

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FREEWHEEL MEDIA, INC.,
Petitioner,

v.

ALMONDNET, INC.,
Patent Owner.

Case IPR2024-00419
Patent 11,564,015

**PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE
UNDER 37 C.F.R. § 42.23**

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	ARGUMENT	2
A.	The Claims Should Be Given Their Plain and Ordinary Meaning in View of the Specification, which Include Systems Having Servers that Access the Internet Using an IP Address that is not one of the Common IP Addresses	2
B.	Ground A Demonstrated the Independent Claims Are Obvious Under the Correct Interpretation of the Claims.....	6
C.	Ground D Renders Obvious the Challenged Claims	7
1.	PO Fundamentally Misunderstands or Misrepresents the Proposed Combination.....	8
2.	A POSA Would Have Found It Obvious to Use a Combined IP Address/Port Number as a Device Identifier in Baig-Zwicky-Damick's System	11
D.	Patent Owner's Unsupported Expert Testimony is Entitled to Little Weight.....	22
E.	Patent Owner Does Not Challenge Grounds B-C or Grounds E-K	23
III.	CONCLUSION.....	25

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Cases

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<i>Facebook, Inc. v. Windy City Innovations, LLC</i> , 973 F.3d 1321 (Fed. Cir. 2020).....	19
<i>Genentech, Inc. v. Chiron Corp.</i> , 112 F.3d 495 (Fed. Cir. 1997).....	5
<i>Google LLC v. EcoFactor, Inc.</i> , 92 F.4th 1049 (Fed. Cir. 2024)	6
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<i>Neenah, Inc. v. Schwendimann</i> , IPR2020-00915, Paper 29 (PTAB Nov. 6, 2020)	15
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<i>Xerox Corp. v. Bytemark, Inc.</i> , IPR2022-00624, Paper 9 (PTAB Aug. 24, 2022).....	23
Regulations	
37 C.F.R. § 42.65(a).....	23

EXHIBITS

Previously Filed:

- Ex. 1001: U.S. Patent No. 11,564,015 (“the ’015 Patent”)
- Ex. 1002: Declaration of Dr. David B. Lett in Support of Petition For *Inter Partes* Review Of U.S. Patent No. 11,564,015
- Ex. 1003: *Curriculum Vitae* of Dr. David B. Lett
- Ex. 1004: Certified Prosecution History for U.S. Patent No. 11,564,015
- Ex. 1005: Excerpts from Case Docket of *Meta Platforms Inc v. AlmondNet Inc et al.*, IPR2022-00773 (March 28, 2022)
- Ex. 1006: U.S. Patent Application Publication No. 2004/0076180 (“Satapati”)
- Ex. 1007: U.S. Patent Application Publication No. 2008/0113674 (“Baig”)
- Ex. 1008: U.S. Provisional Patent Application No. 60/858,204 (“Baig Provisional”)
- Ex. 1009: Redline Comparison Between Baig (Ex. 1016) and Baig Provisional (Ex. 1008)
- Ex. 1010: Reserved
- Ex. 1011: U.S. Patent No. Application Publication No. 2006/0128364 (“Costa”)
- Ex. 1012: Excerpts from E. D. Zwicky *et al.*, *Building Internet Firewalls* (2d ed. 2000) (“Zwicky”)
- Ex. 1013: Declaration of Sylvia Ellis
- Ex. 1014: Declaration of Brian J. Emfinger
- Ex. 1015: U.S. Patent Application Publication No. 2006/0265507 (“Banga507”)
- Ex. 1016: U.S. Patent Application Publication No. 2006/0271690 (“Banga690”)

- Ex. 1017: U.S. Patent Application Publication No. 2006/0242294 (“Damick”)
- Ex. 1018: U.S. Patent No. 9,123,071 (“McFarland”)
- Ex. 1019: U.S. Patent No. 8,930,239 (“Ashbaugh”)
- Ex. 1020: Reserved
- Ex. 1021: Complaint, *AlmondNet, Inc. v. FreeWheel Media, Inc.*, Case No. 1:23-cv-00220-MN (D. Del.)
- Ex. 1022: U.S. Patent No. 8,180,674 (“Madhavan”)
- Ex. 1023: Reserved
- Ex. 1024: Reserved
- Ex. 1025: Reserved
- Ex. 1026: Reserved
- Ex. 1027: Reserved
- Ex. 1028: Reserved
- Ex. 1029: Excerpts from Downing *et al.*, *Dictionary of Computer and Internet Terms* (8th ed. 2003)
- Ex. 1030: Excerpts from Newton, *Newton's Telecom Dictionary* (21st ed. 2005)
- Ex. 1031: U.S. Patent No. 6,282,548 (“Burner”)
- Ex. 1032: U.S. Patent No. 6,036,601 (“Heckel”)
- Ex. 1033: U.S. Patent Application Publication No. 2005/0096978 (“Black”)
- Ex. 1034: Reserved
- Ex. 1035: Hagel *et al.*, *Net Worth: Shaping Markets When Customers Make the Rules* (1999) (“Hagel”)

- Ex. 1036: Request for Comments: 1631, “The IP Network Address Translator (NAT)” (1994) (“RFC 1631”)
- Ex. 1037: Zeff *et al.*, *Advertising on the Internet*, (2nd ed. 1999) (“Zeff”)
- Ex. 1038: Reserved
- Ex. 1039: Request for Comments: 793, “Transmission Control Protocol” (1981) (“RFC 793”)
- Ex. 1040: Request for Comments: 2663, “IP Network Address Translator (NAT) Terminology and Considerations” (1999) (“RFC 2663”)
- Ex. 1041: ANSI/IEEE Std 802.11, 1999 Edition, “Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications”
- Ex. 1042: Excerpts from Harley Hahn, *The Internet Complete Reference* (2d ed. 1996) (“Hahn”)
- Ex. 1043: U.S. Patent Application Publication No. 2003/0066085 (“Boyer”)
- Ex. 1044: U.S. Patent Application Publication No. 2007/0217436 (“Markley”)
- Ex. 1045: U.S. Patent Application Publication No. 2006/0230427 (“Kunkel”)
- Ex. 1046: U.S. Patent No. 6,543,052 (“Ogasawara”)
- Ex. 1047: U.S. Patent Application Publication No. 2002/0145621 (“Nguyen”)
- Ex. 1048: Excerpts from *Computer Dictionary*, Microsoft Press (2d ed. 1994)
- Ex. 1049: Excerpts from *Webster’s New World Computer Dictionary* (10th ed. 2003)
- Ex. 1050: International Publication No. WO 2007/078283 for International Patent Application No. PCT/US2005/047230 to Ashbaugh (“Ashbaugh PCT”)

- Ex. 1051: Claim Chart (Exhibit 8) Accompanying Complaint, *AlmondNet, Inc. v. FreeWheel Media, Inc.*, Case No. 1:23-cv-00220-MN (D. Del.)
- Ex. 1052: Notice of Allowance mailed on August 20, 2013, in U.S. Patent Application No. 13/167,605
- Ex. 1053: Notice of Allowance mailed on December 9, 2021, in U.S. Patent Application No. 16/925,655
- Ex. 1054: U.S. Patent Application Publication No. 2005/0108418 (“Bedi”)
- Ex. 1055: U.S. Patent Application Publication No. 2004/0177147 (“Joshi”)
- Ex. 1056: Mapping Between Baig Provisional (Ex. 1008) and Baig (Ex. 1007)
- Ex. 1057: Reserved
- Ex. 1058: Institution Decision from *Meta Platforms, Inc. f/k/a Facebook, Inc. v. Intent IQ, LLC et al.*, IPR2023-01281, Paper 7 (February 21, 2024)
- Ex. 1059: Reserved
- Ex. 1060: Reserved
- Ex. 1061: Reserved
- Ex. 1062: Reserved
- Ex. 1063: US Pat. App. Pub. No. 2002/0083445 (“Flickinger”)
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- Ex. 1066: Bettina Fabos, *The Commercial Search Engine Industry and Alternatives to the Oligopoly* (Mar. 2006) EastBound Journal

- Ex. 1067: Susan Young, Getting the Message: How the Internet is Changing Advertising (May 16, 2000), <https://hbswk.hbs.edu/item/getting-the-message-how-the-internet-is-changing-advertising>
- Ex. 1068: US Pat. App. Pub. No. 2002/00998842 (“Jennings”)
- Ex. 1069: US Pat. App. Pub. No. 2002/0123928 (“Eldering”)
- Ex. 1070: US Pat. No. 7,634,789 (“Gerba”)
- Ex. 1071: U.S. Pat. App. Pub. No. 2007/0180147 (“Leigh”)

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- Ex. 1072: Declaration of Dr. David B. Lett in Support of Petitioner’s Reply to Patent Owner Response
- Ex. 1073: Request for Comments: 1945, “Hypertext Transfer Protocol – HTTP/1.0” (1996) (“RFC 1945”)
- Ex. 1074: Request for Comments: 2068, “Hypertext Transfer Protocol – HTTP/1.1” (1997) (“RFC 2068”)
- Ex. 1075: Excerpts from Gourley *et al.*, *HTTP: The Definitive Guide* (1st ed. 2002)
- Ex. 1076: Nielsen *et al.*, *Network Performance Effects of HTTP/1.1, CSS1, and PNG*, ACM SIGCOMM (1997)
- Ex. 1077: Cheng *et al.*, *Analysis of HTTP/1.1 Performance on a Wireless Network*, Stanford University (1999)
- Ex. 1078: Ian Hickson, “Web Applications 1.0,” (January 1, 2006). Retrieved from [<https://web.archive.org/web/20060206170806/http://www.whatwg.org/specs/web-apps/2006-01-01/>]
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- Ex. 1082: Excerpts from Shishir Gundavaram, *CGI Programming on the World Wide Web* (1st ed. 1996)
- Ex. 1083: Daniel Goldman, “Opera takes the lead with AJAX support among browsers: More efficient streaming,” (September 1, 2006). Retrieved from
[<https://web.archive.org/web/20070318013327/http://operawatch.com/news/2006/09/opera-takes-the-lead-with-ajax-support-among-browsers-more-efficient-streaming.html>]
- Ex. 1084: Declaration of Erik de la Iglesia in Support of Patent Owner’s Response to the Petition from *Meta Platforms, Inc., v. AlmondNet, Inc., et al.*, IPR2023-01281, Exhibit 2001 (May 29, 2024)
- Ex. 1085: User’s Guide for G-4100 v2 802.11g Wireless Hotspot Gateway, Version 1.00, ZyXEL (1st ed. July 2006) from *Meta Platforms, Inc. f/k/a Facebook, Inc. v. Intent IQ, LLC et al.*, IPR2023-01281, Exhibit 2005 (May 29, 2005)
- Ex. 1086: “Reference Manual for the MR814 v3 Cable/DSL Wireless Router,” Version 1.0, NETGEAR, Inc. (June 2004)
- Ex. 1087: Additional Excerpts from E. D. Zwicky *et al.*, *Building Internet Firewalls* (2d ed. 2000) (“Zwicky”)
- Ex. 1088: Excerpts from Arregoces *et al.*, *Data Center Fundamentals*, (2004)
- Ex. 1089: Second Declaration of Brian J. Emfinger
- Ex. 1090: Request for Comments: 1122, “Requirements for Internet Hosts – Communication Layers” (1989) (“RFC 1122”)
- Ex. 1091: Reserved
- Ex. 1092: Schaefer *et al.*, “Oracle HTTP Server Administrator’s Guide, 10g Release 2 (10.1.2),” Oracle (March 2006)

- Ex. 1093: Excerpts from Chopra, *et al.*, *Professional Apache Tomcat 5* (2004)
- Ex. 1094: November 28, 2005 Web Capture of “Apache HTTP Server Version 2.0 – Apache Core Features,” The Apache Software Foundation. Retrieved from [https://web.archive.org/web/20051128055834/httpd.apache.org/docs/2.0/mod/core.html]
- Ex. 1095: “Opera 4.0 Upgrades File Exchange: Includes HTTP 1.1,” Opera Press (March 28, 2000). Retrieved from [https://press.opera.com/2000/03/28/opera-4-0-upgrades-file-exchange-includes-http-1-1/]
- Ex. 1096: Excerpts from Kurose *et al.*, *Computer Networking: A Top-Down Approach* (6th ed. 2013)
- Ex. 1097: Request for Comments: 2663, “IP Network Address Translator (NAT) Terminology and Considerations,” (1999) (“RFC 2663”)
- Ex. 1098: Excerpts from Martin Sauter, *Communications Systems for the Mobile Information Society* (2006)
- Ex. 1099: Transcript of February 17, 2025 Deposition of Erik de la Iglesia

I. INTRODUCTION

As the Petition showed, every claim of the '015 Patent is unpatentable. Patent Owner's Response ("POR") provides no sound basis for concluding otherwise. Patent Owner ("PO") challenges Ground A by gerrymandering the claims to unnecessarily exclude, from the claimed "computer system," any device that uses a common IP address for Internet access. This erroneous narrowing of the claims undergirds PO's attempts to distinguish the prior art. In addition to misinterpreting the claims, PO mischaracterizes the prior art and Petitioner's grounds. §§II.A-B, *infra*.

For Ground D, PO argues that port numbers would have changed so rapidly that a POSA would have been disincentivized from using a combined IP address/port number as a device identifier in the prior art combination. However, PO's premise is false; port numbers need not rapidly recycle. A POSA, who is not an automaton, would have been aware of the benefits of persistent connections and would have found associating device identifiers that include port numbers assigned to persistent connections to be reliable and obvious. Further, PO's arguments rely on unsubstantiated expert testimony that should be accorded little weight. §§II.C-D, *infra*.

Finally, PO fails to challenge several grounds raised in the Petition. The Board should find all claims of the '015 Patent unpatentable. §II.E, *infra*.

II. ARGUMENT

A. The Claims Should Be Given Their Plain and Ordinary Meaning in View of the Specification, which Include Systems Having Servers that Access the Internet Using an IP Address that is not one of the Common IP Addresses

The Petition applies the proposed combinations against the plain and ordinary meaning of the claim language read in light of the specification. Pet. 9. Despite claiming that no terms require express construction (POR 5), PO's rebuttal to Ground A relies on a misinterpretation of the claimed "computer system" and the "without using" limitation. §II.B, *infra*; Ex. 1001, claims 1 and 14.

Specifically, PO argues that the claimed "computer system" is limited to computer systems that *never* use a common IP address to access the Internet. POR 8. PO thus reads the claim limitation "wherein ... the computer system determining the associations accesses the Internet without using any of the common IP addresses," to mean the same thing as "wherein the computer system determining the associations never accesses the Internet using any of the common IP addresses." But these are not synonymous. A computer system comprising some devices that use a common IP address, and others that do not, accesses the Internet "without using any of the common IP addresses" whenever its servers are accessing the Internet without using the common IP address. The "without using" limitation excludes only those systems that access the Internet *exclusively* via the common IP addresses. It does not require that every instance of Internet access occur without using the

common IP address. This understanding is consistent with the open-ended nature of the claim and the patent specification. PO's implicit narrowing of the claims is unsupported by the specification and should be rejected.

PO contends that a computer system cannot satisfy the “without using” limitation if one portion of that computer system accesses the Internet using a common IP address and another portion of that computer system uses a different IP address to access the Internet. POR 7-8. However, PO cites to nothing in the '015 Patent's claim language, specification, or prosecution history to support its assertion. *Id.* Instead, PO relies solely on attorney argument to draw a supposed distinction between (i) “a system that access the Internet using an IP address ***additional to*** the claimed common IP address” and (ii) “a system that accesses the Internet ***without*** using the claimed common IP address” (i.e., a system that never uses the common IP address to access the Internet). *Id.*, 8 (emphasis in original). But the term “without using” is not limited in the '015 Patent to “never using.”

The '015 Patent includes no discussion or explanation of the “without using” limitation; the term “without using” does not even appear in the context of a common IP address. Ex. 1001.¹ The '015 Patent's figures show the CAS being located on a

¹ The term is used only with respect to personally identifiable information (PII). Ex. 1001, 7:14-16, 8:9-13.

different network across the Internet from the Internet-accessing electronic devices (e.g., modem, computer, STB). *Id.*, FIG. 7. But, the '015 Patent presents both the electronic devices that access the Internet using a common IP address (e.g., modem, computer, STB) and other devices (e.g., CAS) that access the Internet using a different IP address as belonging to the same system.

Each of the fourteen figures in the '015 Patent “illustrate schematically a **system** for targeting television advertisements.” *Id.*, 8:38-48 (emphasis added), FIGS. 1-14. In each figure, the illustrated “system” includes, among other components, the “Central Ad Server” (40) that determines device associations and the Internet-accessing devices at the user premises (e.g., modem, computer, and STB).² *Id.*, 10:46-11:5, 11:6-10 (discussing associations determined by the CAS), FIGS. 1-14.

The descriptions of Figures 1 and 7 in the '015 Patent further expose the error in PO's interpretation. Ex. 1001, 9:35-44 (discussing FIG. 1's system), 13:5-46. As acknowledged by PO's own expert (Ex. 1099, 42:1-16, 47:12-48:3), no figure in the '015 Patent omits from the “system for targeting television advertisements” the

² PO acknowledges that the '015 Patent claims are directed to the embodiments illustrated in Figures 7-12. POR 3.

electronic devices that access the Internet using a common IP address (e.g., modem, STB, computer). Ex. 1001, 8:38-48, FIGS. 1-14.

The '015 Patent makes abundantly clear that its claims are not to be artificially limited and should be construed to be “open ended.” Ex. 1001, 23:66-24:1, 24:18-23 (“the words ‘comprising,’ ... and variants thereof, shall be construed as open-ended terminology”). The open-ended language of the '015 Patent’s independent claims—“computer system **comprising**”—reflects this broad view of the claimed “computer system,” and undermines PO’s arguments by encompassing computer systems having both the device that determines the associations and the devices that access the Internet using the common IP address. *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997) (“[T]he open-ended term ‘comprising’ . . . is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim[.]”).

In sum, PO’s argument relies on an implicit and narrow interpretation of the term “accesses the Internet without using” to mean “never accesses the Internet using.” But the intrinsic record—which PO largely ignored—demonstrates that the claimed “computer system” is not so limited. A computer system that accesses the Internet using an IP address that is not a common IP address satisfies the “without using” limitation even if that computer system accesses the Internet in another

instance using the common IP address. PO's argument, if accepted, would improperly read out of the claims all embodiments of the computer system disclosed in the patent, and should be rejected. *Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1276 (Fed. Cir. 2008) (“We normally do not interpret claim terms in a way that excludes embodiments disclosed in the specification.”); *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1305 (Fed. Cir. 2007); *Google LLC v. EcoFactor, Inc.*, 92 F.4th 1049, 1058-59 (Fed. Cir. 2024); *Apple, Inc. v. Gesture Tech. Partners, LLC*, IPR2021-00920, Paper 28, 21-22 (PTAB Nov. 30, 2022).

B. Ground A Demonstrated the Independent Claims Are Obvious Under the Correct Interpretation of the Claims

PO bases its challenge to Ground A on a single argument: that Baig's modified system, as presented in the Petition, cannot satisfy the claimed requirement that the “computer system determining the associations accesses the Internet without using any of the common IP addresses of the associations identified in part (ii)” (the “without using” limitation). POR 5-9; Ex. 1001, limitations 1(a)(iv) (element [1F]) and 14(a)(iv) (element [14F]).³ As discussed (Section II.A), this argument fails

³ PO does not dispute, and therefore concedes, that Baig-Banga507-Banga690-McFarland discloses and renders obvious all other elements of independent claims 1 and 14.

because it misconstrues the claims. Baig's modified system is consistent with the '015 Patent's open-ended claim language and mirrors the computer systems disclosed in the '015 Patent that include the device that determines the associations (e.g., CAS) and the electronic devices that access the Internet using a common IP address (e.g., STB, computer). *Compare* Ex. 1001, FIG. 7 (illustrating that the CAS does not connect to the Internet via modem providing the STB and computer with Internet access) *with* Pet. 13 (illustrating edited FIG. 1 of Baig with a similar arrangement of the CR server and the user devices separately accessing the Internet).

The Board aptly noted in its Institution Decision that no express construction of any terms was required, and that remains true. ID 9. Under the correct interpretation of the claims, the modified Baig system meets the disputed claim elements because, as the Board explained in the Institution Decision, "the CR server would not have connected to the Internet via the AP and thus would have used a different IP address than the AP that provides devices 102 with Internet access." ID 20-21.

C. Ground D Renders Obvious the Challenged Claims

PO does not dispute that Baig-Zwicky-Damick (Ground D), as presented in the Petition, discloses all elements of the independent claims. POR 9-18. Rather, PO's sole issue with the proposed combination is whether a POSA would have found it desirable and feasible to associate device IDs formed of a combined IP

address/port number. *Id.* Specifically, PO contends that port numbers in the proposed combination would change so rapidly that they would be unreliable for device identification. But PO's argument is founded on the false premise that port numbers associated with a device in Baig-Zwicky-Damick's system must be reassigned rapidly.

1. PO Fundamentally Misunderstands or Misrepresents the Proposed Combination

The Petition explains that a POSA would have (i) understood that Zwicky and Satapati provide additional details concerning well-known network address translation ("NAT") techniques already described in Baig and (ii) recognized that the combination of an IP address and port number may be used to identify a device. Pet. 46-50; Ex. 1002, ¶¶319-435.

According to PO, Petitioner presented an unworkable theory of using a combined IP address/port number to identify devices because a given port would have been "recycled on the order of just a few seconds (or even faster)" and, therefore "IP address/port number combinations would have been extremely unreliable for device identification (and thus device-association) purposes." POR 15. More specifically, PO alleges that port numbers would have changed rapidly due to the TCP network connections to Baig's VCSP website remaining open only long enough to complete a single data transfer before releasing the port number for subsequent use. *Id.*, 10-16. This argument appears to have been created by PO and

its expert out of whole cloth, and it is not supported by either the relied-upon prior art or the references cited in the POR.

The type of TCP connections PO refers to, which close immediately upon completing a requested data transfer, were known as “non-persistent” connections.⁴ Ex. 2003, 3-4; Ex. 2005, 44-47; Ex. 1075, 11; Ex. 1072, ¶10. However, the Petition never suggests that the Baig-Zwicky-Damick or Baig-Satapati-Damick systems must use non-persistent TCP connections to send data over the Internet (Pet. 43-69), and nothing in the prior art would require such connections. Ex. 2005, 44 (developer has option of choosing between persistent or non-persistent connections); Ex. 1072, ¶45.

Nothing in Baig would suggest to a POSA, much less require, that non-persistent TCP connections be used to exchange data between Internet-accessing devices and Baig’s server. Rather, the Petition establishes that “[i]t would have been

⁴ PO refers to the port numbers used with non-persistent connections as “ephemeral” port numbers. POR 10, 13-15. The better term to use is “private” or “dynamic” port numbers, which “can be used for any purpose without registration.” Ex. 2006, 1. Such private/dynamic port numbers are not necessarily “ephemeral” in the sense that they recycle rapidly if assigned to persistent connections. Ex. 1072, ¶43.

obvious to implement port translation techniques (per Satapati or Zwicky) as part of NAT performed by Baig’s AP 106,” and “given the routine and widely-known prior use of NAT and PAT, a POSA would have been accustomed to such techniques.” Pet. 49, 50; Ex. 1002, ¶¶349-353. As Petitioner’s expert, Mr. Lett, explains, at the time of the ’015 Patent’s invention in 2007, a POSA would have understood that Baig’s VCSP server and user devices would have used HTTP/1.1, which was released a decade earlier. Ex. 2003, 3 (explaining Web servers and browsers began implementing HTTP/1.1 in 1998); Ex. 1074, 1 (HTTP/1.1 specification published in 1997); Ex. 1072, ¶¶6-8, 29-40.⁵ And, with *persistent* TCP connections being the default type of connection in HTTP/1.1, the POSA would understand that Baig’s VCSP server, AP, and user devices would have used persistent connections to transport their web communications. Ex. 1074, 43-44; Ex. 1075, 10-11; Ex. 1085, 198; Ex. 1088, 8-10; Ex. 2003, 5; Ex. 1072, ¶¶10-13, 29-40.

The argument of PO’s expert, Mr. de la Iglesia, that the port numbers used in Baig’s system “must be quickly recycled” and Baig’s content server would be unable to determine whether a communication relates to a specific device “because of the rapid variability in assignment of such port numbers” (POR 10, 14; Ex. 2001, ¶¶32, 35) simply ignores that the *default* type of connections used in the art were persistent

⁵ HTTP/1.0 specification published in 1996. Ex. 1073, 1.

connections. Ex. 2003, 3; Ex. 2004, 4; Ex. 2005, 44, 47; Ex. 1074, 44, 160-162; Ex. 1075, 18; Ex. 1088, 10; Ex. 1094, 18; Ex. 1072, ¶¶8, 10, 29, 31-33.

Mr. de la Iglesia's conclusions contradict the teachings of the prior art. Ex. 1072, ¶¶8, 15-16, 37-40, 43, 49-50, 58, 62. For example, Satapati recognized that port numbers may be used to "identify different devices with the same [IP] address." Ex. 1006, ¶¶2, 4-10; Pet. 47-48. PO simply ignores Satapati's teachings that port numbers were used for device identification. POR 9-18; Ex. 1006, ¶2 ("NAT may use port address translation, where port numbers are used to further identify different devices with the same address"). The only evidence PO relies on for its argument is uncorroborated testimony from its expert. POR 9-10, 12-15 (citing Ex. 2001, ¶¶30-32, 34-36); Ex. 1072, ¶¶15-16; *Ericsson Inc. v. Intellectual Ventures I LLC*, 890 F.3d 1336, 1346 (Fed. Cir. 2018) ("To contradict a reference, an unsupported opinion is not substantial evidence."); *Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1378 (Fed. Cir. 2017) ("[W]e must disregard the testimony of an expert that is plainly inconsistent with the record.").

2. A POSA Would Have Found It Obvious to Use a Combined IP Address/Port Number as a Device Identifier in Baig-Zwicky-Damick's System

As discussed (Section II.C.1), PO falsely contends that the Petition's Baig-Zwicky-Damick combination is limited to using non-persistent connections that require rapid port number recycling. PO repeats this same argument throughout its

Response. POR 9-18. However, with Baig-Zwicky-Damick using persistent connections, a POSA would have found associating device identifiers that include the port numbers assigned to those connections to be both workable and reliable, and thus obvious. Ex. 1072, ¶¶6, 9-10, 42-44, 60-65.

a. Baig-Zwicky-Damick's System Would Reliably Associate Device IDs Using Persistent TCP Connections

PO presents an inaccurate picture of how long port numbers would persist by assuming any TCP connection in Baig-Zwicky-Damick would operate as a non-persistent connection. POR 10. But, PO and its expert tacitly recognize that a non-persistent connection is merely one potential TCP connection option available to a POSA. For example, during deposition, PO's expert acknowledged the existence of persistent connections, namely, that "a keep alive feature allows a persistent connection to remain open for multiple requests." Ex. 1099, 31:10-23. Similarly, PO hedges its argument in the POR, stating that port numbers "*may* have been recycled" or are "*typically*" reassigned within seconds. POR 12, 15 (emphasis added). But PO's arguments about the purportedly short lifespan of ports assigned to TCP connections do not apply to ports assigned to persistent connections left open for additional request-response transactions. POR 10-11; Ex. 1072, ¶¶10-13, 40-43, 57-59.

As Mr. Lett explains, a POSA would have understood that non-persistent TCP connections were not the only choice for exchanging web communications in Baig-Zwicky-Damick's system. Ex. 1072, ¶¶10, 45. Nor would it have been the obvious or preferred choice in view of Baig's teachings and a POSA's knowledge of NAT and TCP connections. *Id.*, ¶¶6, 29-38. For example, Mr. Lett explains that a POSA would have understood that there are two options for establishing TCP connections between Baig's server and other devices (e.g., AP 106, devices 102): a persistent connection or a non-persistent connection. *Id.*, ¶¶42-46. A POSA also would have recognized the need to decide which type of connection to use for communicating with Baig's VCSP website:

In many Internet applications, the client and server communicate for an extended period of time, with the client making a series of requests and the server responding to each of the requests. Depending on the application and on how the application is being used, the series of requests may be made back-to-back, periodically at regular intervals, or intermittently. When this client-server interaction is taking place over TCP, the application developer needs to make an important decision—should each request/response pair be sent over a *separate* TCP connection, or should all of the requests and their corresponding responses be sent over the *same* TCP connection? In the former approach, the application is said

to use **non-persistent connections**; and in the latter approach, **persistent connections**.

Ex. 2005, 44 (emphasis in original). When faced with the decision of which type of connection to use in Baig-Zwicky-Damick's system, as Mr. Lett explains, a POSA would have found persistent connections to be the preferred connection for several reasons. Ex. 1072, ¶45.

First, persistent connections were and have been the default connection for HTTP/1.1, the primary protocol for transmitting information across the Internet, since 1997. Ex. 2003, 3; Ex. 2004, 4; Ex. 2005, 44; Ex. 1074, 44. Second, because the VCSP services offered by Baig's server are provided in real-time and include interactive services, e.g., online gaming and chat rooms (Ex. 1007, ¶¶53-54, 79-82, 107-110, 124, Abstract; Pet. 52-54), a POSA would have found it obvious to use persistent connections. Ex. 1072, ¶¶52-56; Ex. 1078, 5, 86-98; Ex. 1079, 1, 4-6; Ex. 1082, 6-10; Ex. 1083, 5; Ex. 1096, 4; §II.C.2.b, *infra*. A POSA would have avoided using non-persistent connections to communicate such data in Baig-Zwicky-Damick's system given the known disadvantages that ultimately led to its replacement as the preferred connection type for HTTP. Ex. 1072, ¶¶29-35; Ex. 2003, 4-5; Ex. 2004, 3-4; Ex. 2005, 46-47; Ex. 1076, 2 (left column, second paragraph); Ex. 1075, 7-8; Ex. 1077, 3-4.

Tellingly, PO's own evidence shows that persistent connections were known to provide advantages over non-persistent connections and be a preferred alternative to non-persistent connections. Ex. 2003, 3-5; Ex. 2004, 3-5; Ex. 2005, 44-47; Ex. 1074, 43; Ex. 1075, 8, 19-20; Ex. 1076, 2; Ex. 1077, 4; Ex. 1094, 18; Ex. 1072, ¶¶29, 33-35. A POSA equipped with this knowledge of persistent connections and the knowledge that persistent connections were implemented in web servers and APs before April 2007, would have found port numbers to be workable, reliable, and usable in the device IDs when creating the claimed associations in Baig-Zwicky-Damick. Ex. 1072, ¶¶11-13, 25, 37-42, 44-46, 59-65; Ex. 2003, 5; Ex. 1074, 43-44; Ex. 1075, 10-11; Ex. 1088, 8-10; Ex. 1085, 198; Ex. 1092, 44-46; Ex. 1093, 4-5; Ex. 1094, 18; Ex. 1095, 1-2.

PO largely ignores the teachings of persistent connections in the prior art. POR 9-18; Ex. 1072, ¶¶8, 10-13, 29-33, 37-41, 45, 49-52. This is improper. *Neenah, Inc. v. Schwendimann*, IPR2020-00915, Paper 29, 33 (PTAB Nov. 6, 2020) (“a reference should be considered in its entirety for what it fairly teaches one skilled in the art”), *aff'd*, 82 F.4th 1371 (Fed. Cir. 2023), citing *In re Wesslau*, 353 F.2d 238, 241 (CCPA 1965) (“[i]t is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.”). Given the wealth

of teachings that would have led a POSA to use persistent TCP connections for HTTP communications with Baig's VCSP website, the Board should reject Mr. de la Iglesia's uncorroborated supposition that a POSA would have counterintuitively felt constrained to use non-default, non-persistent connections. Ex. 1072, ¶¶10, 29-35, 43-45, 57-60, 64; *Velandier v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) (noting that Board has discretion to accord little weight to expert's "broad conclusory statements that it determined were unsupported by corroborating references"); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) ("Lack of factual support for expert opinion going to factual determinations" is sufficient to "render the testimony of little probative value in a validity determination.").

In the Baig-Zwicky-Damick system, as implemented by a POSA actually trying to succeed in his endeavors, a port number would not be recycled within seconds of assignment as PO contends. Rather, as Mr. Lett explains, any port number assigned to a persistent connection in Baig-Zwicky-Damick would have persisted throughout the duration of that connection, which would have remained open until either Baig's VCSP server or Baig's user device signaled the close of that connection. Ex. 1072, ¶¶8, 10-11, 13-14, 25, 37-38, 41-46, 59-62; Ex. 2004, 4; Ex. 1074, 44 (explaining the overall operation of persistent connections), 109 (discussing the "close" connection option). A POSA would have understood that the

connection would have been established when a user first joins Baig's VCSP community (e.g., by logging into the VCSP website) and that the connection would have persisted until that user left the VCSP community (e.g., by logging out of the website). Ex. 1072, ¶¶59 (explaining that Baig's server also could have logged off users after a period of inactivity), 62; Ex. 1097, 3-4; Ex. 1090, 92 (default idle time no less than two hours); Ex. 1088, 4 (default idle time typically 2-3 hours). Given the long-lived nature of the persistent connection between Baig's website and the user device, a POSA would have found the port number assigned to that persistent connection to "serve a device-identification purpose" (*compare* Ex. 2001, ¶40) and be a reliable way to identify the user device and to establish associations between device IDs of user devices belonging to the same VCSP community. Ex. 1072, ¶¶42-44, 59-65.

**b. PO's Argument and Its Expert's Testimony
Improperly Remove the Knowledge and Creativity of
a POSA**

PO argues that a POSA would have had no motivation to pursue Petitioner's implementation of Baig-Zwicky-Damick's system given the rapid recycling of port numbers and supposed "unworkability" and "unreliability" of IP address/port number combinations as a device identifier. POR 9-10, 15-18. PO contends that (i) a POSA would have avoided trying to consider the connection table ports of Baig's AP because Baig's server would be unable to assume that the same port would be

reused by a device, and (ii) a POSA would have no reason to generate associations between IP address/port number combinations as device identifiers given the “rapid fluctuation” in port assignments and the need to open “numerous parallel connections” to obtain web information from Baig’s server. POR 11-16.

As discussed (Section II.C.2.a), PO’s assertion that Baig’s system would be limited to using non-persistent connections is inaccurate. Ex. 1072, ¶45; POR 9-18. PO’s argument is built on the false premise that a user’s browser would have to open numerous parallel connections to obtain content from Baig’s VCSP website and that Baig’s AP could not allocate enough port numbers ahead of time to accommodate an unknown number of devices. POR 11-12; Ex. 1072, ¶¶17-24, 26-28, 57-58. However, PO’s own evidence does not support these assertions. Ex. 1072, ¶¶19-23. A POSA would have been aware of the ability and option to configure Baig’s user devices to open a single, persistent, pipelined connection capable of retrieving content from Baig’s website via Baig’s AP, and would have recognized that enough port numbers would have been available to the AP even if Baig’s devices opened multiple, parallel connections. Ex. 1072, ¶¶18, 20-23, 26, 48-51, 59-60; Ex. 2003, 4;

Ex. 2004, 5 (Figure 4.1(b)); Ex. 2005, 45-46; Ex. 1086, 96; Ex. 1087, 5-6; Ex. 1095, 1-2; Ex. 1098, 5.⁶

A POSA is “a person of ordinary creativity, not an automaton.” *Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d 1321, 1343 (Fed. Cir. 2020). PO fails to provide any evidence that these so-called issues of unreliability and feasibility were beyond a POSA’s skill to address by, for example, configuring a browser to open a persistent, pipelined connection to communicate with Baig’s server; using known mechanisms (e.g., keep-alive signals) to preserve an established connection with Baig’s server; and/or maintaining at least one persistent connection with Baig’s server while also permitting additional connections to be opened as needed. Ex. 1072, ¶¶19, 23, 30-32, 37-40, 48-51, 57-60; *NuVasive, Inc., v. Iancu*, 752 F. App’x. 985, 998 (Fed. Cir. 2018) (upholding Board’s finding of obviousness because “[PO]’s expert testimony regarding the inoperability of the combination ... is mere speculation and conclusory”). That failure is fatal given that it was known at the time

⁶ Even if PO argued that multiple, persistent connections were better than a single, persistent connection, that would not undermine the obviousness of using a single, persistent connection. *In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012) (“just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes”).

of the alleged invention for a POSA to use port numbers to “identify different devices with the same [IP] address” (Ex. 1006, ¶2) and that persistent connections were implemented in web servers and APs. Ex. 1072, ¶¶8, 11-12, 15-16, 25, 32, 36-41, 45; Ex. 2003, 5; Ex. 1074, 43-44; Ex. 1075, 10-11; Ex. 1088, 8-10; Ex. 1085, 198 (indicating that AP kept connections open for a defined idle period, e.g., five minutes); Ex. 1093, 4-5.

As noted above in Section II.C.2.a, when implementing a communications network and content delivery system, such as Baig’s, a POSA would have been presented with two options for establishing TCP connections between the content server and other devices: a persistent connection or non-persistent connection. Ex. 1072, ¶45; Ex. 2005, 44. But PO does not reach its contrived conclusion—that Baig’s system necessarily uses non-persistent connections—by evaluating whether a POSA would have chosen to use one type of TCP connection over the other. Instead, PO’s argument ignores any consideration of persistent connections by a POSA and is premised on Baig’s system using less preferred non-persistent connections. POR 9-15. This is a false choice. Ex. 1072, ¶¶9-10, 45-48, 52-56; Ex. 2005, 44.

To perpetuate this fallacy, PO and its expert artificially constrain the prior art to using only non-persistent connections, and do so without reference to any corroborating evidence of record. *Ashland Oil, Inc.*, 776 F.2d at 294; Ex. 1072,

¶¶10-12, 37-40, 43-45, 50-51, 58-60. In his declaration, PO's expert deviates from the use of persistent connections in the prior art, which were the de facto industry standard for delivering data within a network, by instead requiring Baig's system to employ non-persistent connections that would cause port numbers to rapidly recycle. Ex. 2003, 3; Ex. 2004, 4; Ex. 2005, 44, 47; Ex. 1074, 44, 160-162; Ex. 1075, 4-5; Ex. 1088, 6-7; Ex. 2001, ¶36. Even worse, PO's expert provides little reason to deviate from using persistent connections that were known to have significant advantages over nonpersistent connections, including reduced latency and server overhead. Ex. 1072, ¶¶32-35, 49; Ex. 2003, 5; Ex. 2004, 3, 5, 9-10; Ex 2005, 47; Ex. 1074, 43; Ex. 1075, 8, 11, 19-20; Ex. 1076, 2; Ex. 1077, 4; Ex. 1094, 18. Further, during the deposition of PO's expert, when confronted with the inconvenient fact that his own declaration exhibits demonstrate that persistent connections were a known and beneficial alternative to non-persistent connections, Mr. de la Iglesia was forced to acknowledge that both connection types were known in the art. Ex. 1099, 27:12-32:9; Ex. 1072, ¶¶37-38. He thus concedes that PO's argument presents a false choice and limited view of the prior art.

Mr. de la Iglesia's self-serving and conclusory testimony that persistent connections, while known since 1997, were not actually implemented by web servers, web browsers, and access points by 2007 is a red herring. First, portions of his testimony appear to be premised on his technical experience before 2003,

roughly four years before the '015 Patent's priority date. Ex. 1099, 10:24-12:4, 38:16-39:13, 48:23-49:9; Ex. 1072, ¶¶49-51. Second, his testimony, much like the statements made in his declaration, is not supported by any evidence on record. Ex. 1099, 32:13-33:8, 36:14-37:3, 38:16-39:13; 52:9-24; Ex. 1072, ¶¶11-14, 39-40, 48-50. More important, his testimony is inconsistent with the prior art. Several statements made during his deposition concerning the use and implementation of persistent connections in the art during the relevant time period are simply inaccurate. Mr. Lett makes clear, with supporting evidence, that persistent connections were well-known and implemented in web servers and APs before the '015 Patent's priority date. Ex. 1072, ¶¶11-14, 25, 41, 45, 48-49, 59; Ex. 2003, 5; Ex. 1074, 43-44; Ex. 1075, 10-11; Ex. 1088, 8-10; Ex. 1084, ¶61; Ex. 1085, 198.

D. Patent Owner's Unsupported Expert Testimony is Entitled to Little Weight

PO provides no evidence to corroborate multiple arguments in its POR other than the declaration of its expert who repeats the statements nearly verbatim, also, without support. POR 10-16; Ex. 2001, ¶¶32 (no evidence that lifetime of port is restricted by NAT security settings and firewalls), 33 (no evidence supporting testimony about AP's teardown of connections), 34 (no supporting evidence), 35 (no supporting evidence about changing set of port numbers during user's login session), 36 (no evidence supporting testimony about design of Baig's system), 36 fn.2 (no evidence supporting testimony about how intermediate NAT devices would have

operated), 37 (no evidence supporting testimony about websites’ use of “higher-complexity elements” in 2006-2007), 38 (no evidence supporting testimony about speed of port recycling), 39 (no evidence supporting testimony about purported “facts” that support expert’s opinions). Mr. de la Iglesia’s deposition testimony also is unsupported by evidence and is contradicted by Petitioner’s evidence and in some cases PO’s own evidence. §§II.C.2.a-b, *supra*.

This conclusory and unsubstantiated opinion, therefore, is entitled to no significant weight. *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) (“Lack of factual support for expert opinion going to factual determinations, however, may render the testimony of little probative value in a validity determination.”) (citation omitted); *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15 (PTAB Aug. 24, 2022) (“the cited declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight”); 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

E. Patent Owner Does Not Challenge Grounds B-C or Grounds E-K

PO does not independently dispute any argument in Grounds B-C or E-K. *See generally* POR. PO simply asserts that these grounds “do not provide any additional reasoning as to why the claim requirements of the independent claims [] are

satisfied.” POR 18.⁷ If the Board finds that Grounds A and D render obvious independent claims 1 and 14, then the Board should also find that (i) Grounds A and D render obvious claims 2-7, 9-10, 12-13, 15-20, 22-23, and 25-26, (ii) Ground E renders obvious claims 1-7, 9-10, 13-20, 22-23, and 26, (iii) Grounds B, F, and G render obvious claims 8 and 21, (iv) Grounds C, H, and I render obvious claims 11 and 24, and (v) Grounds J and K render obvious claims 12 and 25. Pet. 6.

⁷ While the Petition presents Grounds D and E together, PO only challenges Ground D and does not separately challenge Ground E. Pet. 6, 43-76; POR 18. For example, although PO’s expert testified his opinion applied to both Grounds D and E, PO does not assert that the alleged deficiencies of Ground D also apply to Ground E. *See generally* POR; Ex. 1099, 49:20-50:17.

III. CONCLUSION

For the reasons above, in the Petition, and the associated declarations and exhibits, the '015 Patent's claims are obvious and should be canceled.

Respectfully submitted,

Dated: March 5, 2025

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CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petitioner's Reply totals 5,437, which is less than the 5,600 allowed under 37 CFR § 42.24(c)(1), as counted by the Word Count feature of Microsoft Word.

Pursuant to 37 C.F.R. § 42.24(a)(1), this count does not include the table of contents, the table of authorities, mandatory notices under § 42.8, the certificate of service, this certification of word count, the claims listing appendix, or appendix of exhibits.

Dated: March 5, 2025

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.105, I hereby certify that I caused a true and correct copy of this **PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE UNDER 37 C.F.R. § 42.23** in connection with IPR2024-00419 to be served via e-mail on March 5, 2025, in its entirety on the following counsel of record for Patent Owner:

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