United States District Court,
N.D. California.

PCTEL, INC,
Plaintiff.
v.
AGERE SYSTEMS, INC, et al,
Defendants.

No. C03-02474 MJJ

March 20, 2006.

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CLAIM CONSTRUCTION ORDER

MARTIN J. JENKINS**, J.**

INTRODUCTION

Before the Court is Plaintiff PCTEL, Inc. ("Plaintiff", "PCTEL"), Defendants Agere Systems, Inc. and Lucent Technologies Inc.'s ("Defendants", "Agere") proposed construction of disputed terms in a patent held by PCTEL.

The parties filed a Revised Joint Claim Construction Statement ("Joint Statement", Doc. No. 228) with each party's proposed construction of terms. On January 18, 2006, the Court held a hearing at which time the parties presented oral arguments in support of their respective constructions. The Court has read the moving and responding papers, including the patent-in-suit, considered the arguments of counsel, and now construes the disputed terms in the claims.

BACKGROUND

This case concerns the alleged infringement of U.S. Patent Number 5,787,305 ("the '305 patent") entitled "Host signal processing modem using a software simulation of a UART." Peter C. Chen ("Chen") is listed as the inventor of the '305 patent. The issue before the Court is the construction of five disputed terms contained in the '305 patent.

I. The '305 Patent

The '305 patent claims an invention in the area of computer modems. A modem allows one or more electronic devices to communicate over telephone lines. Modems are most familiar in the field of personal computing where they are commonly used to connect to the Internet using the telephone system. Modems are needed because computers generate digital signals, whereas telephone lines are designed to transmit analog signals. A modem is capable of receiving digital signals from a computer and "modulating" these signals to produce corresponding analog signals which are suitable for transport over the telephone network. Similarly, in the other direction, modems receive analog signals from the phone network and "demodulate" or translate them into digital signals which are suitable for the computer. Modem is a contraction of "modulation" and "demodulation."

The '305 patent concerns software emulation of Universal Asynchronous Receiver-Transmitter ("UART") hardware. Historically, UARTs were hardware integrated circuits which translated parallel data into serial data and vice-versa. UARTs permitted the microprocessor of a personal computer, which produced parallel data, to send and receive data through the computer's serial port, which transmitted and received only serial data.

With the increased processing power of computers, it became possible to simplify modem hardware by eliminating certain chips whose functionality could be replicated through software running on the host computer. Modems which used the processing power of the host computer in this way were known as host signal processing ("HSP") modems. Initially, implementation of HSP modems under operating systems such as Windows was difficult, due to limitations in system design. Early operating systems such as Windows 3.1 were designed to interact with UART hardware through specialized communications ports. When communicating through these ports, the operating system expected UART hardware to be present on the other end. Such UART hardware was unnecessary in a HSP modem, as the UART functionality was replicated through software. The '305 patent provided one solution to this problem, by integrating the desired UART functionality with the operating system. Additionally, the '305 patent provided a solution for the problem of non-UART devices attempting to communicate with the system's communication ports through the standard UART interface.

LEGAL STANDARD

The construction of a patent is a matter of law for the Court. Markman v. Westview Instruments, Inc., 517 U.S. 370, 372, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). In construing terms, the Court must conduct an independent analysis of the claim terms; it is insufficient to simply choose between the competing constructions that the parties have submitted. Exxon Chem. Patents v. Lubrizol Corp., 64 F.3d 1553, 1555 (Fed.Cir.1995). To determine the meaning of a patent claim, the Court considers three sources: (1) the claims; (2) the specification; and (3) the prosecution history. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed.Cir.1995) (*en banc*), *aff'd,* Markman, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577.

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude." ' Phillips v. AWH Corp., 415 F.3d 1303 (Fed.Cir.2005) (*en banc*) (quoting Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1115 (Fed.Cir.2004). Accordingly, in construing disputed terms, the Court first looks to the words of the claims. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996). Generally, the Court ascribes the words of a claim their ordinary and customary meaning. *Id*. "[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the

invention, *i.e.,* as of the effective filing date of the patent application." Phillips, 415 F.3d at 1313.

Other claims of the patent in question can also assist in determining the meaning of a claim term. Vitronics, 90 F.3d at 1582. Because an inventor normally uses claim terms consistently throughout a patent, the usage of a term in one claim may reveal the meaning of the same term in other claims. *See* Rexnord Corp. v. Laitram Corp., 274 F.3d 1336, 1342 (Fed.Cir.2001). Conversely, use of a term in a different way in another claim may also be useful in determining the particular meaning of the disputed term. *See* Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1538 (Fed.Cir.1991). Particularly, the existence of a dependent claim that adds a particular limitation creates a presumption that the limitation in question is not present in the independent claim. *See* Liebel-Flarseim Co. v. Medrad, Inc., 358 F.3d 898, 910 (Fed.Cir.2004); Tandon Corp. v. U.S. Int'l Trade Comm'n, 831 F.2d 1017, 1023 (Fed.Cir.1987).

Because the claims are part of a fully integrated written instrument comprised principally of the specification, the Court must next review the specification. Markman, 52 F.3d at 978-79. Because the specification must contain a description of the invention that is clear and complete enough to enable those of ordinary skill in the art to make and use it, the specification is "always highly relevant" to the Court's claim construction analysis. Vitronics, 90 F.3d at 1582. "Usually, [the specification] is dispositive; it is the single best guide to the meaning of a disputed term." *Id.* "In light of the statutory directive that the inventor provide a 'full' and 'exact' description of the claim invention, the specification necessarily informs the proper construction of the claims." Phillips, 415 F.3d at 1316. In some cases, the specification may reveal that the patentee has given a special definition to a claim term that differs from its ordinary meaning. "In such cases, the inventor's lexicography controls." *Phillips,* 415 at 1316. The specification also may reveal the patentee's intentional disclaimer or disavowal of claim scope. "In that instance, as well, the inventor has dictated the correct claim scope, and the inventor's intention, as expressed in the specification, is regarded as dispositive." *Id.* "Although words in a claim are generally given their ordinary and customary meaning, a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification of file history." Thus, the specification can act as a dictionary when it expressly or impliedly defines terms used in the claims. *Id.*

Next, in addition to reviewing the specification, the Court should consider the patent's prosecution history, if it is in evidence. Markman, 52 F.3d at 980. The prosecution is intrinsic evidence and consists of the complete record of the proceedings before the Patent and Trademark Office ("PTO") and includes the prior art cited during the examination of the patent. Phillips, 415 F.3d at 1317. "The prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower then it would otherwise be." *Phillips,* 415 F.3d 1317; *see also* Chimie v. PPG Indus., Inc., 402 F.3d 1371, 1384 (Fed.Cir.2005) ("The purpose of consulting the prosecution history in construing a claim is to exclude any interpretation that was disclaimed during prosecution.") (internal quotations omitted).

In addition to the foregoing intrinsic evidence, the Federal Circuit has also authorized district courts to rely on extrinsic evidence in claim construction, which consists of "all evidence external to the patent and prosecution history, including exert and inventor testimony, dictionaries, and learned treatises.' Markman, 52 F.3d at 980. However, extrinsic evidence is "less significant than the intrinsic record in determining the legally operative meaning of claim language." C.R. Bard, Inc. v. U.S. Surgical Corp., 388 F.3d 858, 862 (Fed.Cir.2004). "Because dictionaries, and especially technical dictionaries, endeavor to collect the accepted meanings of terms used in various field of science and technology, those resources have been properly

recognized as among the many tools that can assist the court in determining the meaning of particular terminology to those of skill in the art of the invention." *Phillips,* 415 F.3d 1318. Accordingly, the Court may consider this evidence, if the Court deems it helpful in deciphering the true meaning of the claim terms. *Id*.

Additionally, the Federal Circuit has recognized that, "extrinsic evidence in the form of expert testimony can be useful to a court for a variety of purposes, such as to provide background on the technology at issue, to explain how an invention works, to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field." Phillips, 415 F.3d at 1318. At the same time, the Court must disregard an expert's conclusory, unsupported assertions regarding the definition of a claim term. *Id*. Likewise, the Court should discount expert testimony that is directly at-odds with the claim construction mandated by the intrinsic evidence. *Id.; see also* Key Pharms. v. Hercon Labs. Corp., 161 F.3d 709, 716 (Fed.Cir.1998).

While extrinsic evidence may be useful to the court, it is unlikely to lead to a reliable interpretation of claim language unless considered in the context of the intrinsic evidence. *Id*. "Nevertheless, because extrinsic can help educate the court regarding the field of the invention and can help the court determine what a person of ordinary skill in the art would understand claim terms to mean, it is permissible for the district court in its sound discretion to admit and use such evidence. In exercising that discretion, and in weighing all the evidence bearing on claim construction, the court should keep in mind the flaws inherent in each type of evidence and assess that evidence accordingly." *Id*. at 1319.

With these canons of construction in mind, the Court turns to the disputed claim terms.

DISPUTED CLAIM TERMS

The following is a list of five terms identified by the parties in the October 27, 2005 Revised Joint Claim Construction Statement (Docket No. 228):

1) "a device coupled to the local bus";

2) "the device occupies an I/O slot that corresponds to a first communications port on the local bus";

3) "a UART emulation which";

4) "converts the access as required for the register set and address assignment of the device";

5) "a software modem"

ANALYSIS

A. Construction of "a device coupled to the local bus"

The parties dispute the meaning of the term "a device coupled to the local bus" which appears in Claim 1 of the '305 patent:

1. A system comprising: a computer having a processing unit, a main memory, and a local bus; a device

coupled to the local bus, wherein the device occupies an I/O slot that corresponds to a first communications port on the local bus ...

PCTEL contends that the term means "[a] device arranged so that electrical signals can pass between the device and the local bus", whereas Agere proposes that the term means "a device directly connected to the local bus." PCTEL argues that the term "coupled" does not necessarily imply a physical connection, asserting that such an interpretation is more suited in the field of mechanical engineering, rather than to the relevant field of art, electrical engineering. PCTEL urges the Court to adopt a definition of coupling which focuses on the passing of signals rather than physical attachment. To support its position, PCTEL points to the following language from Claim 1,

"a software modem adapted to convert digital samples *from the device* to data values transmitted to the UART emulation and adapted to convert data values from the UART emulation to digital samples *for the device*."

PCTEL also cites the claim language "the device occupies an I/O slot" to support the conclusion that the device is not directly connected to the bus. According to PCTEL the relevant physical connection is between the bus and the I/O slot and not between the bus and the device. Therefore, PCTEL argues, the device is indirectly connected to the bus through the I/O slot. PCTEL supports it argument with dictionary definitions for the word "couple" which focus on the meaning of the word with respect to the transfer of energy, rather than any physical connection. FN1

FN1. PCTEL offers the following dictionary definition for the word "coupling":
coupling: The association of two or more circuits or systems in such a way that power or signal information may be transferred from one to another. IEEE STANDARD DICTIONARY OF ELECTRICAL AND ELECTRONICS TERMS (1988)

coupling: "The association or mutual relationship of two or more circuits or systems in such a way that power may be transferred from one to another." MODERN DICTIONARY OF ELECTRONICS (6th Ed.1984).

Agere disputes PCTEL'S construction, pointing to the prosecution history of the '305 patent for support. FN2 During prosecution, the PTO rejected PCTEL's submission based upon Patent Number 5,408,614 ("Thornton patent") which claimed a similar system, except that the Thornton invention was connected to the computer through a parallel port. Declaration of Jordan N. Malz ("Malz Declaration"), Ex. 6 at 17643. The patent examiner noted that the major difference between the Thornton patent and the '305 patent was that the former was "coupled to the parallel port" and the latter had a "direct connection to the control/address/data bus within the PC." Id. (emphasis added) The patent examiner deemed it obvious to "couple a device to the local bus" in light of Thornton. In response, PCTEL sought to distinguish the '305 patent from the Thornton patent arguing that Thornton, "teaches away from connecting a device to the local bus."

FN2. Agere also cites dictionary definitions that support its interpretation of the term "coupling".

PCTEL's construction is problematic. The first place a Court must look to construe the meaning of a patent are the words of the claim itself. Vitronics, 90 F.3d at 1582. Immediately following the phrase "coupled to the local bus" is the phrase "wherein the device *occupies* an I/O slot." The use of the word "occupies" elaborates upon the phrase "coupled to the local bus" and strongly suggests a direct, physical connection to the local bus through the I/O slot.

This interpretation is supported by language the specification itself, which notes that "[t]his invention relates to a ... device having a non-standard I/O interface *coupled* to a local bus ... common *devices connected* to a ... bus include serial I/O devices such as ... a modem ....[t]he non-standard device *connects* to an I/O *slot* ..." ('305 Patent, Description, 2). FN3 The claims and the specification indicate that the inventor understood the I/O slot to be physical entry-point on the local bus through which the device would be coupled, and therefore directly connected, to the local bus.

FN3. Emphasis is added unless otherwise indicated.

The prosecution history also supports this reading. There is evidence that the patent examiner understood "coupled to" to mean "directly connected to." The Court finds the patent examiner's rejection of PCTEL's claims, on the basis of Thorton prior art, particularly instructive. The Thornton patent taught an invention similar to the '305 patent, but which was connected to a parallel port, whereas the '305 patent was connected to the bus through an I/O slot. In rejecting PCTEL's claims, the patent examiner stated, "the Thornton device is *coupled* to the parallel port ... [i]t would have been obvious for one of ordinary skill in the art to have [the] *device coupled* to the local bus because it would have [a] *direct connection* to the control/address/data bus within the PC." (Malz Decl., at 17643). This implies that the examiner understood the phrase "coupled to" to mean "directly connected to" since the Thornton device was directly connected to the parallel port, and the patent examiner referred to it as "coupled" to the parallel port; similarly, PCTEL's device was "coupled" to the local bus through the I/O slot and the examiner referred to it as "directly connected ... to the bus." PCTEL's own papers acknowledge the fungibility of these terms as used during the prosecution, stating that "[o]ne distinction debated in the prosecution history was that the '305 device would not *connect* externally through a parallel port, but would *connect internally with the local bus*." (Reply, 4). PCTEL thereby acknowledged that the issue involved "connecting" devices to the local bus, despite the fact that the examiner used the word "coupling" as well as "connecting."

The intrinsic evidence supports a finding that the inventor had this same understanding of the word "coupled", namely, that he understood the word "coupled" to be synonymous with "connected." Responding to the examiner's claim that "it would have been obvious to have [Thornton's] device *coupled* to the local bus", the inventor states "[a]pplicant disagrees because *connecting* the device disclosed by Thornton to a local bus is contrary to the purpose of the device ... Thornton teaches away from *connecting* a device to the local bus." Accordingly, the Court finds that the inventor used "coupled" and "connected to" interchangeably and understood it as such..

Moreover, from the inventor's use of "connected", it is clear that he didn't understand that word to encompass so broad a definition as PCTEL now urges. PCTEL asserts that "coupled" means "arranged so that electrical signals can pass between the device and the local bus." However, the inventor stated that "[c]onnecting the device disclosed by Thornton to a local bus is contrary to the purpose of the device ... the

exact purpose of the invention disclosed by Thornton is to avoid using resources such as a device slot or a serial port." Accordingly, the inventor understood a "connection" to the local bus to require a direct, physical connection through either a device slot or a serial port. It therefore follows that the inventor did not understand "connected" to have the broad meaning of "arranged so that electrical signals can pass between the device and the local bus", as he clearly contemplated "connected to the bus" to involve a direct connection through one of the input mechanisms on the local bus.

The Court gives more weight to the intrinsic evidence of the specification and prosecution history than to PCTEL's extrinsic dictionary evidence. PCTEL's reliance on dictionaries is problematic as there are dictionary definitions supporting the proposed constructions of both parties. "A claim should not rise or fall based upon ... the court's independent decision, uninformed by the specification, to rely on one dictionary rather than another." Phillips, 415 F.3d at 1322. Accordingly, given the language of the claims and the inventor's understanding of these terms during the prosecution history, the Court finds that the clearest reading of "a device coupled to the local bus" is a "device directly connected to the local bus".

B. Construction of "the device occupies an I/O slot that corresponds to a first communications port on the local bus"

Next, the parties dispute the meaning of "the device occupies an I/O slot that corresponds to a first communications port on the local bus." The claim reads as follows:

1. A system comprising: a computer having a processing unit, a main memory, and a local bus; a device coupled to the local bus, wherein the device occupies an I/O slot that corresponds to a first communications port on the local bus ...

PCTEL contends that the term means, "the device occupies an input/output slot that corresponds to a communications port on the local bus." Agere construes the term as, "the device occupies an input/output slot on the local bus that corresponds to one of the communications ports used for connection to a serial device containing a UART."

The first dispute is whether the phrase "on the local bus" should be interpreted to modify the term "device" or the term "communications port." In other words, does the '305 patent require the "device" or the "communications port" to be on the local bus. The term "on the local bus" could modify either phrase under a fair reading. PCTEL maintains that "on the local bus" does not require a physical connection to the bus, but rather refers to a conceptual connection in which the communications port has access to the data on the local bus. As support, PCTEL cites language in the specification in which the phrase "on the local bus" is used abstractly to describe signals which are transmitted via the local bus but which are not physically located on top of the local bus. FN4 According to PCTEL, using the phrase "on the local bus" in this manner indicates that the inventor understood the term so as not to require a physical connection.

FN4. An excerpt from the "Summary of the Invention" in the specification reads:

"The COM driver sets the base address of the non-standard device by sending a predetermined pattern of address and data signals on the local bus and then following the pattern with a signal that indicates the base address of the device. The device starts in a locked state where the device does not have a base address and does not respond to signals on the local bus. Once the device recognizes the pattern sent by the COM driver, the device address is set to the value provided by the COM driver, and the device transitions to an unlocked

state. In the unlocked state, the device responds to signals on the local bus which correspond to the base address of the device."
Agere disagrees, pointing to other language of the specification which indicates that the I/O slot is an apparatus physically located on the local bus. The relevant portion reads, "[s]erial device 210 logically occupies a COM port but does not have a hardware UART which *physically occupies* an I/O address slot on ISA bus 115. Accordingly, the I/O slot for the COM port used by serial device 210 is available for non-standard interface 205." (emphasis added). Additionally, Agere cites a portion of the prosecution history in which PCTEL distinguished prior art because it was not using an input/output "slot on the local bus." Malz Declaration, Ex. 7 at AL 17661.

The Court finds Agere's interpretation persuasive. The language cited by PCTEL using the phrase "on the local bus" to refer to conceptual access to signals is inapposite to the current dispute. That language does not illuminate the relationship between the I/O port and the local bus, which is the relevant issue. Agere's citations, on the other hand, do concern this relationship. Taken together, they suggest that the inventor intended the disputed term to reflect the fact that the I/O slot was physically located on the local bus.

Next, the parties dispute the interpretation of the term "communications port." The Court must read terms the way that they would have been interpreted by a person of ordinary skill in the art at the time of the invention. Phillips, 415 F.3d at 1313. Agere argues that at the time of the invention, the term "communications port" was a term of art referring to a specific type of port used for communicating with devices containing UARTs. Agere urges the Court to interpret "communications port" to refer to only communications ports which were used to connect to hardware UARTs, arguing that a person of ordinary skill in the art at the date of filing FN5 would have interpreted the term "communications port" to mean as such. To support this, Agere points to the '305 specification, which reads:

FN5. The '305 patent was filed on April 25, 1995.

WINDOWS.TM. and MS-DOS support four communication or COM ports, each having a predefined base device address....Each COM port *is for* connection to a serial device which contains a communication interface known as a Universal Asynchronous Receiver/Transceiver (UART).
Agere contends that the specification teaches that "communications ports" refers to those four "COM" ports which were specially reserved for communications with UART devices.FN6

FN6. Agere cites other specification language in support of this position:
"The COM driver contains ... a procedure requesting access to a register of a *UART at the first COM port* ..." '305 Patent at 2:25-34. (emphasis added).

"COM driver 220 determines which of the *four COM ports are allocated to standard UART devices* ..." '305 Patent at 4:11-15 (emphasis added).

Agere also urges the Court to examine the holding of the International Trade Commission ("ITC") which previously considered this precise issue. See *In the Matter of Certain HSP Modems, Software and Hardware*

Components Thereof, and Products Containing Same, 337-TA-439 (I.T.C., October 18, 2001). ITC decisions, while not binding, can be considered persuasive authority by a district court. Texas Instruments v. Cypress Semiconductor Corp., 90 F.3d 1558, 1569 (Fed.Cir.1996). The ITC found that the term "communications port" was intended to apply to the four COM ports which were reserved by the operating system for communicating with UART devices.

The Court declines to adopt Agere's construction of the term "communications port." Agere has not demonstrated that a person of ordinary skill in the art would have understood the term "communications port" to refer to only those four communications ports which were specifically reserved for communications with UART devices. Most of Agere's intrinsic evidence refers to particular embodiments of the invention. "[A] particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment." SuperGuide Corp. v. DirecTV Enterprises, 358 F.3d 870, 875 (Fed.Cir.2004). In the absence of evidence that a person in the ordinary skill in the art understood the claim to mean otherwise, the Court ascribes the words of a claim their ordinary and customary meaning. Vitronics Corp., 90 F.3d 1576, 1582. To construe the term "communications port" as Agere urges would be to unduly limit the scope of PCTEL's claims. Moreover, the Court finds the ITC analysis unpersuasive on this particular issue.FN7 Given these considerations, the Court construes "the device occupies an I/O slot that corresponds to a first communications port on the local bus" as "the device occupies an input/output slot on the local bus that corresponds to a communications port."

FN7. PCTEL points out that ITC decision was based upon the faulty assumption that "[t]he 124 additional COM ports of Windows 95 ... do not accept standard UART-based devices" and that therefore "Windows 95, like Windows 3.1 before, assigns UART-based devices only to COM1 through COM4." PCTEL presented evidence that this assumption is inaccurate, and that a UART device can be assigned to COM ports higher than 4 in versions of Windows subsequent to 3.1

C. Construction of "a UART emulation which"

Next the parties dispute the meaning of "a UART emulation which", appearing in Claim 1 of the '305 patent as follows:

a UART emulation which in response to an access by the procedure for accessing the register set of a UART, converts the access as required for the register set and address assignment of the device;

PCTEL contends that the term means "software that responds to the operating system as a hardware UART would respond in that it." Agere counters with the construction, "a software mimicking of the data and control registers of a UART, and not simply accessing a non-UART device by bypassing the communications driver that handles UART devices, which."

PCTEL argues the context of the term explains the meaning of "UART emulation." According to PCTEL, the remainder of the claim teaches that UART emulation consists of responding to requests by the operating system for the UART register set data. The requests are then converted to contend with the non-UART devices that may actually be present according. PCTEL contends that their construction represents the functionality described in the '305 patent.

Agere's reading of "UART emulation" focuses on access to the data and control registers of the UART.

Agere argues that to the extent to which the '305 patent teaches UART emulation, it only teaches the "mimicking" of the data and control registers of a hardware UART. Agere points to portions of the specification detailing the manner in which data is structured and formatted to emulate the UART standard.FN8 Agere also points out that PCTEL disclaimed certain characteristics of UART emulation during the prosecution history and reexamination of the patent. The patent examiner noted that UART emulation was already disclosed in prior art Patent Number 5,678,059 ("Ramaswamy patent"). In distinguishing the '305 patent from the prior art, PCTEL asserted that the Ramaswamy patent taught away from '305's UART emulation because Ramaswamy bypassed the COM driver when it accessed non-UART devices. Malz Declaration, Ex. 15 at 26008-09. Therefore, according to Agere, PCTEL disclaimer implies that the '305 patent includes a limitation requiring that the system access the COM driver. Agere urges the Court to adopt a construction of "UART emulation" in line with this requirement.

FN8. "The data and control values are formatted for a standard UART device so that whether software modem 223 is a standard modem containing a hardware UART or a software modem is completely transparent to application 140 and operating environment 130."'305 Patent, 7:17-22; Also, Agere cites the appendix in which the structures of the control register are detailed. '305 Patent, Appendix A, 1:1-20.

PCTEL'S construction is closer to the plain meaning of the term "UART emulation." However, as currently presented, PCTEL's proposed construction would broaden the scope of the claim beyond what was actually understood in light of PCTEL's disclaimers throughout the prosecution history and re-examination record. The Court agrees with Agere's contention that the UART emulation, as actually taught by the '305 patent, is narrower than that which is asserted by PCTEL. However, the Court does not agree with Agere's argument that the COM driver limitation was necessarily adopted by PCTEL during prosecution. Accordingly, the clearest reading of "a UART emulation which" is "software that responds to the operating system as a hardware UART would respond, with respect to UART control and register data, which."

D. Construction of "converts the access as required for the register set and address assignment of the device."

The term at issue appears in Claim 1 as follows:

a UART emulation which in response to an access by the procedure for accessing the register set of a UART, converts the access as required for the register set and address assignment of the device

PCTEL submits that the term means, "converts the request for data from a hardware UART to a request for data from the register set and address assignment of the device." Agere contends that the term means, "chooses between accessing the registers of a hardware UART or the corresponding registers in the computer's memory."

According to PCTEL, the essence of the '305 patent is the translation of requests for data from the operating system, which is expecting a hardware UART to be present, to that of a non-UART device which is actually present. PCTEL argues that Agere's construction unduly limits the invention to systems which have a component which chooses between accessing the hardware UART registers and registers in the computer's memory. PCTEL points out that the presence of a hardware UART is optional according to the specification, thus undermining Agere's requirement that there be a component which makes such a choice.FN9

FN9. "Optionally, the system includes a standard device having a UART coupled to an I/O slot corresponding to a second COM port, and the COM driver contains routines for accessing the standard device." '305 Patent at 2:31-34.

PCTEL also cites the preferred embodiment, which, it argues, describes an invention closely aligned with its construction. The preferred embodiment describes a system which accesses storage in the computer's main memory in response the operating system's request for UART data.FN10 The system may have to translate the request for the particular device that is present, since each device might have its own special set of commands. According to PCTEL, the "as required" language refers to this conversion. Additionally, PCTEL argues that Agere's construction impermissibly limits the '305 invention to that which is described in the preferred embodiment section of the specification.

FN10. "In one embodiment of the invention, a computer system includes a non-standard device and a COM driver for the non-standard device. The non-standard device connects to an I/O slot corresponding to a first COM port but has a register set which differs from the standard register set for a UART. The COM driver contains: a UART emulation which in response a procedure requesting access to a register of a UART at the first COM port, instead accesses storage locations in main memory of the computer system. " '305 Patent, 2:20-8.

Agere argues that consistent with the specification and the ITC decision, the limitation at issue requires the system to choose between accessing the registers of a hardware UART or the registers of a non-UART device. Agere contends that the language "as required" implies that conversion is not always required, and that the system must sometimes make a choice. Agere further cites portions of the specification detailing instances in which the system makes choices between UART and non-UART devices. Additionally, Agere relies on a portion of the prosecution history in which PCTEL distinguished the '305 patent from the prior art by changing the words "UART emulation which ... accesses storage locations in main memory" to the current language. Agere argues that reading the claims now to including accessing storage would expand the scope of the claim beyond what was disclaimed during the prosecution process. Finally, Agere argues that the phrase "request for data" in PCTEL's proposed construction involves a broader concept than the word "access" found in the claim terms, and would similarly enlarge the scope fo the claim.

From the specification, it is clear that the system claimed by the '305 patent performs translation for non-UART devices for operating systems which are expecting UART hardware. Generally speaking, PCTEL's construction is closer to the plain meaning of the claim terms in light of the specification. However, Agere's objection that the phrase "request for data" is too broad is persuasive. Accordingly, the clearest reading of the disputed term "converts the access as required for the register set and address assignment of the device" is "converts the request for accessing the register set and address assignment of a UART to a request for accessing the register set and address assignment of the device."

E. Construction of "a software modem"

The disputed term appears in Claim 1 of the '305 patent as follows:

a software modem adapted to convert digital samples from the device to data values transmitted to the

UART emulation and adapted to convert data values from the UART emulation to digital samples for the device.

PCTEL contends that the claim means "software that performs modulation and demodulation" whereas Agere proposes "a modem that utilizes the software executed by the host processor to perform modem signal processing functions rather than including a digital signal processing (DSP) chip."

Agere contends that the term "software modem" as construed by PCTEL gives it a greater scope than that which was actually claimed by the '305 patent. Pointing to the title of the patent, "Host Signal Processing Modem Using a Software Simulation of a UART", and sections of the prosecution history in which PCTEL describes its invention as a HSP modem,FN11 Agere argues that the term "software modem" should be understood as synonymous with "HSP modem." Agere cites portions of the prosecution history in which PCTEL distinguished the '305 patent from the prior art on the basis that the prior art contained DSP chips, whereas the '305 patent performed digital function processing using software.FN12 The patentee distinguished the '305 patent from the prior art, stating that the prior art:

FN11. See Malz Declaration, Ex. 7 at AL 17658 (12/23/97 Response), Ex. 9 at AL 17974 (1/6/03 Response).

FN12. [missing text]

"[D]id not even recognize the desirability of replacing the DSP chip (i.e. the element for performing digital processing functions) with a software modem."
Malz Declaration, Ex. 9 at 17972 (1/6/03 Response).

Based on this language, Agere contends, PCTEL cannot now claim that the patent covers non-HSP modem devices, such as those that contain DSP chips.
PCTEL counters that the digital system processing which occurred in the prior art was modulation and demodulation. Thus, PCTEL contends, the disclaimer concerning modems with DSP chips is entirely consistent with their construction of "software that performs modulation and demodulation" because that functionality is performed in the '305 patent through software. PCTEL cites the claim language following the phrase "software modem" in which the modem is "adapted to convert digital samples from the device to data values ...", arguing that this is simply modulation and demodulation, in accordance with PCTEL's construction.

Under the plain meaning of the claim, illuminated by the context of the surrounding words, the term "software modem" is explained by the language "adapted to convert digital samples from the device to data values." However, PCTEL expressly distinguished the '305 patent from the prior art based upon the fact that the prior art had a dedicated DSP chip, and the '305 patent did not. It is well established that "the prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution." *Spring Window Fashions LP v. Novo Industries, L.P.,* 323 F.3d 989,994 (Fed Cir.2003). The Court finds that the patentee disclaimed systems which include digital signal processing performed by hardware. Accordingly, the Court construes the claim "software modem" to be "a modem that utilizes the software executed by the host processor to perform modulation and demodulation rather than including a digital signal processing (DSP) chip."

CONCLUSION

For the foregoing reasons, the Court construes the disputed claim terms as follows:

1. "device coupled to the local bus" is construed as "a device directly connected to the local bus."

2. "the device occupies an I/O slot that corresponds to a first communications port on the local bus" is construed as "the device occupies an input/output slot on the local bus that corresponds to a communications port."

3. "a UART emulation which" is construed as "software that responds to the operating system as a hardware UART would respond with respect to UART control and register data, which."

4. "converts the access as required for the register set and address assignment of the device" is construe as "converts the request for accessing the register set of a UART to a request for accessing the register set and address assignment of the device."

5. "software modem" is construed as "a modem that utilizes the software executed by the host processor to perform modulation and demodulation rather than including a digital signal processing (DSP) chip"

IT IS SO ORDERED.

N.D.Cal.,2006.
PCTEL, Inc. v. Agere Systems, Inc.