

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

KOSS CORPORATION,
Patent Owner.

IPR2021-00255
Patent 10,298,451 B1

Before DAVID C. MCKONE, GREGG I. ANDERSON,
and NORMAN H. BEAMER, *Administrative Patent Judges*.

BEAMER, *Administrative Patent Judge*.

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

I. INTRODUCTION

On November 25, 2020, Apple, Inc. (“Petitioner”) filed a Petition (“Pet.”) pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of claims 1–21 of U.S. Patent No. 10,298,451 B1 (“the ’451 patent”).

Paper 2. On March 8, 2021, Koss Corporation (“Patent Owner”) filed a Preliminary Response. Paper 6. Pursuant to our authorization, Petitioner and Patent Owner subsequently filed reply and sur-reply briefs, respectively, further addressing discretionary denial pursuant to 35 U.S.C. § 314.

Papers 20, 21. We instituted *inter partes* review on June 3, 2021. Paper 22.

Patent Owner filed a Response on August 27, 2021 (PO Resp.) Paper 28. Petitioner filed a Reply on December 23, 2021 (Reply). Paper 42. Patent Owner filed a Sur-Reply on February 8, 2022 (Sur-Reply). Paper 50. An oral hearing took place on March 3, 2022. The Hearing Transcript (“Tr.”) is included in the record as Paper 53. After considering the parties’ arguments and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1–21 of the ’451 patent are unpatentable.

II. BACKGROUND

A. The ’451 Patent

The ’451 patent, titled “Configuring Wireless Devices For A Wireless Infrastructure Network,” was filed on August 7, 2018, issued on

May 21, 2019, and lists related continuation applications dating to March 15, 2013.¹ Ex. 1001, codes (54), (22), (45), (63).

The '451 patent is directed to “permit[ing] a wireless device to receive data wirelessly via an infrastructure wireless network, without physically connecting the wireless device to a computer in order to configure it, and without having an existing infrastructure wireless network for the wireless device to connect to.” Ex. 1001, Abstr. Figure 1 of the '451 patent is reproduced below.

¹ During prosecution, Applicant asserted an invention date of May 14, 2012, and, according to Petitioner, in *Koss Corporation v. Apple Inc.*, Case No. 6:20-cv-00665 (W.D. Tex.) (the Texas litigation), Patent Owner asserts an invention date of July 12, 2010. Pet. 8–9 (citing Ex. 1002, 50–57); *see also* Ex. 1014, 4. It is unnecessary to determine the applicability of these dates for purposes of this Decision, because the effective dates of the references are sufficiently early compared to the May 14, 2012, date, and Patent Owner does not assert the July 12, 2010, date in this proceeding.

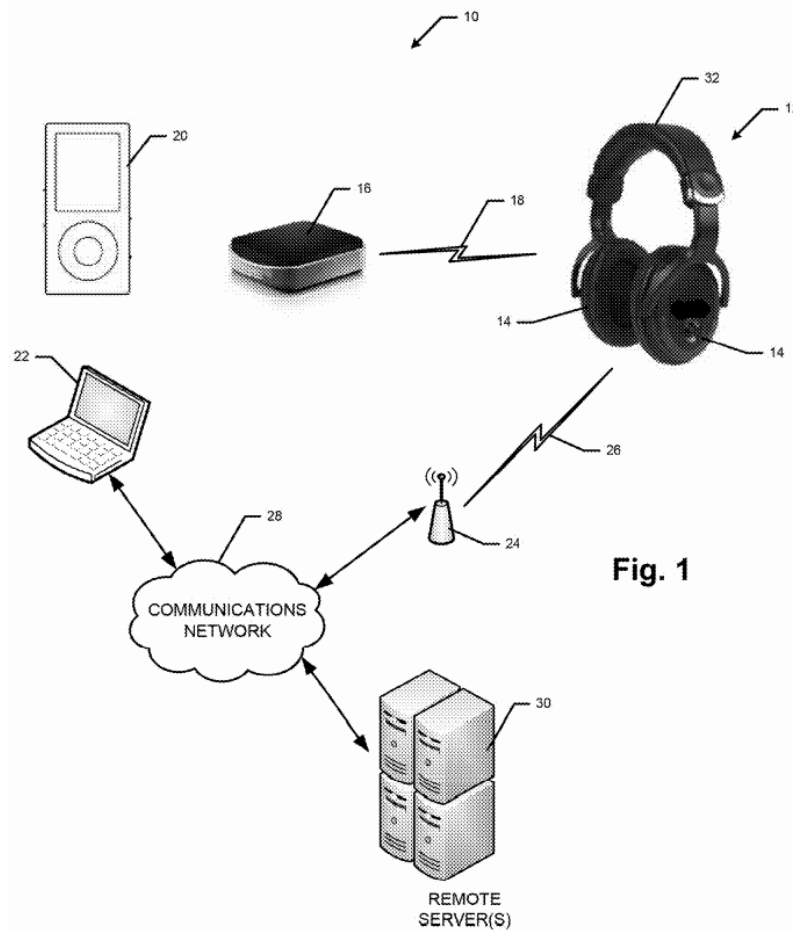


Figure 1 is a block diagram depicting earphones 14 which can communicate wirelessly with content access point (CAP) 16 via ad hoc communications link 18, which can be, for example, a Wi-Fi link or Bluetooth. *Id.* at 3:1–10. The '451 patent explains that an ad hoc link is a point-to-point network that does not utilize preexisting structure such as wireless access points. *Id.* at 3:10–15. CAP 16 can be connected to digital audio player (DAP) 20, such as a personal MP3 player, or computer 22, such as a laptop, via a USB connector. *Id.* at 3:17–36. Alternatively, CAP 16 may be an integral part of DAP 20 or computer 22. *Id.* at 3:35–36. Earphones 14 can also connect to access point 24 via wireless infrastructure link 26. *Id.* at 3:36–40. The '451 patent explains that a wireless

infrastructure link is part of a network that utilizes a wireless access point and connects to an Internet service provider, such as Internet 28. *Id.* at 3:40–44. Both computer 22 and access point 24 connect to Internet 28. *Id.* at 3:45–40. Remote servers 30 are also connected to Internet 28. *Id.* at 3:49–50.

In operation, a user, via computer 22, may connect to the remote server system 30 to provision or initialize CAP 16 and earphones 14 for initial use, and to otherwise manage CAP 16 and earphones 14. *Id.* at 3:51–54. Initial operation of earphones 14 involves plugging CAP 16 into DAP 20 or computer 22 (generally, “media devices”), enabling CAP 16 to transmit media content from the media devices to be played on earphones 14. *Id.* at 4:35–44. Earphones 14 can also be set up to receive content from server 30 via Internet 28 and access point 24, which is achieved by the user logging into a website via computer 22, with CAP 16 connected to the computer. *Id.* at 4:45–5:22. While logged in, the user enters access point credentials and information identifying CAP 16 and earphones 14, which are stored in the user’s account on the server, and the access point credentials are also transferred to the earphones 14. *Id.* As stated in the ’451 patent:

This process allows the earphones 14 to be configured for infrastructure network (and Internet) access without having to physically connect the earphones 14 to the computer 22 to configure them and without having an existing different infrastructure network that the earphones 14 need to connect to.

Id. at 5:22–27. Patent Owner argues that requiring a wireless consumer product to be plugged into a computer can be a cumbersome process that

presents numerous challenges, given that a computer is not always available, the plug for connecting the wireless computer device to the computer may not be available, or smaller wireless consumer devices may not accommodate a port for the plug to the computer. PO Resp. 3 (citing Ex. 2022 (Declaration of Joseph C. McAlexander III (“McAlexander Decl.”)) ¶¶15–16).

The ’451 patent also describes using devices such as video players, lighting systems, cameras, manufacturing equipment, medical devices, gaming systems, “or any other suitable controllable electronic equipment” in place of the earphones. *Id.* at Figs. 4, 5, 5:66, 6:10–15.

B. Illustrative Claim

Independent claim 1 is reproduced below.

1. A system comprising:
 - a wireless access point;
 - an electronic device;
 - a mobile computer device that is in communication with the electronic device via an ad hoc wireless communication link; and
 - one or more host servers that are in communication with the mobile computer device via the Internet, wherein the one or more host servers receive and store credential data for an infrastructure wireless network provided by the wireless access point,
- wherein:
 - the mobile computer device is for transmitting to the electronic device, wirelessly via the ad hoc wireless communication link between the electronic device and the mobile computer device, the credential data for the infrastructure wireless

network stored by the one or more host servers;
and

the electronic device is for, upon receiving the credential data for the infrastructure wireless network from the mobile computing device, connecting to the wireless access point via the infrastructure wireless network using the credential data received from the mobile computer device.

Ex. 1001, 8:30–53.

C. References

Petitioner relies on the following references (Pet. 1–2):

- Brown et al., U.S. Pat. No. 9,021,108 B2. Ex. 1004 (“Brown”).
- Scherzer et al., US 2007/0033197 A1. Ex. 1005 (“Scherzer”).
- Baxter et al., US 2007/0245028 A1. Ex. 1008 (“Baxter”).
- Drader et al., US 2011/0025879 A1. Ex. 1009 (“Drader”).
- Ramey et al., US 2010/0307916 A1. Ex. 1010 (“Ramey”).
- Gupta et al., US 2010/0165879 A1. Ex. 1011 (“Gupta”).

Petitioner also filed a Declaration, and Supplemental Declaration, of Dr. Jeremy Cooperstock in support of the Petition. Ex. 1003 (“Cooperstock Decl.”); Ex. 1023 (“Cooperstock Suppl. Decl.”).

D. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–14 of the ’451 patent on the following grounds (Pet. 1):

Claims Challenged	35 U.S.C. §	References
1, 6, 11–13, 15–20	103 ²	Brown, Scherzer
2, 7–10, 21	103	Brown, Scherzer, Baxter
3–4	103	Brown, Scherzer, Drader
5	103	Brown, Scherzer, Ramey
14	103	Brown, Scherzer, Gupta

E. Real Parties in Interest

The parties identify themselves as the real parties in interest. Pet. 78; Paper 4, 2.

F. Related Proceedings

The parties identify the above-referenced Texas litigation, and *Apple Inc. v. Koss Corporation*, Case No. 5:20-cv-05504 (N.D. Cal.), as related matters. Pet. 78; Paper 4, 2.

The '451 Patent is also involved in *Apple Inc. v. Koss Corporation*, IPR2021-00600, filed March 7, 2021. Paper 17, 1.

III. ANALYSIS

A. Obviousness: Legal Standards

A claim is unpatentable for obviousness if, to one of ordinary skill in the pertinent art, “the differences between the subject matter sought to be

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103. Because the March 15, 2013, effective filing date for the claims of the '451 patent appears to be before the March 16, 2013, effective date of the applicable AIA amendment, we refer to the pre-AIA version of 35 U.S.C. § 103. Our conclusions would not change under the post-AIA version of this statute.

patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting 35 U.S.C. § 103(a)). The question of obviousness is resolved on the basis of underlying factual determinations, including “the scope and content of the prior art”; “differences between the prior art and the claims at issue”; and “the level of ordinary skill in the pertinent art.” *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, secondary considerations, such as “commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.” *Graham*, 383 U.S. at 17–18.

A patent claim “is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR*, 550 U.S. at 418. Rather, an obviousness determination requires finding “both ‘that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.’” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367–68 (Fed. Cir. 2016) (citation omitted); *see KSR*, 550 U.S. at 418 (for an obviousness analysis, “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements [in the way the claimed] new invention does”). “Although the *KSR* test is flexible, the Board ‘must still be careful not to allow hindsight reconstruction of references . . . without any explanation as

to *how* or *why* the references would be combined to produce the claimed invention.” *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1066 (Fed. Cir. 2016) (citation omitted).

Further, an assertion of obviousness “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); accord *In re NuVasive, Inc.*, 842 F.3d 1376, 1383 (Fed. Cir. 2016) (stating that “conclusory statements” amount to an “insufficient articulation[] of motivation to combine”; “instead, the finding must be supported by a ‘reasoned explanation’” (citation omitted)); *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016) (“To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.”).

The motivation to combine must be “accompanied by a reasonable expectation of achieving what is claimed in the patent-at-issue.” *Intelligent Bio-Sys*, 821 F.3d at 1367. “The reasonable expectation of success requirement refers to the likelihood of success in combining references to meet the limitations of the claimed invention.” *Id.*

B. Level of Skill in the Art

Petitioner’s expert Dr. Cooperstock, testifies:

[A] person of ordinary skill in the art at the time of the ’451 patent’s Critical Date (“POSITA”) would have had at least a Bachelor’s Degree in an academic area emphasizing electrical engineering, computer science, or a similar discipline, and at

least two years of experience in wireless communications across short distance or local area networks.

Cooperstock Decl. ¶ 26.

Patent Owner's expert, Dr. Joseph C. McAlexander III, testifies:

A person of ordinary skill in the art ("POSITA") to which the '451 Patent pertains would be someone working in the electrical engineering field with experience in wireless networks and wireless products. Such a person would have a bachelor's degree in electrical engineering and at least two or more years of work experience in the industry. In my opinion, extensive work experience and technical training might substitute for educational requirements, while advanced degrees, such as a relevant M.S. or Ph.D., might substitute for experience. Accordingly, such a person would have studied and have practical experience with circuit design, speaker components, and wireless communications and networking.

McAlexander Decl. ¶ 23.

The proposals are similar and consistent with the level of ordinary skill in the art reflected by the prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). On this record, the level of ordinary skill is neither in dispute nor dispositive of any challenge. For purposes of this Decision, we apply Petitioner's articulation.

C. Claim Construction

The Petition was accorded a filing date of November 25, 2020. Paper 3, 1. In an *inter partes* review for a petition filed on or after November 13, 2018, a claim "shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b) (2019). We apply

the claim construction standard from *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (*en banc*).

Claim terms need only be construed to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Petitioner states, “[n]o formal claim constructions are necessary.” Pet. 9. Patent Owner does not address claim construction. For purposes of this Decision, we do not construe any claim terms.

However, we note that the claim term, “mobile computer device,” appears nowhere in the ’451 specification. For example, Figure 1 of the ’451 patent does not explicitly depict a device that is both “in communication with the electronic device via an ad hoc wireless communication link” and which is “in communication” with host servers “via the Internet.” However, the specification describes an embodiment in which CAP 16 may be an integral part of computer 22. *Id.* at 3:35–36. We find such a device is an example of the claimed “mobile computer device.”

D. Ground 1A: Obviousness of Claims 1, 6, 11–13, and 15–20 Over Brown and Scherzer

Petitioner challenges claims 1, 6, 11–13, and 15–20 as obvious over the combination of Brown and Scherzer. Pet. 16–59.

1. Brown

Brown, titled “Method, System And Apparatus For Enabling Access Of A First Mobile Electronic Device To At Least One Network Accessible By A Second Mobile Electronic Device,” was filed February 25, 2011, and issued April 28, 2015, with a related provisional application filed September

27, 2010.³ Ex. 1004, codes (54), (22), (45), (60). Brown is directed to automatically enabling access of a first mobile electronic device to a network accessible by a second mobile electronic device that has stored on it the configuration data for accessing the network. *Id.* at Abstr. Figure 1 of Brown is reproduced below.

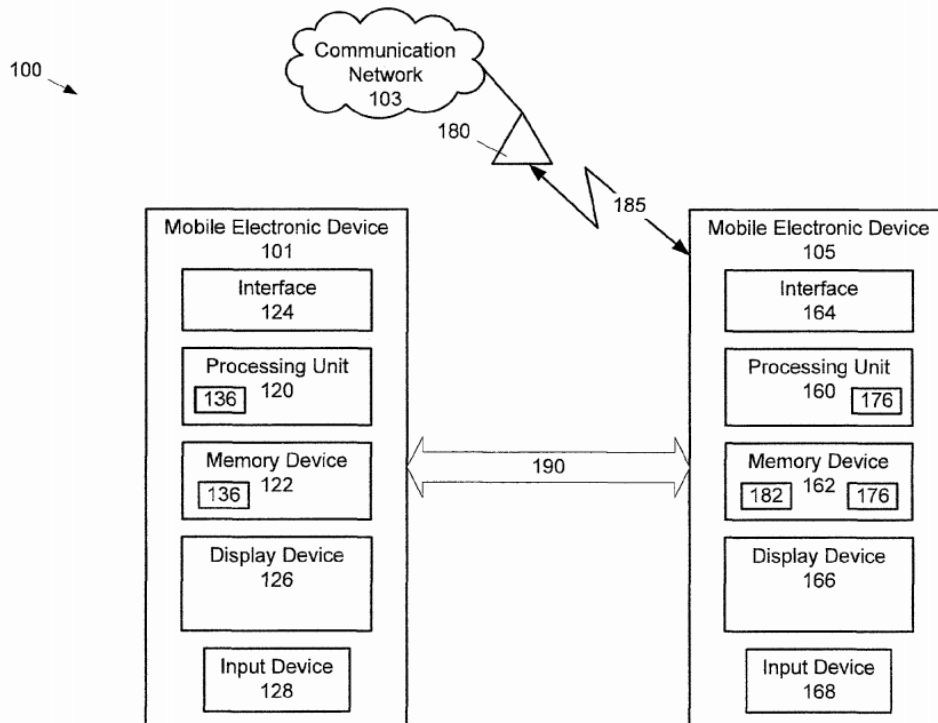


Fig. 1

Figure 1 is a block diagram depicting mobile electronic device 101 and 105, which can be, for example, tablets or personal digital assistants (PDAs). *Id.* at 4:10–17, 5:57–6:5. Device 105 is set up to communicate with network

³ Petitioner asserts that Brown is entitled to the benefit of the provisional filing date of September 27, 2010. Pet. 2–4 (citing Ex. 1012; Cooperstock Decl. ¶ 35). It is unnecessary to determine whether Brown is entitled to this earlier priority date for purposes of this Decision, because the February 15, 2011, application date is sufficient to establish the prior art status of Brown, given the complete record.

103 (e.g., the Internet) via wireless link 185 connecting to access point 180, based on configuration data 182 stored in memory 162. *Id.* at 4:39–49.

Initially, device 101 is not configured to communicate with access point 180. Ex. 1004, 4:64–67. However, device 101 is paired with device 105 via link 190, which can be, for example, a Bluetooth connection. *Id.* at 5:1–9. In operation, when in close proximity, communication between device 101 and device 105 is automatically established via link 190, and configuration data 182 is transferred to device 101 so that it can wirelessly communicate with access point 180. *Id.* at Figs. 2–4, 1:58–2:5, 7:28–8:15. This exchange is handled by applications 136 and 176 installed in devices 101 and 105, respectively. *Id.* at 4:24–25, 4:34–36, 7:23–27.

Brown describes an example, in which device 105 is a PDA which is typically carried by the user to multiple locations, and thus is configured to connect with multiple access points, while device 101 is a tablet that is less travelled. *Id.* at 5:18–56. Using the method of Brown, when devices 101 and 105 are proximate to an access point already accessible by device 105, rather than manually configuring device 101 with the required credentials, the credentials can be transferred from device 105. *Id.* Brown states that this approach avoids the alternative of manually configuring device 101, which is “inconvenient, inefficient and a waste of computing resources.” *Id.* at 5:54–56.

2. *Scherzer*

Scherzer, titled “Providing And Receiving Network Access,” was filed May 25, 2006, and published February 8, 2007. Ex. 1005, codes (54), (22), (43). Scherzer is directed to a collaborative arrangement providing

wireless network access for a number of users to a number of separate wireless access points. *Id.* ¶ 14. Figure 1 of Scherzer is reproduced below.

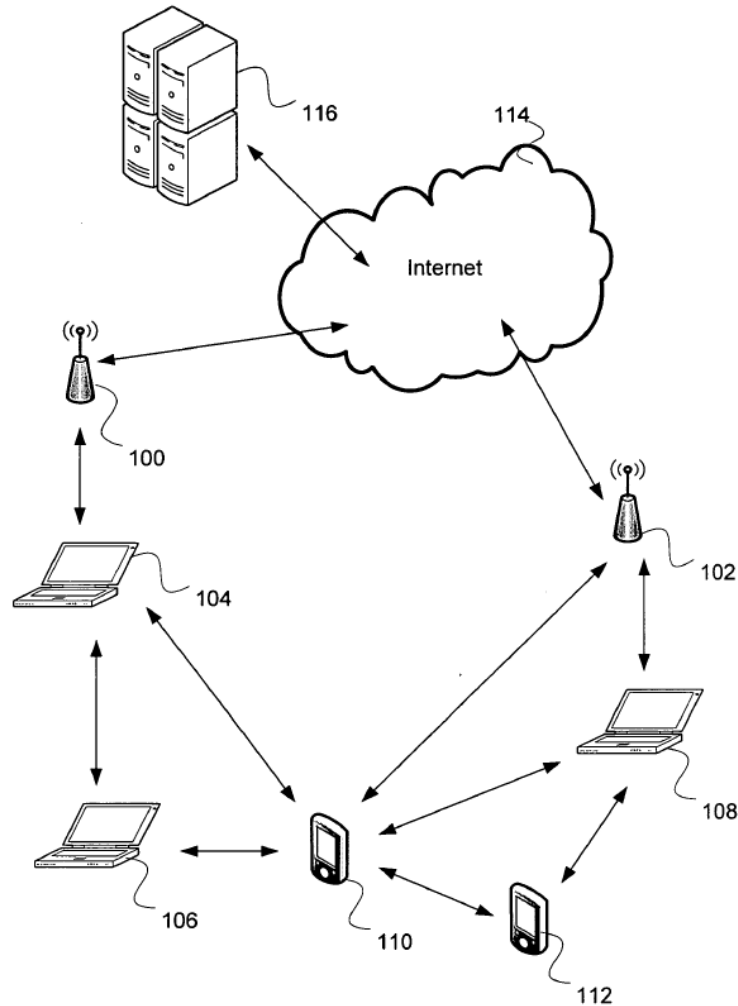


FIG. 1

Figure 1 depicts wireless access points 100 and 102, accessing Internet 114, to which can be connected user devices such as laptops 104, 106, and 108, and personal digital assistants (PDAs) 110 and 112. *Id.* ¶ 20. Application server 116 is also connected to Internet 114. *Id.* In operation, a user registers with the application server, provides credentials for that user's access point, and in return for allowing other registered users to receive

those credentials, can receive credentials for other access points that have been provided to the application server by other registered users. *Id.* An accounting system on application server 116 keeps track of usage and can control the extent and manner in which the users can share each other's usage of the access points. *Id.*

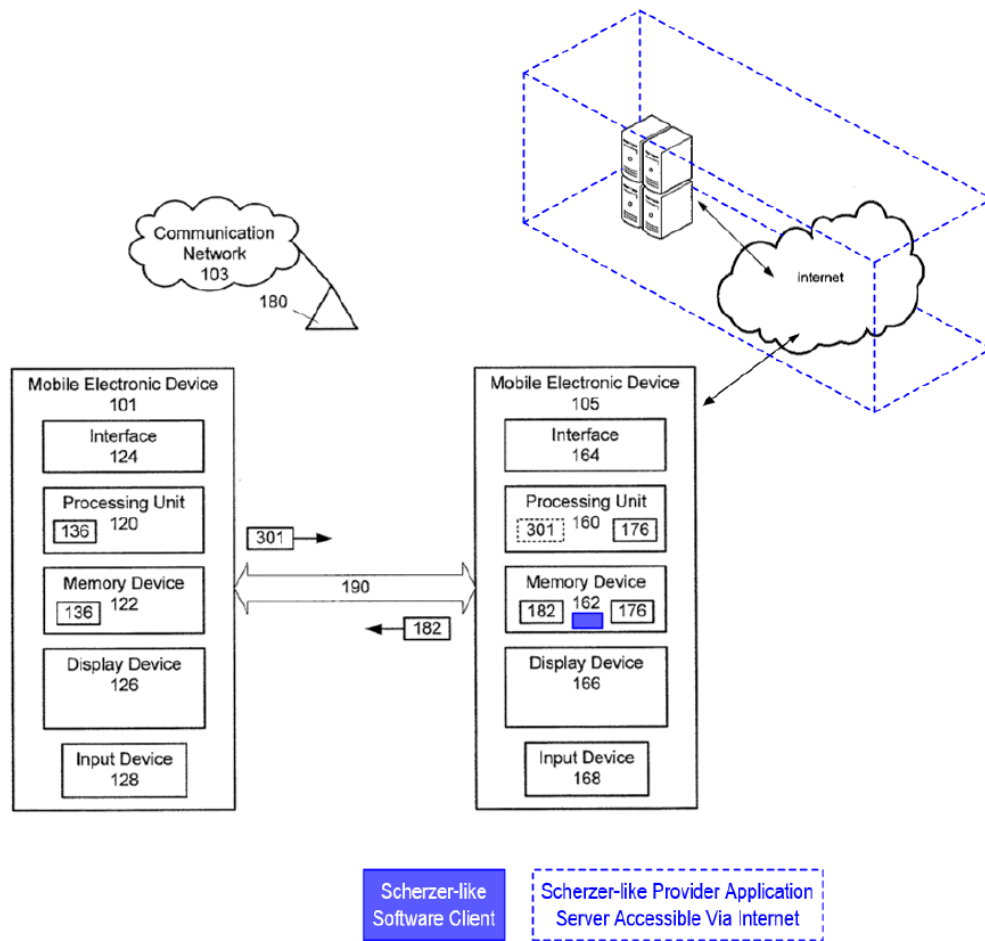
Each user device is provided with a software client, which enables the user to access another user's access point either directly or by relaying information through another registered user's device. Ex. 1005 ¶ 20. As stated in Scherzer:

Access point information . . . can be provided to a user via a wired network by preloading the user's device, a cell phone network, a Wi-Fi network, or any other appropriate network. In some embodiments, access information is provided to a user not in real time — for example, the user down loads access information [from] server while connected to his own access point before going to a new location where user desires to use[] other user's access points.

Id. Thus, “a collaborative community of users allows a percentage of bandwidth of the user's access point to be accessed by one or more other users in order to be able to use other access points when in locations not within range of the user's own access point.” *Id.* ¶ 15.

3. *The Combination of Brown and Scherzer*

Petitioner argues that one of ordinary skill would have been motivated to combine the user devices of Brown with the application server of Scherzer in the manner depicted in the figure reproduced below, provided by Petitioner.



Brown-Scherzer Combination

The above figure, entitled “Brown-Scherzer Combination,” depicts Figure 1 of Brown modified to include “Scherzer-like Software Client” in the memory of device 105, and showing device 105 communicating via the Internet with a “Scherzer-like Provider Application Server.” Pet. 27.

Petitioner argues that Brown does not “consider the challenges of obtaining the credentials needed to access WiFi connections at different locations,” and that therefore one of ordinary skill would have been motivated to incorporate into Brown’s device the software client of Scherzer. Pet. 24–25 (citing Cooperstock Decl. ¶¶ 42–43). Petitioner points out that Brown describes device 105 as connecting to networks in multiple

locations, and that use of a Scherzer-like software application would have increased the number of available locations, given that both Brown and Scherzer use the same types of credentials (such as SSIDs and passwords) to access networks. *Id.* at 25–26 (citing Cooperstock Decl. ¶¶ 44–46).

Petitioner’s expert Dr. Cooperstock testifies that “a POSITA would have been motivated to combine Brown and Scherzer given advantages to network connectivity provided by the combination to the types of devices described in Brown.” *Id.* at 27–28 (citing Cooperstock Decl. ¶ 47).

Petitioner describes an example of how this combination improves the functionality of Brown, in which a user is at a new location and wishes to stream video from the Internet, and has a smartphone that has cellular connection capabilities, but which is not suited for viewing streaming video, and a tablet which is better suited for video viewing but does not have cellular access, and neither the smartphone nor the tablet has the local access point credentials. Pet. 30 (citing Cooperstock Decl. ¶ 55). Petitioner argues that one of ordinary skill would have been motivated to use the Scherzer approach to load the necessary credentials for the access point from the Scherzer-like server into the smartphone via the cellular connection, and then use the Brown capability to transfer those credentials into the tablet for viewing video content via the access point. *Id.* at 30–33 (citing Cooperstock Decl. ¶¶ 56–61).⁴

⁴ Patent Owner argues that the testimony of Petitioner’s expert, Dr. Cooperstock, should be given little weight “because his methodology fails to follow the *Graham* framework and embodies a clear case of hindsight reconstruction of the claimed invention.” PO Resp. 9, 17, 36–38. We find the testimony of Dr. Cooperstock helpful in our analysis as set forth herein.

Patent Owner’s argument against Petitioner’s proposed combination of Brown and Scherzer is, in summary: “Petitioner’s case ignores the registration requirements and security considerations of Scherzer’s community-based system, which effectively prohibit the combinations of Brown and Scherzer relied upon in the Petition.” PO Resp. 2. Patent Owner argues that Scherzer requires the devices used in its described approach to be registered, and that the Brown approach of transmitting access credentials obtained from a Scherzer-like server from one device to another would not be allowed or considered if the receiving device is not registered. *Id.* at 7–8, 20, 22, 25–26, 29–30 (citing McAlexander Decl. ¶¶ 42, 48, 51–55); Sur-Reply 5–6, 18–19. Patent Owner relies on the disclosure in Scherzer that, as part of the user registration process, the media access control (MAC) address of the user’s device is provided as user identification information, in effect also registering the device — therefore, an unregistered device, such as posited in the Brown/Scherzer combination, would be prevented from accessing credentials from a registered device. *Id.* at 16 (citing McAlexander Decl. ¶ 50; Scherzer ¶ 21).

Patent Owner further argues that if the device registration requirements of Scherzer were overridden or ignored, such that Scherzer’s access credentials could be freely disseminated to and used by unregistered devices, the foundation supporting Scherzer’s “community”-based system — a mutual exchange of access credentials for the benefit of registered users — would be undermined. PO Resp. 8; Sur-Reply 9–10. Patent Owner’s challenge to the proposed combination argues that the combination would ignore the account acceptability requirement and associated tracking and bandwidth allocation in Scherzer, which prevents

unregistered devices from accessing a registered user's wireless access point. PO Resp. 21 (citing McAlexander Decl. ¶¶ 51–56). According to Patent Owner:

If access credentials were freely disseminated from the Scherzer-like server to unregistered devices as proposed in the Petition, however impractical in view of practical considerations and common security features, Scherzer's service would inevitably reduce into an unwieldy and undesirable service in which unregistered users are rewarded, i.e., they can freely take advantage of other's wireless networks, while registered users are penalized, i.e., they sacrifice the bandwidth on their own wireless network and risk becoming crowded out of their own wireless network entirely. . . . Such an approach would undermine Scherzer's *exchange* of access credentials for the *mutual* benefit of the registered users in the community. . . . Indeed, it is unlikely users would register with Scherzer's service if their access credentials could be freely disseminated, as permitted by the Petition's combination.

PO Resp. 21–22 (citing McAlexander Decl. ¶ 56), *see also* PO Resp. 27–29. Relying on its expert, Patent Owner argues that the “Scherzer system would likely include security features to safeguard the registered users' access credentials [which] would likely preclude the transfer of those access credentials to unregistered devices.” *Id.* at 21, n.1 (citing McAlexander Decl. ¶ 60).

Patent Owner also argues that the examples provided by Petitioner are motivated by hindsight reconstruction based on the claimed subject matter. PO Resp. 8–9, 19, 22–23, 30–36 (citing McAlexander Decl. ¶¶ 63–64, 67). For example, argues Patent Owner, rather than using the Brown approach to transfer credentials from one device to another, it would be more straightforward for a user to directly obtain credentials from the Scherzer server for each device, allowing the Scherzer system to track usage as

expected by the Scherzer approach — thus removing any motivation for the asserted combination. *Id.* at 22–23, 30, 34–36 (citing McAlexander Decl. ¶¶ 57, 64, 67); Sur-Reply 16.

Petitioner replies that Patent Owner would limit Scherzer to specific disclosed embodiments, ignoring the overall teaching of that reference, and that the described accounting and tracking of subsequent access in Scherzer are added features limited to only certain embodiments. Reply 8–9, 13 (citing Cooperstock Suppl. Decl. ¶¶ 11–12, 19–24). In particular, argues Petitioner, the focus in Scherzer is on registered users, not registered devices — Scherzer nowhere discusses the concept of registered devices. *Id.* at 9–11, 14 (citing Cooperstock Suppl. Decl. ¶¶ 13–16, 63). Scherzer only states that the user registration process “*can* include” providing a MAC address, and therefore providing a MAC address is not required for all embodiments, and in any event, there is no disclosure of how a MAC address is used even if required. *Id.* at 11–12, 15–16 (citing Cooperstock Suppl. Decl. ¶ 23; Scherzer ¶¶ 16, 21, 24, 27).

Petitioner also disputes Patent Owner’s criticism of Petitioner’s example of how the Brown/Scherzer combination would be used, arguing that it solves a problem when the user is in a location where neither the smartphone nor tablet has the access information necessary to establish a connection with any WiFi access points in their vicinity since the devices are out of range of the user’s work WiFi access point. Reply 16. As discussed, “[w]ith the Brown-Scherzer combination, a user could not only obtain network credential information (using Scherzer’s teachings) on the smartphone, but then utilize Brown’s automated configuration technique to allow the tablet to access the Internet without requiring any manual entry.”

Id. at 17 (citing Cooperstock Suppl. Decl. ¶ 29). Petitioner disputes Patent Owner’s alternative solution — where a user directly obtains credentials from the Scherzer server for each device — as ignoring the premise of the example, in which neither the smartphone nor the tablet has access to credential information and the tablet is not able to access the Internet to download the Scherzer-like software. *Id.* (citing Cooperstock Suppl. Decl. ¶ 30); *see also* Reply 24–25.

Upon consideration of the complete record and the parties’ arguments, we determine that Petitioner has proved by a preponderance of the evidence that a person of ordinary skill would have been motivated to combine Brown and Scherzer as argued by Petitioner. We are not persuaded that combining Brown with a Scherzer-like provider application client and server necessarily would involve the tracking and control provisions that Patent Owner relies on in its arguments. “The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Instead, the relevant issue is “what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *Id.* “Combining the *teachings* of references does not involve an ability to combine their specific structures.” *In re Nievelt*, 482 F.2d 965, 968 (CCPA 1973).

In addition, Patent Owner’s reliance on Scherzer’s disclosed use of a media access control (MAC) address as part of the user registration process is unpersuasive, given that Scherzer only indicates that the registration information “can include” a MAC address, and there is no explanation in Scherzer of how the MAC address is used even if included. Scherzer is not

limited to applications where the participating users are heavily restricted for tracking and resource allocation purposes. For example, the user network in Scherzer can be limited to a network of “friends,” where the prospect of sharing credentials among multiple devices is not a barrier to Petitioner’s proposed Brown/Scherzer combination. Scherzer ¶ 16. Likewise, Patent Owner’s speculation that a Scherzer system would incorporate security features to limit transfer of access credentials has no support in the Scherzer disclosure.

Also, given that one of the mechanisms disclosed in Scherzer for obtaining credentials from the server involves using a cellular phone connection, Petitioner’s example whereby one device makes use of this capability, and a second device, not having cellular access, makes use of the Brown transfer technique, is realistic and appropriate, and one of ordinary skill would have had a reasonable expectation of success in implementing the combination.⁵

4. Independent Claims 1 and 18

For the “wireless access point” requirement of claim 1, Petitioner relies on wireless access point 180 of Brown. Pet. 34–35 (citing Ex. 1004, 4:39–67, 4:47–51; Cooperstock Decl. ¶ 82). For the “electronic device”

⁵ Patent Owner also argues that the Petition “does not follow the framework set forth in *Graham* and entirely fails to address *Graham*’s second factor — the identification of the differences between the claimed subject matter and the cited references. *Graham*, 383 U.S. at 17–18.” PO Resp. 39. We are not persuaded by this argument. The differences between Brown or Scherzer taken alone, versus the claimed subject matter, are readily apparent from Petitioner’s presentation, which adequately satisfies the requirements of *Graham*.

requirement of claim 1, Petitioner relies on device 101 of Brown. Pet. 35–36 (citing Ex. 1004, 5:57–64; Cooperstock Decl. ¶ 83). For the “mobile computer device that is in communication with the electronic device via an ad hoc wireless communication link” requirement of claim 1, Petitioner relies on device 105 of Brown, which communicates with device 101 via link 190, which can be a Bluetooth link. Pet. 36–37 (citing Ex. 1004, 5:65–6:4, 7:28–31; Cooperstock Decl. ¶ 84).

For the fourth limitation of claim 1,

one or more host servers that are in communication with the mobile computer device via the Internet, wherein the one or more host servers receive and store credential data for an infrastructure wireless network provided by the wireless access point,

Petitioner relies on the Scherzer-like server of the Brown-Scherzer combination, which communicates via the Internet with the Scherzer-like software client of device 105, and which receives and stores access credentials for access points provided by users of the system. Pet. 37–41 (citing Ex. 1005, ¶¶ 15–16, 20–25; Cooperstock Decl. ¶¶ 85–89).

For the fifth limitation of claim 1,

the mobile computer device is for transmitting to the electronic device, wirelessly via the ad hoc wireless communication link between the electronic device and the mobile computer device, the credential data for the infrastructure wireless network stored by the one or more host servers,

Petitioner relies on the ability of the Brown-Scherzer combination to transfer access point credentials from device 105 to device 101 via link 190.

Pet. 42–44 (citing Ex. 1004, 7:65–8:2, 8:54–58; Cooperstock Decl. ¶¶ 90–91).

For the sixth limitation of claim 1,
the electronic device is for, upon receiving the credential data
for the infrastructure wireless network from the mobile
computing device, connecting to the wireless access point via
the infrastructure wireless network using the credential data
received from the mobile computer device,

Petitioner relies on the ability of device 101 to communicate with access
point 180 after receiving the credentials. Pet. 44–47 (citing Ex. 1004, 2:34–
36, 4:39–63, 8:66–67, 9:26–28; Cooperstock Decl. ¶¶ 92–95).

Independent claim 18 contains limitations commensurate with the
second through sixth limitations of claim 1. Ex. 1001, 10:1–24. Petitioner
and its expert Dr. Cooperstock rely on essentially the same record and
rationale for claim 18 as they do for claim 1. Pet. 54–57; Cooperstock Decl.
¶¶ 107–113.

Patent Owner does not address Petitioner’s arguments regarding the
independent claims other than to challenge the combination of Brown and
Scherzer, as discussed above. As explained above, we find that a skilled
artisan would have had reasons, with rational underpinning, to combine
Brown and Scherzer in the manner proposed by Petitioner, and would have
had a reasonable expectation of success. Based on the evidence detailed
above, including Dr. Cooperstock’s testimony, we find that the combination
of Brown and Scherzer teaches each limitation of claims 1 and 18.

5. Dependent claims 6, 11–13, 15–17, 19, and 20

Claim 6 depends from claim 1, and additionally requires “the
electronic device comprises a gaming system.” Ex. 1001, 8:64–65.
Petitioner relies on Provisional Patent Application No. 60/687,463 (“the
'463 Provisional”), entitled “Collaborative Mobile Broad Band (CMBB)

Service,” incorporated by reference into Scherzer for all purposes, which discloses that “[g]aming over cell-phones is a fast growing industry.” Pet. 47 (citing Ex. 1006, ¶ 59; Cooperstock Decl. ¶ 96).

Claim 11 depends from claim 1, and additionally requires “the mobile computer device comprises a smartphone, and wherein the smartphone comprises a radio module for communicating wirelessly via the ad hoc wireless network with the electronic device.” Ex. 1001, 9:26–29. Petitioner relies on the disclosure in Brown that device 105 includes interface 164, which communicates with device 101 via Bluetooth link 190. Pet. 48 (citing Ex. 1004, 4:28–34, 5:65–6:4, 6:66–7:3, 7:28–31; Cooperstock Decl. ¶ 97).

Claim 12 depends from claim 1, and additionally requires,

the infrastructure wireless network comprises an infrastructure Wi-Fi network; and

the credential data for the infrastructure Wi-Fi network comprises an identifier for the infrastructure Wi-Fi network.

Ex. 1001, 9:30–35. Petitioner relies on the disclosure in Brown of the use of a Wi-Fi network, with the use of the SSID of the access point for communication. Pet. 48–49 (citing Ex. 1004, 4:54–63; Cooperstock Decl. ¶ 98).

Claim 13 depends from claim 12, and additionally requires “the credential data structure for the infrastructure Wi-Fi network additionally comprises a password for the infrastructure Wi-Fi network.” Ex. 1001, 9:36–38. Petitioner relies on the disclosure in Brown of the use of a password of the access point for communication. Pet. 49 (citing Ex. 1004, 4:54–60; Cooperstock Decl. ¶ 99).

Claim 15 depends from claim 12, and additionally requires “wherein the ad hoc wireless network comprises a Bluetooth wireless network.”

Ex. 1001, 9:43–44. Petitioner relies on the disclosure in Brown of the use of Bluetooth for link 190. Pet. 49 (citing Ex. 1004, 7:28–31; Cooperstock Decl. ¶ 100).

Claim 16 depends from claim 12, and additionally requires “wherein the ad hoc wireless network comprises an ad hoc Wi[-]Fi wireless network.” Ex. 1001, 9:44–45. Petitioner relies on Provisional Patent Application No. 60/728,918 (“the ’918 Provisional”), entitled “Wireless Broadband By Centrally Managed Peer to Peer Networking,” incorporated by reference into Scherzer for all purposes, which discloses that “direct connectivity using ad-hoc WiFi method is well known in the art.” Pet. 49–50 (citing Ex. 1007, Fig. 4, 9, 14; Cooperstock Decl. ¶¶ 101).

Claims 17 and 19 depend from claim 1 and 18, respectively, and additionally require,

wherein the one or more host servers host a website through which, via the mobile computer device, a user of the electronic device specifies the credential data for the infrastructure wireless network, such that the one or more host servers receive and store the credential data, and such that the credential data are stored by the one or more host servers for an account associated with the user.

Ex. 1001, 9:46–53, 10:25–33. Petitioner relies on the functionality of the Scherzer-like server, which receives and stores credential data as claimed. Pet. 50–53, 57 (citing Ex. 1005, ¶¶ 20–22; Cooperstock Decl. ¶¶ 102–106, 114).

Claim 20 depends from claim 19, and additionally requires

the infrastructure wireless network comprises an infrastructure Wi-Fi network;

the credential data for the infrastructure Wi-Fi network comprises:

an identifier for the infrastructure Wi-Fi network; and
a password for the infrastructure Wi-Fi network; and
the electronic device comprises an electronic device
selected from the group consisting of:
an acoustic speaker;
a video player;
a lighting system;
a camera;
a medical device; and
a gaming system.

Ex. 1001, 10:33–48. Petitioner relies on the above record cited for claims 6, 12, and 13. Pet. 58–59 (citing Cooperstock Decl. ¶¶ 115–117).

Patent Owner does not address Petitioner’s arguments regarding claims 6, 11–13, 15–17, 19, and 20, other than to challenge the combination of Brown and Scherzer, as discussed above. Based on the evidence detailed above, including Dr. Cooperstock’s testimony, we find that the combination of Brown and Scherzer (including the descriptions in the ’463 Provisional and the ’918 Provisional incorporated in Scherzer by reference) teaches each limitation of claims 6, 11–13, 15–17, 19, and 20.

E. Ground 1B

Petitioner challenges claims 2, 7–10, and 21 as obvious over the combination of Brown, Scherzer, and Baxter. Pet. 59–70. Baxter is directed to configuring audio and video content to be provided by a server to a client device such as a smart phone, including searching catalogs on a server to select audio or video content. Pet. 59–61 (citing Ex. 1008, Abstr., ¶¶ 3, 51–53, 62, 65, 142; Cooperstock Decl. ¶¶ 62–63). Petitioner argues that suggestions in the ’463 Provisional, incorporated by reference into Scherzer,

regarding use of smart phones to play or display media, would have suggested to one of ordinary skill to adapt the Brown-Scherzer combination to include a Baxter-like client application running on device 101, in communication with a Baxter-like server to provide media content. Pet. 61–64 (citing Ex. 1004, 5:57–64; Ex. 1006, ¶¶ 3, 5, 52–53, 55, 58, 62, 65, 142; Cooperstock Decl. ¶¶ 64–67).

Claims 2, 7–10, and 21 of the ’451 patent variously require: the electronic device of claim 1 to receive control data from a remote network server; an acoustic speaker device; a set of earphones; a remote network server to stream audio content on the speaker; a remote network server to stream video content on a video player. Ex. 1001, 8:54–57, 8:66–67, 9:1–25, 10:49–52. Petitioner relies on the audio and video streaming capabilities (including providing control data) of the Baxter client-server system, together with the speaker and display capabilities of a smartphone, in the Brown-Scherzer-Baxter combination, as teaching or suggesting these claim requirements. Pet. 65–70 (citing Cooperstock Decl. ¶¶ 118–126).

Patent Owner does not address Petitioner’s arguments regarding this ground other than to challenge the combination of Brown and Scherzer, as discussed above. Having considered the record and the parties’ arguments, we determine that Petitioner has proved by a preponderance of the evidence that a person of ordinary skill would have been motivated to additionally combine Baxter with Brown and Scherzer, with a reasonable expectation of success. Furthermore, based on the evidence detailed above, including Dr. Cooperstock’s testimony, we find that the combination of Brown, Scherzer (including the descriptions in the ’463 Provisional incorporated in

Scherzer by reference), and Baxter teaches each limitation of claims 2, 7–10, and 21.

F. Ground 1C

Petitioner challenges claims 3 and 4 as obvious over the combination of Brown, Scherzer, and Drader. Pet. 70–73. Drader is directed to controlling camera modules and LED flash components in portable electronic devices, and Petitioner argues that it would have been obvious to incorporate the camera and flash capabilities of Drader into the electronic device of Brown, given that Brown is broadly directed to the use of “any suitable mobile electronic device,” and Drader teaches the concept that electronic devices, such as PDAs, cell phones, and laptop computers, are known to include cameras and lighting systems to create flashes for taking pictures. Pet. 70–72 (citing Ex. 1004, 5:57–64; Ex. 1009, ¶¶ 3, 24, 28, 30, 68; Cooperstock Decl. ¶¶ 69–72).

Claims 3 and 4 require the electronic device of claim 1 to be a lighting system and camera, respectively. Ex. 1001, 8:58–61. Petitioner relies on the disclosure of Drader regarding incorporating camera and LED flash capabilities into smart phones as teaching or suggesting this subject matter. Pet. 72–73 (citing Cooperstock Decl. ¶¶ 127–128).

Patent Owner does not address Petitioner’s arguments regarding this ground other than to challenge the combination of Brown and Scherzer, as discussed above. Having considered the record and the parties’ arguments, we determine that Petitioner has proved by a preponderance of the evidence that a person of ordinary skill would have been motivated to additionally combine Drader with Brown and Scherzer, with a reasonable expectation of

success. Furthermore, based on the evidence detailed above, including Dr. Cooperstock's testimony, we find that the combination of Brown, Scherzer, and Drader teaches each limitation of claims 3 and 4.

G. Ground 1D

Petitioner challenges claim 5 as obvious over the combination of Brown, Scherzer, and Ramey. Pet. 73–76. Ramey is directed to measuring blood glucose levels using a monitor integrated into a smart phone, and Petitioner argues that it would have been obvious to incorporate the monitor into the electronic device of Brown, which also discloses the use of a smart phone. Pet. 73–76 (citing Ex. 1004, 5:57–64; Ex. 1010, ¶¶ 1–3, 18; Cooperstock Decl. ¶¶ 73–78).

Claim 5 requires the electronic device of claim 1 to be a medical device. Ex. 1001, 8:62–63. Petitioner relies on the disclosure of Ramey regarding incorporating a glucose monitor into smart phones as teaching or suggesting this requirement. Pet. 76 (citing Cooperstock Decl. ¶ 129).

Patent Owner does not address Petitioner's arguments regarding this ground other than to challenge the combination of Brown and Scherzer, as discussed above. Having considered the record and the parties' arguments, we determine that Petitioner has proved by a preponderance of the evidence that a person of ordinary skill would have been motivated to additionally combine Ramey with Brown and Scherzer, with a reasonable expectation of success. Furthermore, based on the evidence detailed above, including Dr. Cooperstock's testimony, we find that the combination of Brown, Scherzer, and Ramey teaches each limitation of claim 5.

H. Ground 1E

Petitioner challenges claim 14 as obvious over the combination of Brown, Scherzer, and Gupta. Pet. 76–77. Gupta discloses techniques for using a computing device to provision a wireless device for connection to a Wi-Fi network, via an access point, including provisions for encryption, and Petitioner argues that it would have been obvious to incorporate the well-known use of encryption into the electronic device of Brown, as required by claim 14. Pet. 76–77 (citing Ex. 1004, 4:52–63; Ex. 1011, ¶¶ 1–3, 25, 29–30; Cooperstock Decl. ¶¶ 79–80, 130–131); Ex. 1001, 9:39–41.

Patent Owner does not address Petitioner’s arguments regarding this ground other than to challenge the combination of Brown and Scherzer, as discussed above. Having considered the record and the parties’ arguments, we determine that Petitioner has proved by a preponderance of the evidence that a person of ordinary skill would have been motivated to additionally combine Gupta with Brown and Scherzer. Furthermore, based on the evidence detailed above, including Dr. Cooperstock’s testimony, we find that the combination of Brown, Scherzer, and Ramey teaches each limitation of claim 14.

I. Objective Indicia of Nonobviousness

Patent Owner argues that the sales of Apple’s HomePod and HomePod Mini products have achieved significant sales and are thus evidence of commercial success that confirms that the ’451 claims would not have been obvious. PO Resp. 40–45.

Notwithstanding what the teachings of the prior art would have suggested to one skilled in the art, objective evidence of non-obviousness

(so called “secondary considerations”) may lead to a conclusion that the challenged claims would not have been obvious. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). Objective evidence of non-obviousness “may often be the most probative and cogent evidence in the record” and “may often establish that an invention appearing to have been obvious in light of the prior art was not.” *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012) (quoting *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983)). Objective evidence may include long-felt but unsolved need, failure of others, unexpected results, commercial success, copying, licensing, and praise. See *Graham*, 383 U.S. at 17–18; *Leapfrog Enters., Inc. v. Fisher–Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007).

Commercial success is typically shown with evidence of “significant sales in a relevant market.” *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1312 (Fed. Cir. 2006) (citation omitted). “When a patentee can demonstrate commercial success, usually shown by significant sales in a relevant market, and that the successful product is the invention disclosed and claimed in the patent, it is presumed that the commercial success is due to the patented invention.” *J.T. Eaton & Co. v. Atlantic Paste & Glue Co.*, 106 F.3d 1563, 1571 (Fed. Cir. 1997).

To give substantial weight to objective indicia of nonobviousness such as commercial success, a proponent must establish a nexus between the evidence and the merits of the claimed invention. *ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1220 (Fed. Cir. 2016). Nexus is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in

determining non-obviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). “[T]here is no nexus unless the evidence presented is ‘reasonably commensurate with the scope of the claims.’” *ClassCo*, 838 F.3d at 1220 (quoting *Rambus Inc. v. Rea*, 731 F.3d 1248, 1257 (Fed. Cir. 2013)). A patentee is entitled to a presumption of nexus “when the patentee shows that the asserted objective evidence is tied to a specific product and that product ‘embodies the claimed features, and is coextensive with them.’” *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (quoting *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1072 (Fed. Cir. 2018)). “[T]he patentee retains the burden of proving the degree to which evidence of secondary considerations tied to a product is attributable to a particular claimed invention.” *Fox Factory*, 944 F.3d at 1378.⁶ The Federal Circuit has held that “if the marketed product embodies the claimed features, and is coextensive with them, then a nexus is presumed and the burden shifts to the party asserting obviousness to present evidence to rebut the presumed nexus.” *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1130 (Fed. Cir. 2000).

“[T]he purpose of the coextensiveness requirement is to ensure that nexus is only presumed when the product tied to the evidence of secondary considerations is the invention disclosed and claimed.” *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 33 at 32 (PTAB Jan. 24, 2020) (precedential) (citing *Fox Factory*, 944 F.3d at 1374) (internal quotations omitted). “[T]he degree of correspondence between a product and the patent

⁶ Patent Owner concedes that it bears the burden of persuasion on the issue of nexus, including coextensiveness. Paper 53, 43:8–23.

claim falls along a spectrum. At one end of the spectrum lies perfect or near perfect correspondence. At the other end lies no or very little correspondence.” *Id.* (citing *Fox Factory*, 944 F.3d at 1374) (internal quotations omitted). Also, “[a] patent claim is not coextensive with a product that includes a ‘critical’ unclaimed feature that is claimed by a different patent and that materially impacts the product’s functionality.” *Id.* (citing *Fox Factory*, 944 F.3d at 1375) (internal quotations omitted).

“A finding that a presumption of nexus is inappropriate does not end the inquiry into secondary considerations”; rather, “the patent owner is still afforded an opportunity to prove nexus by showing that the evidence of secondary considerations is the ‘direct result of the unique characteristics of the claimed invention.’” *Fox Factory*, 994 F.3d at 1374 (quoting *In re Huang*, 100 F.3d 125, 140 (Fed. Cir. 1996)).

“Ultimately, the fact finder must weigh the [objective indicia] evidence presented in the context of whether the claimed invention as a whole would have been obvious to a skilled artisan.” *See Lectrosonics*, Paper 33 at 33 (citing *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1331–32 (Fed. Cir. 2016)).

As evidence of commercial success, Patent Owner relies on publicly available documents which indicate that Apple sold almost twenty million HomePod products in the 2018–2020 period, for an estimated revenue of almost \$6.5 billion. PO Resp. 40–41, 44 (citing Ex. 1014, 488–93; Exs. 2016–2020). In arguing that nexus should be presumed, Patent Owner relies on a June 5, 2017 press release announcing the HomePod product, which touts the “easy setup” feature of the product, and a November 6, 2020, infringement claim chart, comparing the HomePod products to the

'451 claims, that it had submitted in the Texas case. *Id.* at 42–44 (citing Ex. 2016, 4; Ex. 1014, 488–93). Patent Owner does not provide a detailed comparison of the HomePod with the challenged claims in its Response. PO Resp. 42–43.

Petitioner argues that Patent Owner has failed to meet its burden to establish nexus, because the HomePod does not embody any of the '451 claims, and because Patent Owner has not shown the required coextensiveness between the HomePod and the claims. Reply 25–29. In particular, Petitioner argues that Patent Owner fails to demonstrate that the HomePod includes a host server, as required by the claims. Reply 26. Also, Petitioner argues that Patent Owner makes no showing of the coextensiveness aspect of nexus, and ignores significant unclaimed features of the HomePod:

(a) two speakers “using both direct and reflected audio to deliver amazing audio wirelessly for an even more immersive experience (KOSS-2016, 4), (b) functionality as a “home assistance” to “send messages, get updates on news, sports, and weather, or control smart home devices” (*id.*, 3), (c) functionality as a “home hub” by “providing remote access and home automations through the Home app” (*id.*) and (d) and “voice control with an array of six microphones, so users can interact with it from across the room, even while loud music is playing” (*id.*, 2).

Reply 27. Petitioner points out, for example, a third-party product review of the HomePod products that touted “a brilliant smart speaker, sounding better than its rivals.” *Id.* at 28 (citing Ex. 2019, 2). Petitioner further argues that Patent Owner provides no evidence of nexus independent of its assertion that nexus is presumed, and that the above unclaimed features are a basis for

rebutting a presumption of nexus even if they do not prevent such a presumption. *Id.* at 28–29.

In response, Patent Owner cites the reference in its litigation claim chart to the use of the “iCloud Keychain servers” as satisfying the server requirement of the claims. Sur-Reply 24 (citing Ex. 1014, 494). Regarding the issue of coextensiveness, Patent Owner disputes Petitioner’s assertion that the HomePod speakers are an unclaimed feature, given the recitation of “acoustic speaker” in claim 20, and characterizes the other asserted unclaimed features as not relating to the “heart” of, and not “critical or significant” to, the ’451 invention. *Id.* at 25–26.

We find that Patent Owner has not met its burden of showing the requisite nexus — that the HomePod product “embodies the claimed features, and is coextensive with them.” *Fox Factory*, 944 F.3d at 1373. Patent Owner’s sole basis for asserting that the HomePod embodies the claims is a 36-page claims chart from a separate litigation. Ex. 1014, 488–523. This extensive incorporation by reference is improper, and we therefore do not consider it. 37 CFR § 42.6(a)(3) (“[a]rguments must not be incorporated by reference from one document into another document”).

Patent Owner’s attorney argument is not persuasive to meet its burden to show that the challenged claims are coextensive with HomePod. In any case, we agree with Petitioner that the HomePod speakers do not appear to be coextensive with the “acoustic speaker” of claim 20. *Cf. Fox Factory*, 944 F.3d at 1376 (“On a broader note, if we were to agree . . . that the coextensiveness requirement is met so long as the patent claim broadly covers the product that is the subject of the secondary considerations evidence, irrespective of the nature of any unclaimed features — then the

coextensiveness requirement would rest entirely on minor variations in claim drafting.”). Patent Owner does not contest that other cited features of HomePod are not claimed in the challenged claims.

Moreover, Patent Owner’s assertion that the unclaimed features cited by Petitioner do not relate to the “heart” of the ’451 patent, or are not critical thereto, is not to the point — the question is whether the unclaimed features “materially impact the functionality of the . . . products.” *Fox Factory* did not hold that unclaimed features must be critical to or for improving the heart of the challenged claims. Rather, we look to whether the unclaimed features “materially impact[] the product’s functionality.” *Fox Factory*, 944 F.3d at 1375. Thus, when *Fox Factory* states that “if the unclaimed features amount to nothing more than additional insignificant features, presuming nexus may nevertheless be appropriate,” *id.* at 1374, it means insignificant to the product, not insignificant to the challenged claims. Patent Owner does not argue, and has not presented evidence, that the unclaimed features of HomePod are insignificant to, or do not materially impact, the HomePod product. In sum, Patent Owner has not shown nexus by virtue of the claims being coextensive with the allegedly successful products.

As noted above, Patent Owner may still show nexus by showing that the commercial success of HomePod is the direct result of the unique characteristics of the claimed invention. *See Fox Factory*, 944 F.3d at 1373–74; *Huang*, 100 F.3d at 140. To that end, Patent Owner argues that “[a]t a minimum, a nexus between the HomePods and the Challenged Claims exists because the commercial success is the direct result of the unique characteristics of the claimed invention.” PO Resp. 44. Patent Owner argues, quoting from a press release, that the HomePod was touted as a

“breakthrough wireless speaker” that “will reinvent how we enjoy music wirelessly throughout our homes. . . .” because of its simple way of obtaining WiFi credentials and connecting to a wireless infrastructure network, and argues that the claims embody this “simple way.” Sur-Reply 27 (citing Ex. 2016, 1–2). However, the press release, in support of its claim to a breakthrough product, bases this on many HomePod features, the “Easy setup” being one of many. Ex. 2016. Patent Owner has not shown persuasive evidence to support an argument that the commercial success of the HomePod was the direct result of the Easy setup feature, which merely allows setup to take place without connecting the HomePod to a computer with a USB cable. Ex. 1001, 2:51–57.

Because Patent Owner has not shown a nexus between the claimed invention and the alleged commercial success, Patent Owner has not made a persuasive showing that commercial success evidences non-obviousness.

J. Conclusion of Obviousness

For the reasons explained above we find that the combination of Brown and Scherzer, alone or additionally combined with Baxter, Drader, Ramey, or Gupta, teaches each limitation of claims 1–21. Petitioner has introduced persuasive evidence, including Dr. Cooperstock’s testimony, that a skilled artisan would have had reasons to combine the teachings of these references with a reasonable expectation of success. We have considered Patent Owner’s arguments and evidence of objective indicia of nonobviousness, but do not find them persuasive, for the reasons explained above. In sum, upon consideration of all the evidence, we conclude that

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Petitioner has proved by a preponderance of the evidence that claims 1–21 would have been obvious.

IV. CONCLUSION⁷

For the reasons above, Petitioner has shown by a preponderance of the evidence that claims 1–21 of the '451 patent are unpatentable, as summarized in the following table.

Claims	35 U.S.C. §	References/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 6, 11–13, 15–20	103	Brown, Scherzer	1, 6, 11–13, 15–20	
2, 7–10, 21	103	Brown, Scherzer, Baxter	2, 7–10, 21	
3–4	103	Brown, Scherzer, Drader	3–4	
5	103	Brown, Scherzer, Ramey	5	
14	103	Brown, Scherzer, Gupta	14	
Overall Outcome			1–21	

⁷ 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).

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, based on a preponderance of the evidence, claims 1–21 of U.S. Patent No. 10,298,451 B1 are held to be unpatentable; and

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

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