

United States District Court,
D. Delaware.

INLINE CONNECTION CORPORATION,
Plaintiff.

v.

AOL TIME WARNER INCORPORATED, et al,
Defendants.

Inline Connection Corporation,
Plaintiff.

v.

Earthlink, Inc,
Defendant.

Nos. CIV.A.02-272-MPT, CIV.A.02-477-MPT

Jan. 27, 2004.

Background: Owner of patents for transmitting data signals of different frequencies over conventional telephone wiring sued Internet service providers (ISPs), alleging infringement by their digital subscriber line (DSL) services.

Holdings: Construing claims, the District Court, Thyng, United States Magistrate Judge, held that:
(1) "signal interface" was device interposed on local side of public trunk line from telephone exchange that performed recited functions of incorporated circuitry, and
(2) claims calling for "circuitry for" various functions recited sufficient structure to avoid means-plus-function treatment.

Claims construed.

Court-Filed Expert Resumes

5,844,596, 6,236,718, 6,243,446, 6,542,585. Construed.

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MEMORANDUM

THYNGE, United States Magistrate Judge.

I. Introduction

This is a patent infringement case. InlineCommunication Corp. ("Inline") FN1 filed suit alleging infringement by AOL Time Warner Incorporated and America Online, Inc. (collectively "AOL") FN2 and EarthLink Inc. ("EarthLink") FN3 related to 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"). Inline alleges AOL and EarthLink's (hereinafter, "defendants") Digital Subscriber Line ("DSL") products infringe certain claims of its patents.FN4 Inline asserts infringement of 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.

FN1. Inline is a Virginia corporation with its place of business in Virginia.

FN2. AOL Time Warner Incorporated is a Delaware corporation with its principal place of business in New York and America Online is a Delaware corporation with its principal place of business in Virginia.

FN3. EarthLink is a Delaware corporation with its principal place of business in Georgia.

FN4. Inline filed an action against AOL on April 12, 2002 and later another action against EarthLink on June 4, 2002. The cases were consolidated on January 16, 2003.

Presently before the court are the parties' positions regarding the proper construction of the asserted claims of the patents-in-suit. Pursuant to *Markman v. Westview Instruments, Inc.*FN5 and local practice, oral argument was held on August 28, 2003. This is the court's opinion construing the disputed claims of the patents-in-suit. Before construing the disputed claims, a brief review of the technology and patents at issue is warranted.

FN5. 52 F.3d 967 (Fed.Cir.1995) (*en banc*), *aff'd*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996).

II. Background FN6

FN6. All information and facts included in this opinion were taken from oral argument, the briefs and the exhibits submitted by the parties.

The technology in this case involves a system of transmitting high frequency data signals and lower frequency voice band signals over conventional telephone wiring. Defendants are two leading internet service providers ("ISPs"). Inline alleges that defendants use its patented system, without permission, to make their DSL products more attractive to consumers. According to Inline, although alternatives to the DSL products offered by both defendants exist, using the Inline system allows defendants' products to be offered without incurring installation charges every time a new DSL customer is added, merely by having the customer "self-install" filters and modem devices within the home.FN7

FN7. While the court may not and will not construe the claim terms by reference to the accused products, an overview of the underlying technology is helpful to understand and give some context to the parties' claim construction disputes. The limited description is included only to provide background.

In addition to providing their DSL services, both AOL and EarthLink offer subscribers internet access through "dial-up" service. Initially, ISPs provided internet access only through dial-up service. Like DSL service, dial-up service allows computer users to access the internet via telephone lines. In order to connect

to the internet using dial-up service, residential users may open an account with an ISP and are then provided with one or more telephone numbers linked to the ISP's computer. The dial-up modem is used to connect the user's computer to the ISP's computer, which in turn is connected to the internet.

However, dial-up internet service has limitations, which may be remedied by using DSL service. If dial-up service is being used to connect to the internet, the telephone line cannot simultaneously be used to send telephone voice signals. Thus, dial-up service users cannot make and receive telephone calls while connected to the internet. Additionally, computers have the capability to connect to the internet and communicate data at a higher rate than the rate afforded by a dial-up modem. The theoretical limit at which dial-up modems can exchange data over a conventional dial-up telephone connection is approximately 56,000 bits per second ("56 Kbps"). As a result, a 56K modem may be limited in the speed of transferring data to users.

A. Asymmetric Digital Subscriber Line ("ADSL") Technology

One type of DSL technology is ADSL technology. ADSL is used as an alternative to dial-up internet service. At its most basic level, ADSL technology involves the high-speed transmission of packets of digital data back and forth from, among other things, the internet to a user's computer. ADSL technology takes advantage of the existing telephone networks used for telephone services to send digital data between the internet and a computer (and vice versa) at higher rates of speed than dial-up service.

Moreover, an ADSL link has a potentially different connection path to the internet than dial up service. An ADSL modem at a customer's residence connects to a companion modem at a central office, which, in turn, is connected to the internet through a central office computer. Unlike dial-up internet service, ADSL allows simultaneous transmission of low frequency voice signals and higher frequency digital data signals over the same telephone line to and from the public telephone network. Thus, the ADSL user may talk simultaneously on the telephone and connect to the internet via the same telephone line because the data and voice frequency ranges can be cleanly separated.

This arrangement permits higher data transmission rates than available on dial-up modems. As a result, ADSL is capable of using subscriber loops to communicate two-way voice signals, upstream data signals, and downstream data signals within different frequency bands. Data transfers can be optimized by allocating more of the frequency range to the data transfers from the central office to the customer than in the opposite direction. ADSL can download data as high as 1.5 million bits per second ("1.5 Mbps"), which is more than 25 times the speed of the maximum dial-up modem rate of 56 Kbps.

B. The Asserted Patented Invention

The four patents-in-suit are directed toward transmitting data signals of different frequencies over conventional telephone wiring. Inline contends that the patents disclose a unique way of enhancing the plain old telephone system ("POTS") to distribute any type of information over telephone wires that traditionally carry telephone calls to a location. These patents describe a system for sharing a telephone wire between information signals, confined to different frequency ranges. The asserted system uses filters to essentially block voice signals at a voice frequency range and pass the information signals at an information frequency range, and vice versa.

The systems disclosed in the '596 family of patents FN8 include a signal interface that transmits information from an external source of information along the shared telephone wire to individual households. Inside a household, a transceiver connected to the shared telephone wire receives information and converts it to data. The shared telephone wire remains connected to the telephone, which continues its traditional use of making and receiving telephone calls, except that filters are installed at the telephone to prevent interference with the high frequency information signals.

FN8. The '596, '446, and the '585 patent are all continuations of a patent application filed July 14, 1989. The July 14, 1989 application resulted in 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 three patents may be referred to as the '596 family or line of patents as they contain the same written disclosure, although have claims of differing scope.

The asserted system set forth in the '718 patent FN9 also describes a system that shares a telephone wire between voice telephone calls and information signals confined to different frequency ranges. The '718 patent, entitled, "Video Transmission and Control System Utilizing Internal Telephone Lines," has a different disclosure than the '596 line of patents and different claims and terminology. For example, the '718 system uses first and second transceivers instead of a signal interface to send and receive information over the telephone lines.

FN9. The '718 patent is also a continuation of the patent application filed July 14, 1989, which resulted in the '399 patent.

III. Claim Construction

A. Legal Principles

[1] The patent claims define the scope of the rights afforded to the patentee under the patent, and the interpretation and construction of those claims is a matter of law to be determined by the court.FN10 A determination of patent infringement requires a two-step analysis. First, the court must determine the correct scope and meaning of the disputed claim terms. FN11 Second, "the analysis requires a comparison of the properly construed claims to the accused device, to see whether that device contains all the limitations, either literally or by equivalents, in the claimed invention." FN12

FN10. Markman, 52 F.3d at 970-71.

FN11. *See* CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1365 (Fed.Cir.2002)(citing Johnson Worldwide Assocs., Inc. v. Zebco Corp., 175 F.3d 985, 988 (Fed.Cir.1999)).

FN12. *Id.*

[2] When construing the claims, the court may consider "both intrinsic evidence (*e.g.*, the patent specification and file history) and extrinsic evidence (*e.g.*, expert testimony)," but should first examine "the intrinsic evidence of the record, *i.e.*, the patent itself, including the claims, the specification and, if in evidence, the prosecution history." FN13 Starting with the intrinsic evidence, the examination should be done in a particular order.FN14 Only when the court is unable to determine the meaning of the asserted claims after assessing the intrinsic evidence should the court consider the extrinsic record.FN15

FN13. Vitronics Corp. v. Conceptor, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996).

FN14. *See* Digital Biometrics, Inc. v. Identix, Inc., 149 F.3d 1335, 1344 (Fed.Cir.1998)(noting that "[e]ven within the intrinsic evidence ... there is a hierarchy of analytical tools").

FN15. Vitronics Corp., 90 F.3d at 1584.

[3] The starting point for the court's examination is the language of the disputed claim. The words of the claim, chosen by the inventor, delimitate the breadth of protection provided by the patent grant.FN16 The words of the claim are generally accorded their ordinary and accustomed meaning. If the claim includes a

term of art, the term is given its ordinary and accustomed meaning to one of ordinary skill in the relevant art at the time of the invention.FN17

FN16. *See* Phonometrics, Inc. v. Northern Telecom Inc., 133 F.3d 1459, 1464 (Fed.Cir.1998); Vitronics, 90 F.3d at 1582; Bell Communications Research Inc. v. Vitalink Communications Corp., 55 F.3d 615, 620 (Fed.Cir.1995).

FN17. *Zelinski v. Brunswick Corp.*, 185 F.3d 1311, 1315 (Fed.Cir.1999); *see also* Johnson Worldwide Assoc., Inc., 175 F.3d at 985(stating that there is a "heavy presumption in favor of the ordinary meaning of claim language").

[4] [5] [6] There is a "heavy presumption" that a claim term carries its ordinary and customary meaning.FN18 If an apparatus claim recites a general structure without limiting that structure to a specific subset of structures, the term will generally be construed to cover all known types of that structure, which the patent disclosure supports.FN19 The "heavy presumption" of the ordinary meaning of a claim term may be overcome and the term narrowed. Yet, an accused infringer cannot simply point to "the preferred embodiment or other structures or steps disclosed in the specification or prosecution history." FN20 A patentee need not "describe in the specification every conceivable and possible future embodiment of his invention." FN21 Rather, a court may constrict the ordinary meaning of a claim term in at least four ways.FN22

FN18. *Id.* *See also* Tate Access Floors, Inc. v. Interface Architectural Resources, Inc., 279 F.3d 1357, 1370 (Fed.Cir.2002)(claim construction analysis of the intrinsic evidence begins with the language of the claims, while engaging a "strong presumption" the claim terms carry their ordinary meaning as viewed by one of ordinary skill in the art).

FN19. *CCS Fitness, Inc.*, 288 F.3d at 1367 (citing *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed.Cir.1998)).

FN20. *Id.*

FN21. *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1344 (Fed.Cir.2001) (citations omitted).

FN22. *CCS Fitness, Inc.*, 288 F.3d at 1367.

First, a patentee is permitted to be his own lexicographer. For the court to accept a suggested meaning that is contrary to the ordinary and accustomed meaning of a word, the novel meaning must be clearly set forth in either the specification or the prosecution history "so as to put one reasonably skilled in the art on notice that the patentee intended to so redefine the claim term." FN23 To determine whether the patentee has used a term in a manner contrary to its accepted meaning, the court's next step is to review the patent's specification.FN24 Because the specification must include a written description, which is sufficient to enable one of ordinary skill in the art to make and use the invention, "the specification is always relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." FN25

FN23. *Id.* at 1367-68.

FN24. *Vitronics Corp.*, 90 F.3d at 1582.

FN25. *Id.*

The specification may limit the scope a claim is accorded in circumstances where no broader scope of the claim is described or enabled by the embodiments disclosed therein.FN26 Although the specification "provide[s]a context to illuminate the meaning of claim terms," FN27 the court should not interpret those claim terms "by adding limitations appearing only in the specification." FN28 The general rule is that unless the claims themselves so limit, "the claims of a patent are not limited to the preferred embodiment" set forth in the specification.FN29 The patent's prosecution history may also be considered in determining the meaning of the claim term if available. The prosecution history "may contain contemporaneous exchanges between the patent applicant and the [Patent and Trademark Office] about what the claims mean." FN30

FN26. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1344 (Fed.Cir.2001) (holding the written description of the preferred embodiment "can provide guidance as to the meaning of the claims, thereby dictating the manner in which the claims are to be construed, even if the guidance is not provided in explicit definitional format"); *see, e.g., Wang Labs., Inc. v. America Online, Inc.*, 197 F.3d 1377, 1383-84 (Fed.Cir.1999)(limiting "frame" to "character-based" data frames and excluding "bit-mapped" data frames of the accused device, where specification described only "character-based" frames and the prosecution history distinguished the claims from prior art "bit-mapped" frames).

FN27. *Abtox, Inc. v. Exitron Corp.*, 122 F.3d 1019, 1023 (Fed.Cir.1997).

FN28. *Electro Medical Sys., S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1054 (Fed.Cir.1994); *but see Network LLC v. Centraal Corp.*, 242 F.3d 1347, 1352 (Fed.Cir.2001)("[a]lthough the specification need not present every embodiment or permutation of the invention and the claims are not limited to the preferred embodiment of the invention, neither do the claims enlarge what is patented beyond what the inventor has described as the invention").

FN29. *Karlin Technology, Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 973 (Fed.Cir.1999); *see also Laitram Corp. v. NEC Corp.*, 163 F.3d 1342 (Fed.Cir.1998) (stating that "the mere repetition in the written description of a preferred aspect of a claimed invention does not limit the scope of an invention that is described in the claims in different and broader terms").

FN30. *Digital Biometrics, Inc.*, 149 F.3d at 1344.

Second, the meaning of a claim term may vary from the ordinary meaning "if the intrinsic evidence shows that the patentee distinguished that term from prior art on the basis of a particular embodiment, expressly disclaimed subject matter, or described a particular embodiment as important to the invention." FN31 Amendments to the patent and arguments made to the patent examiner may each be used to exclude an interpretation disclaimed during prosecution FN32 and each is given equal weight by the court in its interpretation. FN33

FN31. *CCS Fitness, Inc.*, 288 F.3d at 1367-68 (citations omitted).

FN32. *Southwall Technologies, Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576 (Fed.Cir.1995).

FN33. *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 979 (Fed.Cir.1999).

Third, "a claim term also will not have its ordinary meaning if the term 'chosen by the patentee so deprives the claim of clarity' as to require resort to the other intrinsic evidence for a definite meaning." FN34 Finally, if the patentee phrased a claim in a means-plus-function format, the claim term will only cover the corresponding structure or step, or its equivalents, disclosed in the specification.FN35 Only if there is still ambiguity as to the meaning of a claim after reviewing the intrinsic evidence should a court consider extrinsic evidence, such as, expert or inventor testimony.FN36

FN34. CCS Fitness, Inc., 288 F.3d at 1368 (citations omitted).

FN35. *Id.*

FN36. Vitronics Corp., 90 F.3d at 1584.

[7] Dictionary definitions may be consulted when establishing a claim term's ordinary meaning.FN37 Prior to *Texas Digital*, dictionaries were considered a "special form of extrinsic evidence" which courts consulted during claim construction.FN38 In contrast to those earlier opinions, the *Texas Digital* court stated that "categorizing [dictionaries, encyclopedias and treatises available at the time a patent issued] as 'extrinsic evidence' or even a 'special form of extrinsic evidence' is misplaced and does not inform the analysis." FN39 In the extensive commentary on the use of dictionaries in claim construction, the *Texas Digital* court reiterated longstanding precedent that dictionaries are useful resources available to the court when determining the meanings of claim terms. FN40 The court noted that "[d]ictionaries ... publicly available at the time the patent issued, are objective resources that serve as reliable sources of information on the established meanings that would have been attributed to the terms of the claims by those of skill in the art." FN41 Since dictionary definitions recite the meanings of terms unbiased by motives of parties engaged in litigation, the outcome of which may depend on the court's construction of those terms, dictionaries (along with encyclopedias and treatises) "may be the most meaningful sources of information to aid judges in better understanding both the technology and the terminology used by those skilled in the art to describe the technology." FN42

FN37. *Texas Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1202 (Fed.Cir.2002).

FN38. *See, e.g.*, *Bell Atlantic Network Servs. Inc. v. Covad Communications Group Inc.*, 262 F.3d 1258, 1267 (Fed.Cir.2001) (stating that dictionaries and technical treatises are extrinsic evidence, but reminded with caution, the use of non-scientific dictionaries being converted into technical terms of art having legal significance); *Intel Corp. v. Broadcom Corp.*, 172 F.Supp.2d 478, 486 (D.Del.2001) (stating that "[d]ictionaries, however, are a special form of extrinsic evidence that may be considered along with the intrinsic evidence in determining a claim's ordinary meaning") (citing *Interactive Gift Express, Inc. v. CompuServe Inc.*, 231 F.3d 859, 866 (Fed.Cir.2000)).

FN39. *Texas Digital Sys., Inc.*, 308 F.3d at 1203.

FN40. *Id.* at 1202.

FN41. *Id.* at 1202-03.

FN42. *Id.* at 1203.

Thus, when construing the words of a claim, the court should first determine the ordinary and accustomed meanings of disputed claim words through an examination of relevant dictionaries, encyclopedias, or treatises. This determination will reveal the broadest definition of those terms as understood by one of skill in the art. However, the court should not rely on any of these sources in a vacuum because each source may influence the understanding of one skilled in the art at the time of the invention. A court must examine the written description and prosecution history to determine whether the scope of a disputed term has been limited as a result of the patentee clearly setting forth an inconsistent definition of the disputed term or otherwise disavowing or disclaiming the full scope of its meaning.FN43 By following this procedure, when construing claims, the court may avoid improperly importing limitations into a claim based on a single embodiment described in the specification, which might occur if the court begins its analysis with an examination of the written description and the prosecution history. FN44

FN43. *See Alloc, Inc. v. International Trade Com'n*, 342 F.3d 1361, 1368 (Fed.Cir.2003) (looking to the specification to determine the extent of the description of the invention in interpreting the scope of the claim, court upheld a construction of the term "play" that did not appear in the claim language); *see also Sunrace Roots Enterprise Co., Ltd. v. SRAM Corp.*, 336 F.3d 1298, 1304-1307 (Fed.Cir.2003) (reversing an "unduly restrictive" construction as the ordinary meaning of the disputed claim term controlled because neither the specification nor the prosecution history defined the term).

FN44. *Texas Digital Sys., Inc.*, 308 F.3d at 1204-05.

Here, in addition to the construction of various claim terms, the parties also dispute whether certain claim limitations, *i.e.*, those containing "circuitry for" language, are written in "means-plus-function" form, where the limitations do not describe a specific structure, but instead describe a function and claim a "means" for accomplishing that function. Pursuant to 35 U.S.C. s. 112, para. 6, limitations drafted in means-plus-function form are construed to "cover the [functionally] corresponding structure, material, or act described in the specification and equivalents thereof." FN45 Section 112, para. 6 provides a compromise to patentees: Patentees may express a limitation in their patent claims "as a means or a step for performing a specified function without the recital or structure ... in support thereof" such a claim, however, will not be interpreted to cover all structures which would perform that function, but only "the corresponding structure ... described in the specification and equivalents thereof." FN46 The duty to link or associate structure to a claimed function is the *quid pro quo* for the convenience of employing the means-plus-function claiming technique of s. 112, para. 6.FN47

FN45. *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1266-67 (Fed.Cir.1999).

FN46. 35 U.S.C. s. 112, para. 6; *see also J & M Corp. v. Harley-Davidson, Inc.*, 269 F.3d 1360, 1367 (Fed.Cir.2001) ("the scope of such [means plus function] claim language is sharply limited to the structure disclosed in the specification and its equivalents").

FN47. *B. Braun Medical, Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed.Cir.1997).

[8] [9] Determining whether a given claim limitation is subject to s. 112, para. 6 is a question of law.FN48 The Federal Circuit has established a framework for determining when s. 112, para. 6 applies to a claim limitation. FN49 If the word "means" appears in a claim limitation in combination with a function, s. 112, para. 6 is presumed to apply.FN50 This presumption arises because "the use of the term 'means' has come to be so closely associated with 'means-plus-function' claiming that it is fair to say that the use of the term 'means' ... generally invokes section 112(6)." FN51 If a claim recites "means" language, but does not include sufficient structure to perform the function, it is interpreted as a means-plus-function claim under s. 112,

para. 6.FN52 Next, the presumption that s. 112, para. 6 applies to claim terms using the term "means" may be overcome-and the claim term should not be construed as a means-plus-function limitation-if the claim contains a sufficiently detailed recitation of structure, material, or acts to perform the claimed function.FN53 Additionally, the presumption that s. 112, para. 6 applies to a claim limitation using the term "means" may also be overcome if the limitation does not link the "means" to a function.FN54 If no function is linked to the "means" in a claim limitation, that claim limitation cannot be a means-plus-function limitation.FN55

FN48. *See* *Kemco Sales, Inc. v. Control Papers Co., Inc.*, 208 F.3d 1352, 1361 (Fed.Cir.2000).

FN49. *Micro Chem. Inc. v. Great Plains Chem. Co., Inc.*, 194 F.3d 1250 (Fed.Cir.1999).

FN50. *See* *Id.* at 1257; *York Prods. Inc. v. Central Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1574 (Fed.Cir.1996).

FN51. *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed.Cir.1996).

FN52. *See, e.g., Wenger Mfg. Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1232 (Fed.Cir.2001) (holding that "air circulation means" was subject to s. 112, para. 6, because it recited the function of "circulating through said reel," without reciting any structure for performing that function).

FN53. *See* *Personalized Media Communications, LLC v. International Trade Com'n.*, 161 F.3d 696, 704 (Fed.Cir.1998); *see also* *Sage Prods. Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1427-28 (Fed.Cir.1997) ("[W]here a claim recites a function, but then goes on to elaborate sufficient structure, material, or acts within the claim itself to perform entirely the recited function, the claim is not in the means-plus-function format" even if the claim uses the terms "means"); *but see* *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1535 (Fed.Cir.1991) (holding that structural description that served merely to further specify the function of the recited means did not take the claims outside the scope of s. 112, para. 6).

FN54. *See* *York*, 99 F.3d at 1574 (holding that claim with a "detailed recitation of structure" but no connection to any function was not subject to s. 112, para. 6); *see also* *Rodime PLC v. Seagate Tech., Inc.*, 174 F.3d 1294, 1303 (Fed.Cir.1999) (holding "positioning means" was not subject to s. 112, para. 6 where the claim recited a detailed list of structural elements).

FN55. *York*, 99 F.3d at 1574.

[10] If a claim element does not use the word "means" a rebuttable presumption also exists that s. 112, para. 6 does not apply.FN56 Such claim limitations, however, may still be subject to s. 112, para. 6, even if the limitation does not use the word "means," where the limitation is written in functional terms and does not recite sufficient structure to describe the performance of that claimed function.FN57 To help determine whether a claim term recites sufficient structure, an examination is made whether it has an understood meaning in the art.FN58 To determine the appropriate structure, the court should look not only to the specification, but to the prosecution history, as patentees will be estopped from asserting an interpretation of a means-plus-function claim that would be broad enough to cover a prior art reference that the patentee disclaimed coverage of during prosecution.FN59

FN56. *Micro Chem., Inc.*, 194 F.3d at 1257.

FN57. *See, e.g., Id.*; Mas-Hamilton Group v. LaGard, Inc., 156 F.3d 1206, 1213-15 (Fed.Cir.1998) (holding that "lever moving element" and "movable link member" were means-plus-function limitations, even though the term "means" was not used in claims, because the limitations did not recite definite structure and did not give generally understood structural meanings in the art).

FN58. Apex Inc., v. Raritan Computer, Inc., 325 F.3d 1364, 1372 (Fed.Cir.2003) (citing Watts v. XL Sys., Inc., 232 F.3d 877, 880-81 (Fed.Cir.2000)).

FN59. Alpex Computer Corp. v. Nintendo Co. Ltd., 102 F.3d 1214, 1221 (Fed.Cir.1996) ("positions taken before the PTO may bar an inconsistent position on claim construction under s. 112, para. 6").

B. Claim Construction

1. The Parties' Positions

a. Disputed Claim Terms

The parties dispute the following claim terms:

-> "telephone exchange"-as used in the '596 patent, claim 61; the '446 patent, claim 1; and the '585 patent, claim 1.

-> "signal interface"-as used in the '596 patent, claim 61; the '446 patent, claims 1, 2, 3 and 6; and the '585 patent, claims 1, 2, 4 and 8.

-> "first transceiver"-as used in the '718 patent, claims 22, 38 and 39.

-> "second transceiver"-as used in the '718 patent, claims 22, 38 and 39.

-> "circuitry for" claim limitations-as used in the '596 patent, claim 61; the '446 patent, claims 1, 3, 5 and 6; the '585 patent, claims 1, 2, 4, and 8; and the '718 patent, claims 22, 24 and 38.

-> "a high frequency band of frequencies above the highest frequency of the telephone voice band"; "high frequency band"; "high band of frequencies"-as used in the '596 patent, claim 61; the '446 patent, claims 1, 3 and 6; and the '585 patent, claims 1 and 4.

-> "a high band of frequencies above the highest frequency of the telephone voice band"; "high frequency band"; "high band of frequencies"-as used in the '718 patent, claims 22 and 24.

-> "control signals"-as used in the '446 patent, claim 6.

-> "control information"-as used in the '718 patent, claim 22.

-> "destination(s) of information"-as used in the '596 patent, claim 61; the '446 patent claims 1, 3 and 5; and the '585 patent, claims 1 and 2.

-> "external source of information"-as used in the '596 patent, claim 61; the '446 patent, claim 1; and '585 patent, claims 1 and 8.

b. Inline's Position on Disputed Terms

Inline contends that its proffered constructions of the disputed claim limitations are based on the plain

meaning of the claim language and supported by the intrinsic record. According to Inline, "telephone exchange" refers to telephone switching equipment, including equipment within a central office or including a private branch exchange (PBX). Further, it is Inline's position that the meaning of "signal interface" is a device that provides an interconnection and adaptation of signals.

Moreover, Inline contends that the term "transceiver" carries its plain and ordinary meaning across all four patents-in-suit, including the '718 patent, which refers specifically, to a "first transceiver" and "second transceiver." Inline maintains that the undisputed meaning of a "transceiver," a device that transmits and receives signals, as used in the '596, '446 and '585 patents, should be used in all patents-in-suit. Thus, Inline proposes the same construction of the term transceiver as recited in the '718 patent. Similarly, Inline asserts that the term "high frequency band of frequencies above the highest frequency of the telephone voice band," as used in all of the patents-in-suit, means frequencies above the telephone voice band.

The disputed claim term "circuitry for" appears throughout the claim language of the patents-in-suit. Inline contends that each claim element containing the "circuitry for" language, recites a definite, well-known structure corresponding to the recited function. Inline asserts the following constructions, depending on the context of "circuitry for" in the claim language. Inline maintains that the limitation "[transceiver] circuitry for" as stated in the '596 family of patents, means any circuitry within a transceiver, such as a modem. Inline argues that the disputed phrases reciting "[signal Interface] circuitry for" as stated in the '596 line of patents, means a signal interface circuitry within the signal interface.

Moreover, according to Inline, the disputed phrases reciting "circuitry for" language in the '596 family of patents that are not part of the transceiver or the signal interface also have a distinct meaning. Inline suggests "circuitry for preventing transmission of signals in the high frequency band" as stated in claim 61 of the '596 patent, means circuitry that filters out high frequency band signals, such as a low-pass filter circuit, while "circuitry for mitigating the effect of reflections so that said transceivers correctly receive internal signals from the signal interface," as stated in claim 4 of the '585 patent, means circuitry that enables the transceiver to correctly receive the signals, despite echoes.

Inline also proffers a construction of the "circuitry for" phrases set forth in the '718 patent. Claim 22 and dependant claim 28 of the '718 patent recite "a first transceiver" and "a second transceiver." Inline maintains the [first transceiver] "circuitry for" limitation means transceiver circuitry in the first transceiver, while the [second transceiver] "circuitry for" limitation as stated in the '718 patent, means transceiver circuitry in the second transceiver. Additionally, Inline argues that the "circuitry... for" language used in another context in claim 22 of the '718 patent is not part of the transceiver structure. As a result, "circuitry ... for preventing transmission of signals in the high frequency band" as stated in that claim, means a low pass filter circuit that prevents signals within the "high frequency band" above the telephone voice band from interfering with the telephone device.

Finally, Inline asserts that the remaining four claim limitations should be construed using the plain meaning and supported by the intrinsic record. The term "control signal" means a signal that prompts the signal interface to perform a function, "control information" means information that prompts the source for information to perform a function, "destination of information" means a device to which information is directed, such as a computer, FN60 and "external source of information" means a source of information outside of the system.

FN60. *See* D.I. 176. Inline has not submitted additional briefing on the construction of this claim limitation.

c. AOL and EarthLink's Position on Disputed Terms

The defendants maintain that the '596 family of patents describe and claim a system that uses the internal telephone lines of a residence, apartment building or office, in order to avoid having to re-wire the structure with, for example, coaxial cable. Defendants assert that "telephone exchange" means a central office, while "signal interface" means 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.

Defendants also assert that the claim limitation, "destination of information" is a device to which information is directed, while the claim term "external source of information" needs no construction, as the plain meaning of the claim language applies.

Recited in claim 6 of the '446 patent, which is dependant on claim 1, "control signal," according to defendants, means a signal that prompts the signal interface to select an information stream to be transmitted back to the transceiver.

Defendants argue that the '718 patent describes and claims a system for transmitting analog video and infrared remote control signals from one room in a house to another room in the same house via the internal telephone wire. Defendants assert that their proposed construction of the "first transceiver" and "second transceiver" limitations, as recited in the '718 patent, is consistent with a patented system for transmitting video and remote control signals over the internal wiring of a residence. According to defendants, "a first transceiver coupled to the two-wire telephone network" means a transceiver that is connected to a television receiver and performs the recited function of the claim via the internal telephone wiring within a residence, while "a second transceiver coupled to the two-wire telephone network" means a transceiver that is connected to a video source (e.g., VCR) and performs the recited function of the claim via the internal telephone wiring within a residence. Defendants proffer that the proper construction of "control information," as recited in the '718 patent, means information derived from the infrared signal and encoded in a signal which is used to select video signals.

Moreover, defendants contend that the claim limitations, "a high frequency band of frequencies above the highest frequency of the telephone voice band," "high frequency band," and "high band of frequencies," as recited in the '596 line of patents and in the '718 patent mean any of the radio frequencies between 3 and 30 MHz.FN61

FN61. This construction by defendants, recited in their response to Inline's Opening *Markman* Brief (D.I.200) and an attachment to their September 8, 2003 letter to the court (D.I.208), differs from their proposed construction offered in prior briefing. In their memorandum of law on claim construction (D.I.187), defendants assert that the proper construction of "a high frequency band of frequencies above the highest frequency of the telephone voice band" as set forth in the '596 line of patents is "the band of frequencies above 1 MHz." Moreover, defendants propose that the construction of "signals in a high band of frequencies above a telephone voice band" as recited in the '718 patent, is "the band of frequencies above 6 MHz."

Defendants argue that the proper construction of the "circuitry for" limitation is as a means-plus-function claim limitation under 35 U.S.C. s. 112, para. 6 because no meaningful structure beyond the generic word "circuitry" is denoted. Each of the four patents-in-suit recite limiting phrases containing this disputed "circuitry for" language. Defendants argue that the word "circuitry" is so broad and open-ended to those of ordinary skill in the art that it is the functional equivalent of using the word "means." As a result, defendants contend that the "circuitry for" limitations exist as recitations of functions to be performed without any meaningful description of structures to perform those functions.FN62

FN62. *See* D.I. 187. Defendants' claim construction chart for the claim elements containing the "circuitry for" limitation, along with the proffered recited function and corresponding structure, are set forth in Appendix B.

2. The Court's Claim Construction FN63

FN63. The court's construction of the disputed claim terms is based on the current record.

a. Telephone exchange

[11] By ascertaining the ordinary meaning to one skilled in the art, consistent with relevant technical dictionaries, a "telephone exchange" is construed as "a switching center for connecting and switching phone lines." FN64 The claim language is consistent with this definition and there is nothing in the record to suggest that "telephone exchange" means anything other than what the dictionary definition suggests, that is, "a switching center for connecting and switching phone lines."

FN64. See Harry Newton, *Newton's Telecom Dictionary* 463 (3rd ed.1990), defining telephone exchange as "[a] switching center for connecting and switching phone lines. A European term for what North Americans call central office." Newton also 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. Also called CO, as in See-Oh." Id. at 96.

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. Rather than providing the definition of the term "telephone exchange," the meaning offered by Inline is of the word "exchange," which is defined as "[s]witching exchange: an aggregate of traffic-carrying devices, switching stages, controlling and signaling means at a network node that enables subscriber lines and/or other telecommunication circuits to be interconnected as required by individual callers." FN65 The term "switching exchange" does not appear in the patent claims. Rather, the same dictionary relied on by plaintiff in support of its definition, also provides a definition of the entire term "telephone exchange," which is consistent with the court's construction that a telephone exchange is a specific location.FN66

FN65. Graham Langley, *Telephony's Dictionary* 77(1st ed.1982).

FN66. Id. "[E]xchange, telephone" defined as "[i]n the U.S., as an area within which telephone service is provided without toll charges. In Europe, a telephone central office."

Nevertheless, consulting dictionaries is simply the first step in the claim construction analysis. The plain meaning of the term is supported by the intrinsic evidence, including the surrounding text, the other claims, the written description and prosecution history. The term telephone exchange is recited in the preamble of claim 61 of the '596 patent, claim 1 of the '446 patent, and claim 1 of the '585 patent (the entire '596 family). In 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. While the preamble of the claim merely sets forth the intended use or purpose of the claim, the preamble of each relevant disputed claim provides the outer parameters of the communication system contained between the telephone devices and the telephone exchange. The internal system is set forth in the body of the claim.

There is no indication in the illustrations, specifically Figures 1a and 1b, that "telephone exchange," which is noted as the "local telephone exchange" in the specification, has a meaning other than "a switching center for connecting and switching phone lines." This basic configuration of all telephone wiring networks is supported by Figure 1a, which shows bundled pairs leading to "local exchange" and Figure 1b, which shows "line 475" leading to the "local exchange."

b. Signal interface

[12] Neither party has provided a technical nor ordinary English language dictionary in which the term "signal interface" appears. To reach the plain and ordinary meaning, Inline combines the dictionary definitions of the words "signal" FN67 and "interface." FN68 Although the claim term, taken as a whole, lacks a common meaning, the court is not required "to abandon its quest for a common meaning and disregard the established meaning of the individual words." FN69 The lack of common meaning of the phrase does not permit a definition based upon the use of the term in the preferred embodiment or elsewhere in the specification.FN70 Yet, if the patentee chose a phrase that deprives the claim of clarity, the court

shall resort to the other intrinsic evidence for a definite meaning.

FN67. Inline's construction is derived from the definition of "signal" as "[a]n electrical wave used to convey information." See Harry Newton, *Newton's Telecom Dictionary* 423 (3rd ed.1990).

FN68. Inline's construction of the term "interface" is derived from the definition of "[a] mechanical or electrical link connecting two or more pieces of equipment together," Harry Newton, *Newton's Telecom Dictionary* 242 (3rd. ed.1990) and "involving the definition of the interconnection between two equipments or systems." Graham Langley, *Telephony's Dictionary* 104 (1st ed.1982). Newton provides five definitions of interface. The fourth definition of "interface" is "a poorly defined word often used when the speaker is incapable of figuring precisely what he means."

FN69. *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1372 (Fed.Cir.2003) (citations omitted)(court did not resort to the specification to define the claim term "boot selection flag" as the words "boot" and "selection" are descriptive modifiers of "flag," a term having a common meaning in the art).

FN70. *Id.* at 1374.

Defendants assert that Inline's proposed construction is overbroad. Further, they argue that the term does not have an ordinary meaning and the separate definitions offered by Inline deprive the claim term of meaning. Defendants point to the specification, which makes it clear that connecting the signal interface on the local side of the public telephone trunk line is an important aspect of the claimed invention. Moreover, defendants contend that the inventor disclaimed any coverage of a "signal interface" located anywhere other than on the local side of the public telephone trunk line during prosecution. Thus, 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.

The signal interface in the context of the claims, is coupled between the external source and the connection to the telephone network. However, the construction proffered by Inline is far from a clear definition and lacks significant meaning. Its proposed construction differs from the dictionary definitions of the words "signal" and "interface." For example, Inline's proposed construction adds the word "adaptation," which does not appear in either of the dictionary definitions on which it relies. Moreover, while the submitted definition of "interface" is a link connecting two or more pieces of equipment together, the proffered construction is different.

Importantly, the specification reveals that the signal interface is interposed on the opposite end of the public telephone trunk line from the telephone exchange. The common specification provides:

The present invention ... provid[es] distribution of ... 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 that connects to the trunk line of a public or private telephone network. That device is located where the telephone lines for multiple local networks converge to meet the public network trunk (or PBX, in the case of office buildings).FN71

FN71. '596 patent, col. 1, ln. 62-col. 2, ln. 4.

The interface is coupled between the telephone lines and corresponding public telephone lines (which carry voice signals at voiceband frequencies) that serve the residences.FN72

FN72. '596 patent, col. 4, ll. 53-55.

The 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. (*emphasis added*). FN73

FN73. '596 patent, col. 8, ll. 9-13.

[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. (*emphasis added*).FN74

FN74. '596 patent, col. 9, ll. 1-6.

Referring to Fig. 1a, the technology described in this application is designed to communicate signals between transceiver/switch 400, located where individual telephone lines from multiple local networks coverage for connection to a main telephone trunk 476'.FN75

FN75. '596 patent, col. 11, ll. 1-5.

These excerpts from the specification are consistent with the Figures (specifically, Figures 1a and 1b, reproduced below) contained in the '596 line of patents, which 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.

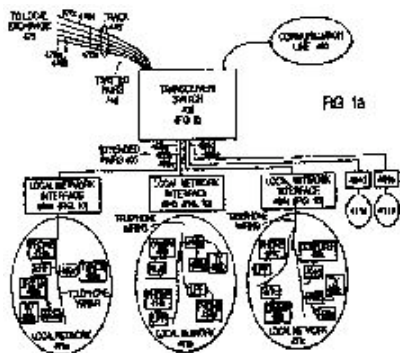


Figure 1a

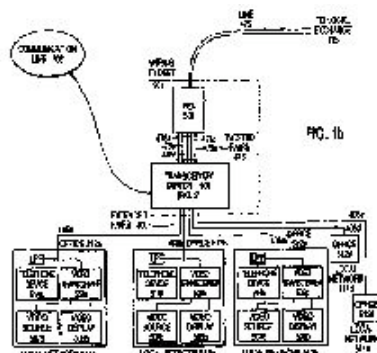


Figure 1b

The patentee also emphasized in the specification, the importance of connecting the signal interface on the local side of the public telephone trunk line by noting that government regulations limit the energy that can be conducted onto the public telephone network:

In addition to preventing the "splitting loss" of these high frequency signals, [low pass] filters 474 prevent them from creating violations of government regulations by conducting onto the public telephone network. Part 68 of the FCC regulations in the U.S., for example, severely limits the energy that can be conducted onto the public network by signals above voiceband and below 6 Mhz.FN76

FN76. '596 patent, col. 48, ll. 39-46.

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. The blocking of these high frequency signals from the public trunk line is accomplished by the specific circuitry

in the signal interface, low pass filters 474, which block high frequency signals from passing onto the public telephone network, but allow low frequency telephone signals to transmit.FN77

FN77. "Low pass filters 474 block transmission of the high frequency signals transmitting through signals separators 413 between processor 418 and local network interface 411."596 patent col. 48, ll. 37-39; *see, e.g.*, Fig. 2 (illustrating low pass filters 484a, 474b and 474c located before the twisted pairs 476, which lead to the local exchange 475).

Additionally, the prosecution history confirms that the location of the signal interface on the opposite side of the public trunk line is a key component of the claimed invention. 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.

The Patent and Trademark Office rejected the claims of the '596 patent as being anticipated by three prior art references, Tatsuzama (U.S. Patent No. 3,723,653), Iwamura (U.S. Patent No. 4,955,048) and Kleinerman (U.S. Patent No. 4,849,811). These three references describe systems involving the transmission of voice signals across public telephone lines. 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, i.e., the signal interface prevents high frequency signals from being transmitted to the telephone exchange.

Also, when distinguishing the invention over the prior art, the patentee explained where the signal interface was located. The inventor relied on the common written disclosure to support the amendments:

Support for the amendments can be found in the specification, for instance, in Fig. 2 in which transceiver/switch 400 is coupled to local exchange 475, and includes filters 474a-c such that "only telephone signals flow through the 'exchange' ports." (P. 31, lines 28-29).FN78

FN78. D.I. 203, Ex. 15 at 23.

As noted by the defendants, the filters 474 in Figure 2 prevent high frequency signals from exiting from the signal interface onto the twisted pairs 476. These twisted pairs 476 form the public trunk line that lead back to the telephone exchange. Thus, the filters 474, which are part of the signal interface, 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.

c. First transceiver, Second transceiver

[13] The parties dispute the use of the term transceiver in the context of the '718 patent. While Inline asserts that transceiver is a term used in its ordinary sense, as used in the '596 family of patents, defendants assert that transceiver should be construed differently in the '718 patent depending on its context.

In reaching this proffered construction, defendants have failed to overcome the heavy presumption that the term transceiver should not carry its ordinary meaning. While defendants assert that their proposed construction flows directly from the specification of the '718 patent and is supported by the testimony of the inventors, Goodman and Domnitz, the court will not deviate from the plain meaning of a "transceiver," "a device capable of both sending and receiving information."

In the context of the claims, the first transceiver is the device connected to the destination of information and the two-wire telephone network, while the second transceiver is the device connected to the source for information and the two-wire telephone network. This construction is established by the plain meaning of the claim language itself and is supported by the intrinsic evidence.FN79 According to the claim language, the first transceiver is connected to a destination of information and the second transceiver is connected to

the source for information. The plain language of the claims defines the transmitting and receiving relationship of the first and second transceiver to the source of the information and equipment connected to the two-wire telephone network.

FN79. *See Dictionary of Computing* (3rd ed.1991) defining transceiver as "acronym for transmitter and receiver. A device that can both transmit and receive signals on a communication medium. Many communication devices, including *modems, *codecs, and terminals, are transceivers."

d. "Circuitry for" limitation

[14] Defendants assert that the disputed limitation "circuitry for" is written in means-plus function form. None of the claims containing the term "circuitry for" include the word "means." Accordingly, it is presumed that the claim elements fall outside of s. 112, para. 6.FN80 However, it must be determined whether the limitation, as understood by one of ordinary skill in the art, fails to recite a sufficiently definite structure or describes a function without reciting sufficient structure for performing that function.FN81 In constructing this term, the court will consider the claim limitations as a whole, as opposed to relying on simply the "circuitry for" limitation in its determination.FN82

FN80. *CCS Fitness*, 288 F.3d at 1369.

FN81. *Id.*

FN82. *See Apex Inc.*, 325 F.3d at 1372.

As for all of the limitations involving the language "circuitry for," the threshold issue is whether the term itself connotes sufficient structure to one of ordinary skill in the art to perform the functions identified by each limitation. In *Apex*, the court held that the term "circuit" read collectively with the appropriate identifier such as "interface," "programming" and "logic," identified some structural meaning to one of ordinary art and therefore, connoted some structure.FN83

FN83. *Id.* at 1373 (citing *Dictionary of Computing*, 75 (4th ed.1996) to define the term "circuit" as "the combination of a number of electrical devices and conductors that when interconnected to form a conducting path, fulfill some desired function"). Although the court did not find it necessary to hold that the term "circuit" itself connotes sufficient structure, the court cited multiple decisions that have concluded the term "circuit" connotes sufficiently definite structure to those skilled in the art. *See Nilssen v. Magnetek, Inc.* 1999 WL 982966, * 9 (N.D.Ill.1999); *CellNet Data Sys., Inc. v. Itron, Inc.*, 17 F.Supp.2d 1100, 1109 (N.D.Cal.1998); *Database Excelleration Sys. Inc. v. Imperial Technology Inc.*, 48 U.S.P.Q.2d 1533, 1537 (N.D.Cal.1998); *but see Nilssen v. Motorola, Inc.*, 80 F. Supp.2d. 921 (N.D.Ill.2000). Additionally, this court determined that the phrase, "I/O circuitry," which was directed to an integrated circuit for processing compressed video signals to provide decompressed video signals, was not a means-plus-function element. *Intel Corp.*, 172 F.Supp.2d at 545-546.

Similarly, here the disputed elements recite a structure, "circuitry," which in itself, conveys some structure and a corresponding function with a well-known implementation. The claims are to be construed in light of the intrinsic evidence and with the knowledge of one of ordinary skill in the art. No evidence has been presented to indicate that the term has been used in the written disclosure "in a manner inconsistent with the ordinary meaning" as understood by one of ordinary skill in the art to warrant deviation from the plain meaning.FN84

FN84. *See Texas Digital*, 308 F.3d at 1204. While defendants submit the declarations of David Waring and Professor Dan Schonfeld in support of their position that the claim language "circuitry" is a generic, open-

ended term connoting any particular structure, defendants have not offered sufficient proof that the court should look beyond the ordinary meaning of the term "circuitry" to enable reference to such extrinsic evidence.

The court does not agree with defendants that the patentee's claims can be construed so broadly to cover every possible, conceivable way or means to perform a function. Every use of the term "circuitry for" in the asserted claims include additional adjectival qualifications identifying further, sufficient structure to perform the claimed functions to one skilled in the art. The limitation "for" connotes that the qualifying modifiers FN85 are part of some definite structure for performing corresponding functions. Such adjectives narrow the scope of the structure of the claim, making the claim term, "circuitry for" more definite.

FN85. *E.g.*, [transceiver] circuitry for ('596, '446, '585 patents); [signal interface] circuitry for ('596, '446, '585 patents); "circuitry for preventing transmission of signals in the high frequency band" ('596 patent); "circuitry for mitigating the effects of reflections so that the transceivers correctly receive internal signals from the signal interface" ('585 patent); [first transceiver] circuitry for ('718 patent); [second transceiver] circuitry for ('718 patent); and "circuitry for preventing transmission of signals in the high frequency band" ('718 patent).

e. A high frequency band of frequencies above the highest frequency of the telephone voice band FN86

FN86. The parties construe disputed claim terms "a high frequency band of frequencies above the highest frequency of the telephone voice band," "high frequency band" and "high band of frequencies" (recited in the '596 line of patents) as having the same or very similar construction and have addressed the disputed limitations as one claim and therefore, they will be construed as such. Similarly, the disputed language "a high band of frequencies above the highest frequency of the telephone voice band," as well as, "high frequency band" and "high band of frequencies" appear in the '718 patent, which are included in the court's construction discussed herein.

[15] Each system claimed in the '718, '596, '446 and '585 patents relates to the sharing of voice band frequencies and frequencies above the voice band on telephone wiring, and communicating the voice and information conveyed by the respective frequency bands to their respective destinations. The court construes the term "high frequency band of frequencies above the highest frequency of the telephone voice band" as "frequencies above the telephone voice band between the range of 1 and 30 MHz." This construction is based upon the plain meaning of the claim language and is supported by the intrinsic evidence.

"High frequency band of frequencies above the highest frequency of the telephone voice band" appears in the independent claims of the '596 line of patents. A slight variation of the phrase appears in the '718 patent, which recites "high band of frequencies above a telephone voice band of frequencies." The construction noted above applies to all patents-in-suit. Each independent claim equates a definition of the disputed claim terms, "high frequency band" and "the high band of frequencies" to frequencies above the telephone voice band.

Inline provides insufficient proof of the ordinary meaning it proffers, i.e., "frequency band" as "[a] range of frequencies between upper and lower limits." Yet, the dictionary cited by Inline does contain a definition of "high frequency," which is "any of the radio frequencies in the band between 3 and 30 MHz." FN87

FN87. *See* Graham Langley, *Telephony's Dictionary* 86 (1st ed.1982).

The common specification of the '596 family of patents is consistent with the plain meaning of the disputed terms. For example, the common specification explains:

To minimize the highest frequency used for transmission, it is recommended that the first channel be placed

as close to the voiceband as feasible, and that each succeeding channel be placed above and adjacent to the previous channel. The channels should be separated in frequency sufficiently, however, to allow clean separation at the receive end without excessive filtering costs. FN88

FN88. '596 patent, col. 19, ll. 20-26.

The '718 patent specification also explains:

The technique disclosed herein embodies an extension designed to avoid interference with telephone signals. The extension calls for the frequency of the electrical version of the control signals to be converted to a higher band before transmission across wiring. This band will be high enough to eliminate interference with telephone or low-frequency communication signals.FN89

FN89. '718 patent, col. 13, ll. 22-28.

The specifications reveal that the frequencies are separated above the voice band during shared transmission on telephone wiring above the 3 MHz limit. Additionally, the common specification set forth in the '596 line of patents does not provide that the high frequency signals are lower than 1 MHz. FN90 The common specification of the '596 line of patents provides in the section entitled "Minimum Frequency":

FN90. *See e.g.*, '596 patent, col. 23, ln. 64-col. 30, ln. 32 and Figs. 3a and 3c.

If AM is used to transmit video signals, it is preferred that the picture carrier of the first such channel be located above 4.25 MHz ... For FM transmission, it is preferred that the low end of the first channel be 4 MHz. FN91

FN91. '596 patent, col. 19, ll. 27-30, 43-44.

Moreover, the '718 patent specification provides:

As mentioned earlier, the U.S. Federal Communications Commission imposes no restriction on signals above 6 MHz, leaving ample room between that frequency and the video signals.... FN92

FN92. '718 patent, col. 13, ll. 51-54.

f. Control signal

[16] The term "control signal" appears within dependent claim 6 of the '446 patent, which provides, "the transceiver further includes circuitry for transmitting a control signal in the high frequency band to the signal interface." This term is construed as "a signal that prompts the signal interface to perform a function." This construction is established by looking to the plain meaning of "control signal" as it appears in the claim. This meaning is also consistent with the intrinsic evidence.

The ordinary meaning of the term "control" is the "ability to manage or direct." FN93 The ordinary meaning of the term "signal" is "[a]n electrical wave used to convey information." FN94 In the context of the claim, the control signal is sent to the signal interface. The common specification provides that the term control signal refers to prompting a device, such as a "targeted converter box," FN95 and/or an "RF video receiver" using infrared transmitters FN96 and/or "transceiver/switch 400",FN97 to perform a function.

FN93. *See American Heritage Dictionary of the English Language* (4th ed.2000).

FN94. See *Harry Newton, Newton's Telecom Dictionary* (3rd ed.1990).

FN95. '446 patent, col. 2, ll. 2:67-3:2.

FN96. '446 patent, col. 9, ll. 46-47.

FN97. '446 patent, col. 13, ll. 23-25.

g. Control Information FN98

FN98. The disputed claim term "control Information" is contained in claim 22 of the '718 patent, which recites:

A system for bi-directional communication of information ... comprising: a first transceiver ... including ... circuitry for transmitting onto the two-wiring telephone network in the high frequency band a first transmitted signal that encodes control information in the first signal;

a second transceiver coupled to the two-wiring telephone network including ... circuitry for receiving the first transmitted signal from the two-wire telephone network, circuitry for recovering the *control information* from the received first transmitted signal, circuitry for providing the control information to a source for information,

... (*emphasis added*).

[17] Appearing in claim 22 of the '718 patent, the term "control information" is construed as "information that prompts the source of information to perform a function." This construction is established by the plain meaning of the claim language and is supported by the intrinsic evidence. As noted above, the ordinary meaning of the term "control" is "the ability to manage or direct." In the context of the claim, the signals are received and processed as information. This is exemplified in the specification. The specification describes control signals from infrared transmitters being converted to electric signals, forming an electrical version of the controlled signals and transmitting these control signals across the telephone network wiring.FN99

FN99. See '718 patent, col. 13, ll. 10-57; col. 16, ll. 26-34; col. 18, ll. 31-36.

h. Destination of information

[18] Destination of information is construed as a "device to which information is directed." This construction is established by the plain meaning of the claim language and is supported by the intrinsic evidence. The claim language of each of the patents in the '596 family provides for systems for communicating information between an external source of information and a plurality of destinations of information.

i. External source of information

The term "external source of information" is recited in the '596 line of patents as "[a] system for communicating information between an external source of information ..." FN100 Inline asserts that the term should be construed as "a source of information outside the system," while defendants contend that the

limitation needs no construction beyond the plain meaning of the claim language. Inline cites to the ordinary meaning of "external" as meaning "of, related to, or located on the outside or an outer part." FN101 The court will not construe the claim limitation, "external," beyond the plain meaning afforded by the claim language itself, as the definition proposed by Inline merely restates the clear and ordinary meaning of the word "external."

FN100. *See* claim 61 of the '596 patent, claim 1 of the '446 patent and claim 1 of the '585 patent.

FN101. *See The New Merriam-Webster Dictionary* (Frederick C. Mish ed.1989).

IV. Summary of Court's Claim Construction of Disputed Terms

For the reasons set forth above, the court adopts the following as its claim construction of the disputed terms of the patents-in-suit.

"telephone exchange"	A switching center for connecting and switching phone lines.
"signal interface"	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.
"first transceiver" "second transceiver"	No construction beyond that of "transceiver: a device capable of both sending and receiving information."
"Circuitry for"	This is not a means-plus-function limitation. The ordinary meaning of the claim limitations connote a specific structure to one skilled in the art.
"A high frequency band of frequencies above the highest frequency of the telephone voice band" ('596 line of patents); "high band of frequencies above a telephone voice band of frequencies" ('718 patent), "high frequency band," and "high band of frequencies"	Frequencies above the telephone voice band between the range of 1 and 30 MHz.
"control signal"	A signal that prompts the signal interface to perform a function.
"control Information"	Information that prompts the source of information to perform a function.
"destination(s) of information"	A device to which information is directed.
"external source of information"	The plain meaning of the claim language applies and no additional construction is given.