 of the '609 patent provides:

> 6. A wavelength division multiplexed optical communication system for transmitting a plurality of optical communication channels on an optical waveguide, each optical communication channel having a distinct channel wavelength, the optical communication system comprising:
>
> a plurality of transmission elements, each of the transmitting elements including a laser and a modulator for transmitting an information-bearing optical signal having a transmission element wavelength,
>
> a plurality of remodulators optically communicating with the plurality of transmission elements for placing the information from each of the transmission element information-bearing optical signals onto separate optical channels in the wavelength division multiplexed optical communication system, each of the remodulators comprising:
>
> an opto-electronic conversion element for receiving a transmission element information-bearing optical signal and outputting an electrical signal corresponding to information from the transmission element information-bearing optical signal;
>
> a remodulator laser for emitting a continuous wave optical carrier signal, the wavelength of the optical carrier signal being the wavelength of an optical channel in the wavelength division multiplexed optical communication system;

an external modulator for modulating the optical carrier signal emitted by remodulator laser, the external modulator communicating with the electrical signal output from the opto-electronic conversion element for imparting the information from the electrical signal to the optical signal through the external modulator to create an information-bearing optical signal corresponding to an optical channel in the wavelength division optical communication system;

an optical waveguide optically communicating with each of the remodulators for receiving a plurality of optical channels, each optical channel having a unique wavelength;

a plurality of optical demultiplexers optically communicating with the optical waveguide, each demultiplexer including a Bragg grating member having a wavelength band of high reflectivity, the wavelength band of high reflectivity for each Bragg grating member corresponding to an optical channel in the wavelength division multiplexed optical communication system; and

a plurality of optical receivers optically communicating with the demultiplexers such that each optical receiver receives an optical channel.

'609 patent, col. 9, l. 1 - col. 10, l. 17.

Claim 7 of the '609 patent provides:

7. A wavelength division multiplexed optical communication system as recited in claim 6 wherein the external modulator is an electro-optic external modulator.

'609 patent, col. 10, ll. 18-20.

Claim 8 of the '609 patent provides:

8. A wavelength division multiplexed optical communication system as recited in claim 7 wherein the electro-optic

external modulator includes a Mach-Zehnder interferometer.

'609 patent, col. 10, ll. 21-23.

B. The '309 Patent

The '309 patent attempts to improve the technology of the '609 patent by providing improved compatibility between optical transmitters of various data rates and WDM optical communication systems. '309 patent, col. 2, ll. 14-17. The '609 patent uses optical remodulators to take input signals from optical transmitters and output the information onto optical channels within the channel plan of a WDM system. However, these systems typically use a one-to-one correspondence between an optical channel input to an optic remodulator and an output channel produced by the optical remodulator. '309 patent, col. 1, ll. 58-63. This is problematic when the optical transmitters providing the source signals have different data rates from the optical channels in the WDM system. Thus, it became desirable to have something other than a one-to-one correspondence and to alter the bit rate of an incident optical signal to a rate better suited for propagation within a transmission line of a WDM optical system. '609 patent, col. 1, l.66-col. 2, l. 6.

The jury found that Corvis literally infringed independent claim 7 and dependent claim 12 of the '309 patent. In full, independent claim 7 of the '309 patent provides:

7. An optical communication apparatus, comprising:

a first photodetector configured to sense a first optical signal having a first data rate, and generate a first electrical signal in response thereto;

an electrical demultiplexing circuit having an input coupled to said first photodetector and a plurality of outputs, said electrical demultiplexing circuit generating each of a plurality of second electrical signals at a respective one of said plurality of outputs in response to said first electrical signal;

a plurality of first optical transmitters, each of which being respectively coupled to a respective one of said plurality of outputs of said electrical demultiplexing circuit, said plurality of first optical transmitters generating a plurality of second optical signals, each a respective one of a plurality of wavelengths and in response to a respective one of said plurality of second electrical signals at least, at least one of said plurality of second optical signals having a second data rate less than said first data rate;

a plurality of second photodetectors, each of which being configured to sense a respective one of said plurality of second optical signals, and generate a respective one of a plurality of third electrical signals in response thereto;

an electrical multiplexing circuit having a plurality of inputs, each of which being coupled to a respective one of said second plurality of photodetectors, and an output supplying a fourth electrical signal in response to said plurality of third electrical signals;

a second optical transmitter emitting a third optical signal at a third data rate.

‘309 patent, col. 9, l. 64 - col. 10, l. 27.

Claim 12 of the ‘309 patent is dependent on claim 11 of the ‘309 patent. However, claim 11 of the ‘309 patent depends on claim 8, which in turn depends on claim 7. Accordingly, claim 8

of the ‘309 patent provides:

> 8. An optical communication apparatus in accordance with claim 7, further comprising:
>
> an optical mulitplexer coupled to said plurality of first optical transmitters, said optical mulitplexer being configured to direct said plurality of second optical signals onto an optical communication path.

‘309 patent, col. 10, ll. 29-34.

Claim 11 of the ‘309 patent provides:

> 11. An optical communication apparatus in accordance with claim 8, further comprising:
>
> an optical demultiplexer having an input coupled to said optical communication path and a plurality of outputs, each of which being coupled to a respective one of said plurality of second photodetectors, said optical demulitplexer supplying a respective one of said plurality of second optical signals to said second photodetectors via a respective one of said plurality of outputs of said optical demultiplexer.

‘309 patent, col. 10, ll. 42-51.

Claim 12 of the ‘309 patent provides:

> 12. An optical communication apparatus in accordance with claim 11, wherein said optical demultiplexer further comprises:
>
> an optical splitter having a input coupled to said optical communication path, and a plurality of outputs;
>
> a plurality of optical selectors, each of which respectively coupled to one of said plurality of outputs of said optical splitter, each of said plurality of optical selectors supplying a corresponding one of said plurality of second optical signals to a respective one of said plurality of second photodetectors.

‘309 patent, col. 10, ll. 51-61.

II. The Court's Claim Construction

Following a Markman hearing and before trial, the Court issued its claim construction of the disputed terms in this case. With respect to those terms which are relevant to the instant issue, the Court concluded as follows:

"Information bearing optical signal" means "an optical signal which has been coded with any type of information; any optical signal that has been modulated constitutes an information bearing optical signal."

"Non-information-bearing optical signal" means "an optical signal which has not been modulated."

"Plurality of optical communication channels" means "two or more optical communication channels; each optical communication channel providing an optical signal path separated in frequency from other optical signal paths."

"Optical remodulator" or "remodulator" means "an optical interface between space-division transmission and wavelength-division transmission."

"External modulator" means "a modulator that acts on the optical carrier signal output from a signal emitter, as opposed to acting on the signal emitter itself."

"Coupled" means "the transfer of energy over a conductive or dielectric medium, such as an optical waveguide or wire."

DISCUSSION

I. Whether The Reverse Doctrine Of Equivalents Is A Viable Defense

Although rarely offered as a defense, the reverse doctrine of equivalents has been recognized in patent law for over 100 years. The principle was first laid out by the Supreme Court in 1898 in Boyden Power-Brake Co. v. Westinghouse, 170 U.S. 537, 568 (1898). Distinguishing between infringement of the "letter" of a claim and infringement of the "spirit" of a claim, the Court explained:

> [E]ven if it be conceded that the [accused] device corresponds with the letter of the [patentee's] claims, that does not settle conclusively the question of infringement. We have repeatedly held that a charge of infringement is sometimes made out, though the letter of the claims be avoided. The converse is equally true. The patentee may bring the defendant within the letter of his claims, but if the latter has so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted, when he has done nothing in conflict with its spirit and intent.

Id. at 568. Later, in Graver Tank & Manufacturing Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950), the Supreme Court reaffirmed this principle stating:

> The wholesome realism of [the doctrine of equivalents] is not always applied in favor of a patentee but is sometimes used against him. Thus, where a device is so far changed in principle from a

> patented article that it performs the same or a similar function in a substantially different way, but nevertheless falls within the literal words of the claim, the doctrine of equivalents may be used to restrict the claim and defeat the patentee's action for infringement.

CIENA suggests that the reverse doctrine of equivalents is no longer a viable defense, because both Westinghouse and Graver Tank were decided before Congress enacted 35 U.S.C. § 112. With the requirements for the written description, enablement, definiteness and means-plus-function claims codified in Section 112, CIENA contends that the purpose of the reverse doctrine of equivalents, "to prevent unwarranted extension of the claims beyond a fair scope of the patentee's invention," has already been accomplished. (D.I. 585 at 6, citing Scripps Clinic & Research Found. v. Genentech, Inc., 927 F.2d 1565, 1581 (Fed. Cir. 1991)).

While the Federal Circuit has hinted that it may well be that Section 112 is a codification of the reverse doctrine of equivalents, it has never expressly so held. See Tate Access Floor, Inc. v. Interface Architectural Res. Inc., 279 F.3d 1357, 1368 (Fed. Cir. 2002); In re Donaldson Co., 16 F.3d 1189, 1194 & n. 5 (Fed. Cir. 1994). The Federal Circuit has also never affirmed a decision applying the reverse doctrine of equivalents to find non-infringement of a claim otherwise literally infringed, Tate, 279 F.3d at 1368, but the Federal Circuit has referred favorably to the doctrine suggesting that it has not yet

been written off. See Genentech, 927 F.2d at 1581; SRI Int'l v. Matsushita Elec. Corp. of America, 775 F.2d 1107, 1123-1124 (Fed. Cir. 1985). Until the Federal Circuit explicitly disregards the doctrine, the Court musst presume its continued viability and apply the reverse doctrine of equivalents to determine whether Corvis is entitled to a finding of non-infringement despite the jury's finding that Corvis literally infringed the '309 and '609 patents.

II. Whether The Reverse Doctrine Of Equivalents Applies To Preclude Corvis From Being Liable For Literal Infringement Of The '309 And '609 Patents

Whether the reverse doctrine of equivalents applies in a given case only becomes an issue once the patentee has established literal infringement of a claim. "When a patentee establishes literal infringement, the accused infringer may undertake the burden of going forward to establish the fact of non-infringement under the reverse doctrine of equivalents." SRI Int'l, 775 F.2d at 1123-1124. Once the accused infringer establishes a prima facie case of noninfringement under the reverse doctrine of equivalents, "the patentee, who retains the burden of persuasion on infringement, must rebut the prima facie case." Id. at 1124.

Noninfringement under the reverse doctrine of equivalents presents a question of fact. SRI Int'l, 775 F.2d at 1124. "Application of the reverse doctrine of equivalents requires that

facts specific to the accused device be determined and weighed against the equitable scope of the claims, which in turn is determined in light of the specification, the prosecution history, and the prior art." Genentech, 927 F.2d at 1581. To establish a prima facie case of the application of the reverse doctrine of equivalents, the accused infringer must show that "the accused device [is] sufficiently different from that which is patented that despite the apparent literal infringement, the claims are interpreted to negate infringement." Texas Instruments, 846 F.2d at 1371. An accused device is sufficiently different from the patented claims when the accused device "is so far changed in principle from a patented article that it performs the same or a similar function in a substantially different way." Graver Tank, 339 U.S. at 608-609. Thus, in determining whether the reverse doctrine of equivalents applies to preclude a finding of literal infringement, the Court must consider four criteria: (1) the principle of the claimed invention; (2) the principle of the accused product; (3) the degree of change in the principle of the accused product from that of the claimed invention; and (4) whether the accused product performs in a substantially different way. SRI Int'l, 775 F.2d at 1124.

With respect to the principle of the claimed invention, Corvis contends that:

> [T]he principle of the invention disclosed in the '609 and '309 patents is a WDM optical communication system

> that uses a remodulator containing an external remodulator to impart information from transmission elements onto an optical wavelength at the wavelength of the laser, which is then combined with optical channels from other remodulators and sent through a fiber to corresponding receivers.

(D.I. 582 at 18). In contrast, CIENA contends that the principle of the invention claimed in the '609 patent is:

> a WDM optical communication system for transporting information (e.g. telephone calls) using remodulators at a transmit location for placing information onto channels in the WDM system and fiber Bragg gratings in a demultiplexer at a receive location to separate the channels.

(D.I. 585 at 11). CIENA also contends that the principle of the invention claimed in the '309 patent is:

> a WDM optical communication system for transporting a high speed optical signal from a transmit location to a receive location by first generating at the transmit location a plurality of lower speed optical signals at the receive location to recreate the high speed optical signal from the lower speed optical signals.

(D.I. 585 at 15). Examining these proposals in light of the evidence adduced at trial and the claim language, specification, prosecution history and prior art, the Court finds that CIENA's proposals most accurately define the principles of the claimed inventions. In the Court's view, Corvis' formulation of the principle of the claimed invention is an impermissible attempt to limit the claimed invention to the preferred embodiments disclosed in the patents. The principle of the claimed invention is defined by reference to the claim language in the first instance. SRI Int'l, 775 F.2d at 1124 (suggesting that court

should not substitute "gist" of the patent drawn from operation of a disclosed embodiment for the structural claims); Phillips Petroleum, 673 F. Supp. at 1353 (recognizing that "it is the claim and not the specification which measures the scope of an invention"). The claim language is amplified by the specification, prosecution history and the prior art. Scripps Clinic, 927 F.2d at 1581. The Federal Circuit has counseled against limiting claims to the preferred embodiments or other specific examples in the specification. Deering Precision Instruments, L.L.C. v. Vector Distribution Sys., 347 F.3d 1314, 1323 (Fed. Cir. 2003); Texas Instruments, Inc. v. United States Int'l Trade Comm'n, 805 F.2d 1558, 1563 (Fed. Cir. 1986); SRI Int'l, 775 F.2d at 1121, n. 14.

In this case, the language of claim 6 of the '609 patent does not require the remodulator "to impart information from transmission elements onto an optical wavelength at the wavelength of the laser." Indeed, the Court rejected similar arguments made by Corvis during the claim construction phase of this litigation and concluded that the terms "remodulator" and "external modulator" did not include such limitations when construed in light of the claim language and specification.

In addition, the Court finds that Corvis' proposed principle of the invention is incomplete, because it ignores the receive side of the system. The evidence adduced at trial demonstrates

that CIENA, over its competitors, was able to use in-fiber Bragg gratings in receivers. Tr. Vol. A at 181:10-182:25; 183:20-23; 183:24-184:5. The Court is persuaded that this is an important technical aspect of the invention claimed in the '609 patent that should not be ignored in defining the principle of the invention.

Further, the Court observes that Corvis' proposed principle of the invention collapses the '609 and '309 patents in a manner that fails to sufficiently account for the features of the two patents. The reverse doctrine of equivalents requires the Court to focus in the first instance on the claimed invention. Phillips Petroleum, 673 F. Supp. at 1353. Corvis' proposed principle of the invention fails to meet this threshold requirement, because it includes features not claimed in the '309 patent. For example, the limitations imposed by Corvis of a "remodulator containing an external modulator" and the "imparting [of] information . . . at the wavelength of the channels" fail to appear in the language of the asserted claims of the '309 patent. Instead, it appears to the Court that Corvis' proposed principle of the invention emanates from language used by the Patent Examiner in his Reasons for Allowance of the '309 patent. (DTX-346 at CN057647). As Corvis points out, the Patent Examiner stated that "the prior art of record does not teach nor render obvious one or more remodulators optically communicating with the optical transmitters . . ., the remodulators placing information

from the information-bearing optical signals of the first set of optical transmitters onto optical channels in the wavelength division multiplexed optical communication system." (D.I. 582 at 6 (quoting DTX 346 at CN057647). However, the Patent Examiner's comments quote a portion of claim 1 of the '309 patent, and claim 1 was not advanced in this litigation. Further, the limitations described by the Patent Examiner are not found in the language of the asserted claims 7 and 12, and therefore, the Court concludes that they should not be imported into the principle of the claimed invention. Moreover, even if the Court were to consider the Patent Examiner's statements regarding the remodulator recited in claim 1 of the '309 patent, the Court would conclude that Corvis' proposed principle of the invention exceeds the scope of the Patent Examiner's remarks. For example, the Patent Examiner's statement did not include any requirement for the remodulator to impart information from transmission elements onto an optical wavelength at the length of the wavelength laser, as Corvis contends in its proposed principle of the invention. Similarly, the Patent Examiner did not state that the remodulator must be comprised of an external modulator, even though the Patent Examiner did list several elements of the remodulator.

By contrast, the Court finds that the proposed principles of the inventions advanced by CIENA properly account for the relevant features in each of the claimed inventions and comport

with the claim language, as interpreted by the Court, in light of the specification, prosecution history and prior art. The evidence adduced at trial demonstrated that the invention claimed in the '609 patent solved two problems, the problem of interconnecting telephone equipment made by different companies and separating the mulitiplexed optical channels in a reliable yet cost-effective manner. The first problem was solved using remodulators as an open face interface between space-division transmission and wavelength-division transmission. Tr. Vol. A. at 188:18-189:1; 176:7-178:14; Vol. 2 at 231:6-234:17. The second problem was solved by using in-fiber Bragg gratings for demultiplexing. Tr. Vol. 2 at 234:18-236:17. The language of the '609 patent, as interpreted by the Court does not place any limitations on the remodulators, and the Court is persuaded that CIENA's proposed principle of the invention claimed in the '609 patent is correct. '609 patent, claim 6; Tr. Vol. 2 at 248:22-249:8; Tr. Vol. A 179:21-184:5.

As for the '309 patent, the evidence adduced at trial demonstrates that the '309 patent addressed the difficulty of transporting high data rate OC-192 signals across telecommunications networks that had been designed to accommodate OC-48 signals, a slower rate. '309 Patent, col. 29-33; Tr. Vol. 3 at 611:20-614:10. CIENA addressed this problem using the inverse multiplexing technique, which breaks up the OC-192 signal

into four slower OC-48 signals and then recombines them. Tr. Vol. 3 at 616-620:24. The principle of the invention proposed by CIENA comports with the contours of the claimed invention and the Court is persuaded that CIENA's proposed principle of the invention claimed in the '309 patent is correct. '309 patent, col. 2, ll.33-36, col. 8, ll.2-6; Tr. Vol. 3 at 614:11-615:7; 616:14-20; 620:8-24.

Having determined the principles of the claimed inventions, the Court must next determine whether the principles of Corvis' infringing system are the same. Specifically, the Court must determine whether Corvis' accused system is so far changed in principle that it performs the function of the claimed invention in a substantially different way. Reviewing the evidence adduced at trial, the Court finds that the principle of Corvis' infringing system is the same as the principle of the invention claimed in the '609 and '309 patents. With respect to the '609 patent, Corvis' system performs the same function of transporting information in the same way as the claimed invention by using Tx Modules, which correspond to remodulators, at a transmit location for placing information onto channels in the WDM system and using fiber Bragg grating as demultiplexers at receive locations to separate the channels. Tr. Vol. 2 at 364:19-365:13; 382:21-384:11; 404:17-406:10; Vol. 3 at 454:17-456:1; PTX 654 at COR062513-14, 062519-20; PTX 680; PTX 827. With respect to the

'309 patent, the Court likewise finds that Corvis' accused system performs the same function in the same way as the claimed invention. Corvis' accused system transports a high speed optical signal from a transmit location to a receive location by first generating a plurality of lower speed optical signals from the high speed optical signal, and then receiving the lower speed optical signals at the receive location to recreate the high speed optical signal from the lower speed optical signals. Tr. Vol. 3 at 622:2-23; 625:16-629:2; PTX 886 at COR054192; PTX 1232 at COR104490-91.

Corvis contends that its system uses regenerators and those are different than remodulators. In the Court's view, Corvis' argument goes more to the question of literal infringment, which is not relevant here. The jury concluded that there was no difference between Corvis' regenerator and the claimed remodulator, and this finding is not disturbed by the application of the reverse doctrine of equivalents, because that doctrine only comes into play once a finding of literal infringement has been made. Texas Instruments, 846 F.2d at 1371. Further, the Court is persuaded by the testimony of Dr. Kaminow that the presence of the regenerator does not substantially change the accused system from the claimed invention and that Corvis' transmitter module is essentially the same as the claimed remodulator. Tr. Vol. 3 at 514:5-15; 517:22-523:24; Tr. Vol. B

at 318:15-319:9.

To the extent that Corvis also contends that its device contains additional features or performs additional functions which are not claimed in the '609 and '309 patents or which may be better than those claimed in the '609 and '309 patents, those additional features and functions are insufficient to avoid infringement. Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 945 (Fed. Cir. 1990) (rejecting the defense of the reverse doctrine of equivalents because "[t]he addition of features does not avoid infringement, if all the elements of the patent claims have been adopted. Nor is infringement avoided if a claimed feature performs not only as shown in the patent, but also performs an additional function."); American Standard Inc. v. Pfizer Inc., 722 F. Supp. 86, 105-106 (D. Del. 1989). For example, Corvis contends that its product uses "subcarrier mulitplexing" which is not used in the claimed invention, but Drs. Kaminow and Pollack both testified that this feature did not create any substantial differences between the claims and the accused system.[1] Tr. Vol. 2 at 392:9-399:2; Vol. 3 at 455:17-

[1] Corvis also contends that its subcarrier technology is not interchangeable with the technology used in CIENA's patents and this lack of interchangeability supports a finding of non-infringement. In support of its argument, Corvis contends that CIENA rejected the use of subcarrier modulation during the work that led to the patents. Interchangeability between elements of an accused device and a patented invention is evaluated at the time of infringement, and not at the time the patent was issued. Warner-Jenkinson, 520 U.S. at 19. Thus, the Court finds CIENA's

456:24, 642:2-643:22. Drs. Kaminow and Pollack also considered other differences alleged by Corvis and found these differences to be irrelevant or insubstantial. Tr. Vol. 3, 519:4-522:19, 646:16-647:7. The Court is persuaded by the testimony of these witnesses and finds that the presence of additional or better features and functions in the Corvis system does not so far change the principle of the accused system that it performs the same or similar function of the claimed invention in a substantially different way.

In sum, the Court concludes that Corvis cannot escape the jury's finding of literal infringement by application of the reverse doctrine of equivalents. The Court finds that Corvis' accused system is not so far changed in principle from the principle of the claimed invention so as to perform the same or

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decision regarding the use of subcarrier modulation during its work leading up to the patent to be irrelevant to the application of the reverse doctrine of equivalents. To the extent that Corvis contends that its product performs a different type of electrical processing by way of "electrical multiplexing" or "subcarrier modulation" than the '609 patent, the Court finds that these differences do not support a finding of non-infringement. The '609 patent does not require a specific type of electrical processing, and the written description expressly states that the patent is not limited to the examples disclosed in the patent. '609 patent, col. 7, ll. 66- col. 8, l. 3. Further, the Court is persuaded by the testimony of Drs. Pollack and Kaminow that electrical multiplexing and subcarrier modulation are contemplated by the claimed invention, and therefore, these processing techniques do not render the accused system substantially different from that which is claimed in the '609 patent. Tr. Vol. 3 at 646:16-24; Tr. Vol. C at 662:17-664:18; see also Tr. Vol. A at 225:1-227:5.

similar function in a substantially different way. Corvis' attempts to distinguish its accused system reargue claim construction issues which were already rejected by the Court and reargue the question of literal infringement which was already determined by the jury. In addition, the Court is not persuaded that any of the differences cited by Corvis render its system substantially different from the claimed invention, and the fact that Corvis' system was also patented does not change the Court's view. Corvis did not cite either the '609 or '309 patents during the examination of its patents and evidence of separate patentability is not a defense to patent infringement. Vaupel Textilmaschinen KG v. Meccanica Euro Italia S.P.A., 944 F.2d 870, 879 n.4 (Fed. Cir. 1991); see also Water Techs. Corp. v. Calco, Ltd., 850 F.2d 660, 669 (Fed. Cir. 1988) ("[I]t is elementary patent law that a patent may issue on an improvement which infringes another's patent."); Texas Instruments, 805 F.2d at 1563 ("Devices that have been modified to such an extent that the modification may be separately patented may nonetheless infringe the claims of the basic patent."). As the Federal Circuit recognized in SRI International, the reverse doctrine of equivalents is seldom successful as a defense to literal infringement "[b]ecause products on which patent claims are readable word for word often are in fact the same, perform the same function in the same way, and achieve the same result, as

the claimed invention . . .” 775 F.2d at 1124 n. 19. In the Court’s view, this case presents no exception to this realization. Accordingly, the Court concludes that Corvis has failed to establish a prima facie case of the application of the reverse doctrine of equivalents, and therefore, Corvis has failed to establish non-infringement as a result of the reverse doctrine of equivalents.

CONCLUSION

For the reasons discussed, the Court concludes that Corvis cannot establish non-infringement of the ‘609 and ‘309 patents under the reverse doctrine of equivalents.

An appropriate Order will be entered.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CIENA CORPORATION, a Delaware Corporation, and CIENA PROPERTIES, INC., a Delaware Corporation,	:	
Plaintiffs,	:	
v.	:	Civil Action No. 00-662-JJF
CORVIS CORPORATION, a Delaware Corporation,	:	
Defendant.	:	

ORDER

At Wilmington, this 9th day of September 2004, for the reasons discussed in the Opinion issued this date;

IT IS HEREBY ORDERED that Corvis Corporation has not established non-infringment of U.S. Patent Nos. 5,938,309 and 5,504,609 under the reverse doctrine of equivalents, and therefore, judgment is entered for Plaintiffs, CIENA Corporation and CIENA Properties, Inc. and against Defendant, Corvis Corporation, on Corvis Corporation's reverse doctrine of equivalents defense.

JOSEPH J. FARNAN, JR.
UNITED STATES DISTRICT JUDGE

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FOR THE DISTRICT OF DELAWARE

CIENA CORPORATION, a Delaware Corporation, and CIENA PROPERTIES, INC., a Delaware Corporation,	:	
Plaintiffs,	:	
v.	:	Civil Action No. 00-662-JJF
CORVIS CORPORATION, a Delaware Corporation,	:	
Defendant.	:	

JUDGMENT IN A CIVIL CASE

This action came before the Court for a trial by jury. The issues of patent infringement and validity were separated by the Court and have been tried to separate juries, the Honorable Joseph J. Farnan, Jr., District Judge, presiding. These issues having been tried and the juries having rendered their verdicts on February 24, 2003; February 28, 2003 and April 28, 2003 and answered Verdict Forms, copies of which are attached hereto;

IT IS ORDERED AND ADJUDGED that:

1) Judgment is entered in favor of Plaintiffs, CIENA Corporation and CIENA Properties, Inc. and against Defendant Corvis Corporation on Plaintiff's claim of infringement of claims 6, 7, and 8 of U.S. Patent No. 5,504,609.

2) Judgment is entered in favor of Plaintiffs, CIENA Corporation and CIENA Properties, Inc. and against Defendant Corvis Corporation on Plaintiff's claim of infringement of claims 7 and 12 of U.S. Patent No. 5,938,309.

3) Judgment is entered in favor Defendant Corvis Corporation and against Plaintiffs, CIENA Corporation and CIENA Properties, Inc. on Plaintiff's claim of infringement of claims 1 and 4 of United States Patent No. 5,784,184.

4) Judgment is entered in favor Defendant Corvis Corporation and against Plaintiffs, CIENA Corporation and CIENA Properties, Inc. on Plaintiff's claim of infringement of claims

4, 5, and 6 of U.S. Patent No. 5,557,439.

5) Judgment is entered in favor of Plaintiffs, CIENA Corporation and CIENA Properties, Inc. and against Defendant Corvis Corporation on Defendant's counterclaims of invalidity of claims 7 and 12 of U.S. Patent No. 5,938,309.

6) Judgment is entered in favor of Plaintiffs, CIENA Corporation and CIENA Properties, Inc. and against Defendant Corvis Corporation on Defendant's counterclaim of invalidity of U.S. Patent No. 5,557,439.

DATED AT WILMINGTON, DELAWARE, THIS 9th day of September, 2004.

JOSEPH J. FARNAN, JR.
UNITED STATES DISTRICT JUDGE

Peter T. Dalleo
Clerk of Court

By: Deborah L. Krett
Deputy Clerk