IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

INLINE CONNECTION CORPORATION, Plaintiff, v. AOL TIME WARNER INCORPORATED, et al., Defendants.	)	C. A. No. 02-272-MPT
INLINE CONNECTION CORPORATION, Plaintiff, v. EARTHLINK, INC., Defendant.	)	C. A. No. 02-477-MPT Consolidated Cases

MEMORANDUM OPINION

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Wilmington, Delaware
April 13, 2005

Thynge, U.S. Magistrate Judge

I. INTRODUCTION

This is a patent infringement case. On April 12, 2002, Inline Communication Corporation ("Inline")[1] filed suit alleging infringement by AOL Time Warner Incorporated,[2] America Online, Inc. ("AOL"),[3] and EarthLink, Inc. ("EarthLink").[4] (hereinafter, AOL and EarthLink are referred to as "defendants") of four of its patents: U.S. Patent Nos. 5,844,596 (the "'596 patent"), 6,243,446 (the "'446 patent"), 6,542,585 (the "'585 patent"), and 6,236,718 (the "'718 patent") (collectively "the patents-in-suit").[5] Inline alleges defendants' Digital Subscriber Line products infringe claim 61 of the '596 patent, claims 1-6 of the 446 patent, claims 1, 2, 4, 8 and 9 of the '585 patent and claims 22, 24, 38 and 39 of the '718 patent.

The parties filed a Joint Submission Regarding Claim Construction[6] and briefing in support of their respective proposed definitions of certain disputed claim terms recited in the patents-in-suit.[7] Pursuant to *Markman v. Westview Instruments, Inc.*[8] and

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[1] Inline is a Virginia corporation with its principal place of business in Virginia.

[2] AOL Time Warner Incorporated is a Delaware corporation with its principal place of business in New York. AOL Time Warner Incorporated was subsequently dismissed from this action. *See* D.I. 266.

[3] AOL is a Delaware corporation with its principal place of business in Virginia.

[4] EarthLink is a Delaware corporation with its principal place of business in Georgia.

[5] The '596, '446, and the '585 patents are each continuations of a patent application filed July 14, 1989. The July 14, 1989 application issued as U.S. Patent No. 5,010,399 (the "'399 patent"), which is not asserted in this action. More specifically, the '585 patent is a continuation of the application that resulted in the '446 patent, which is a continuation of the application that resulted in the '596 patent. Throughout this opinion, the '596, '446, and '585 patents may be collectively referred to as the "'596 family of patents" as they each share a substantially identical written disclosure. The '718 patent is also a continuation of the patent application filed July 14, 1989, which resulted in the '399 patent and has a separate written disclosure.

Because the '596 family of patents each share a substantially identical specification, citation to the '596 patent's specification, or to the "common specification," in this opinion should be understood to refer to the same language in the written descriptions of the '446 patent and the '585 patent.

[6] D.I. 176.

[7] D.I. 187 (Defendants' Memorandum of Law on Claim Construction); D.I. 189 (Inline's Opening *Markman* Brief); D.I. 200 (Defendants' Response to Inline's Opening *Markman* Brief); D.I. 197 (Inline's Responsive *Markman* Brief).

[8] 52 F.3d 967 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996).

local practice, oral argument on the proper construction of the disputed claim terms was held on August 28, 2003 (the "*Markman* hearing").[9] On January 27, 2004 the court issued a memorandum opinion setting forth its construction of the disputed claim terms.[10]

On February 10, 2004, pursuant to Federal Rule of Civil Procedure 59(e) and District of Delaware Local Rule 7.1.5, plaintiff timely-filed a Motion for Reargument and/or Reconsideration of the Court's Construction of the Phrase "A High Frequency Band of Frequencies Above the Highest Frequency of the Telephone Voice Band," (the "Motion for Reconsideration").[11] On October 19, 2004, this court issued a memorandum opinion modifying its construction of the phrase the "a high frequency band of frequencies above the highest frequency of the telephone voice band" (the "high frequency" claim term).[12] During the pendency of the court's determination of the Motion for Reconsideration, the parties filed cross-motions for summary judgment.

On March 8, 2004, defendants jointly filed a revised motion for summary judgment of non-infringement and for summary judgment of invalidity for failure to comply with the written description requirement and supporting brief.[13]

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[9] *See* D.I. 207 (Transcript of the *Markman* hearing).

[10] *Inline Connection Corp. v. AOL Time Warner Inc.*, 302 F. Supp. 2d 307 (D. Del. 2004) (the "*Markman* Opinion").

[11] D.I. 242.

[12] *See Inline Connection Corp. v. AOL Time Warner Inc.*, 347 F. Supp. 2d 56 (D. Del. 2004).

[13] D.I. 251 (Defendants' Revised Motion for Summary Judgment of Non-Infringement and for Summary Judgment of Invalidity for Failure to Comply with the Written Description Requirement); D.I. 252 (Defendants' Joint Revised Brief in Support of Their Motion for Summary Judgement of Non-Infringement and for Summary Judgment of Invalidity for Failure to Comply with the Written Description Requirement). Defendants originally filed a Motion for Summary Judgment of Non-Infringement, or in the Alternative, for Summary Judgment of Invalidity for Failure to Comply with the Written Description Requirement and brief in support thereof directed at all four of the patents-in-suit on August 8, 2003. D.I. 192; D.I. 193. That motion presented non-infringement arguments in the alternative addressing the parties' competing claim construction proposals. At the August 28, 2003 *Markman* hearing, the court stayed briefing on

On April 19, 2004 Inline filed a cross motion for summary judgement of infringement of the '596 family of patents and supporting brief.[14]

II. BACKGROUND[15]

A. The Claimed Invention

The inventions described in the '596 family of patents concern the simultaneous transmission of high frequency information signals and lower frequency voice band signals over conventional telephone wiring. These patents describe a way of enhancing the plain old telephone system ("POTS") to distribute information signals over telephone wire that traditionally carry telephone calls to telephones which are part of a "local network."[16] The patents specifically describe a system for sharing a telephone wire between telephone calls transmitted in the voice band range and information signals which are transmitted in a different frequency range. The result is that the invention enables the transmittal of both voice and information signals on the

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defendants' motion until the court issued its opinion on claim construction. D.I. 207 at 4. Defendants subsequently filed their revised motion for summary judgment and supporting brief, also directed at all four patents-in-suit, thereby superceding and mooting their August 8, 2003 motion. As a result of the court's modification of the "high frequency" claim term, the parties agreed that the court was only to consider defendants' summary judgment arguments concerning the "signal interface" claim term of the '596 family of patents in this opinion. *See* D.I. 288.

[14] D.I. 260 (Inline's Motion for Partial Summary Judgment of Infringement by America Online and EarthLink of the Asserted Claims of the '596, '446, and '585 Patents); D.I. 261 (Inline's Opening Brief in Support of its Motion for Partial Summary Judgment of Infringement by America Online and Earthlink on the Asserted Claims of the '596, '446, and '585 Patents). Inline's summary judgment motion includes infringement arguments discussing each of the elements of the asserted claims of the '596 family of patents. Pursuant to this court's April 29, 2004 scheduling order, defendants' opposition brief to, and Inline's reply brief in support of, Inline's motion only address Inline's arguments with regard to the "signal interface" element of the asserted claims. D.I. 270. In the event that summary judgment is not granted to either party based on the "signal interface" claim term, briefing on the other elements of the asserted claims of the '596 family of patents will proceed. *Id.*

[15] All facts are taken from the patents, their prosecution histories, as well as, relevant deposition testimony, declarations, and other exhibits submitted with the parties' briefing.

[16] '596 patent 1:28-34 ("Each network includes a set of interconnected, active telephone wires (i.e., a group of wires that create conductive path for telephonic signals) internal to a house, an apartment unit, or a room in commercial buildings. (Such wiring internal to houses, apartment units, or rooms in commercial buildings shall be referred to herein as 'local networks.')").

same telephone wire, enabling a consumer to use his or her telephone while simultaneously using a computer. This is accomplished by the use of filters which block voice signals at a voice frequency range and pass the information signals at an information frequency range, and vice versa. These filters prevent interference between the respective telephone voice band and information signals.

The asserted claims each include a "signal interface." The claimed "signal interface" transmits information from an external source of information along the shared telephone wire to the local networks. Inside a structure housing the local networks, a "transceiver" is connected to the shared telephone wire for receiving the information signal and converting it to data for a computer or other device. The shared telephone wire remains connected to the telephones of the local network in the standard manner except that filers are installed at the telephones to prevent interference with the information signals. The "transceiver" and "signal interface" include filters for preventing interference with voice communication on the telephone.

B. The Accused Products

Defendants are two Internet Service Providers ("ISPs") which offer, among other services, Asymmetric Digital Subscriber Line ("ADSL") Internet access to their customers. ADSL is an industry-standard service offered by various telephone companies.[17] Defendants separately lease ADSL lines from ILECs or CLECs which they then assign to their respective ADSL subscribers. ADSL technology is commonly defined as:

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[17] The telephone companies are known as incumbent local exchange carriers ("ILECs"), and certain competitive local exchange carriers ("CLECs").

> ADSL: (Full Rate *asymmetrical DSL*) ADSL offers differing upload and download speeds and can be configured to deliver up to six megabits of data per second (6000k) from the network to the customer that is up to 120 time faster than dialup service and 100 times faster than ISDN. ADSL enables voice and high-speed data to be sent simultaneously over the existing telephone line. This type of DSL is the most predominant in commercial use for business and residential customers around the world. Good for general Internet access and for applications where downstream speed is most important, such as video-on-demand. ITU-T Recommendation G.992.1 and ANSI Standard R1.413-1998 specify full rate ADSL.[18]

The ADSL Internet access defendants provide to their subscribers conforms to the industry standards promulgated by the American National Standards Institute ("ANSI") and the International Telecommunications Union ("ITU"). Specifically, defendants provide splitterless ADSL service to many of their subscribers.[19]

Part of the ADSL system leased by telephone companies to ISPs is a digital subscriber line access multiplexer ("DSLAM"). This device is frequently, although not always, located in a telephone company's central office and transmits the ISPs' information signals downstream along the same wires that simultaneously carry telephone voice signals. In the upstream direction, the DSLAM receives from the local networks voice band and information signals and separates those signals for continued upstream transmission to the telephone company's switching equipment and the ISPs' data centers, respectively.

III. STANDARD OF REVIEW

A grant of summary judgment pursuant to Federal Rule of Civil Procedure 56(c)

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[18] D.I. 262, Ex. A at ICC 505737 ("DSL 'Glossary'").

[19] Splitterless ADSL service is more economical for ISPs, and convenient for customers, as a technician does not have to visit customers' residences and install a splitter which separates telephone voice signals from ADSL signals. Instead, with splitterless ADSL, the ISP provides its customers with a self-install kit that obviates the need for a technician's visit.

is appropriate "if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law."[20] This standard is applicable to all types of cases, including patent cases.[21] A Rule 56(c) movant bears the burden of establishing the lack of a genuinely disputed material fact by demonstrating "that there is an absence of evidence to support the nonmoving party's case."[22] Therefore, summary judgment is appropriate when there is no genuine issue of material fact or, when drawing all factual inferences in favor of the nonmoving party, no "reasonable jury could return a verdict for the nonmoving party."[23]

The non-movant must be given the benefit of all justifiable inferences and the court must resolve any disputed issue of fact in favor of the non-movant.[24] In cases where the nonmoving party will bear the burden of proof on a dispositive issue, the non-movant must designate "specific facts showing that there is a genuine issue for trial."[25] Material facts are those which "might affect the outcome of the suit under the governing law."[26] Any doubt as to the existence of any issue of material fact requires a denial of the motion.[27] Where the parties have filed cross motions for summary judgment arguing opposite sides of the same issues, each motion must be considered under the

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[20] Fed. R. Civ. Pro. 56(c).
[21] *Johnston v. IVAC Corp.*, 885 F.2d 1574, 1576-77 (Fed. Cir. 1989).
[22] *Celotex Corp. v. Catrett*, 477 U.S. 317, 325 (1986).
[23] *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 148 (1986).
[24] *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451, 456 (1992).
[25] *Celotex Corp.*, 477 U.S. at 324.
[26] *Anderson*, 477 U.S. at 248.
[27] *Id.*

same standards.[28]

IV. POSITIONS OF THE PARTIES

Each of the parties move for summary judgment based on the court's construction of the claim term "signal interface." In the *Markman* Opinion, the court construed "signal interface" as "a device interposed on the opposite end (i.e., the local side) of the public trunk line (as defined by the inventor in the patent) from the telephone exchange that performs the recited functions of the incorporated circuitry."[29]

Inline alleges that the ATU-C/DSLAM device[30] in an ADSL system is the claimed "signal interface." Defendants argue that "[i]t is undisputed that the ATU-C/DSLAM is located on the public side of the public telephone trunk line, at the telephone company's central office."[31] Because the court determined that the claimed "signal interface" must be located on the "local side" of the public trunk line, defendants contend that "there can be no literal infringement of the asserted claims of the '596, '446 and '585 Patents as a matter of law."[32]

Defendants also contend that Inline cannot prove infringement under the Doctrine of Equivalents ("DOE") for two reasons. First, the accused DSLAM is

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[28] *Williams v. Philadelphia Housing Authority*, 834 F. Supp. 794, 797 (E.D. Pa. 1993) *aff'd*, 27 F.3d 560 (3d Cir. 1994) ("In cases where the parties filed cross-motions for summary judgment, each side essentially contends that no issue of material fact exists from its perspective. . . . We must, therefore, consider each motion for summary judgment separately. . . . The standards under which we grant or deny summary judgment do no change because cross motions are filed. . . . Each party still bears the initial burden of establishing a lack of genuine issues of material fact. Such contradictory claims do not necessarily guarantee that if one party's motion is rejected, the other party's motion must be granted." (citations omitted)).

[29] 302 F. Supp. 2d at 329.

[30] An ATU-C is an ADSL modem. This is an element of a DSLAM which communicates over telephone wiring with a corresponding ADSL modem at a subscriber's premises, an ATU-R. The court will generally refer to only the "DSLAM" with the understanding that ATU-Cs are an element thereof.

[31] D.I. 252 at 6 (emphasis in original).

[32] *Id.* at 8.

purportedly substantially different from the claimed "signal interface" "since the accused ATU-C/DSLAM has several properties that the common specification of the patents explicitly forbid the signal interface from having."[33] Defendants contend that the court specifically found that the patentee emphasized that an important function of the "signal interface" is "'to prevent high frequency signals, coming from the external source, from passing onto the public telephone trunk line.'"[34] Defendants argue that since the DSLAM "is designed for the very purpose of transmitting signals that Inline claims to be 'high frequency' signals onto the public telephone trunk line," there can be no infringement under the DOE.[35]

Second, defendants argue that "prosecution history estoppel precludes Inline from using the DOE to expand the claims to attempt to cover the accused DSLAM."[36] Defendants maintain that in the *Markman* Opinion the court found the patentee relied on the placement of the "signal interface" at a specific location which prevents high frequency signals from being transmitted onto the public trunk line in order to distinguish the invention from prior art references.[37] Based on this finding, defendants argue that prosecution history estoppel precludes Inline from making a DOE argument covering a system in which high frequency signals are transmitted onto the public trunk line.[38]

In its opposition to defendants' motion for summary judgment, Inline argues that

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[33] *Id.*
[34] *Id.* at 8-9 (emphasis omitted) (quoting 302 F. Supp. 2d at 323).
[35] *Id.* at 9.
[36] *Id.* at 8.
[37] *Id.* at 11.
[38] *Id.*

defendants' position "mischaracterizes the 'public trunk line' as defined by the inventor . . . and ignores a second implementation using remote terminal locations of the ATU-C/ DSLAM, outside of a central office."[39] According to Inline, an examination of the evidence demonstrates that:

> 1. The DSLAM is located on the local side – the end of – the public trunk line, as is the claimed signal interface; and
> 2. The DSLAM does not transmit ADSL high frequency signals onto the public trunk line, but rather blocks these signals from reaching the public trunk line and the telephone exchange at the opposite end of the trunk line, as does the claimed signal interface.[40]

Inline's opposition to defendants' motion does not specifically address defendants' arguments as to why they do not infringe under the DOE.

Approximately one week prior to defendants' filing of their reply brief in support of their motion for summary judgment, Inline filed its cross motion for partial summary judgment of infringement of the asserted claims in the '596 family of patents. As in its brief in opposition to defendants' motion, Inline again contends that the DSLAMs through which defendants' provide ADSL service are always located on the local side of the public trunk line, as defined by the inventor in the patents, and that defendants ignore a configuration where the DSLAM is located at a remote location rather than in a central office.[41] Inline submits no evidence or argument of infringement under the DOE as an alternative to its literal infringement arguments in its motion for summary judgment.

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[39] D.I. 257 at 2.
[40] *Id.*
[41] D.I. 261 at 2.

V. ANALYSIS

Patent infringement requires a two-step analysis. The first step is for the court to make the legal determination of how the claims at issue are to be construed.[42] The second step is a factual determination of comparing the properly construed claims to the accused product to determine whether the accused product contains all the limitations, either literally or by equivalents, of the claimed invention.[43] If the accused devices do not contain at least one limitation required by the asserted claims, the court must conclude that the devices do not infringe as a matter of law and grant defendants' summary judgment motion.[44]

Absent literal infringement of the express terms of the claim, infringement may be found under the DOE. Essential to the inquiry under the DOE is whether the accused product or process is identical or equivalent to each claimed element of the patented invention.[45] Nevertheless, prosecution history estoppel provides a legal limitation on the application of the DOE by excluding from the range of equivalents subject matter surrendered during prosecution of the application for the patent.[46]

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[42] *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1365 (Fed. Cir. 2002).

[43] *Id.*

[44] *See Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1323 (Fed. Cir. 2001) ("Summary judgment of noninfringement is appropriate where the patent owner's proof is deficient in meeting an essential part of the legal standard for infringement, such failure will render all other facts immaterial."); *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed. Cir. 1995); *see also Warner-Jenkinson Co., Inc., v. Hilton Davis Chem. Co.*, 520 U.S. 17, 39 n.8 (1997) ("Where the evidence is such that no reasonable jury could determine two elements to be equivalent, district courts are obliged to grant partial or complete summary judgment.").

[45] *Warner-Jenkinson*, 520 U.S. at 40.

[46] Prosecution history estoppel ensures that a DOE argument remains linked to its underlying purpose. It arises when an amendment is made to a patent during its prosecution and as a result, the scope of the patent is narrowed. To determine the extent of the claim, prosecution history estoppel requires an examination of the subject matter surrendered. While the patent cannot extend as far as the original claim, the narrowing amendment does not relinquish unforeseen equivalents or those equivalents that do not vary far beyond a fair interpretation of the surrendered material. *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 737-38 (2002).

The court's determination of the competing motions for summary judgment to a large extent rests on how the inventor defined public trunk line. Before discussing that definition, it is necessary to reiterate certain aspects of the invention described in the '596 family of patents as well as the parties' positions and the court's reasoning concerning the construction of the claim terms relevant to the parties' motions, specifically "signal interface" and "telephone exchange."

A. The Court's Construction of "Signal Interface" and "Telephone Exchange"

The '596 family of patents describe an:

> [I]nvention relat[ing] to a system for simultaneous two-way communication of video signals and other signals between multiple networks of telephone wiring . . . providing distribution of all of these signals to a local network of active telephone wiring (i.e. the wiring internal to a house, apartment unit, or a room in a commercial building) from a distribution device[, i.e, the claimed "signal interface,"] that connects to the trunk line of a public or private telephone network.[47]

In the *Markman* Opinion, the court stated that "[i]n each claimed system, at one end of the telephone wiring network are telephone devices, such as telephones. The telephone exchange is at the other end of the telephone wiring network."[48]

The court construed "telephone exchange" as "[a] switching center for connecting and switching phone lines."[49] In its *Markman* briefing, Inline contended that "'telephone exchange' is telephone switching equipment, including equipment within a central office or a private branch exchange."[50] Defendants argued that "[t]he proper construction of 'telephone exchange' is a telephone company 'central office.'"[51]

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[47] '596 patent 1:23-2:1.
[48] 302 F. Supp. 2d 307, 321 (D. Del. 2004).
[49] *Id.* at 329.
[50] D.I. 189 at 14.
[51] D.I. 187 at 27 (emphasis omitted).

The court rejected Inline's position stating: "Inline's construction that 'telephone exchange' is switching equipment, rather than a switching center, is not consistent with the dictionary definition of the term, the claim language, or the specification."[52] The court noted that "a dictionary relied on by plaintiff in support of its definition . . . provides a definition of . . . 'telephone exchange,' which is consistent with the court's construction that a telephone exchange *is a specific location.*"[53] The court next examined the intrinsic evidence to determine the consistency of the proffered dictionary definitions with that evidence. The court found that evidence established that "[i]n each claimed system, *at one end of the telephone wiring network* are telephone devices, such as telephones. The telephone exchange is at *the other end* of the telephone wiring network."[54] The court also determined "[t]here is no indication in the illustrations . . . that 'telephone exchange' . . . has a meaning other than 'a switching *center* for connecting and switching phone lines.'"[55] Thus, the court explicitly rejected Inline's position that the "telephone exchange" claim term means switching equipment and, instead, determined that "telephone exchange" is a specific location "for connecting and switching phone lines" which is located at the "other end of the telephone wiring

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[52] 302 F. Supp. 2d at 320.

[53] *Id.* at 321 (emphasis added). As set forth in the *Markman* opinion, the definition upon which the court based its construction of "telephone exchange" defines that term as "[a] switching center for connecting and switching phone lines. A European term for what North Americans call **central office**." *Id.* at 320 n.64 (emphasis added). The court also noted that the same dictionary "defines 'central office' as 'telephone company facility where subscribers' lines are joined to switching equipment for connecting other subscribers to each other, locally and long distance.'" *Id.*

[54] *Id.* at 321 (emphasis added). Although Inline argued for a construction of "telephone exchange" that was ultimately rejected by the court in the *Markman* Opinion, the court notes that Inline set forth a description of the communication system consistent with the description recited by the court. *See* D.I. 189 at 14 ("Plain meaning: The claims require that the telephone exchange form one end of a telephone wiring network. The other end is formed by telephone devices . . . at residences." (emphasis and citations omitted)).

[55] 302 F. Supp. 2d at 321 (emphasis in original).

network" from the telephone devices.

The court construed the term "signal interface" as:

> A device interposed on the opposite end (i.e., the local side) of the public trunk line (as defined by the inventor in the patent) from the telephone exchange that performs the recited functions of the incorporated circuitry.[56]

In its *Markman* briefing, Inline argued that "[t]he proper construction of signal interface is a device that provides an interconnection and adaptation of signals."[57] Inline asserted that the specification does not "require that [the 'signal interface'] occupy a particular position between the telephone exchange and telephones within subscriber residences or offices."[58] Inline contended that "the term signal interface should not be construed as inherently limited to any particular location. Rather, the claims merely define the spatial relationship of the signal interface as anywhere between the telephone exchange and telephone devices."[59] Inline also argued that "[d]efendants assert that there must be a location restriction on signal interface in order to prevent high frequency signals from reaching an arbitrary point on the public telephone network: a trunk. This is nonsense. The signal interface keeps signals from reaching the exchange, not a public trunk line."[60] Inline argued further that defendants' proposed construction, which was ultimately adopted by the court, would read out the embodiment illustrated in figure 1b of the patents.[61]

In the *Markman* Opinion, the court stated, "[d]efendants assert that Inline's

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[56] *Id.* at 329.
[57] D.I.189 at 16.
[58] *Id.* at 18.
[59] *Id.* at 20.
[60] D.I. 197 at 13.
[61] *Id.* at 14.

proposed construction is overbroad. . . . Defendants maintain that the signal interface replaces the *existing interface* between the public telephone network, that is, an ordinary telephone trunk line and the telephone lines that lead to individual residences. The court agrees."[62]

The court found that one of the functions of the claimed "signal interface" was to "prevent the high frequency signals from passing onto the collection of twisted pairs 476 that form the public trunk line leading *back to the telephone exchange*."[63] The court also determined that relevant figures in the patents depict "the 'signal interface' as being interposed on the opposite end (i.e., the local side) of the public trunk line from the telephone exchange."[64] Examining the prosecution history, the court also stated that,

> During the prosecution of the '596 patent, a number of prior art systems were distinguished on the basis that *the claimed signal interface* prevented high frequency signals from being transmitted *onto the public telephone trunk line* and *back to the local exchange*. . . . In order to overcome the teachings of these references, the inventor amended the claims so that the interface included circuitry for preventing transmission of the received video signal *to the telephone exchange*.[65]

The court notes that its construction of "signal interface" does not read out the embodiment represented in figure 1b of the patents, as Inline argued during the *Markman* proceedings. In making that argument, Inline equated the private branch exchange ("PBX") illustrated in that figure with the claimed "telephone exchange."[66] Figure 1b shows that the PBX is not the "telephone exchange" recited in the claims.

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[62] 302 F. Supp. 2d at 322 (emphasis added).
[63] *Id.* at 324 (emphasis added).
[64] *Id.* at 323.
[65] *Id.* at 324 (emphasis added).
[66] D.I. 197 at 14.

That figure illustrates line 475' leading from the PBX back to the "Local Exchange," i.e., the "telephone exchange."[67] Although not a basis for the court's construction of "signal interface," the court notes that an illustration created by Inline and included as an exhibit to its *Markman* submissions also shows that the PBX is not the recited "telephone exchange." That exhibit illustrates the relationship of the various components of the telephone system in a PBX embodiment of the claimed invention and shows the "Telephone Exchange" separate and upstream from a "PBX Switch" and "Signal Interface" which are located in a "PBX Wiring Closet."[68]

Based solely on the intrinsic evidence, the court adopted defendants' proposed construction of "signal interface." In adopting that construction, the court explicitly rejected Inline's contention that the claimed "signal interface" could be located anywhere on the telephone wiring network between the "telephone exchange" and telephone devices explaining that:

> [t]he patentee . . . emphasized in the specification, the importance of connecting the signal interface on the local side of the public trunk line by noting that government regulations limit the energy that can be conducted onto the public telephone network . . . .
>
> Thus, the signal interface is designed to prevent high frequency signals, coming from the external source, from passing onto the public telephone trunk line. If the signal interface was located somewhere on the public trunk line, the signals would travel over the public trunk line to reach the signal interface.[69]

With regard to the two claim-terms most pertinent to the current motions for

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[67] The court noted that in "[f]igures 1a and 1b [the] 'telephone exchange' . . . is noted as the 'local telephone exchange' . . . ." 302 F. Supp. 2d at 321.

[68] *See* D.I. 190, Ex. A.

[69] 302 F. Supp. 2d at 323.

summary judgment, then, the court construed "telephone exchange" to be a specific location, "a switching *center*," and not merely the switching *equipment* that may be housed therein. The court determined that the claimed "signal interface" was interposed at a pre-existing point of convergence located on the "local side" of the public trunk line, which local side is at the "opposite end . . . of the public trunk line (as defined by the inventor in the patent) from the telephone exchange."

B. The Public Trunk Line (as Defined by the Inventor in the Patent)

At oral argument on the parties' cross-motions for summary judgment, Inline pointed out that the court's construction of "signal interface" has both a location and a functional component. The location component is "a device interposed on the opposite end (i.e., the local side) of the public trunk line (as defined by the inventor in the patent) from the telephone exchange . . . ." The functional component is "a device . . . that performs the recited functions of the incorporated circuitry." Inline acknowledges that both components must be present in the accused device for infringement to be found.[70] The court will first address the location component of "signal interface."

Key to the court's consideration of the parties' summary judgment motions with regard to the location component of the court's "signal interface" construction is a determination of how the inventor defined the public trunk line in the patents. The parties' positions on that definition are recited below.

Defendants assert that:

> [T]he inventor defined the public trunk line as the communication path running from the telephone company central office (referred to in the

[70] *See* D.I. 290 at 47.

patent as the 'telephone exchange') at one end to a point within or just outside a structure, where twisted pairs of telephone lines from individual residences, apartments, or offices converge, i.e., "the point of convergence."[71]

Inline frames the issue as follows:

> The dispute for purposes of Defendants' motion for summary judgment . . . is the point where telephone lines are split into two segments: one segment, the public trunk line, as defined by the inventor, is the communications pathway that carries voice signals to the switching center where they are connected and switched for voice communications; the other segment, the extended pairs, as defined by the inventor, carries both voice and information signals to the customer premises. The patents describe this point as the signal interface. The Court has construed this point to be on the local side of the public trunk line as the latter term is described by the inventor.[72]

In support of its motion for summary judgment, Inline specifically contends that:

> [T]he patents give several examples of the public trunk line. One example is telephone wire pairs upstream of the signal interface (transceiver/switch 400) that lead to the telephone exchange. (*See* Fig. 1a; '596 patent, col. 9:1-4; D.I. 239 at 27, 30). The public trunk line may also be a fiber optic line. ('596 patent, col. 7:42-50). *The public trunk line is thus the telephone twisted pairs, and any fiber optic line, that links the switching center of the local telephone company with the signal interface.* The local side of the public trunk, as defined by the inventor in the patents, is the downstream side of the telephone twisted wire pairs that carry voice telephone signals from the switching center, ultimately as far as subscribers' homes or offices. At the opposite end, the public side of the public trunk line connects to the switching center for connecting and switching telephone lines.[73]

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[71] D.I. 271 at 3-4; *see also id.* at 4 ("In sum, the Court determined that, in the pre-existing telephone networks described in the common specification, the public trunk line begins at an interface point, where wires from individual residences (called extended pairs) converge. From that point, the public trunk line runs back to the telephone exchange . . . ."); D.I. 274 at 4 ("[T]he Court specifically recognized that, in the telephone networks described in the common specification, a 'public trunk line' (as defined by the inventor) is an existing structure that runs from a central office to a point of convergence, where it interfaces with individual extended pairs to individual residences or offices."); *id.* at 6 ("[T]he public trunk line is the aggregation of wires that begins at the point of convergence where separate twisted wire pairs from individual homes or apartment units come together and collectively lead back to a telephone company central office.").

[72] D.I. 257 at 4-5.

[73] D.I. 261 at 21-22 (emphasis added).

Inline's contention that "the patent divides the transmission path into two segments: the public trunk . . . and the extended pairs . . ."[74] does not appear to be in dispute.[75] Inline goes on to assert, however, that:

> *[I]t is the signal interface itself, because of its function, that divides the telephone lines into the public trunk segment and the extended pairs segment.* By definition, then, the signal interface is at the 'local' end of the trunk. The 'public' end is on the opposite side, and connects to the switching center."[76]

As a consequence of the public trunk line purportedly being defined by the placement of the "signal interface" at some point on the telephone wiring network, Inline argues that:

> The signal interface . . . is always on the local side, at the downstream end of this trunk so that it can perform its functions of: 1) passing voice signals upstream onto the trunk for connecting and switching these voice signals to the public switched telephone network, and 2) passing information signals onto the telephone lines that lead to their destinations – devices designed to receive these signals. The trunk line performs a single function: it carries voice signals but not the claimed high frequency information signals.[77]

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[74] D.I. 257 at 7.

[75] *See* D.I. 271 at 6 ("[T]he Court correctly recognized that, in the pre-existing telephone networks described in the common specification, a public trunk line (as defined by the inventor) already exists and runs from the telephone exchange to the point of convergence where it interfaces with the extended pairs leading back to the individual residences, offices, etc.").

[76] D.I. 257 at 7 (emphasis added); *see also* D.I. 261 at 25 ("[T]he patents' signal interface, defines the division between the public and local sides of the conductive pathway and delineates the beginning of the local side. By definition, then . . . the signal interface, is on the opposite end, or local side, of the public trunk line that leads to the switching center.").

[77] D.I. 257 at 5. The court notes that in its summary judgment submissions, Inline also resurrects its prior argument that the PBX is the claimed "telephone exchange," reiterating that during the *Markman* proceedings it argued "the trunk in the private environment connects the private branch telephone exchange to the signal interface: the trunk is private and the claimed telephone exchange in this embodiment is a private branch telephone exchange." D.I. 275 at 9. Inline again contends that "in Figure 1b, the telephone exchange and the signal interface are both typically located in a single building. The patents teach that the telephone trunk line (476) (defined by the inventor in the patents) couples the PBX telephone exchange to the signal interface." *id.* at 17. As explained above, the PBX is not the recited "telephone exchange." Furthermore, Inline's assertion contradicts its own position that the definition of public trunk line provided by the inventor in the patents is "the telephone twisted pairs, and any fiber optic line, that links the switching center *of the local telephone company* with the signal interface." D.I. 261 at

Neither parties' position accurately describe the public trunk line as defined by the inventor in the patents. Defendants' definition, which requires that the point of convergence, at which a "signal interface" may be interposed, to always be "a point within or just outside a structure," is not completely consistent with the inventor's definition of public trunk line. For its part, Inline's assertions do not correctly characterize the court's construction of "telephone exchange," "signal interface," or the manner in which the inventor described the communication system in which the claimed invention operates.

First, Inline contends that defendants' summary judgment arguments "mischaracterize the Court's construction of 'telephone exchange' [and that] . . . Defendants go so far as to adopt the very 'central office' *building* construction the Court expressly rejected."[78] Inline appears to misapprehend the court's construction. As

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21. Also, the common specification explicitly contradicts Inline's contention that the twisted pairs designated "476" *in figure 1b* constitute the trunk line. The very section of the patent cited by Inline for this proposition, *see* D.I. 275 at 17, states: "Tranceiver/switch 400 (Fig. 2) is also located inside wiring closet 501, interposing along the portions of *extended pairs 405* that is within a few (e.g., 20) feet of PBX 500. The relatively short portions of *extended pairs 405* connecting between transceiver/switch 400 and PBX 500 *are called twisted pairs 476a-476c (collectively, 476).*" '596 patent 41:57-62 (emphasis added). In the configuration illustrated by figure 1b, the public trunk line is designated cable 475'. *See* '596 patent 41:52-54 ("PBX 500 . . . also connects to local exchange 475 (i.e. the public telephone network) through cable 475' . . . ."); '596 patent 9:1-4 ("[T]he interface . . . is interposed between telephone wire pairs from the local telephone exchange (the trunk line) . . . ."). Curiously, other assertions by Inline are consistent with this plain reading of the patents. For instance, Inline states that "[f]igure 1a . . . is functional block diagram showing the relationship of various components of the claimed system" and that "[a] review of *all* block diagrams included in the patents show that they each include the language 'to the ____.'" D.I. 257 at 5 & 5 n.5 (emphasis added). That statement is correct in that, like figure 1a's depiction of "[Trunk] 476'" traveling "TO LOCAL EXCHANGE 475," the block diagram of figure 1b illustrates "Line 475'" traveling from the PBX "TO LOCAL EXCHANGE 475." In that same submission, Inline even characterizes the PBX in figure 1b as switching equipment, and not the recited "telephone exchange," i.e., the switching center. *See id.* at 17 n.18 ("[T]he PBX of Figure 1b is a *voice switch* for switching and connecting phone lines served by the PBX switching center. The PBX is a smaller version of the *voice switch* that is part of *the switching center*, and the PBX switches and connects telephone lines *served by that larger voice switch.*" (emphasis added)); *see also* D.I. 275, Ex. A at 245:17-19 (2003 Goodman Dep. ("[I]n [figure] 1B the transceiver switch 400 is located near the *telephone switch*, which I label PBX500" (emphasis added))).

[78] D.I. 275 at 2 (emphasis in original).

explained above, the court expressly rejected Inline's proposed construction of "telephone exchange," not defendants' proposed construction. Furthermore, in parts of its summary judgment submissions, Inline seems to be promoting the very "telephone switching equipment" construction that the court expressly rejected.[79] In other instances, Inline submits evidence which distinguishes the "switching center" from the switching equipment contained therein and is consistent with the court's construction of "telephone exchange" as not being the same as switching equipment.[80]

Next, Inline acknowledges that the court determined that the claimed "signal interface" is interposed at a specific location, i.e., on the local side of the public trunk line.[81] However, Inline's argument that the public trunk line and the extended pairs are defined by placement of the "signal interface" and/or the types of signals carried on

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[79] *See* D.I. 265, ¶ 28 (Jackson Infringement Decl. ("In the case of central office infrastructure, the public trunk is the telephone wiring upstream of the splitter in the ADSL interface. That upstream wiring heads back to the *telephone switching equipment* on the edge of the public switched telephone network. . . . The public side of the trunk is at the *switching equipment* that connects and switches calls to provide telephone service. The local side of the public trunk is at the opposite end, where the ADSL interface connects to extended pairs that extend to subscribers." (emphasis added))). Additionally, and as discussed above, Inline states that "the PBX . . . is a voice switch[, i.e. switching *equipment*] for switching and connecting phone lines," D.I. 257 at 17 n.18, and nevertheless argues that the PBX is the claimed "telephone exchange." *See* D.I. 275 at 16-17.

[80] *See* D.I. 261 at 25 (quoting deposition testimony of Livaditis, AOL's 30(b)(6) witness, who describes a POTS Class-5 voice switch (which Inline states is "[t]he heart of the switching center") as "a voice switch contained within a serving wire center or central office." (emphasis omitted)). The POTS Class-5 voice switch in this example, then, is the switching equipment for "connecting and switching phone lines" contained within the "switching center." *See also*, D.I. 257 at 16 (Inline's notation on a diagram entitled "BellSouth DSL Architecture" labeling "POTS Voice Switch" as "Switching Center Component").

[81] *See* D.I. 261 at 2. The court notes that the distinction between "public" and "private" is a distinction as to who owns the particular telephone wire. *See, e.g.*, D.I. 274, Ex. A at 249 (2003 Goodman Dep. (stating that the distinction between "public/private is only who owns [the telephone lines].")). The language of the court's construction of "signal interface" does not make a distinction between public and private, i.e., who owns the telephone lines. That construction states that the "signal interface" is interposed at a point of convergence on the "local side" of the public trunk line, i.e., the end of the public trunk line where there is a pre-existing point of convergence beyond which the extended pairs lead to the "local networks." Rather than making a public/private distinction, the court's construction distinguishes the "local side" from the "'telephone exchange' side" of the public trunk line; "a device interposed on *the opposite end (i.e., the local side)* of the public trunk line . . . *from the telephone exchange*."

each as a result of the function of the "signal interface" ignores an important fact evident from the common specification. That fact is that the public trunk line, the extended pairs and the points of convergence (where the claimed "signal interface" may be interposed) are described as existing elements of the telephone wiring network.[82] The patents do not describe the public trunk line and extended pairs as amorphous structures, the identities of which are determined only when a "signal interface" is interposed somewhere on the telephone wiring network. The result of Inline's definition of the public trunk line as any group of wires "upstream" from the "signal interface" (or any group of wires upon which only voice signals are transmitted) is that the "signal interface" could be placed anywhere on the public trunk line. As stated above, the court's *Markman* Opinion rejected that proposed construction.[83]

The patents explain, "[t]he [signal] interface provided by the invention . . . replaces the *existing interface* between the public telephone network (i.e., an ordinary telephone trunk line) and the telephone lines that lead to individual residences."[84] The telephone lines that lead from the existing interface, or point of convergence, to the individual residences (i.e., to the local networks) are the extended pairs.[85]

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[82] Inline seemingly acknowledges this point. *See* D.I. 275 at 4 ("[A]ll telephone wires are existing, as are the access points where telephone wires converge.").

[83] Although Inline now contends that it "has never argued that a signal interface may be installed anywhere on a public trunk line, as Defendants characterize this term," D.I. 275 at 9, that is the effect of arguing that the placement of the "signal interface" defines the public trunk line. Also, as noted above, in its *Markman* submissions, Inline explicitly argued that "the claims merely define the spacial relationship of the signal interface as *anywhere* between the telephone exchange and telephone devices." D.I. 189 at 20 (emphasis added).

[84] '596 patent 8:9-13 (emphasis added).

[85] *See* '596 patent 9:1-6 ("[T]he interface . . . is interposed between telephone wire pairs from the local telephone exchange (the trunk line) and the extended telephone wire pairs leading to separate local networks of telephone wiring."); '596 patent 1:64-66 (describing "a local network of active telephone wiring" as "the wiring internal to a house, apartment unit, or a room in a commercial building").

The common specification lists several points of convergence at which the claimed "signal interface" may be interposed. Describing the invention, the specification states that "[t]he present invention relates to a system for simultaneous two-way communication of video signals and other signals between multiple networks of telephone wiring *whose twisted pairs converge together into a single bundle, wiring block, or other common points of access*, and a high capacity communication line located at that point of access."[86]

These points of convergence are described as pre-existing locations. For instance, the specification recites:

> Typically, the existing interface will be *a simple 'punch-down' panel* that provides electronic connections between the extended pairs and the pairs that are part of the trunk line.[87]
>
> In the case of houses, the point of common access can be *a telephone pole*. In the case of apartment buildings, the point of access can be *the "wiring closets"* found in those buildings. In the case of commercial buildings, the point of access can be *the electronic PBX*, or 'private branch exchange' common to those types of buildings.[88]
>
> [T]he twisted pairs providing telephone service to the units of an apartment building often converge *in a room in the basement of such a building*, providing a point of common access to a large number of units. *Other 'common points of access'* often available in an apartment building are the *wiring closets* that are often located on every floor.[89]

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[86] '596 patent 1:23-28 (emphasis added).

[87] '596 patent 8:15-18 (emphasis added).

[88] '596 patent 1:34-40 (emphasis added).

[89] '596 patent 63:6-12 (emphasis added); *see also* '596 patent 5:16-19 (stating that a particular "arrangement can actually achieve extra economies if telephone lines from several subscribers converge at one point, as they do *in apartment buildings* and sometimes *on telephone poles or pedestals*." (emphasis added)). As noted above, the common specification recites a "wiring block" as one of the pre-existing points of convergence. *See* '596 patent 1:23-28. Inline has presented evidence that the main distribution frame ("MDF") at a telephone company's central office is made up of wiring blocks. Based on this, Inline argues that the patents specifically contemplate an implementation in which a "signal interface" is located within a central office. As explained below, the court's construction of "signal interface" within a central office is not consistent with the court's construction of "signal interface" as an MDF within a central

The court agrees with Inline's statement that the public trunk line is described in the patents as "the telephone twisted pairs, and any fiber optic line, that links the switching center of the local telephone company with the signal interface."[90] However, the court did not, as Inline suggests, construe "signal interface" such that its placement *defines* the public trunk line, nor does the inventor's definition of public trunk line in the patents provide support for that proposition. Because the "signal interface" is interposed at a pre-existing point of convergence, the public trunk line running from the "telephone exchange" to that point, and the extended pairs that run from that point to the local networks, are also pre-existing structures and the specification consistently describes them as such. For example, the patents state, "the . . transceiver/switch[, i.e, the claimed "signal interface,"] . . . is connected to multiple pairs of telephone wire pairs from the local telephone exchange (the trunk line) and the extended telephone wire pairs leading to separate local networks of telephone wiring."[91]

> The wiring of each local network further includes a single branch that strays far from the structure, ultimately leading to the point of convergence where they connect to (or become part of) trunk 476'. These are extended pairs 405a-405e, (collectively, extended pairs 405.) The

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office is not on "the opposite end (i.e., the local side) of the public trunk line." The court's construction does not, however, preclude the claimed "signal interface" from being interposed at a wiring block. In its summary judgment briefing and at oral argument, Inline stated that "wiring blocks" are also found at locations outside of a central office. *See* D.I. 275 at 18 ("The wiring block in the commercial office building is often called a punch down panel . . . ."); D.I. 290 at 72 (discussing the placement of a "signal interface" "with the wiring block in the basement of the apartment" and stating "the patent goes on to teach that not only may you do it here in this wiring block [in the basement of an apartment building], but in many apartment buildings, there are wiring blocks on each floor"). These are examples of wiring blocks on the local side of the public trunk line at which the claimed "signal interface" may be interposed.

[90] D.I. 261 at 21; *see also id.* at 24 (stating that "[t]he inventor provided at least two pertinent definitions of the public trunk line in the patents": (1) "telephone wires [sic] pairs from the local exchange [switching center] to the signal interface" (citing '596 patent 9:1-6) and (2) "a fiber optic trunk line leading from the local exchange [switching center] to the signal interface" (citing '596 patent 7:42-50) (alterations by Inline)).

[91] '596 patent 9:1-6.

> extended pairs 405 from each of local networks 411 may be bundled closely together near the point of convergence. When transceiver/switch 400 is installed, extended pairs 405 are broken near the point of convergence, with transceiver/switch 400 interposing between the two ends of each pair.[92]

Nowhere does the common specification imply that the extended pairs or the public trunk line are defined by the placement of the claimed "signal interface." The inventor acknowledges that, because the "signal interface" must be interposed at a pre-existing point of convergence, it may not be feasible to provide service to some residences due to the length of the extended pairs that lead from that point to potential subscribers:

> [A] point of convergence at which conductors lead to a large number of subscribers *is not always nearby*. If some of the subscribers are a great distance from *the convergence point*, the attenuation of transmission may be too severe to allow reliable communication across the twisted pairs that comprise the telephone line.[93]

The limitation on the length of the existing extended pairs upon which the invention can transmit information signals does not implicate the length of the public trunk line, however. As Inline correctly points out, the common specification demonstrates that the public trunk line and the extended pairs discussed in the patents may be relatively long or short. For instance, claim 1 of the '585 patent recites, in the relative element:

> [A] plurality of separate conductive paths, each coupling the signal interface and a different one of the plurality of transceivers and providing at least part of a path for telephone signals in the voice band between the

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[92] '596 patent 11:27-37.

[93] '596 patent 6:29-35 (emphasis added); *see also* '596 patent 63:24-29 ("In very large apartment buildings . . . the distances may be such that extended pairs 405 will be relatively long for certain apartment units. . . . [T]his increases the attenuation of transmission, preventing the use of higher frequencies and limiting the number of signals that can transmit at a single time.").

> telephone exchange and one or more of the telephone devices at the same residence as said transceiver, wherein said separate conductive paths *exceeds 1000 feet in length.*[94]

The common specification also describes extended pairs of varying lengths.

> There can be a large variation in the lengths of extended pairs 405. In an apartment building, the telephone wires serving different units may converge at a point 100 feet or less from each apartment unit. An example of the other extreme occurs when distributing signals to separate houses in a neighborhood. In this case, connecting ten houses to a single transceiver/switch 400 may mean that some of extended pairs 405 will be longer than, perhaps, *1000 feet.*[95]

> The wiring of each local network further includes a single branch that strays *far from the structure*, ultimately leading to the point of convergence where they connect to (or become part) of trunk 476'.[96]

> [A]ttenuation of the video signal increases with frequency, which means that the highest useful frequency on extended pairs 405 decreases with length, ultimately restricting the signals to below 4Mhz. This is a problem because 4 Mhz of bandwidth is the approximate minimum required for transmission of an NTSC video signal in analog form. The inventors estimate that this point occurs before the lengths of extended pairs 405 reach *3000 feet.*[97]

> [T]he wires of many different networks in an apartment or office building often converge at a point *less than 500 feet* from those networks.[98]

Depending on the distance from the "telephone exchange" to the point of convergence, then, the public trunk line running from the "telephone exchange" to a point of convergence may be relatively longer or shorter in comparison to the extended pairs.[99] In each of these examples, however, the extended pairs are on the "local side"

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[94] '585 patent claim 1 (emphasis added).
[95] '596 patent 14:43-50 (emphasis added).
[96] '596 patent 11:27-30 (emphasis added).
[97] '596 patent 14:51-58 (emphasis added).
[98] '596 patent 17:46-49 (emphasis added).
[99] Contrary to Inline's suggestion, defendants' arguments concerning how the inventor defined the public trunk line in the patents is not dependent on the relative lengths of the public trunk line and the extended pairs. *See* D.I. 271 at 7 ("Regardless of the relative length of the public trunk line and the

of the public trunk line where those twisted pairs travel from the point of convergence to the local networks. This language, reciting extended-pair length of up to 3000 feet, or possibly more, also demonstrates that the inventor did not define the public trunk line as necessarily extending to "a point within or just outside a structure," as defendants contend.[100]

Also, the fact that particular twisted pairs are bundled closely together for some distance does not, in and of itself, define the public trunk line. The common specification states that the extended pairs may also be bundled together downstream from the "signal interface" for some distance. For example the patents recite:

> The extended pairs 405 from each of local networks 411 may be bundled closely together near the point of convergence.[101]
>
> [T]here is a significant possibility of cross talk interference between the various signals on extended pairs 405. This possibility is high because telephone wires converging at a common point may run parallel and very close to each other for a long distance.[102]
>
> [C]rossover, which can cause interference, is likely to result when pairs 405 are closely bundled within a common sheath, as often happens.[103]
>
> Bundles of multiple twisted pair wires[, i.e., extended pairs,] often lead from the basement location to the wiring closets.[104]

These citations demonstrate that, although the public trunk line may be an aggregation of twisted pairs, similar bundling is also described with regard to the

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extended pairs, the specification makes clear that the twisted pairs from the individual residences converge together at the public trunk line, which leads back to the telephone exchange. . . .").

[100] *Id.* at 4.

[101] '596 patent 11:31-33.

[102] '596 patent 17:32-36.

[103] '596 patent 14:67-15:2.

[104] '596 patent 63:13-15; *see also* '596 patent 29:63-65 ("A particular type of crosstalk interference can occur when transmitting signals over several twisted pairs in a large bundle of pairs.").

extended pairs, at least in some instances.[105] Therefore, the patentee did not define all bundles of twisted pair wires as the public trunk line.

To summarize, the patent describes placing a "signal interface" at a pre-existing point of convergence. As a result of practicing the claimed invention, high frequency signals and telephonic voice signals are transmitted on the extended pairs to the local networks. The "signal interface" prevents high frequency signals from being transmitted onto the public trunk line and back to the "telephone exchange." Thus, the public trunk line carries only telephonic voice signals. The descriptions of the signals that travel on the public trunk line and the extended pairs, however, merely state the result of practicing the claimed invention. Nowhere does the common specification state, or imply, that the public trunk line and the extended pairs are *defined* by the type of signals that travel on them. Rather, the public trunk line and the extended pairs are descriptions of pre-existing segments of the telephone wiring network described in the patents.

Based on the plain language of the patents, therefore, the court determines that the inventor defined the public trunk line in the patents as the telephone twisted pairs, and any fiber optic line, traveling from the "telephone exchange" to an existing point of convergence at which the claimed "signal interface" may be interposed.

C. Literal Infringement

In light of the inventor's definition in the patents of the public trunk line, the court

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[105] The court notes, however, that the specification does not imply that bundled extended pairs travel from the local networks all the way back to the "telephone exchange." The telephone wiring network is described in the patents as including extended pairs traveling between the local networks to the "signal interface" and the public trunk line traveling from that point back to the "telephone exchange."

determines that defendants' ADSL service provided via a DSLAM housed in a central office cannot literally infringe the "signal interface" limitation of the '596 family of patents. This is because in a central office implementation the DSLAM is not "on the opposite end (i.e., the local side) of the public trunk line (as defined by the inventor in the patent) from the telephone exchange." As a result of this determination, the court need not address the functional component of its "signal interface" construction with regard to a central office DSLAM implementation as Inline acknowledges that the accused device must meet both components of the court's construction in order for the accused devices to literally infringe the asserted claims of the '596 family of patents.

Inline also alleges that defendants provide ADSL service through remote location DSLAM implementations, i.e., where the DSLAM is not located in a central office. One form of remote location implementation is where a DSLAM is installed in what is referred to as a remote terminal. Remote terminals may be used to provide ADSL service to residences that would otherwise be too far from a central-office DSLAM to receive ADSL signals.[106] Remote terminals are also required to provide ADSL service if a telephone company has replaced the twisted pairs of the public trunk line with a fiber optic cable.[107] Another remote location implementation utilizes a DSLAM, known

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[106] D.I. 263, Ex. MM at IA16188 (Defining "Remote Terminal" as "[a] remote DSLAM located outside of the Telephone Company Central Office. Owned by the Telephone Company, the purpose of the remote terminal is to place a DSLAM closer to neighborhoods that otherwise would not qualify for DSL service."); *see also* D.I. 265 ¶ 29 (Jackson Infringement Decl. ("In the case of remote terminal infrastructure, the ADSL interface is located outside of the central office in an enclosure designed to provide telephone wiring connections and telephone service to subscribers located near the remote terminal.")).

[107] As explained below, ADSL signals cannot be transmitted over a fiber optic cable. Therefore, where the twisted pairs of the public trunk line have been replaced with a fiber optic cable, a DSLAM must be installed in a remote terminal to provide ADSL service to potential subscribers as a central office DSLAM cannot provide that service, regardless of the distance from a central office to those potential subscribers.

as a MiniRam, often located in apartment buildings.[108]

In response to Inline's allegation that defendants provide ADSL service via a DSLAM in a remote terminal, defendants argue that "Inline presents no evidence (a) that any ADSL service offered by Defendants utilizes a remote terminal or (b) that any ADSL implementation using a remote terminal places a DSLAM any place other than on the public side of the public trunk line."[109] The court will first address the purported lack of evidence that defendants provide ADSL service using a remote terminal DSLAM.

Inline has presented evidence demonstrating that phone companies are increasingly employing DSLAMs in remote terminals for use by ADSL providers.[110] Inline has also elicited testimony from defendants acknowledging that ADSL service may be provided through a DSLAM at a location other than a central office.[111] The fact that phone companies provide ADSL access via DSLAMs located in remote terminals,

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[108] *See* D.I. 275, Ex. J at 163 (2004 Thompson Dep. ("Q. What is a mini-RAM? A. Mini-RAM, as I understand it, is just another term for remote DSLAM, RAM standing for remote access mulitplexor, just dropping the DSL. . . . Q. What's your high level understanding of how a remote DSLAM works? A. Exactly the same as a DSLAM but in a smaller facility.").

[109] D.I. 271 at 11.

[110] *See* D.I. 262, Ex. F at ELNK 16954 (BellSouth, A Handbook for Network Service Providers ("With an aggressive, ongoing expansion program and remote-terminal DSL solutions, you can reach more potential customers. These remote solutions eliminate the requirement of having a central office within 18,000 feet of your customer. At the end of 2000, over 500 remote-terminal solutions in 46 markets have been equipped for DSL.")); *see also* D.I. 262 (2004 Pilipczuk Dep. 71:21-72:4 (SBC Project Pronto was an initiative that was to have provided DSL service via remote terminals)).

[111] D.I. 262 (2003 Collins Dep. 26:19-24 ("Q. Where would the DSLAM be physically located? A. The DSLAMS are going to be located out in remote offices, could be a CO, could be a remote office; difference being central offices typically aggregate remote offices.")); D.I. 275 Ex. M at 112:6-10 (2003 Collins Dep. ("But one of the things that's – this – this again, Exhibit 33, could be – you could say this is correct, but incomplete again. There's another technology, where they would use remote terminals, not DSLAMS at the CO.")); D.I. 262 (2004 Thompson Dep. 99:22-100:4; 100:12-14; 101:14-18 ("And a DSLAM does not have to reside at a central office. It just has to be on the phone line somewhere. Central office just happens to be a convenient place. . . . . Remote DSLAMs, yeah, can be somewhere else in the phone network other than the central office. . . . Same issue with the next page talking about the DSLAM being at the central office. It's probably an appropriate generalization, but it's not necessarily accurate.")).

and defendants acknowledgment of that fact, is not sufficient evidence to establish, as a matter of law, whether defendants' subscribers actually utilize ADSL lines from remote terminals.

Much of the evidence Inline presents consisting of defendants' documents, rather than phone company documents, suggests that defendants' ADSL service is only provided via central-office DSLAMs. For instance, an EarthLink document describing the speed of a ADSL connection states that:

> The maximum speed of your DSL connection will depend on how far your home is from the company's central office (CO) – including the distance to your DSLAM. The further away from the CO you get, the slower the maximum speed. If you're more than 12,000 feet (about two miles) from the CO, EarthLink probably won't sell you a DSL account, because we wouldn't be able to give you a fast enough connection to justify your cost.[112]

Inline has, however, presented other evidence which raises a question of fact as to whether defendants provide ADSL service via a DSLAM located at a remote location.

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[112] D.I. 263, Ex. X ("EarthLink, Support Center, Connecting to the Internet Tutorial, Connecting to the Internet, How Fast Can It Go?"); *see also, e.g.,* D.I. 263, Ex. X at ELNK 08748 ("EarthLink, What Is DSL?" (stating that "[i]n order to be eligible for DSL, users must live near a phone company's central office")); D.I. 275, Ex. C ("AOL Plus DSL System Schematic" (illustrating a DSLAM located inside a "Telephone Company Central Office (CO)")); D.I. 257 at 14 (including EarthLink, Inc. Layer 2 Service functional block diagram illustrating a DSLAM "Located at Local CO"); D.I. 263, Ex. T at IA 10095 ("Broadband Connections AOLnet Operations" dated 06/10/99 ("Technical Specifications" describing xDSL as "Dedicated connection from member residence to telephone company office")); D.I. 263, Ex. X ("EarthLink, Support Center, Connecting to the Internet Tutorial, Connecting to the Internet, DSL" (describing DSL use of high frequency signals and stating "[t]o use these frequencies, special equipment is installed in your telephone company's 'central office'" and describing a DSLAM as "a gadget that lives at your phone company's 'central office,' a building near your house housing equipment used by the phone company for your area")); D.I. 263, Ex. Z at IA16106 (listing possible reasons for "Noise impairments on DSL loop from the telco central office DSLAM to the NID"); D.I. 263, Ex. II at IA10513 ("Broadband Internet Access Service Agreement" between AOL and Covad Communications Company (defining "Loop Qualified Number" as "a telephone number (i) that is served by a telephone wire from the central office that is no greater than 18,000 cable feet long")); D.I. 263, Ex. JJ at IA10484 ("DSL Network Services Agreement" between AOL and SBC Operations, Inc. (stating that "'Loop Qualified' means, in the case of a residential household, that such household is both (a) located within 17,500 cable feet (unless the parties otherwise agree) of a Central Office of SBC or its Affiliate which is equipped with a DSLAM and (b) capable of receiving an ADSL Service Arrangement contemplated hereunder")).

With regard to MiniRams, Inline points to an e-mail chain including recipients having EarthLink e-mail addresses with the subject line "Miniram's in Miami???" The first e-mail in the chain recites:

> [W]e're noticing that MiniRams are popping up in these large apartment complex high-rises in Miami. . . Is there any training that BellSouth can get us in order to specially wire these customers up, or is it necessary? We are either finding no sync, or they are not provisioned yet so far. Typically if they have a mini-ram within the building, they should get sync, right? Is there any way to find out if they have a miniram before we go onsite?[113]

This e-mail was forwarded from one individual having an EarthLink e-mail address to another individual having an EarthLink e-mail address with the question "can you get some answers from BST on how to handle the situation below?"[114] The e-mail responding to that question states:

> According to BST, when there is a miniram located in an apartment room, it is telephone company equipment, so we shouldn't be touching it, no training is necessary. When service is established, it is provided through an NID, in the same way that service would be supplied from a central office. If there is no sync at NID, there is a problem. In addition, they have no way of telling us whether a miniram is involved in an order via regular regular [sic] order process, nor would their [sic] be any added value in knowing that information.[115]

At oral argument, defendants maintained that there is no evidence as to who the author of the original e-mail is or whether defendants actually provide ADSL service via MiniRams.[116] However, responses to that original e-mail from individuals having EarthLink e-mail addresses at least raises a question of fact as to whether EarthLink

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[113] D.I. 275, Ex. L at ELNK/JA-026761.
[114] *Id.*
[115] *Id.*
[116] *See* D.I. 290 at 101-02.

does in fact provide such service.

Inline also submits AOL and EarthLink documentation indicating that each may provide ADSL service via DSLAMS located in remote terminals. One such document was produced by AOL and is captioned "Ticket Checklist."[117] This document appears to be a checklist of items reciting possible causes for subscribers' ADSL service to be non-functional. Included on the checklist are items addressed to both "Remote Terminal Issues" and "CO [central office] Issues."[118] A similar document was produced by EarthLink titled "aDSL Standard Operating Procedures Manual."[119] In a section of that document captioned "Section 3: Installation Services Processes and Procedures," under the heading "If the Problem is No Sync (SBC)," the document describes the steps to be taken "[i]f ASI was NOT able to verify Sync at the NID, ASI should have had Sync verified at the Central Office (CO)/Remote Terminal (RT) . . . ."[120]

Additionally, David Thompson of EarthLink was questioned in a deposition about an e-mail he apparently authored concerning remote terminal issues at EarthLink.

> Q. This is Exhibit DT-10. This is an e-mail dated August 20th 2000 to broadband operations-vendor and some other people. And the subject is quick numbers on deployed remote terminals. . . . [L]et's start with the first sentence. "Just a quick heads up. Almost a year ago the broadband group identified remote terminal deployment as contributing significant

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[117] D.I. 275, Ex. K.

[118] *See* D.I. 275, Ex. K at IA16066 ("7. **Remote Terminal Issues** - RBOC tkt (in conjunction with FXI truckroll?)/ The FXI tech get no sync at the NID. The RBOC may not be able to test remotely from the RT and will have to dispatch a tech. **8. CO Issues** – RBOC tkt (in conjunction with FXI truckroll?)/ NO sync tickets/ The FXI tech will confirm no sync at NID and we will have to pen a ticket with the RBOC. A vendor meet may be the result of this situation (FXI tech and RBOC tech meet at customer Premise) . . . ." (emphasis in original)).

[119] D.I. 275, Ex. I.

[120] D.I. 275, Ex. I at ELNK 012564; *see also* D.I. 258, Ex. C at 40:12-18 (2003 Collins Dep. (discussing a document entitled "EarthLink, Inc. Layer 2 Service" Collins was asked "Q. Looking back at this Layer 2 service, I noticed a box for a DSLAM . . . Where would that physically be located in this topology? A. Its CO or remote office.")).

problems to ADSL provisioning." Do you recall why you would have written that?

A. Most likely because the broadband group of which I was part of had identified *remote terminal deployment* as contributing to significant problems to ADSL provisioning *as it affected EarthLink.*

Q. So you believe that to be a true statement? Is that what you're saying?

A. I would agree that is probably a true statement. We had identified that.[121]

This evidence is enough to raise a question of fact as to whether defendants provide ADSL service to some of their subscribers via DSLAMs located at remote locations. Defendants argue that even if they provide ADSL service utilizing remote location DSLAMs, such implementation nevertheless is non-infringing.

Defendants argue that "wires running downstream from the hypothetical remote terminal configuration comprise . . . a public trunk line."[122] Defendants support this argument based, in part, on Inline's contention that, "'in both cases[, i.e., central office and remote terminal implementations,] the ADSL interface . . . serves hundreds of subscribers.'"[123] Defendants characterize that statement as a concession by Inline "that the wires running downstream from remote terminals are aggregated, or concentrated precisely in the same way as central office configurations, and that they remain aggregated or concentrated until they reach a point of convergence, where individual twisted pairs break off and lead to individual residences."[124] As explained above,

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[121] D.I. 275, Ex. J at 165:10-166:7 (emphasis added).
[122] D.I. 274 at 12.
[123] *Id.* (emphasis omitted) (quoting D.I. 261 at 35).
[124] *Id.* at 12-13.

however, the inventor did not define public trunk line in the patents as merely an aggregation of wires. The common specification describes instances where extended pairs leading from a "signal interface" may also be bundled or aggregated.

Moreover, the fact that a large number of customers may be served by a "signal interface" interposed at a particular point of convergence does not necessarily mean that the wires downstream from a point of convergence constitute a public trunk line rather than extended pairs. The court finds no numerical limitation in the patents on the number of residences that may be served by a "signal interface" interposed at a particular point of convergence, as implied by defendants. Indeed, the common specification states that "a general aspect of this invention is a system that provides video signal communication between a source of the video signal and a *plurality* of units that include destinations of the video signal. . . ."[125]

The fact that there may, or may not, be additional points of convergence downstream from a remote terminal also does not mean that the wires traveling from a remote terminal to another point of convergence are not extended pairs. The common specification provides an example of multiple, or intermediate, points of convergence interposed on the same set of extended pairs in the description of an apartment building implementation.

> [T]he twisted pairs providing telephone service to the units of an apartment building often converge in a room in the basement of such a building, providing a point of common access to a large number of units.

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[125] '596 patent 3:58-61; *see also* '596 patent 4:26-28 ("The interface can select the same video signal for *multiple* residences and transmit the video signal onto the *plurality* of telephone lines that serve those residences." (emphasis added)); '596 patent 6:29-31 ("[A] point of convergence at which conductors lead to *a large number of subscribers* is not always nearby." (emphasis added)).

> Other 'common points of access' often available in an apartment building are the wiring closets that are located on every floor. These provide an intermediate point of convergence to the telephone wires of the units on that floor.[126]

Nothing has been cited to the court to indicate that instances of intermediate points of convergence are limited to the embodiment described above.

Finally, the specification and testimony concerning instances where a telephone company has replaced the twisted pairs of the public trunk line with a fiber optic cable indicates that a remote terminal implementation was contemplated by the inventor. The patents recite:

> The copper wires of this network are currently being replaced by fiber optics because these lines can carry much more information. Increasing the communication capacity to an individual residence using current technology requires installation of a fiber optic cable spanning the entire distance from the "local exchange" to the residence. The improvement described herein is the result of using the existing copper wires to communicate video and other signals over approximately the last 1000 feet of this link, i.e. from the main optical fiber trunks to electronic devices in the subscriber facilities.[127]

In that implementation, the point of convergence would be at a remote terminal located where those copper wires meet the fiber optic trunk. This implementation is consistent with defendants' testimony concerning one of the reasons for installing a DSLAM at a remote terminal.

> Q. What's your understanding of why remote DSLAMs are used?
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> A. As I understand, ADSL requires a physical wire. It will not work over fiber. . . . I understand some of the LECs will provision phone lines using a piece of fiber from the central office to a remote site and that would be providing phone network. But you could not connect anything off the fiber

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[126] '596 patent 63:6-13.
[127] '596 patent 7:40-50.

> to a DSLAM in the central office. So you would put a remote DSLAM where it could pick copper to get to the customer's premises.[128]

Consequently, the court determines that a remote terminal is a point of convergence at which the claimed "signal interface" may be interposed. A remote-terminal DSLAM, then, meets the location component of the court's "signal interface" construction. The court must next consider evidence regarding the functional component of the claimed "signal interface" to determine whether DSLAMs located at remote locations would meet this component of the court's construction of that term.

This component of the courts construction is that the claimed "signal interface" is "a device . . . that performs the recited functions of the incorporated circuitry." At oral argument, Inline contended that the functions of the claimed "signal interface" are to: (1) receive signals encoding information streams from the external source of information,[129] (2) transmit to a transceiver or transceivers signals in the high frequency band encoding information streams,[130] and (3) prevent high frequency signals from traveling upstream to the telephone exchange on the telephone wiring network.[131] Inline stated that defendants do not dispute that a DSLAM performs all of the functional aspects of the claimed "signal interface."[132]

The parties agree that defendants offer their allegedly infringing ADSL services

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[128] D.I. 275, Ex. J at 167:18-168:6 (2004 Thompson Dep.).
[129] '596 patent claim 61; '446 patent claim 1; '585 patent claim 1.
[130] '596 patent claim 61; '446 patent claims 1, 3; '585 patent claims 1, 8.
[131] '446 patent claim 1; '585 patent claim 1.
[132] D.I. 290 at 47 ("[I]f you look at the functional component, there is no dispute between the parties, and indeed, no argument was made here by [defendants] . . . that their DSLAM does not infringe the functional component of the Court's definition.").

via an industry-standard ADSL implementation.[133] Inline presents evidence that the industry-standard ADSL service employs DSLAMs that receive signals encoding information streams from an external source of information. For instance, defendants' expert, David L. Waring, states that:

> The ADSL modems in the central office are typically a part of a larger piece of equipment known as a Digital Subscriber line Access Multiplexer ('DSLAM'). The DSLAM is a device located in a telephone company central office that simultaneously links a number of ADSL modems (and, thus many ADSL customers) to a single high-speed transmission line known as an Asynchronous Transfer Mode ("ATM") line. This ATM line in turn connects the DSLAM to the servers of the Internet Service Provider.[134]

Defendants have not argued that an industry-standard DSLAM does not perform this function. Defendants contend, however, that a DSLAM does not perform the "preventing" function. In fact, at oral argument that was the only function defendants argued a DSLAM does not have.[135]

Specifically, defendants argue that a "DSLAM performs the function of transmitting signals onto the public telephone network . . . ."[136] Defendants support this assertion by pointing to a document submitted by Inline that defines a DSLAM as "[a] central office device that splits DSL signals and connects them to Internet hosts and the

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[133] *See* D.I. 252 at 4 ("ADSL is an industry-standard service offered by various telephone companies . . . . Both AOL and EarthLink separately lease ADSL lines from telephone companies, which AOL and EarthLink then assign to their respective ADSL subscribers."); D.I. 262, Waring Decl. ¶ 19 ("ADSL is an industry-standard high-speed data transmission system offered primarily by telephone companies.").

[134] D.I. 262, Waring Decl. ¶ 38; *see also* D.I. 261 at 11-12.

[135] *See* D.I. 290 at 111 ("They've actually got the three things . . the receiving, the transmitting and then the preventing. . . . And . . . our specific position . . . is [that] . . . [w]e believe with respect to those claims that have the . . . preventing requirement . . . that for the same reasons we've been arguing about the physical location restriction, the preventing means are not present as well.").

[136] D.I. 271 at 9.

public telephone network."[137] Based on the patents' equating "the public telephone network" with "the public trunk line,"[138] defendants argue that a DSLAM cannot literally infringe the '596 family of patents because the claimed "signal interface" must prevent the transmission of high frequency signals onto the public trunk line. This argument is unavailing for several reasons.

First, the definition of DSLAM cited by defendants is from the Ameritech Glossary. The construction of "signal interface" adopted by the court, and proposed by defendants, is concerned with "public trunk line *(as defined by the inventor in the patents)*." Therefore, the reference to "the public telephone network" in that glossary does not necessarily mean the same thing as that same phrase in the patents. Second, that definition is inconsistent with the evidence presented to the court in that it states that a DSLAM is "[a] central office device." Evidence has been submitted, which defendants do not dispute, that a DSLAM may be located in remote locations, not only in a central office. Evidence has also been presented that a DSLAM located in a remote location prevents the transmission of signals other than signals in the voiceband upstream over the public trunk line (as defined by the inventor in the patents).[139]

Consequently, defendants' motion for summary judgment of no literal infringement is denied with regard to ADSL service purportedly provided via remote location DSLAMs. Because there is a question of fact as to whether defendants

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[137] *Id.* (citing D.I. 257 at 1 n.1 and D.I. 258, Ex. A (Ameritech ADSL Reseller Guide, Part 1: NSP Guidelines (the "Ameritech Glossary"))).

[138] *See* '596 patent 8:9-13 ("The interface . . . replaces the existing interface between *the public telephone network (i.e., an ordinary telephone trunk line)* and the telephone lines that lead to the individual residences." (emphasis added)).

[139] *See, e.g.,* D.I. 261 at 13 n.38.

actually provide ADSL service via remote location DSLAMs, however, Inline's motion, with regard to literal infringement of the "signal interface" claim term is also denied.

D. Infringement Under the Doctrine of Equivalents ("DOE")

In their motion for summary judgment, defendants not only argue that they do not literally infringe the '596 family of patents, they also contend Inline cannot establish infringement of those patents under the Doctrine of Equivalents with regard to the "signal interface" claim term.

At oral argument, Inline asserted "one of the issues that was not briefed or raised here was the Doctrine of Equivalents, because of the time it's discussing, there's still factual issues remaining outstanding."[140] After being corrected by defendants that their brief was directed at both literal non-infringement and non-infringement under the Doctrine of Equivalents,[141] Inline countered that defendants "have to come forward with some evidence of Doctrine of Equivalents, and there is none."[142] This is an incorrect statement of the law.

Summary judgment may be entered against a party who bears the burden of proof at trial if that party fails to show the existence of a genuine issue of material fact on the subject of the motion.[143] The Federal Circuit has stated that "this court has *repeatedly* stated, infringement requires that *every limitation* of a claim be met literally or by a substantial equivalent."[144] The *Intellicall* court responded to plaintiff's argument

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[140] D.I. 290 at 44.
[141] *Id.* at 88.
[142] *Id.* at 138.
[143] *Celotex Corp. v. Catrett*, 477 U.S. 317, 322-23 (1986).
[144] *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1389 (Fed. Cir. 1992) (emphasis in original).

that "it had no duty to submit evidence with respect to infringement under the doctrine of equivalents," by stating that "[a] movant may prevail by pointing out the 'absence of evidence to support the nonmoving party's case' with respect to an issue on which the nonmovant bears the burden."[145] There, because the plaintiff produced no evidence of the equivalency of one of the elements of the only asserted independent claim, the Federal Circuit affirmed the grant of defendant's motion for summary judgment of noninfringement under the doctrine of equivalents.[146] Here, Inline finds itself in a similar situation with respect to defendants' motion regarding the Doctrine of Equivalents.

At oral argument, Inline acknowledged that the non-moving party must address arguments raised by the moving party[147] and that on the issue of infringement under the doctrine of equivalents Inline bears the burden of proof.[148] While contending that the record is insufficient to determine the issue of infringement under the doctrine of equivalents, Inline also acknowledged that fact discovery in this case has ended.[149]

Inline has presented no evidence to support a doctrine of equivalents argument for infringement with regard to the "signal interface" claim limitation. Neither in its opposition to defendants' motion nor at oral argument did Inline specifically counter, or even mention, defendants' DOE arguments with regard to "signal interface." In its opening brief, defendants made arguments that they do not infringe, either literally or

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[145] *Id.* at 1389.
[146] *Id.*
[147] *See* D.I. 290 at 130.
[148] *See id.* at 131-132.
[149] *See id.* at 130; *see also* D.I. 241 at 46 (Transcript of January 27, 2004 teleconference (court ordered that fact discovery was to be completed by February 27, 2004)). Inline's brief in opposition to defendants' motion for summary judgment was filed after the close of fact discovery on April 6, 2004. *See* D.I. 257.

under the Doctrine of Equivalents, the '596 family of patents[150] and the '718 patent.[151] Consideration of the parties' summary judgment arguments concerning the '718 patent has been deferred pending the court's determination of the summary judgment arguments concerning "signal interface" in this opinion. The court notes, however, that in its opposition to defendants' motion, Inline specifically responds to defendants' assertion that there can be no infringement under the Doctrine of Equivalents concerning the "high frequency" claim term of the '718 patent.[152] The declaration of Inline's expert, Dr. Charles L. Jackson, devotes ten of its thirty-six paragraphs to a discussion of the Doctrine of Equivalents with regard to the '718 patent.[153] The single paragraph of Dr. Jackson's declaration directed at the '596 family of patents discusses the telephone wiring network in which the invention operates, but makes no specific argument for infringement of those patents under the doctrine of equivalents.[154]

At oral argument Inline stated that it "had not heard [it] suggested that [DOE argument with regard to "signal interface"] was going to be raised and resolved."[155] Inline also stated that it believed the parties agreed during a teleconference with the court that defendants' DOE argument was not going to be addressed.[156] The court's review of the record indicates otherwise.

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[150] *See* D.I. 252 at 5-11.

[151] *See id.* at 12-17.

[152] *See* D.I. 257 at 22 (asserting that "infringement under the doctrine of equivalents is a question of fact, not subject to resolution on summary judgment here" and citing the declaration of Dr. Jackson stating that a certain frequency range "is equivalent to the claimed high frequency control information signal even under the Court's current construction.").

[153] *See* D.I. 256 ¶¶ 21-30 (Jackson Decl.). The court makes no comment concerning the sufficiency of Inline's DOE evidence and argument with regard to the '718 patent as that issue is not being considered by the court for the purposes of this opinion.

[154] *See id.* at ¶ 36.

[155] D.I. 290 at 131.

[156] *See id.* at 132; 134.

At a teleconference on January 27, 2004, counsel for AOL stated that, with respect to the '596 family of patents, its summary judgment motion was directed at the "signal interface" claim term and expressed defendants' belief that their motion could dispose of the entire case with respect to those patents.[157] Following that teleconference the parties each submitted letters explaining their respective positions regarding the case schedule following the end of fact discovery on February 27, 2004. The letter submitted by defendants on February 11, 2004 included "[a] brief summary of the requested briefing schedule, and the bases for Defendants' motion."[158] In that summary, defendants specifically stated that Inline could not establish infringement under the Doctrine of Equivalents in light of the court's construction of "signal interface."[159] Subsequent to that teleconference, the court partially granted Inline's motion to reconsider its construction of the "high frequency" claim term.[160] In light of the modification in that opinion, a teleconference was held on October 18, 2004 to discuss the impact of that modification on the parties' pending motions for summary judgment, by which time defendants had filed their revised motion for summary judgment considered in this opinion.

During that teleconference the parties agreed that no further briefing was necessary with regard to the outstanding cross motions for summary judgment as they related to the "signal interface" claim term. With respect to that term, defendants stated

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[157] *See* D.I. 241 at 33-34. In this teleconference, defendants were referencing their motion for summary judgment filed on August 8, 2003. Defendants' brief in support of that motion contained the assertion that Inline could not establish infringement under the Doctrine of Equivalents with regard to the "signal interface" claim term. *See* D.I. 193 at 16-17.

[158] D.I. 244 at 1.

[159] *Id.* at 3.

[160] *See Inline Connection Corp. v. AOL Time Warner Inc.*, 347 F. Supp. 2d 56 (D. Del. 2004).

that the court was to consider the arguments made in Section III. B. of their opening brief in support of their revised motion for summary judgment of non-infringement.[161] That section contains arguments, based on "signal interface," that defendants do not infringe either literally[162] or under the Doctrine of Equivalents.[163] As a result of the court's modification of the "high frequency" claim term, Inline stated for the record that *with regard to the "high frequency" claim term* it has no literal infringement argument concerning Claim 6 of the '446 patent.[164] Inline stated its belief, however, that it may still have a DOE argument concerning the "high frequency" element of that claim.[165] In response, the court stated that for the purposes of its determination of the parties' summary judgment motions, and for oral argument on those motions, that the parties should "hold off on Doctrine of Equivalents under '718 and *Doctrine of Equivalents that may exist under Claim 6 of the '446, because I understand that also does not have to do with signal interface and telephone exchange issues.*"[166]

At the instruction of the court, the parties submitted a joint letter confirming which sections of their respective briefs were pertinent to the court's determination of those motions as they relate to the "signal interface" and "telephone exchange" claim terms. That joint letter stated that:

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[161] *See* D.I. 287 at 23.
[162] *See* D.I. 252 at 6-8.
[163] *See id.* at 8-11.
[164] D.I. 287 at 16.
[165] *Id.*
[166] D.I. 287 at 32 (emphasis added); *see also id.* at 39 ("We will leave for another day the Doctrine of Equivalents matter under the '718 patent."); *id.* at 39-40 (stating that the court would consider whether further briefing on Doctrine of Equivalents for the '718 patent is necessary in light of the court's modification of its construction of the "high frequency" term "once the court gets its opinion done on the '596 family of patents on an issue that does not involve *the DOE considerations of the '718 patent.*" (emphasis added)).

> Plaintiff Inline and defendants AOL and EarthLink have identified the following portions of their previously submitted briefs and supporting documents which are pertinent to the Court's consideration of Defendants' motion for summary judgment of non-infringement of the '596 patent family based on the "signal interface" and "telephone exchange" claim terms . . . .[167]

The letter indicated that the DOE section of defendants brief was to be considered in for the purposes of this opinion.[168]

Subsequent to oral argument, Inline submitted a letter addressing the court's questions concerning this issue. Inline asserted that in its opposition to defendants' motion, Inline "address[ed] every noninfringement argument made by Defendants, on both literal and DOE noninfringement."[169] Inline contended that defendants' arguments in favor of noninfringement under the doctrine of equivalents are identical to its arguments of no literal infringement.[170] Inline also maintained that its opposition to defendants' motion specifically addresses defendants' DOE arguments. Inline's argument is unpersuasive.

Again, "[a] movant may prevail at the summary judgment stage by pointing out the absence of evidence to support the non-moving party's case with respect to an issue on which the non-movant bears the burden of proof."[171] In *Graver Tank & Mfg. Co., Inc. v. Linde Air Products Co.*, the United States Supreme Court stated that "a patentee may invoke [the] doctrine [of equivalents] to proceed against the producer of

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[167] D.I. 288 at 1.
[168] *See id.* at 1-2.
[169] D.I. 291.
[170] *Id.*
[171] *Fisher-Price, Inc. v. Safety 1st, Inc., Co.*, No. Civ. A. 01-51, 2002 WL 1307333, at *17 (June 14, 2002 D. Del.) (citing *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1389 (Fed. Cir. 1992) (citing *Celotex Corp. v. Catrett*, 477 U.S. 317, 325 (1986))).

[an allegedly infringing] device if it performs substantially the same function in substantially the same way to obtain the same result."[172] The Federal Circuit has since "recognized the function, way, result test applied in *Graver Tank*."[173] Moreover, "substantial identity must be proven with regard to all three elements of the doctrine specified in *Graver Tank*: *function* performed, *means* by which function is performed, and *result* achieved."[174]

"[T]he evidentiary requirements necessary to prove infringement under the doctrine of equivalents [include] . . . the need to prove equivalency on a limitation-by-limitation basis . . . [and] requir[es] equivalency to be proven with particularized testimony and linking argument."[175] The Federal Circuit stated that the purpose of "[t]hese evidentiary requirements [is to] assure that the fact-finder does not, under the guise of applying the doctrine of equivalents, erase a plethora of meaningful structural and functional limitations of the claim on which the public is entitled to rely in avoiding infringement."[176] Therefore, "[i]n order to prevent the doctrine from expanding a patent's protection beyond the scope of its claims, the Federal Circuit has warned that the application of the doctrine of equivalents should be 'the exception . . . [and] not the rule' in patent infringement actions."[177]

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[172] 339 U.S. 605, 608 (1950) (internal quotations omitted).

[173] *Texas Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1566 (Fed. Cir. 1996).

[174] *Lear Siegler, Inc. v. Sealy Mattress Co. of Michigan, Inc.*, 873 F.2d 1422, 1425 (Fed. Cir. 1989) (emphasis in original).

[175] *Texas Instruments*, 90 F.3d at 1566 (citations and internal quotations omitted).

[176] *Id.* at 1567 (internal quotations omitted); *see also Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1322-23 (Fed. Cir. 2003) (stating that "the evidentiary requirements for proof of infringement under the doctrine of equivalents . . . require . . . provid[ing] evidence 'on a limitation-by-limitation basis' . . . [and] [t]hat evidence must have included 'particularized testimony and linking argument.'" (citations omitted)).

[177] *nCube Corp. v. SeaChange Int'l, Inc.*, 313 F. Supp. 2d 361, 377 (D. Del. 2004) (quoting *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991)).

The Federal Circuit has summarized the burden of establishing infringement under the doctrine of equivalents, stating that:

> [A] patentee must . . . provide particularized testimony and linking argument as to the "insubstantiality of the differences" between the claimed invention and the accused device or process, or with respect to the function, way, result test when such evidence is presented to support a finding of infringement under the doctrine of equivalents. Such evidence must be presented on a limitation-by-limitation basis. Generalized testimony as to the overall similarity between the claims and the accused infringer's product or process will not suffice.[178]

A plaintiff asserting infringement under the doctrine of equivalents "must present *evidence* and *argument* concerning the doctrine and *each* of its *elements*. . . . The evidence and argument on the doctrine of equivalents cannot merely be subsumed in plaintiff's case of literal infringement. . . . Accordingly, the fact there was evidence and argument on literal infringement, that may also bear on equivalence," is insufficient to demonstrate infringement under the doctrine of equivalents.[179]

The court determines that Inline has provided no evidence or argument of the equivalency of a DSLAM to the claimed "signal interface." To the extent Inline argues that such evidence and argument has been presented, the court finds that it is impermissibly subsumed in its arguments for literal infringement and provides insufficient particularized linking testimony to raise a genuine question of material fact with regard to the requirements set forth by the Federal Circuit for infringement under the DOE. Consequently, defendants' motion for summary judgement of non-

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[178] *Texas Instruments*, 90 F.3d at 1567.

[179] *Lear Siegler*, 873 F.2d at 1425 (citations omitted). The court notes that the recitation of the *Graver Tank* elements is not intended to indicate that Inline fails to establish infringement under the Doctrine of Equivalents, rather these citations are is provided to show the elements that Inline would have had to address to raise a question of fact with regard to defendants' alleged infringement under the DOE.

infringement of the '596 family of patents under the doctrine of equivalents is granted.

CONCLUSION

For the reasons stated above, defendants' revised motion for summary judgment is granted in part and denied in part. To the extent that a central office DSLAM implementation cannot literally infringe the "signal interface" claim element of the '596 family of patents, defendants' motion is granted. Because a question of fact remains as to whether defendants provide ADSL service to their subscribers via remote location DSLAMs, defendants' motion is denied with respect to such implementation. For the same reason, Inline's motion for summary judgment with respect to the "signal interface" claim element is also denied. Because Inline has presented no evidence concerning the equivalency of a DSLAM to the claimed "signal interface," defendants' motion for summary judgment of non-infringement under the doctrine of equivalents is granted.[180]

[180] Defendants' August 8, 2003 motion for summary judgment is also denied as moot, having been superceded by defendants' revised motion for summary judgment.

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

INLINE CONNECTION CORPORATION, Plaintiff, v. AOL TIME WARNER INCORPORATED, et al., Defendants.	)	C. A. No. 02-272-MPT
INLINE CONNECTION CORPORATION, Plaintiff, v. EARTHLINK, INC., Defendant.	)	C. A. No. 02-477-MPT Consolidated Cases

ORDER

At Wilmington, Delaware, this **13th** day of **April, 2005**.

For the reasons stated in this court's April 13th, 2003 Memorandum Opinion, IT IS ORDERED THAT:

America Online, Inc.'s and EarthLink, Inc.'s ("defendants") revised motion for summary judgment of non-infringement of the '596 family of patents (D.I. 251) is **GRANTED** in part and **DENIED** in part.

Defendants' motion for summary judgment of no literal infringement of the '596 family of patents is **GRANTED** with respect to the provision of ADSL service via a DSLAM located in a telephone companies' central office.

Defendants' motion for summary judgment of no literal infringement of the '596 family of patents is **DENIED** with respect to their alleged provision of ADSL service via a DSLAM located at a remote location.

Defendants' motion for summary judgment of no infringement of the '596 family of patents under the Doctrine of Equivalents is **GRANTED**.

Neither this Order nor the court's April 13, 2005 Memorandum Opinion makes any determination with regard to defendants' summary judgment arguments in this motion concerning the '718 patent.

Defendants motion for summary judgment of non-infringement (D.I. 192) is **DENIED** as moot.

Inline Connection Corporation's motion for summary judgment of infringement of the "signal interface" claim term of the '596 family of patents (D.I. 260) is **DENIED**.

A teleconference is set for **Wednesday, April 20, 2005 at 8:30 a.m. EST** to address the status and future schedule this case. **Plaintiff's counsel shall initiate the call**.

UNITED STATES MAGISTRATE JUDGE