

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

REOLINK INNOVATION INC.
and
SHENZHEN REOLINK TECHNOLOGY CO., LTD.,
Petitioner,

v.

THROUGHTTEK CO., LTD.,
Patent Owner.

IPR2024-01192
Patent 9,774,916

Before MICHAEL J. STRAUSS, DAVID C. McKONE, and
SHEILA F. McSHANE, *Administrative Patent Judges*.

STRAUSS, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Reolink Innovation Inc. and Shenzhen Reolink Technology Co., Ltd. (collectively, “Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–10 and 16 (the “challenged claims”) of U.S. Patent No. 9,774,916 (Ex. 1002, “the ’916 patent”). Throughtek Co., Ltd. (“Patent Owner”) did not file a preliminary response to the Petition.

The Board instituted an *inter partes* review of the challenged claims pursuant to 35 U.S.C. § 314. Paper 6 (“Inst. Dec.”).

After institution, Patent Owner filed a Patent Owner Response (Paper 8, “PO Resp.”¹) and Petitioner filed a Reply (Paper 9, “Reply”). The parties then presented oral arguments via a hearing (November 3, 2025), and the Board entered a hearing transcript into the record (Paper 15).

For the reasons set forth in this Final Written Decision pursuant to 35 U.S.C. § 318(a), we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1–10 and 16 of the ’916 patent are unpatentable.

A. Real Parties-in-Interest

Petitioner identifies itself, Reolink Innovation Inc. and Shenzhen Reolink Technology Co., Ltd., as the real parties-in-interest. Pet. 80. Patent Owner identifies itself, Throughtek Co., Ltd., as the real party-in-interest. Paper 5, 2.

¹ We note that, although the cover page of Patent Owner’s Response correctly indicates case number IPR2024-01192, starting at page 1, heading fields appearing at the top of each subsequent page incorrectly indicate the case number as IPR2024-00509.

B. Related Matters

Petitioner states “[t]he ’916 Patent is the subject of [a] civil action [in the United States District Court for the District of Delaware] captioned *ThroughTEK Co. Ltd. v. Reolink Innovation Inc.*, Case No. 1-24-cv-00169 (D. Del.).” Pet. 80. Patent Owner identifies the same district court action as a related matter. Paper 5, 2.

C. The ’916 Patent

1. Effective Filing Date of the ’916 Patent

The ’916 patent is titled “Information Concentrating Center Capable of Making P2P Connections with Remote Client Devices” and issued on September 26, 2017, from patent application No. 14/591,008 (“the ’008 application”), filed January 7, 2015. Ex. 1001, codes (10), (21), (22), (45), (54). The ’008 application became the ’916 patent, which claims the benefit of provisional application No. 61/924,240 (“the ’240 provisional”), filed on January 7, 2014. *Id.*, code (60).

Petitioner contends the challenged claims of the ’916 patent “recite multiple limitations that were disclosed no earlier than the January 7, 2014 filing of the provisional application, and are therefore entitled to a priority date no earlier than January 7, 2014.” Pet. 7 (“Effective Filing Date of the Challenged Claims”). In particular, Petitioner asserts that claim 1’s elements [1a]–[1c] were not disclosed in “the earlier continuation-in-part parent cases, and instead the first (arguable) mention of any electronic device ‘for concentrating information’ that also has an ‘interface for connecting to a television for viewing said information’ was not until FIGS. 1–3 of the

provisional application were filed on January 7, 2014.” *Id.* at 7–8 (citing Ex. 1001, 15:7–13; Ex. 1003 ¶ 34).

Patent Owner does not dispute any of Petitioner’s contentions as to the effective filing date, stating in agreement with Petitioner’s asserted Effective Filing Date of the Challenged Claims that “[t]he ’916 Patent claims a priority of a provisional application 61/924,240 filed on January 7, 2014.” PO Resp. 8.

Given that the parties are in agreement on the January 7, 2014, effective filing date, we similarly use January 7, 2014, as the effective filing date of the challenged claims for purposes of this Decision.

2. Subject Matter of the ’916 Patent

The ’916 patent is directed to establishing a point-to-point (P2P)² Internet bidirectional connection between an information concentrating device (e.g., a television set top box 1730) and a remote client device (1706, e.g., cell phone). Ex. 1001, 1:40–47. Figure 19 of the ’916 patent is reproduced below.

² Although the ’916 Patent defines the abbreviation “P2P” to mean “point-to-point” (Ex. 1001, 1:20–21), other publications use the abbreviation to mean “peer-to-peer.” *See, e.g.*, Ex. 1007, 62; Ex. 1008 ¶ 5. Petitioner asserts that “[p]oint-to-point” is often used interchangeably in the art with ‘peer-to-peer,’ and both are represented by the ‘P2P’ shorthand. The evidence here confirms that the ’916 Patent’s ‘point-to-point’ connections established over the Internet plainly include conventional ‘peer-to-peer’ connections.” Pet. 3, n.4. For purposes of this Decision, we accept Petitioner’s assertion.

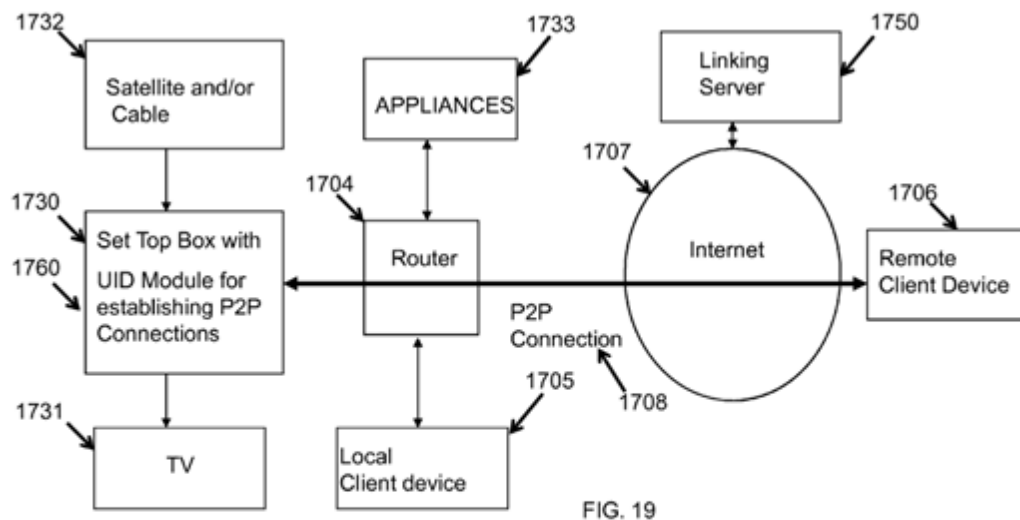


Figure 19 reproduced above is “a schematic of a system for establishing a P2P connection by using a Unique Identification associated with the set top box and a linking server.” Ex. 1001, 3:12–14.

Figure 19 illustrates an example embodiment with a set top box configured as an information concentrating device. “[T]he information concentrating [device (e.g., set top box 1730)] has a unique identification (UID) [see UID Module 1760] for allowing the remote client device [1706] to establish the P2P connection, wherein the unique identification is registered in a linking server [1750] and the P2P connection is established through the linking server.” *Id.* at 1:63–67. The remote client device (1706) provides the UID of the information concentrating device (e.g., set top box 1730) to the linking server (1750) to request and establish a P2P connection with the identified information concentrating device (e.g., set top box 1730). *Id.* at 2:1–6. “In one embodiment, the remote client does not have a . . . UID[] to register to the linking server when the remote client device sends the first message to the linking server for establishing a P2P connection with the information concentrating center.” *Id.* at 2:7–11.

D. Illustrative Claim

Petitioner challenges claims 1–10 and 16 of the '916 patent. Pet. 1. Apparatus claim 1 is the sole independent claim. Ex. 1001, 15:5–40. Claims 2–5, 7, and 16 depend directly from independent claim 1 and claims 8–10 depend from dependent claim 7. *Id.* at 15:41–16:45–48. Claim 1, which is illustrative, is reproduced below, with bracketed designations added to claim limitations (also referred to as claim elements) for reference purposes. *See* Pet. v.

- [1pre] An electronic device for concentrating information, comprising:
 - [1a] at least one first interface for receiving information from at least one information source;
 - [1b] a second interface coupling to the Internet, for establishing a connection with a remote client device through the Internet;
 - [1c] a third interface for connecting to a television for viewing said information; and
 - [1d] a unique identification (UID) embedded in the electronic device for concentrating information,
 - [1e] wherein the electronic device for concentrating information contacts at least one linking server through the Internet to register said embedded unique identification (UID) into the at least one linking server for identifying network addressing information of the electronic device for concentrating information so as to enable the remote client device to establish a P2P connection with the electronic device for concentrating information for viewing said information received by the electronic device for concentrating information;
 - [1f] wherein the remote client device contacts the at least one linking server through the Internet according to said unique identification (UID) of the electronic device for concentrating information for establishing a P2P connection between the remote client device and the electronic device for concentrating information via the Internet,

- [1g] wherein at least one portion of the information received by the electronic device for concentrating information is delivered to the remote client device on the P2P connection,
- [1h] wherein the remote client device does not have a unique identification (UID) to register in the at least one linking server for associating connecting information of the remote client device when the remote client device contacts the at least one linking server for establishing the P2P connection.

Ex. 1001, 15:5–40.

E. Evidence and Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–10 and 16 of the '916 patent are unpatentable based on the following grounds:

Claim(s) Challenged	35 U.S.C §	Reference(s)/Basis
1–8, 10, 16	103 ³	Lorex Manual, ⁴ Kim '941 ⁵
9	103	Lorex Manual, Kim '941, Kim '517 ⁶

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, and was effective on March 16, 2013. Because, as discussed above, we use Petitioner’s asserted effective filing date for the '916 patent of January 7, 2014, for the purposes of this decision, which is after the effective date of the applicable AIA amendments, we refer to the AIA version of 35 U.S.C. § 103. *See* Ex. 1001, code (60).

⁴ Lorex LH150 ECO4 Series Instruction Manual English Version 1.0 (2013), *available at* https://www.lorextechnology.com/downloads/securitydvr/LH150-Series/LH150_SERIES_MANUAL_EN_R1_web.pdf (Ex.1007, “Lorex Manual”).

⁵ US 2011/0082941 A1, published April 7, 2011 (Ex. 1008, “Kim '941” or “Kim941”).

⁶ US 2014/0218517 A1, published August 7, 2014 (Ex. 1009, “Kim '517” or “Kim517”).

Claim(s) Challenged	35 U.S.C §	Reference(s)/Basis
1–8, 10, 16	103	Lorex Manual, Kuo ^{7,8}
9	103	Lorex Manual, Kuo, Kim ’517
1–8, 10, 16	103	Lorex Video, ⁹ Galvin, ¹⁰ Kuo
9	103	Lorex Manual, Galvin, Kuo, Kim ’517

Pet. 1. Petitioner also relies on the Declarations of Vlad Kardashov (Exs. 1003, 1021); the Transcript of the February 21, 2025, Deposition of Yu-Li Kao in IPR2024-00509 (Ex. 1022); and the Oral Hearing Transcript in *Reolink Innovation Inc. v. ThroughTek Co., Ltd.*, IPR2024-00509 (Ex. 1029).

Patent Owner relies on the Declaration of Yu-Li Kao in IPR2024-00509 (Ex. 2005), and the Transcript of the November 1, 2024, Deposition of Vladlan Kardashov (Ex. 2007).

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Relying on the testimony of Vlad Kardashov, Petitioner proposes that a person of ordinary skill in the art at the time of the invention of the ’916 patent “would have had a bachelor’s degree in electrical engineering and two

⁷ US 2012/0198040 A1, published August 2, 2012 (Ex. 1011, “Kuo”).

⁸ The subject ’916 patent claims priority to Kuo as a continuation-in-part of that earlier filed application. Ex. 1001, code (63).

⁹ Lorex Technology Inc., “How to set up remote access for DVR using - Lorex Stratus Connectivity” (June 18, 2013), *available at* <https://www.youtube.com/watch?v=fMPri9WFuTM> (Ex. 1012, the “Lorex Video”).

¹⁰ US 2012/0113265 A1, published May 10, 2012 (Ex. 1013, “Galvin”).

years of work experience with network and communication technologies.” Pet. 8 (citing Ex. 1003 ¶¶ 12–14). Patent Owner does not contest Petitioner’s proposal or provide a proposal of its own. On the complete record, we adopt Petitioner’s description of the level of ordinary skill in the art, as it is consistent with the technology described in the ’916 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

B. Claim Construction

In this *inter partes* review, claims are construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b). Under the principles set forth by our reviewing court, the “words of a claim ‘are generally given their ordinary and customary meaning,’” as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner asserts that “no claim elements need a formal construction for purposes of resolving controversies in this proceeding.” Pet. 9 (citing Ex. 1003 ¶¶ 43–44; *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011), *Google Inc. v. Intellectual Ventures II LLC*, 701 Fed. Appx. 946, 956 (Fed. Cir. 2017)). Petitioner states “[a]ll claim terms should be construed according to the *Phillips* standard.” *Id.* (citing *Phillips*, 415

F.3d at 1303; 37 C.F.R. § 42.100). Patent Owner presents no proposed claim constructions.

We determine that we need not expressly construe any claim terms to resolve the parties' disputes on the current record. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

C. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103 if “the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103 (2011); *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective indicia of nonobviousness.¹¹ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

D. Asserted Obviousness of Claims 1–8, 10, and 16 Over the Lorex Manual and Kim '941

Petitioner contends that claims 1–8, 10, and 16 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of the Lorex Manual

¹¹ Neither party submits any objective evidence of nonobviousness.

and Kim '941. Pet. 16–36. In support, Petitioner also relies upon the Kardashov Declaration. Ex. 1003.

Patent Owner does not argue a failure of the combination to teach claim 1, arguing instead that “the *Lorex Manual* reference does not qualify as prior art under 35 U.S.C. §102(a)(1)” and that Kim '941 teaches away from element [1h]. PO Resp. 1, 5.

We begin our discussion with brief summaries of the *Lorex Manual* and Kim '941, and then address the evidence and arguments presented.

1. The Lorex Manual (Ex. 1007)

The *Lorex Manual* is an instruction manual for guiding users of the Lorex LH150 EC04 series security camera systems through setup, operation, and troubleshooting of those systems and, in particular, the LH158 8-channel and LH156 16-channel models of EC04 Series Digital Video Recorders (DVRs). *See generally* Ex. 1007. The Manual describes the DVRs as connecting to and supporting inputs from up to 8 or 16 security cameras, depending on model, to an HDMI-compatible television or monitor for viewing a system interface and video feeds from connected security cameras, and a CAT 5 RJ45 Ethernet connection for local and remote connectivity. *Id.* at 5, 8, 17, 19–20, 27, 31.¹² The Manual further includes sections describing “Connecting to Your DVR Over the Internet on PC or Mac” and “Mobile Apps: Accessing your DVR Using a Mobile Device.” *Id.* at 26, 57–62, 84–86, 92–95. Remote DVR access is provided using the

¹² Page numbers are those printed in the original document as they appear in the lower left of each page rather than page numbers added to the Exhibit as submitted.

DVR's Device ID and Client Port number to establish an Internet connection between the DVR and a remote computer using Lorex Client Software for PC or for MAC or to a remote mobile device such as an iPhone or Android phone running the Lorex ECO Stratus application. *Id.* at 58–60, 84–85.

2. Kim '941 (Ex. 1008)

Kim '941 describes establishing a peer-to-peer (P2P) connection between network devices or nodes, such as a smart phone and a video camera, using Transmission Control Protocol (TCP) or User Datagram Protocol (UDP) hole punching to establish a direct tunnel between peer nodes. Ex. 1008 ¶¶ 18, 52, 55, 66, 69. Kim '941 further describes a network server that stores a node's "virtual address, a network address, a NAT address, and a network connection type on an ID basis" as shown in Figure 5 reproduced below. *Id.* ¶ 75.

FIG. 5

120



ID	Virtual address			Network address		NAT address		Network connection type
	Virtual IP	Network prefix	prefix length	IP	Port	IP	Port	
Abc@xyz.com	x.x.x.x	-	-	192.168.1.2	1000	100.1.1.2	1024	NAT-Full Cone
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
def@zyx.com	y.y.y.y	1.1.2.0	24	192.168.2.2	2000	200.1.1.2	2024	NAT-Restricted Cone

Figure 5 above is a table depicting server "mapping to an ID (abc@xyz.com, def@zyx.com) of a peer node, a virtual address, a network address, a NAT [Network Address Translation] address, and a network connection type." Ex. 1008 ¶ 75

3. *Whether the Lorex Manual is Prior Art Under 35 U.S.C. § 102(a)(1)*

Ground 1 of the Petition alleges that the combination of the Lorex Manual and Kim teaches all the limitations of claim 1, and that there is a rationale to combine the references. Pet. 14–31. As a preliminary matter, the parties disagree about whether certain disclosures in the Lorex Manual are prior art under 35 U.S.C. § 102(a)(1) to the '916 patent.

The Petition alleges that “Grounds 1A–2B rely on publications that all qualify as prior art under 35 U.S.C. § 102.” Pet. 2. Petitioner argues that the Lorex Manual was published in 2013 based on (a) a copyright notice appearing at the bottom of the first page of the document (*id.* (citing Ex. 1007)), and (b) “sworn testimony [of Vlad Karashov, former Director of Engineering & Product Development at Lorex Technology, Inc] confirming public accessibility and dissemination of [the] Lorex Manual by 2013” (*id.* n. 1 (citing Ex. 1003 ¶¶ 53–60)).

In response, Patent Owner asserts “the *Lorex Manual* does not qualify as prior art under 35 U.S.C. § 102(a)(1) (‘§ 102(a)’)) based on the exception under 35 U.S.C. § 102(b)(1)(A) (‘the § 102(b) exception’).” PO Resp. 1–2 (footnotes omitted). Patent Owner argues

the disclosure in the *Lorex Manual* was made within the one year from the effective filing date of the '916 Patent, and subject matter disclosed therein is obtained directly or indirectly from the Patent owner ThroughTek as evidenced by the 5-year exclusivity agreement of joint venture partnership dated September 18, 2012 (‘Agreement’ [(Ex. 2001)]) between ThroughTek Co., Ltd. (‘ThroughTek’) and Lorex Corporation (‘Lorex’).

PO Resp. 2.

Petitioner disputes that the § 102(b) exception applies, contending Appellant’s evidence fails to satisfy the requirements of the statute. Pet. Reply 1–19. In particular, Petitioner argues Patent Owner fails to “demonstrat[e] that ‘*the* disclosure’ . . . of [the] Lorex Manual . . . was made by Lorex’s personnel who ‘obtained *the subject matter disclosed* directly or indirectly’ from an alleged inventor of ThroughTek’s ’916 Patent” as required by 35 U.S.C. § 102(b)(1)(A). *Id.* at 2.

a. Legal Background

35 U.S.C. § 102(a)(1) defines the prior art that will preclude the grant of a patent on a claimed invention and states:

[a] person shall be entitled to a patent unless—

(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.

Section 102(b)(1) provides two exceptions to § 102(a)(1) for disclosures made within one year of the effective filing date. Specifically, 35 U.S.C. § 102(b)(1) provides that a disclosure made one year or less before the effective filing date of a claimed invention shall not be prior art under 35 U.S.C. § 102(a)(1) with respect to the claimed invention if: (A) the disclosure was made by the inventor or joint inventor or by another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor; or (B) the subject matter disclosed had, before such disclosure, been publicly disclosed by the inventor or a joint inventor or by another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor. 35 U.S.C. § 102(b)(1).

A petitioner retains the burden of persuasion throughout the proceeding of establishing unpatentability. *See Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). However, with regard to specific evidence supporting the unpatentability challenge, such as the priority date of a reference used to establish obviousness, a petitioner shifts the burden of production to dispute the effective priority date of a prior art reference to the patent owner by alleging obviousness based upon a reference that appears to be prior art on its face. *Id.* at 1379–80 (burden of production satisfied by assertion of anticipation, shifting burden to patent owner); *see also Pfizer, Inc. v. Genentech, Inc.*, IPR2017-01488, Paper 27 at 13 (PTAB Dec. 1, 2017) (initial burden met where prior-art patents “predate the earliest possible priority date shown on the face of the” challenged patent).

b. Patent Owner’s Arguments

Patent Owner contends “[t]he *Lorex Manual* was published [i]n 2013 without [a] precise date to support if it was published more than one year prior to the [January 7, 2014 effective filing date of the] ’916 Patent.” PO Resp. 8. Thus, Patent Owner asserts “the *Lorex Manual* is not prior art under the §102(a) based on the §102(b) exception since the subject matter disclosed therein is obtained directly or indirectly from the inventor (Patent Owner) as evidenced by the Agreement between ThroughTek and Lorex.” *Id.* (citing Ex. 2001 (a LOREX-ThroughTek Exclusivity Agreement)).

Patent Owner asserts

The Agreement specifically states that [Patent Owner] ThroughTek is the owner of all right, title and interest in and to the asse[its more particularly described on Schedule A, which specifically states that [Patent Owner] ThroughTek provides “a

connection platform based on P2P (Point to Point) network connection architecture and advanced Cloud computing technology via API (Application Programming Interface) for cross-platform connection to build up the connection between different devices an across different operation systems.”

PO Resp. 8–9 (citing Ex. 2001, ¶¶1, 7). Patent Owner argues

Pursuant to the Agreement, the Patent Owner ThroughTek has disclosed its complete P2P solution to Lorex at the time. In essence, the Agreement provides that the P2P network connection solution disclosed in the *Lorex Manual* is developed by ThroughTek, and that the product featured in the *Lorex Manual* is manufactured by a third party, and sold under brand names associated with Lorex. EX2001, ¶¶001–007. In particular, Petitioner’s witness Mr. Kardashov[] was also present during the execution of this Agreement. EX2006. The Patent Owner ThroughTek via the declaration and exhibits illustrate the business cooperation between Lorex and ThroughTek. Although the execution of the Exclusive Agreement was initiated at 9/18/2012, the actual technical collaboration started far before in order to facilitate and solidify the cooperation. EX2005, ¶¶9–9B.

PO Resp. 9 (formatting altered). Thus, according to Patent Owner, “any alleged P2P solution shown in the *Lorex Manual* is . . . obtained from ThroughTek based on the on-going business cooperation between Lorex and ThroughTek. Therefore, the *Lorex Manual* reference should not be qualified as a prior art.” *Id.*

c. Petitioner’s Reply

Petitioner responds that Patent Owner has failed to meet its burden of production to establish the prerequisites of § 102(b)(1), namely to show the Lorex’s Guide disclosure relied upon in the Petition was communicated by a specific ThroughTek inventor of the ’916 patent to Lorex. Pet. Reply 4. As a preliminary matter, Petitioner argues

the linchpin of PO’s argument here is Mr. Kao’s declaration

(EX2005), which attempts to provide testimony that introduces an Agreement (EX2001) between Lorex and ThroughTek. This is a fatally flawed premise. As detailed below, ***Mr. Kao's declaration was not even prepared for this proceeding and it never mentions the '916 Patent or the particular Lorex publications at issue in this IPR.*** EX2005, p. 1 (cover identifying IPR of U.S. Patent RE47,842 rather than '916 Patent), ¶¶1–13 (addressing “the '842 Patent” not the '916 patent); EX1021, ¶4. To the extent PO's evidence is probative at all (it is not), it fails to show that the narrow §102(b)(1)(A) exception is applicable here.

Pet. Reply 2–3.

Petitioner argues the Agreement also fails to show “***the subject matter disclosed***” in [the] Lorex Manual . . . that is relied upon in the Petition . . . [was] ‘obtained . . . directly or indirectly from the inventor or a joint inventor’ of the '916 Patent” as required by 35 U.S.C. §102(b)(1)(A). Pet. Reply 4. In particular, Petitioner argues the Agreement (1) has “nothing to do with the physical ports, video streaming capabilities, or other conventional DVR features disclosed in [the] Lorex Manual” (*id.* at 5); (2) only addresses what will be developed in the future, not what had been developed at the time of the agreement; (*id.* at 5–6); (3) was executed (a) after “the subject matter disclosed in [the] Lorex Manual . . . cited in the Petition had been ***earlier implemented in Lorex products and disclosed in multiple earlier Lorex publications***” (*id.* at 10), and (b) after “ThroughTek had ***publicly disclosed in Kuo (EX1011) identical techniques*** for establishing P2P connections through a linking server (e.g., a cloud platform) as those claimed in the '916 Patent” (*id.* at 10–11). Petitioner further argues Patent Owner fails to “present any evidence of exactly what was communicated from ThroughTek to Lorex in relation to the Agreement

or the October 11, 2012 meeting” (*id.* at 14) including any evidence “that connects the subject matter of the Agreement or any related technical discussions to the ‘the subject matter disclosed’ in [the] Lorex Manual” (*id.* at 18).

Under the heading “The ‘Subject Matter’ Shortcoming,” Petitioner argues that Patent Owner’s Agreement with Lorex addresses subject matter other than subject matter relied upon in the Petition and asserted by Patent Owner to have been communicated by an inventor of the ’916 Patent to Lorex. Pet. Reply 6. In particular, Petitioner argues:

[T]he text of the Agreement indicates that the subject matter was centered upon ThroughTek’s Assets for “Cloud Connectivity Services,” and specifically that ThroughTek “will develop” in the future some type of “connectivity services with a connection platform based on P2P (Point to Point) network connection architecture and Cloud computing technology.” EX2001, 7. But the Petition does *not* rely on [the] Lorex Manual’s . . . cloud connectivity or P2P solutions. Rather, the Petition plainly cites to disclosures of *Kim941* (EX1008) in Grounds 1A–1B and disclosures *of Kuo* (EX1011) in Grounds 1C–2B for claim elements related to establishing P2P connections using a linking server.

Pet. Reply 6–7.

Thus, Petitioner argues, because “the Petition did not rely on [the] Lorex Manual . . . cloud connectivity services . . . there is . . . nothing relevant from [the] Lorex Manual or [the] Lorex Video to exclude as prior art even if Lorex had obtained cloud connectivity subject matter from ThroughTek (which it did not).” Pet. Reply 9–10.

Under the heading “The Temporal Problem,” Petitioner argues that the Agreement does not show Lorex obtained the subject matter cited in the Petition from ThroughTek because the Agreement was executed after Lorex

had already implemented the subject technology. Pet. Reply 10. That is, Petitioner asserts Lorex had developed technology described and cited in the Lorex Manual “before any record interaction between Lorex and ThroughTek.” *Id.* at 12. In support, Petitioner relies on the testimony of Vlad Kardashov (citing Ex. 1021 ¶¶ 7–14, 19), publications describing Lorex DVR products (Ex. 1024, 1025) and Lorex products’ remote capabilities (Ex. 1026), and various Lorex videos available on YouTube.com (Exs. 1027, 1028). *Id.* at 12.

Petitioner further asserts the Agreement fails to show Lorex obtained the subject matter cited in the Petition from ThroughTek because it was executed after “ThroughTek had ***publicly disclosed in Kuo (EX1011) identical techniques*** for establishing P2P connections through a linking server (e.g., a cloud platform) as those claimed in the ’916 Patent.” Pet. Reply 10–11 (citing Exs. 1101, 1021). Petitioner argues “even if PO’s allegation were true that Lorex had obtained the connectivity features of the ’916 Patent from ThroughTek (they did not), those features had already been publicly disclosed. PO submits no evidence that Lorex obtained any relevant subject matter from ThroughTek that was not already publicly available through Kuo.” *Id.* at 14.

Petitioner also asserts Patent Owner’s argument fails because Patent Owner “failed to present any evidence of exactly what was communicated from ThroughTek to Lorex in relation to the Agreement or the October 11, 2012 meeting.” Pet. Reply 14.

The only evidence PO cites at all as to what was allegedly communicated is Mr. Kao’s assertion that “[b]efore the Exclusive Agreement was executed, Lorex and ThroughTek had exchanged technical information, and the ThroughTek has

provided Lorex any necessary technical support for facilitating the decision of the Exclusive Agreement.” EX2005, ¶9B^[13] (cited by POR, p. 9). But this vague assertion falls well short of establishing that the subject matter disclosed in [the] Lorex Manual or Lorex Video was obtained from any inventor of the ’916 Patent. Critically, Mr. Kao identifies *no specific disclosures* from [the] Lorex Manual or Lorex Video that were allegedly the subject of the “exchanged technical information,” nor does Mr. Kao specify whether the alleged exchange of technical information began before Lorex published various other documents containing substantially the same subject matter as [the] Lorex Manual and Lorex Video (e.g., EX1027-EX1027). EX1021, ¶¶25–30. This is unsurprising considering that *Mr. Kao’s declaration was not even prepared for this proceeding and it never mentions the ’916 Patent or the Lorex Manual or Lorex Video publications that are the subject of this IPR*. POR, p. 4 (conceding that “EX2005 and EX2007 are documents originally prepared for a different Petition IPR2024-00509”); EX2005, p. 1 (cover identifying IPR of U.S. Patent RE47,842 rather than ’916 Patent), ¶¶1–13 (addressing ’842 Patent). In fact, PO submitted no evidence that Mr. Kao had ever considered the Lorex references at issue in this IPR at all. The timeline simply does not support PO’s argument.

Pet. Reply 14–15.

Under the heading “The Legal Error: PO Ignores the Statutory Text,” Petitioner argues Patent Owner fails to provide “any evidence that the ‘subject matter disclosed’ in [the] Lorex Manual is the *same* as any alleged technical disclosure obtained from an inventor of the ’916 Patent in connection with the October 11, 2012 meeting (or any earlier or later

¹³ “Before the Exclusive Agreement was executed, Lorex and ThroughTek had exchanged technical information, and . . . ThroughTek has provided Lorex any necessary technical support for facilitating the decision of the Exclusive Agreement.” Supplemental Declaration of Yu-Li Kao dated March 7, 2025 (Ex. 2005).

discussions).” Pet. Reply 15–16. Petitioner argues “[t]he exceptions under §102(b)(1) are narrow,” requiring a showing “that the disclosed subject matter be ‘*identical*’ to the subject matter disclosed by the inventor.” *Id.* at 16 (citing MPEP §§ 2153.02, 2153.03). Petitioner argues

PO’s vague citations to the Agreement about ‘cloud connectivity services’ that ThroughTek “will develop” (EX2001, 7) comes up well short of what is required. PO presents no evidence that “the subject matter” allegedly communicated from ThroughTek in connection with the Agreement was actually the *same* as the subject matter disclosed in [the] Lorex Manual.

Pet. Reply 17.

Petitioner asserts that, rather than show the subject matter included in the Lorex Manual was communicated by ThroughTek to Lorex, “Mr. Kao concedes the opposite of what PO needed . . . (admitting ThroughTek was ‘not involve[d] in any Lorex publications’).” Pet. Reply 18 (citing Ex. 2005 ¶ 11) (footnote omitted). Petitioner again emphasizes that, in any case, “*Mr. Kao’s declaration was prepared for a different IPR involving a different patent and different prior art, and consequently, it does not even mention the ’916 Patent or the particular Lorex Manual or Lorex Video publications that are the subject of the grounds in this IPR.*” *Id.* at 19 (emphasis omitted) (citing PO Resp. 4, Ex. 2005).

In summary, Petitioner argues:

The complete absence of any evidence necessary to establish key facts under §102(b)(1)(A) renders PO’s arguments all the more astonishing. Lacking such necessary evidence, there is no legitimate basis for PO to contend that Lorex obtained the subject matter disclosed in [the] Lorex Manual or [the] Lorex Video from ThroughTek. It is not enough for PO to meet its burden under §102(b)(1)(A).

Pet. Reply. 19.

Patent Owner did not file a sur-reply.

d. Analysis

Based on a preponderance of the evidence, we agree with Petitioner that Patent Owner fails to demonstrate that the Lorex Manual was based on a disclosure made by the inventor or joint inventor or by another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor.

The Lorex Manual is relied on under Ground 1 A, exclusively or in the alternative to or in combination with Kim, for all claim elements. Pet. 9– 31. Patent Owner fails to demonstrate that this subject matter was disclosed to Lorex by ThroughTek, much less by one of the inventors of the '916 Patent.

According to Patent Owner, the subject matter of the Agreement was “a connection platform based on P2P (Point to Point) network connection architecture and advanced Cloud computing technology.” PO Resp. 8. In particular, the Agreement states “LOREX has recognized [ThroughTek’s] cloud connectivity services Assets,” those Assets being described in Schedule A. Ex. 2001, 1. Schedule A describes cloud connectivity services to include “varied networked device, including IP cam, NAS, Set-top box, home gateway, and similar devices.” Ex. 2001, 7. Schedule A further indicates that:

[ThroughTek] will develop connectivity services with a connection platform based on P2P (Point to Point) network connection architecture and advanced Cloud computing technology via API (Application Programming Interface) for cross-platform connection. The end result will allow developers to utilize a ready-to-use API to build up the connection between different devices and across different operation systems.

Ex. 2001, 7.

Because the Agreement does not include “details of the Lorex DVR including its ports, unique device ID, and capabilities for streaming secure video to a remote client device over the Internet” (*see* Pet. Reply 4), the Agreement fails to describe or otherwise appear to be directed to the relevant subject matter alleged by Patent Owner to have been disclosed and incorporated into the Lorex Manual. To the extent the Agreement mentions cloud connectivity and P2P solutions, the Petition relies on Kim ’941, not the Lorex Manual for teaching this subject matter. Pet. Reply 7. Moreover, the Agreement fails to evidence that any subject matter disclosed pursuant to the Agreement was or even would be “by the inventor or joint inventor or by another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor” as required by 35 U.S.C. § 102(b)(1)(A).

Furthermore, as emphasized by Petitioner, the October 11, 2012, meeting between representatives of ThroughTek and Lorex occurred *after* the subject matter disclosed in the Lorex manual “had been ***earlier implemented in Lorex products and disclosed in multiple earlier Lorex publications.***” Pet Reply 10–12. Moreover, Patent Owner does not sufficiently identify or explain the relevance of subject matter discussed at that meeting to what was published in the Lorex Manual. Furthermore, the Agreement addresses prospective efforts, not information that may have been disclosed at some unidentified prior meeting as Patent Owner suggests may have occurred. PO Resp. 9 (“Although the execution of the Exclusive Agreement was initiated at 9/18/2012, the actual technical collaboration started far before in order to facilitate and solidify the cooperation.”). Thus, Patent Owner’s arguments again fall short of evidencing that the subject

matter disclosed in the Lorex Manual was obtained from the inventors of the '916 patent.

g) Conclusion Concerning the Lorex Manual as Prior Art

The Lorex Manual, having been published in September 2013, is prior art under 35 U.S.C. § 102(a)(1) because the '916 patent is only entitled to the later January 7, 2014, filing date of the '240 provisional application and because the § 102(b)(1) exceptions to 35 U.S.C. § 102(a)(1) do not apply.

4. Whether Kim '941 Teaches Away From the '916 Patent

Ground 1A of the Petition alleges that the combination of the Lorex Manual and Kim '941 teaches all the limitations of claim 1, and that there is a rationale to combine the references. Pet. 9–31.

a. Patent Owner's Arguments

Patent Owner asserts “the alleged combination of the cited references cannot be properly constructed” because “*Kim941* explicitly teaches away from the '916 Patent.” PO Resp. 13. In particular, Patent Owner argues Kim discloses establishing direct communication between peer nodes by having a node initiating the communication obtain the virtual address of a target node by sending a registration request to a server, the request including information of the network connection type. PO Resp. 10. Patent Owner argues

As both peer nodes P1 and P2 are required to register with the server 100 for obtaining the virtual address and storing the information such as the network connection type in the storage unit 120 of the server 100 before establishing a direct communication, Patent owner submits that *Kim941* explicitly teaches away from the recited limitation of “*wherein the remote client device does not have a unique identification (UID) to register in the at least one linking server for associating*

connecting information of the remote client device when the remote client device contacts the at least one linking server for establishing the P2P connection". Furthermore, as *Kim941* requires both peer nodes P1 and P2 to be registered in order for the server to determine whether it is possible to establish a direct tunnel/communication between P1 and P2, any modification on *Kim941* to prohibit the registration of any peer node will hinder the *Kim941*'s intended function.

PO Resp. 12–13.

b. Petitioner's Reply

Petitioner argues

PO fails to address what Element [1h] requires, namely that "the remote client device does not have a unique identification (UID) to register in the at least one linking server for associating connecting information of the remote client device *when the remote client device contacts the at least one linking server for establishing the P2P connection.*"

Reply 21 (citing Exs. 1001, 1021).

In particular, Petitioner argues that the negative limitation of element [1h] is temporally limited to when the remote client device contacts the server but does not preclude earlier (i.e., non-contemporaneous) registration by the client with the server.

[N]othing in the plain language of Element [1h] precludes the remote client device from *pre-registering* a unique identification (UID) in the linking server *before* the remote client device contacts the server to establish a P2P connection. Element [1h] instead recites a specific temporal condition that limits the remote client device to not having a UID to register in the linking server only at the time "*when the remote client device contacts the at least one linking server for establishing the P2P connection.*" While *Kim941* does disclose that peer nodes including a remote client device *pre-register* their respective IDs with a server, this registration process takes place *separately and*

before a peer node later contacts the server to establish a P2P connection with another peer after the peers are registered. For example, Kim941 explicitly discloses that the first peer’s “tunnel query request message,” which the first peer sends when contacting the server to establish a P2P connection with a second peer, includes only the unique ID of the second peer to identify the second peer as the target of the connection. The first peer does not need to (and does not) send its own unique ID to register with the server in the tunnel query request message since the first peer is already registered by this time.

Reply 22–23 (citations omitted).

Petitioner further argues

Contrary to PO’s assertions, the Petition never proposed to eliminate registration from Kim941’s process or otherwise deviate from Kim941’s plain teachings to meet Element [1h]. PO’s arguments simply fail to recognize that the breadth of [1h] is met by Kim941’s process despite the peer nodes’ pre-registration with the linking server. Because the Petition never proposed to eliminate or modify Kim941’s registration process, there can be no teaching away from a modification that was never made or proposed—especially where Kim941 itself embraces rather than criticizes registration techniques.

Reply 23–24 (citations omitted).

Patent Owner does not file a sur-reply.

c. Analysis

We agree with Petitioner. The negative limitation of element [1h] states the “remote client device does not have a unique identification (UID) to register in the . . . linking server . . . when the remote client device contacts the . . . linking server for establishing the P2P connection.” There is no language limiting the remote client device from having a UID to register at times other than when the remote client device contacts the server for establishing a P2P connection with a designated electronic device for

concentrating information (e.g., set top box). In particular, the negative limitation of element [1h] does not extend to or otherwise exclude a preregistration process prior to the remote device contacting the linking server for establishing a P2P connection with the electronic device for concentrating information. Thus, Patent Owner's argument is not persuasive because it relies on limitations not present in, and is not commensurate in scope with, claim 1.

Moreover, Patent Owner's argument that "any modification on *Kim941* to prohibit the registration of any peer node will hinder the *Kim941*'s intended function" (PO Resp. 13) belies the absence of any reliance on such modification in the Petition. Accordingly, Patent Owner's teaching away argument fails to show that Petitioner's reliance on Kim '941, individually or in combination with the Lorex Manual, is improper.

5. Alleged Obviousness of Claims under Ground 1A

a. Claim 1

The Petition asserts that the combination of the Lorex Manual and Kim '941 teaches all the limitations of claim 1, and that there is a rationale to combine the references. Pet. 14–49. Patent Owner does not present any arguments contesting Petitioner's application of the references to the claims. In particular, Patent Owner does not dispute (1) the cited references disclose all claim elements, (2) Petitioner's asserted motivations for combining the teaching of the cited reference, or (3) a person of ordinary skill in the art would have had a reasonable expectation of success for each obviousness combination.

Below we consider the claim 1 limitations and rationale to combine in turn.

- i. *Element [1pre]: “An electronic device for concentrating information, comprising”*

Although not conceding that it is limiting, Petitioner argues that the preamble element [1pre] of claim 1 would have been obvious over the Lorex Manual-Kim ’941 combination’s teaching of an electronic device for concentrating information. Pet. 17–18 (citing Ex. 1003 ¶¶ 79–82; Ex. 1007, 5–7). In particular, Petitioner contends that the Lorex Manual’s description of “an 8-channel DVR having eight video input ports and a 16-channel DVR having sixteen video inputs ports for receiving respective video streams from up to eight or sixteen connected cameras” teaches the subject matter of the preamble, i.e., “an *electronic device* (e.g., a DVR) that *concentrates information* (e.g., video streams) from one or more cameras of a security system.” *Id.* (citing Ex. 1003 ¶¶ 79–82; Ex. 1007, 5–6).

On the record before us and in the absence of any counterargument from Patent Owner, we find that the Lorex Manual and Kim ’941 teach the preamble of claim 1, i.e., claim element [1pre].¹⁴

- ii. *Element [1a]: “at least one first interface for receiving information from at least one information source”*

Petitioner contends that claim element [1a] is taught by the combination of the Lorex Manual and Kim ’941. Pet. 18–19 (citing Ex. 1007, 5–6). In particular, Petitioner argues that the Lorex Manual’s description of connectors labeled on the rear panel of the 8-channel DVR including eight BNC-type connectors for connecting respective cameras to

¹⁴ We need not determine whether the preamble of claim 1 is limiting because Petitioner has shown that the Lorex Manual teaches the preamble.

the DVR and eight RCA-type connectors for connecting audio from audio-enabled cameras teach element [1a]. *Id.* That is, according to Petitioner, “the DVR described in [the] Lorex Manual includes video input ports (*at least one first interface*) configured to connect to up to eight or sixteen video cameras as information sources for video data (*at least one information source*).” *Id.* at 18 (citing Ex. 1007, 5).

On the record before us and in the absence of any counterargument from Patent Owner, we find that the Lorex Manual and Kim ’941 teach the first interface of claim 1, i.e., claim element [1a].

iii. *Element [1b]: “a second interface coupling to the Internet, for establishing a connection with a remote client device through the Internet”*

Petitioner contends that the combined teachings of the Lorex Manual and Kim ’941 teach or suggest claim element [1b]. Pet. 19–20 (citing Ex. 1003 ¶¶ 84, 86–89; Ex. 1007, 5–7, 58, 84). In particular, Petitioner argues that element [1b] is taught by the Lorex Manual’s description of the 8-channel DVR including a local area network (LAN) port connected by an Ethernet cable to a network router and onto the Internet for streaming video from the DVR to a remote client device such as a smartphone, tablet, or PC. *Id.* (citing Ex. 1003 ¶¶ 84, 86; Ex. 1007, 5–7, 84 (“You can remotely view camera streams from your DVR on compatible mobile phones and tablets.”)). Thus, according to Petitioner, the Lorex Manual’s LAN port teaches the second interface of element [1b]. *Id.* at 20.

On the record before us and in the absence of any counterargument from Patent Owner, we find that the Lorex Manual and Kim ’941 teach the second interface of claim 1, i.e., claim element [1b].

- iv. *Element [1c]: “a third interface for connecting to a television for viewing said information; and”*

Petitioner contends that the combined teachings of the Lorex Manual and Kim ’941 teach or suggest claim element [1c]. Pet. 20–22 (citing Ex. 1003 ¶¶ 90–92; Ex. 1007, 5, 8, 15). Petitioner argues that the Lorex Manual’s description of the 8-channel DVR having a High-Definition Multimedia Interface (HDMI) port displaying an interface operating in a Playback Mode to display video on a connected monitor “discloses that the DVR includes *a third interface* (i.e., HDMI port) for connecting to a *television* for viewing *information* (i.e., video) concentrated by the DVR” as recited by element [1c]. *Id.* at 21–22 (citing Ex. 1003 ¶ 91; Ex. 1007, 5, 8, 15).

On the record before us and in the absence of any counterargument from Patent Owner, we find that the Lorex Manual and Kim ’941 teach the third interface of claim 1, i.e., claim element [1c].

- v. *Element [1d]: “a unique identification (UID) embedded in the electronic device for concentrating information,”*

According to Petitioner, the combined teachings of the Lorex Manual and Kim teach or suggest claim element [1d], asserting that each publication describes peer nodes with embedded IDs. Pet. 22–23 (citing Ex. 1003 ¶¶ 93–96; Ex. 1007, 58–60, 85, 93; Ex. 1008 ¶ 58). In particular, Petitioner argues that the Lorex Manual’s disclosures of a “label attached to a housing of the DVR [that] contains the device ID printed in standard characters and encoded in a quick-response (QR) code” teaches a device ID of the DVR that is physically embedded in the DVR. *Id.* at 22 (citing Ex. 1003 ¶ 94; Ex. 1007, 58, 85). Petitioner further argues the Lorex Manual’s description of a

device ID that is used to distinguish peer nodes teaches a digitally embedded device ID. *Id.* (citing Ex. 1003 ¶ 95; Ex. 1007, 58). Petitioner further contends Kim '941's disclosure of a server registering an ID of a peer node also teaches the UID of element [1d]. *Id.* at 22 (citing Ex. 1003 ¶ 95; Ex. 1008 ¶ 56). Petitioner argues "in the predictable Lorex Manual-Kim941 combination, the device ID is embedded in the peer node to permit the peer node to register with a conventional hole-punching server using the device ID." *Id.* at 22–23 (citing Pet. § V.A.3; Ex. 1003 ¶ 95).

On the record before us and in the absence of any counterargument from Patent Owner, we find that the Lorex Manual and Kim '941 teach the UID of claim 1, i.e., claim element [1d].

- vi. *Element [1e] "wherein the electronic device for concentrating information contacts at least one linking server through the Internet to register said embedded unique identification (UID) into the at least one linking server for identifying network addressing information of the electronic device for concentrating information so as to enable the remote client device to establish a P2P connection with the electronic device for concentrating information for viewing said information received by the electronic device for concentrating information;"*

Petitioner contends that the combined teachings of the Lorex Manual and Kim teach or suggest claim element [1e]. Pet. 23–25 (citing Ex. 1003 ¶¶ 97–101; Ex. 1007, 10, 57–59, 62, 85, 87–90; Ex. 1008 ¶¶ 55–60, 78–89, Fig. 6; Pet. § V.A.3). In particular, Petitioner argues that the Lorex Manual's description of a cloud connectivity service (i.e., "Lorex Stratus Connectivity") that connects a PC or mobile device (i.e., remote client) to a DVR (i.e., an "electronic device for concentrating information") over the Internet via Lorex's Stratus (i.e., "linking") servers teaches or suggests element [1e] (i.e., a linking server that facilitates a link between the

electronic device for concentrating information and the remote client device). *Id.* Petitioner further argues that the Lorex Manual teaches that the connection can be peer-to-peer (P2P). *Id.* at 23–24 (citing Ex. 1003 ¶ 98; Ex. 1007, 62 (“Connection Status: Shows the type of connection used. • P2P (peer-to-peer) indicates that the video is streaming directly from the DVR to the computer running the Client Software.”); 87–90).

Petitioner further argues that the Lorex Manual’s description of a “remote client device perform[ing a] secure handshake with the Stratus servers using a message that includes the device ID of the DVR” to establish a connection with the DVR teaches element [1e]’s unique identification. Pet. 24 (citing Ex. 1003 ¶ 99; Ex. 1007, 57–59, 85, 93). In the alternative, “[t]o the extent [the] Lorex Manual does not expressly disclose that the DVR contacts the Stratus servers to register the device ID,” Petitioner argues, “these operations would have been predictably provided by the Lorex Manual-Kim941 combination.” *Id.* (citing Ex. 1003 ¶ 100; Pet. § V.A.3). In particular, Petitioner asserts that Kim ’941 “describes a peer node that contacts a linking server 100 to register a unique ID with [and allowing] the server . . . to facilitate hole punching and the establishment of a P2P connection between the peer node and another peer node based on the unique ID.” *Id.* at 24–25 (citing Ex. 1003 ¶ 100; Ex. 1008 ¶¶ 55–60, 78–89; Figs. 2, 6). According to Petitioner “[i]n the combination, [the] Lorex Manual’s DVR would predictably contact the Stratus servers (*at least one linking server*) to register its embedded ‘device ID’ consistent with Kim941’s teachings.” *Id.* at 25 (citing Ex. 1003 ¶ 100; Pet. § V.A.3).

On the record before us and in the absence of any counterargument from Patent Owner, we find that the Lorex Manual and Kim ’941 teach an

electronic device capable of performing the operations recited by claim 1, i.e., claim element [1e].

- vii. *Element [1f]: “wherein the remote client device contacts the at least one linking server through the Internet according to said unique identification (UID) of the electronic device for concentrating information for establishing a P2P connection between the remote client device and the electronic device for concentrating information via the Internet,”*

Petitioner contends that “Element [1f]—as well as [1h], [3], [4], [5], [6], [8] and [10]—are recitations of intended use that do not further define the structure of the ‘electronic device for concentrating information’ as recited in the preamble[,] are not entitled to patentable weight[,] and do not contribute to the patentability of any Challenged Claim.” Pet. 25 n.5.

Petitioner nonetheless argues these features are taught by the Lorex Manual-Kim ’941 combination. *Id.* In particular, Petitioner argues “[t]he teachings of [the] Lorex Manual in view of Kim941 would have rendered Element [1f] obvious.” *Id.* at 25 (citing Ex. 1003 ¶¶ 102–104). In particular, Petitioner argues that the “Lorex Manual discloses that a *remote client device* (e.g., smartphone, tablet, or PC) can use the *unique identification* (e.g., the ‘device ID’) of the DVR to identify a particular DVR as the target for a P2P connection.” *Id.* (citing Ex. 1003 ¶ 102; Ex. 1007, 58–59, 61, 62, 85) (emphasis omitted). Petitioner further asserts that Kim ’941 also “describes conventional techniques for a remote client device to contact at least one linking server through the Internet according to a unique identification of another device to establish a P2P connection between the remote client device and the other device via the Internet.” *Id.* at 26 (citing Pet. § V.A.2; Ex. 1003 ¶ 103). In particular, Petitioner argues element [1f] is taught or suggested by Kim ’941’s description of peer node P1 establishing a direct

communication tunnel with peer node P2 by transmitting a tunnel query request message to sever 100 including an ID of peer node P2. *Id.* at 26–27 (citing Ex. 1008 ¶¶ 80–89, Fig. 6). According to Petitioner “[i]n the Lorex Manual-Kim-9[4]1 combination, the remote client device (e.g., smartphone, tablet, or PC) would predictably contact the Lorex Servers (e.g., ***at least one linking server***) to initiate a P2P connection with the DVR by sending a tunnel query request message that includes the DVR’s unique device ID consistent with the teachings of Kim941.” *Id.* at 27 (citing Ex. 1003 ¶ 103).

On the record before us and in the absence of any counterargument from Patent Owner, we find that the Lorex Manual and Kim ’941 teach a remote client device capable of performing the operations of claim 1, i.e., claim element [1f].

viii. *Element [1g]: “wherein at least one portion of the information received by the electronic device for concentrating information is delivered to the remote client device on the P2P connection,”*

Petitioner contends that the combined teachings of the Lorex Manual and Kim teach or suggest claim element [1g]. Pet. 27–28 (citing Ex. 1003 ¶¶ 105–107; Ex. 1007, 84, 86–87). In particular, Petitioner argues that the “Lorex Manual shows how a user of the remote client device can navigate a user interface of a mobile device to view live video from each of eight video channels” by receiving “data from the DVR over the P2P connection established between the remote client device and the DVR.” *Id.*

On the record before us and in the absence of any counterargument from Patent Owner, we find that the Lorex Manual and Kim ’941 teach a delivering a portion of information to a remote client device, i.e., claim element [1g].

- ix. *Element [1h]: “wherein the remote client device does not have a unique identification (UID) to register in the at least one linking server for associating connecting information of the remote client device when the remote client device contacts the at least one linking server for establishing the P2P connection.”*

Petitioner contends that the combined teachings of the Lorex Manual and Kim teach or suggest claim element [1h]. Pet. 28–31 (citing Ex. 1003 ¶¶ 108–113; Ex. 1007, 61, 62, 84–85; Ex. 1008 ¶¶ 55–60). Petitioner argues that the Lorex Manual discloses that a “mobile device initiates a request to connect with the DVR by entering the device ID of the DVR, the client port of the DVR, and a username and password associated with the DVR.” *Id.* at 29 (citing Ex. 1003 ¶ 109; Ex. 1007, 85). Petitioner further argues “[t]o the extent that the Lorex Manual does not expressly disclose that the mobile device does not have a UID to register with the Lorex servers when the remote client device contacts the servers to connect, such conventional features would have been obvious to a [person of ordinary skill in the art] when considering the teachings of Kim’941.” *Id.* at 29–30 (citing Ex. 1003 ¶ 110). Petitioner argues that, although Kim ’941 discloses that both peer nodes P1 and P2 “*pre-register* their IDs [and passwords] with a server before one of the peer nodes contacts the server for establishing a P2P connection,” later, when P1 contacts the server to actually establish a connection with P2, “[P1] *does not* have a unique ID to register in the server.” *Id.* at 30 (citing Ex. 1003 ¶¶ 110, 111; Ex. 1008 ¶¶ 55–60).

According to Petitioner:

a [person of ordinary skill in the art] would have understood and it would have been obvious that there is no need for the first peer to register with the server merely to request a P2P connection with the second peer since the server need only look-up registered information (e.g., the ID and network address(es)) of

the second peer—not the first peer—to perform hole-punching and follow the process shown in FIG. 6 [of Kim ’941]. Moreover, Kim941 expressly contemplates that peers register with the server in advance such that the first peer does *not* provide its unique ID for registration again when it *later* contacts the server 100 to establish the P2P connection. . . . Indeed, Kim941 expressly discloses that the first peer’s “tunnel query request message” includes the unique ID of the second peer rather than that of the first peer to identify the second peer as the device to which the first peer requests to connect.

Id. at 30–31 (citations omitted). Thus, Petitioner argues, according to the combined teachings of the Lorex Manual and Kim ’941, that “Lorex’s remote client device would predictably not include its own device ID for registration when contacting the Lorex Stratus servers to establish a P2P connection with the DVR.” *Id.* at 31 (citing Ex. 1003 ¶ 112).

On the record before us and in the absence of any counterargument from Patent Owner, we find that, based on the teachings of the Lorex Manual and Kim ’941, a person of ordinary skill in the art would have understood it unnecessary to resend a previously registered UID when subsequently contacting a server for establishing the P2P connection thereby rendering obvious the negative limitation of claim 1, i.e., claim element [1h].

x. Reasons to Combine the Lorex Manual and Kim ’941

Petitioner asserts multiple reasons for combining the teachings of the Lorex Manual with the teachings of Kim ’941. Pet.13–17. Petitioner contends, further citing to the Kardashov Declaration for supporting testimony, that a person of ordinary skill in the art would have incorporated Kim ’941’s use of a network server for device registration and hole-punching techniques into the Lorex Manual’s DVR “so that a remote client device (e.g., the user’s smartphone, tablet, or PC) can then identify the DVR

as the target of a requested P2P connection using the unique ID that has been registered with the server.” Pet. 14 (citing Ex. 1003 ¶ 71).

First, Petitioner contends, with the Kardashov Declaration providing supporting testimony, that

a [person of ordinary skill in the art] would have understood that implementing [the] Lorex Manual’s system to include a conventional “network server” that facilitates hole-punching (as suggested by Kim’941) would provide an improved and advantageous approach for establishing a P2P connection between the DVR and remote client device when the DVR is located behind a firewall and/or network address translator (NAT) that would otherwise prevent the remote client device from initiating a P2P connection with the DVR (e.g., due to common security policies of firewalls/NATs that block unsolicited inbound communications from devices outside of the DVR’s local network).

Id. at 15 (citing Ex. 1003 ¶ 74; Ex. 1008 ¶ 18–19, 121).

We find that Petitioner’s first proposed reason to combine the Lorex Manual and Kim ’941 has rational underpinning.

Second, Petitioner contends a reason to have implemented the system of the Lorex Manual using a network server and hole punching as taught by Kim ’941 was to “advantageously ‘construct[] a direct communication environment for . . . a video camera.’” *Id.* at 15–16 (quoting Ex. 1008 ¶ 123).

We find that Petitioner’s second proposed reason to combine the Lorex Manual and Kim ’941 has rational underpinning.

Third, Petitioner argues that incorporating a network server that implements hole-punching advantageously “renders it ‘unnecessary for each application service to form a special session,’ thereby improving ‘flexibility’

in ‘operating each service.’” *Id.* at 16 (quoting Ex. 1008 ¶ 122; citing Ex. 1003 ¶ 76).

We find that Petitioner’s third proposed reason to combine the Lorex Manual and Kim ’941 has rational underpinning.

Fourth, Petitioner further argues that the combination “would beneficially allow the server to confirm whether a direct tunnel can be formed between the IP camera and user’s/terminal device.” *Id.* (citing Ex. 1008 ¶¶ 78–83, 94–99, 14–18, Figs. 6, 8; Ex. 1003 ¶ 77).

We find that Petitioner’s fourth proposed reason to combine the Lorex Manual and Kim ’941 has rational underpinning.

In addition, Petitioner asserts several teachings and motivations in the prior art that would have led a person of ordinary skill in the art to successfully modify the Lorex Manual to incorporate the teachings of Kim ’941. Petitioner argues, with the Kardashov Declaration providing supporting testimony, that both the Lorex Manual and Kim ’941 “are directed to establishing P2P connections between network endpoints (e.g., [the] Lorex Manual’s DVR and remote client device)” and “a [person of ordinary skill in the art] would have possessed ample skill to successfully implement the combination [given] the predictable electrical/network and software components involved in the combination and the relatively advanced state of the art at the time.” *Id.* at 17 (citing Ex. 1003 ¶ 78). Thus, according to Petitioner, “a [person of ordinary skill in the art] would have reasonably expected success in achieving the [Lorex Manual-Kim ’941] combination.” *Id.*

We credit the testimony presented in the Kardashov Declaration that a skilled artisan would have had reasons to combine the teachings of the Lorex

Manual and Kim '941. Thus, in the absence of any counterargument from Patent Owner, we find that a skilled artisan would have had reasons, with rational underpinning, to combine the teachings of the Lorex Manual and Kim '941, with a reasonable expectation of success.

xi. Conclusion as to Claim 1

We find that the Lorex Manual and Kim '941 teach each limitation of claim 1 and that a skilled artisan would have had several reasons, with rational underpinnings, to combine the Lorex Manual and Kim '941, with a reasonable expectation of success. Accordingly, upon consideration of all the evidence, we conclude that Petitioner has proven by a preponderance of the evidence that claim 1 would have been obvious over the combination of the Lorex Manual and Kim '941.

b. Dependent Claims 2–8, 10, and 16

For dependent claims 2–8, 10, and 16, Petitioner argues, with citations to the Lorex Manual, Kim '941, and the Kardashov Declaration, that the Lorex Manual (claims 2–5, 7, 8, 10, and 16) and Kim '941 (claim 6) teach each of the claims' additional limitations. Pet. 31–38.

Patent Owner does not address separately dependent claims 2–8, 10, and 16 apart from claim 1 but argues claims 1–8, 10, and 16 together as a group. PO Resp. 13–14. For the reasons discussed above, Patent Owner's arguments are not persuasive. Instead, we find the Lorex Manual and Kim '941 teach each limitation of claims 2–8, 10, and 16 and that a skilled artisan would have had several reasons, with rational underpinning, to combine Manual and Kim '941, with a reasonable expectation of success claims.

Therefore, we additionally determine that Petitioner has proven by a preponderance of the evidence that claims 2–8, 10, and 16, would have been obvious over the combination of the Lorex Manual and Kim ’941.

E. Asserted Obviousness of Claim 9 Over the Lorex Manual, Kim ’941, and Kim ’517 (Ex. 1009)

Dependent claim 9 reads as follows:

The electronic device for concentrating information according to claim 7, wherein the electronic device for concentrating information is connected to an appliance through the routing device and the remote client device controls the appliance through the electronic device for concentrating information.

Petitioner argues that the combined teachings of the Lorex Manual and Kim ’941, as further modified to incorporate the teachings of Kim ’517, would have rendered claim 9 obvious. Pet. 38–43. Petitioner relies on Kim ’517 as “describ[ing] ‘a home network system, [including a] home monitoring method and apparatus using electrical appliances and cameras.’” *Id.* at 38 (quoting Ex. 1009 ¶ 3; citing Ex. 1003 ¶¶ 63–64). By arguing that the “Lorex Manual describes how a user can remotely control pan-tilt-zoom (PTZ) cameras connected to the DVR through an interface of a remote client device (e.g., the smartphone, tablet, or PC),” Petitioner acknowledges that the “PTZ cameras must be physically connected to the DVR through an RS485 port on the rear of the DVR.” *Id.* at 39–40 (citing Ex. 1007, 66, 77–78, 88–89, 96, 106–08). Petitioner asserts that the teaching of Kim ’517 cures the noted deficiency. *Id.* at 38. Figure 5 of Kim ’517 is reproduced below.

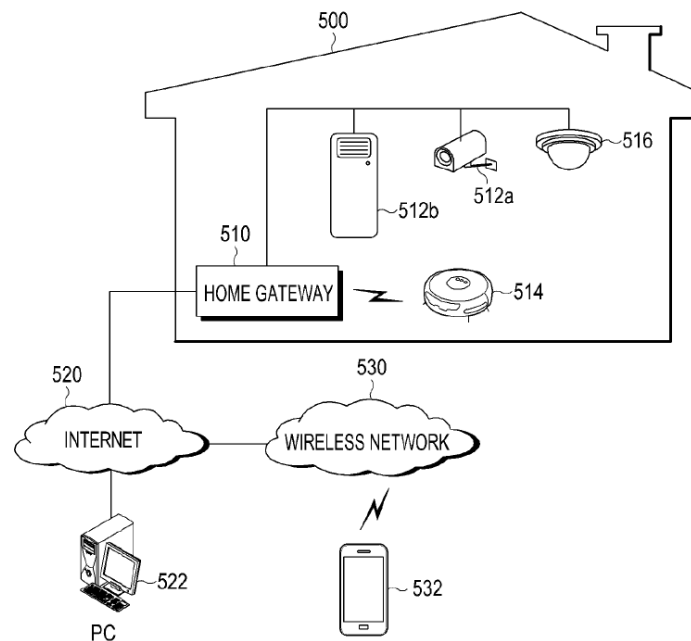


FIG.5

As depicted in Figure 5, reproduced above, Kim '517 describes a home network including a home gateway 510 wired or wirelessly connected to home devices 512a, 512b, 514, and 516 such that a user can remotely control the devices over the Internet via the home gateway using a mobile terminal. Pet. 38 (citing Ex. 1009 ¶¶ 18, 38–47, 56, 59–68, Figs. 1–5 and associated text). Petitioner relies on Kim '517's "suggestion for remotely controlling a PTZ camera or other appliance wirelessly connected to a home gateway like [the] Lorex Manual's DVR" for curing the failure of the Lorex Manual to "expressly disclose a remote client device configured to control through the DVR an appliance that is wirelessly connected to the DVR." *Id.* Petitioner provides reasoning why "a [person of ordinary skill in the art] would have implemented [the] Lorex Manual's DVR according to

Kim '517's suggestion for wirelessly connecting remotely controllable appliances (e.g., PTZ cameras)" including

(1) to expand the capabilities of the DVR and to increase the number and types of devices to which the DVR could connect, . . . (2) to simplify the ability to connect certain cameras and other appliances to the DVR, . . . (3) to allow the DVR to connect to such appliances over longer distances, . . . and (4) to advantageously permit a user to issue commands to and control the appliances through a remote client device.

Pet. 40–41 (citing Ex. 1003 ¶¶ 144–149).

Patent Owner relies on argument presented in connection with claim 1 in arguing the obviousness of claim 9 over the Lorex Manual, Kim '941 and Kim '517, i.e., that the Lorex Manual does not qualify as prior art under 35 U.S.C. §102(a)(1) based on the exception under 35 U.S.C. §102(b)(1)(A) and that Kim '941 teaches away from the '916 patent. PO Resp. 2–3, 14–15. For the reasons discussed above, Patent Owner's arguments are not persuasive. Patent Owner does not otherwise separately argue claim 9.

Accordingly, upon consideration of all the evidence, we conclude that Petitioner has proven by a preponderance of the evidence that claim 9 would have been obvious over the combination of the Lorex Manual, Kim '941 and Kim '517.

F. Additional Grounds

1. The Lorex Manual and Kuo (Ex. 1011)

Kuo is identified by the '916 patent under the heading "Related U.S. Application Data," the '916 patent indicating that it is a continuation-part of the Kuo application. Ex. 1001, code (63). Petitioner asserts Kuo is prior art to the '916 patent under 35 U.S.C. § 102(a)(1). Pet. 2. As explained by

Petitioner, “Kuo is a publication of an earlier-filed patent application by a subset of coinventors named on the ’916 Patent” and which “[t]he ’916 Patent specification expressly refers to . . . multiple times for additional detail on aspects of the subject matter described and claimed in the ’916 Patent.” *Id.* at 43 (citing Ex. 1011 13:42–52, 14:10–16, 18–22). “Indeed, FIGS. 1–11 of Kuo are identical to those same figures in the ’916 Patent.” *Id.* (citing Ex. 1003 ¶¶ 65–69).

Petitioner’s mapping of the Lorex Manual-Kuo combination is very similar to its mapping of the Lorex Manual-Kim ’941 combination, with Kuo cited for features of both claim 1 and claim 6 for which Petitioner relies on and cites to Kim ’941. Pet. 47–53. In connection with dependent claims 2, 3, 4, 7, 8, 10, and 16, Petitioner’s mapping of the Lorex Manual-Kuo combination relies on the Lorex Manual for the same reasons as argued in the Lorex Manual-Kim ’941 combination. *Id.* at 53.

Patent Owner again asserts that the Lorex Manual does not qualify as prior art under 35 U.S.C. §102(a)(1). PO Resp. 3, 16. That argument is unpersuasive for the reasons discussed above. Patent Owner further asserts that “the *Kuo* do not disclose every recited limitation of the ’916 Patent.” *Id.* at 16. However, Patent Owner does not provide any substantive argument or evidence in support of the assertion. Thus, Patent Owner’s assertion conclusory and, therefore, unpersuasive. Moreover, to the extent Patent Owner asserts Kuo standing alone fails to disclose all of the limitations of claims 1–8, 10, and 16, such argument does not address Petitioner’s argument that the claims are obvious over the combined teachings of Kuo and the Lorex Manual, not Kuo alone. Pet. 47–53.

Accordingly, upon consideration of all the evidence, we conclude that Petitioner has proven by a preponderance of the evidence that claims 1–8, 10, and 16 would have been obvious over the Lorex Manual-Kuo combination for the same reasons as given for the Lorex Manual-Kim ’916 combination, discussed above.

Finally, in arguing that claim 9 is rendered obvious over the combined teachings of the Lorex Manual in view of Kuo and Kim ’517, Petitioner relies on the same mapping of Kim ’517 to cure the deficiency of the Lorex Manual-Kuo combination as in the Lorex Manual-Kim ’941 combination of teachings discussed above. *Id.* at 53–54. Therefore, for similar reasons and upon consideration of all the evidence, we conclude that Petitioner has proven by a preponderance of the evidence that claim 9 would have been obvious over the combination of the Lorex Manual, Kim ’941, and Kim ’517.

2. The Lorex Video (Ex. 1012), Galvin (Ex. 1013), and Kuo

Petitioner states the “Lorex Video is a video published on YouTube that illustrates a process for connecting a mobile device (i.e., an Android smartphone) to a DVR using Lorex’s connectivity solutions similar to those described in [the] Lorex Manual.” Pet. 54–55. Petitioner relies on the testimony of Vlad Kardashov in support of an asserted publication date of June 18, 2013, of the Lorex Video. Pet. 2 (citing Ex. 1003 ¶¶ 53–60). Galvin discloses a network video recorder system in which a network video recorder includes Ethernet ports connected to receive camera video and an uplink port connected to a client station displaying video information received by the network video recorder. Ex. 1013 ¶ 57, 67, Fig. 4.

According to Petitioner, the disclosure the Lorex Video is substantially the same as that of and is applied for the same reasons as the Lorex Manual in the Lorex Manual-Kim '941 and the Lorex Manual-Kuo combinations discussed above. Petitioner additionally relies on Galvin for teaching a third interface for connecting to a television as recited by element [1c]. Pet. 58 (citing Ex. 1001 ¶¶ 154–155). As in the Lorex Manual-Kuo combination, the Lorex Video-Galvin-Kuo combination relies on Kuo for teaching the linking server of element [1e] (*id.* at 48–49 (application of Kuo in the Lorex Manual-Kuo combination), 67 (application of Kuo in the Lorex Video-Galvin-Kuo combination)). Petitioner further argues three reasons why it would have been obvious to combine the teachings of the Lorex Video and Kuo (*id.* at 57–58) and further combine that combination with the teachings of Galvin (*id.* at 58–59). Finally, Petitioner argues “a POSITA would have reasonably expected success achieving the Lorex Video-Galvin-Kuo combination.” *Id.* at 59. Thus, Petitioner argues that the Lorex Video-Galvin-Kuo combination renders obvious claims 1–8, 10, and 16. *Id.* at 54–76.

Petitioner further argues the Lorex Video-Galvin-Kuo combination, further in view of Kim '517, renders claim 9 obvious, arguing that Kim '517 cures the deficiency of the Lorex Video-Galvin-Kuo combination for the same reasons it cures the deficiency of the Lorex Manual-Kim '941 combination of teachings. *Id.* at 77.

Patent Owner again argues “the *Lorex Video* does not qualify as prior art under 35 U.S.C. §102(a)(1) . . . based on the exception under 35 U.S.C. §102(b)(1)(A) . . . as similarly discussed above for the Ground 1A,” i.e., argument presented in connection with the Lorex Manual. PO Resp. 4. *See*

also id. at 18–19. Patent Owner makes the same argument in connection with claim 9. *Id.* at 20.

Petitioner addresses the arguments in connection with the Lorex Video together with its argument addressing the Lorex Manual discussed above. Pet. Reply 1–19. Thus, for the reasons discussed above in connection with the Lorex Manual, Patent Owner fails to show that the cited subject matter disclosed in the Lorex Video was obtained from the inventors of the '916 Patent. Accordingly, we are not persuaded the Lorex Video does not qualify as prior art under §102(b)(1)(A).

Patent Owner does not otherwise dispute Petitioner's arguments in connection with the asserted obviousness of claims 1–8, 10, and 16 over the combined teachings of the Lorex Video, Galvin, and Kuo or the asserted obviousness of claim 9 further in view of Kim '517. *See* PO Resp. 4, 18–20.

Accordingly, upon consideration of all the evidence, we conclude that Petitioner has proven by a preponderance of the evidence that 1–8, 10, and 16 would have been obvious over the Lorex Video-Galvin-Kuo combination for substantially the same reasons as given for the Lorex Manual-Kuo combination, discussed above. Likewise, upon consideration of all the evidence, we conclude that Petitioner has proven by a preponderance of the evidence that claim 9 would have been obvious over the Lorex Video-Galvin-Kuo-Kim '517 combination for the same reasons as given for the Lorex Manual-Kuo-Kim '517 combination, discussed above.

III. CONCLUSION¹⁵

Petitioner has proven by a preponderance of the evidence that:

- A. Claims 1–8, 10, and 16 would have been obvious over the Lorex Manual and Kim '941;
- B. Claim 9 would have been obvious over the Lorex Manual, Kim '941, and Kim '517;
- C. Claims 1–8, 10, and 16 would have been obvious over the Lorex Manual and Kuo;
- D. Claim 9 would have been obvious over the Lorex Manual, Kuo, and Kim '517;
- E. Claims 1–8, 10, and 16 would have been obvious over the Lorex Video, Galvin, and Kuo; and
- F. Claim 9 would have been obvious over the Lorex Video, Galvin, Kuo, and Kim '517.

The outcome for the challenged claims of this Final Written Decision follows. In summary:

¹⁵ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–8, 10, 16	103	Lorex Manual, Kim '941	1–8, 10, 16	
9	103	Lorex Manual, Kim '941, Kim '517	9	
1–8, 10, 16	103	Lorex Manual, Kuo	1–8, 10, 16	
9	103	Lorex Manual, Kuo, Kim '517	9	
1–8, 10, 16	103	Lorex Video, Galvin, Kuo	1–8, 10, 16	
9	103	Lorex Video, Galvin, Kuo, Kim '517	9	
Overall Outcome			1–10, 16	

IV. ORDER

It is hereby:

ORDERED that claims 1–10 and 16 of the '916 patent are unpatentable;

FURTHER ORDERED that because this is a Final Written Decision, parties to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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Patent 9,774,916

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