

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNIFIED PATENTS INC.,
Petitioner,

v.

BLUE SKY NETWORKS, LLC,
Patent Owner.

Case IPR2018-00069
Patent 8,265,691 B2

Before DANIEL J. GALLIGAN, JOHN A. HUDALLA, and
STACY B. MARGOLIES, *Administrative Patent Judges*.

HUDALLA, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Inter Partes Review
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

Petitioner, Unified Patents Inc. (“Petitioner”), filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–4, 7–14, and 17–20 of U.S. Patent No. 8,265,691 B2 (Ex. 1001, “the ’691 patent”). Petitioner filed a Declaration of Zygmunt J. Haas, Ph.D. (Ex. 1008) with its Petition. Patent Owner, Blue Sky Networks, LLC (“Patent Owner”), elected to waive the filing of a preliminary response. Paper 6. We determined that

the information presented in the Petition established that there was a reasonable likelihood that Petitioner would prevail in challenging claims 1–4, 7–14, and 17–20 of the '691 patent on all grounds of unpatentability presented. Paper 8 (“Dec. on Inst.”).

During the course of trial, Patent Owner filed a Patent Owner Response (Paper 11, “PO Resp.”). Petitioner filed a Reply to the Patent Owner Response (Paper 12, “Pet. Reply”).

An oral hearing was held on January 10, 2019, and a transcript of the hearing is included in the record.¹ Paper 18 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of claims 1–4, 7–14, and 17–20 of the '691 patent. For the reasons discussed below, Petitioner has demonstrated by a preponderance of the evidence that claims 1–4, 7–14, and 17–20 of the '691 patent are unpatentable.

I. BACKGROUND

A. *Related Proceedings*

The parties identify the following proceedings related to the '691 patent (Pet. 3–4; Paper 5, 2; Paper 7, 2; Paper 10, 2):

Blue Sky Networks, LLC v. Best Buy Co., Inc., No. 1-17-cv-00750 (W.D. Tex. filed Aug. 10, 2017);

Blue Sky Networks, LLC v. Toyota Motor N. Am., Inc., No. 6-17-cv-00435 (E.D. Tex. filed Jul. 28, 2017);

¹ Patent Owner requested permission to be excused from participating in the oral hearing, which we granted. Paper 16.

Blue Sky Networks, LLC v. MediaTek USA, Inc., No. 1-17-cv-00656
(W.D. Tex. filed July 5, 2017);

Blue Sky Networks, LLC v. Lenovo Group, Ltd., No. 1-17-cv-00452
(W.D. Tex. filed May 12, 2017);

Blue Sky Networks, LLC v. BLU Products, Inc., No. 6-17-cv-00263
(E.D. Tex. filed May 4, 2017);

Blue Sky Networks, LLC v. Huawei Device USA, Inc., No. 6-17-cv-
00156 (E.D. Tex. filed Mar. 10, 2017); and

Blue Sky Networks, LLC v. Roche Diabetes Care, Inc., No. 1-18-cv-
00368 (S.D. Ind. filed Feb. 8, 2018).

B. The '691 patent

The '691 patent relates to “wireless handsets with enhanced functionality, including the ability to operate within a wireless network and in a direct handset-to-handset communication mode.” Ex. 1001, 1:26–30. Figure 4A of the '691 patent is reproduced below.

FIG. 4A

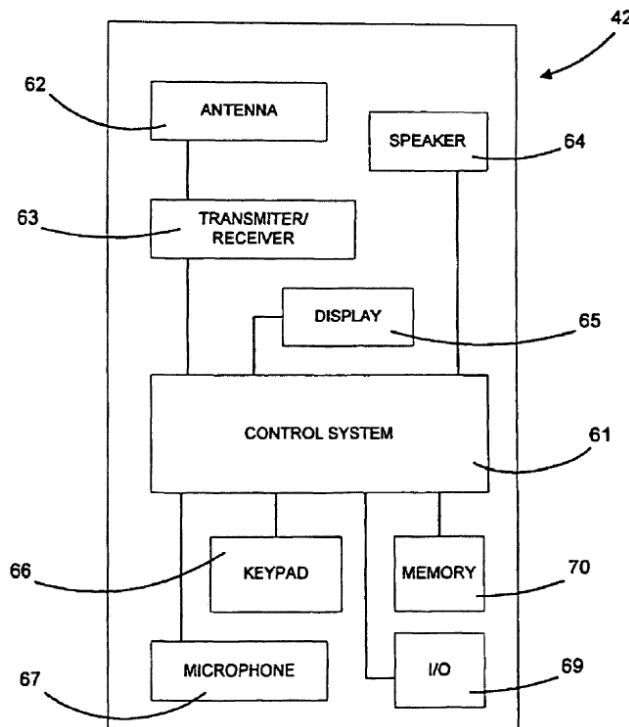


Figure 4A depicts wireless handset 42 that is capable of operating both within a wireless network and outside of a wireless network in a direct communication mode. *Id.* at 13:24–27. Wireless handset 42 includes control system 61, antenna 62, transceiver or tuner 63, speaker 64, display 65, keypad 66, microphone 67, input/output (I/O) port 69, and memory 70. *Id.* at 13:32–40. Wireless handset 42 may have “a find feature that assists a handset operator in determining what objects, including other handset users, are located within the handset’s operating range.” *Id.* at 6:63–67.

In one embodiment described with reference to Figures 9A and 9B, wireless handset 42 may also be equipped with a second, separate tuner that is always on a predetermined dedicated channel. *Id.* at 30:58–62.

Handset 42 can perform a “general Find request” by transmitting a “find request or query” from the second tuner. *Id.* at 30:54–57, 31:11–14.

Handset 42 then determines if a response is received. *Id.* at 31:27–28.

Because “the handset utilizes a dedicated or separate tuner, find queries can occur when the handset is on a call with another handset without disruption of any call.” *Id.* at 32:45–48.

In another embodiment described with reference to Figures 10A and 10B, wireless handset 42 performs the general find query without the use of a dedicated or separate tuner. *Id.* at 32:58–62. Although the find query can be performed when handset 42 is already on a call, the call will be disrupted for a short period of time because handset 42 utilizes the same tuner required for the call. *Id.* at 32:65–33:1. When a user initiates a find query by pressing the FIND key, handset 42 will tune to the registry channel and listen for a predetermined time interval. *Id.* at 33:4–7. Based on the responses received on the registry channel, wireless handset 42 displays a Found list to the user. *Id.* at 33:22–62.

Free calls that are established with handset-to-handset communication may utilize time domain multiplexing. *Id.* at 37:47–49.

The ’691 patent issued from an application that was filed September 12, 2011, and claims priority back through several related applications to an application filed on June 15, 1998. *Id.* at [22], [60]. As discussed below, Petitioner establishes that, at a minimum, its asserted references qualify as prior art relative to June 15, 1998, the filing date of the earliest-filed related application.

C. Illustrative Claim

Of the challenged claims, claims 1 and 11 of the '691 patent are independent. Claims 2–4 and 7–10 depend from claim 1, and claims 12–14 and 17–20 depend from claim 11. Claim 1 is illustrative of the challenged claims and recites:

1. A method for short-range wireless communication by an apparatus, the method comprising:

transmitting, by a transceiver in the apparatus, a message to an object over a time slotted channel of a wireless network, wherein the object is within a short-range wireless communication area of the apparatus and the apparatus is operating in a short-range messaging state;

transmitting, by the transceiver, an inquiry message to two or more other objects from the apparatus to determine whether it is within the short-range wireless communication area of the apparatus, wherein the inquiry message is communicated via another time slotted channel of the wireless network within the short-range wireless communication area of the apparatus and the apparatus stays in communication with the object; and

receiving, by the transceiver in the apparatus, a response message from at least one of the two or more other objects to the inquiry message via the another time slotted channel of the wireless network if the at least one of the two or more other objects is set to respond.

Id. at 92:61–93:13.

D. Prior Art

Petitioner relies on the following prior art:

Haartsen, U.S. Patent No. 6,026,297, filed Sept. 17, 1997, issued Feb. 15, 2000 (Ex. 1010, “Haartsen ’297”);

Dent et al., U.S. Patent No. 5,896,375, filed July 23, 1996, issued Apr. 20, 1999 (Ex. 1011, “Dent”);

Haartsen, U.S. Patent No. 6,590,928 B1, filed Sept. 17, 1997, issued July 8, 2003 (Ex. 1012, “Haartsen ’928”); and

Cushman et al., U.S. Patent No. 6,125,287, filed Sept. 5, 1997, issued Sept. 26, 2000 (Ex. 1013, “Cushman”).

E. The Instituted Grounds

We instituted *inter partes* review of claims 1–4, 7–14, and 17–20 of the ’691 patent on the following grounds (Dec. on Inst. 28), which are all of the grounds presented in the Petition (Pet. 9):

References	Basis	Claims Challenged
Haartsen ’297, Dent, and Haartsen ’928	35 U.S.C. § 103(a)	1, 2, 4, 7–12, 14, and 17–20
Haartsen ’297, Dent, Haartsen ’928, and Cushman	35 U.S.C. § 103(a)	3 and 13

F. Claim Interpretation

For *inter partes* reviews based on a petition filed before November 13, 2018, we normally construe the claims by applying the broadest reasonable interpretation in light of the specification. 37 C.F.R. § 42.100(b) (2017); *see Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016).

Nevertheless, the ’691 patent expired on June 15, 2018 (*see* Pet. 11–12), so we construe the claims using a district-court type claim construction approach in accordance with the standard set forth in *Phillips v. AWH Corporation*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b); *In re Rambus Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012). We applied this same standard in our Decision on Institution. *See* Dec. on Inst. 7–8.

Under the standard applied by district courts, claim terms are generally given their plain and ordinary meaning as would be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1313. “There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012).

Petitioner argues that the phrase “stays in communication” from claims 1 and 11 encompasses “the continuous communication embodiment (as in the two-transceiver embodiment of FIGS. 9A–9B) and the on-hold communication embodiment (as in the single transceiver embodiment of FIGS. 10A–10B).” Pet. 12–14. The phrase “stays in communication” pertains to the limitations that the recited “transceiver in the apparatus” transmits a message to an object and also transmits an inquiry message to two or more other objects while “the apparatus stays in communication with the object.” Petitioner contends the specification of the ’691 patent “does not use the phrase ‘*stays in communication*,’ but it does provide insight on its meaning.” *Id.* at 12 (citing Ex. 1008 ¶ 32).

To construe this term, Petitioner refers to two embodiments of the ’691 patent discussed above: (1) the two transceiver embodiment described with reference to Figures 9A and 9B; and (2) the single transceiver embodiment described with reference to Figures 10A and 10B. *See id.* at 12–13. According to Petitioner, in the two transceiver embodiment, “the first transceiver performs a call on a first channel while the second

transceiver transmits a find query on a second channel.” *Id.* at 12 (citing Ex. 1001, 30:54–31:4). Petitioner contends this embodiment “allows for staying in continuous communication.” *Id.* Regarding the single transceiver embodiment, Petitioner contends an ordinarily skilled artisan “would have understood that the one transceiver embodiment provides for staying in communication while on ‘hold’” because “disrupting an ongoing call for a short period of time . . . means placing the ongoing call on ‘hold.’” *Id.* at 13 (citing Ex. 1008 ¶ 34). As such, Petitioner contends that “[e]ven though the [single] transceiver is not transmitting messages, it nevertheless ‘stays in communication’ since the call is not disconnected.” *Id.* at 13.

Accordingly, Petitioner contends an ordinarily skilled artisan “would have understood that the continuous communication embodiment (as in the two-transceiver embodiment of FIGS. 9A–9B) and the on-hold communication embodiment (as in the single transceiver embodiment of FIGS. 10A–10B) are each within the scope of the plain and ordinary meaning of ‘*stays in communication.*’” *Id.* at 14 (citing Ex. 1008 ¶ 36).

In our Decision on Institution, we agreed with Petitioner that the phrase “stays in communication” encompasses the two embodiments identified by Petitioner. Dec. on Inst. 9. Thus, we adopted Petitioner’s interpretation of the limitation “stays in communication.” *Id.* In its Response, Patent Owner does not put forth any arguments related to claim construction. Based on the entire trial record, we discern no reason to depart from our initial construction, so we again adopt Petitioner’s interpretation of “stays in communication.”

We determine that no other terms require explicit construction. *See, e.g., 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))).

II. ANALYSIS

A. *Principles of Law*

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *See 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 skill in the art; and (4) where in evidence, so-called secondary considerations.² *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We also recognize that prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.” *In re Paulsen*, 30 F.3d at 1480 (citing *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)). We analyze Petitioner’s obviousness grounds with the principles identified above in mind.

² Patent Owner does not put forth any arguments or evidence related to secondary considerations of nonobviousness.

B. Level of Ordinary Skill in the Art

Citing testimony from Dr. Haas, Petitioner contends a person having ordinary skill in the art would have had “a B.S. degree in Electrical Engineering, Computer Engineering, Computer Science, or equivalent training, as well as at least three years of technical experience in the field of wireless communication systems.” Pet. 10 (citing Ex. 1008 ¶¶ 13–15). Patent Owner does not put forth any arguments or evidence regarding the level of ordinary skill in the art. We apply Petitioner’s definition of the level of ordinary skill without the qualifier “at least.” We are satisfied that this definition comports with the level of skill necessary to understand and implement the teachings of the ’691 patent and the asserted prior art.

C. Obviousness Ground Based on Haartsen ’297, Dent, and Haartsen ’928

Petitioner contends the subject matter of claims 1, 2, 4, 7–12, 14, and 17–20 would have been obvious over Haartsen ’297, Dent, and Haartsen ’928. Pet. 14–65. Patent Owner disputes Petitioner’s contentions.³ PO Resp. 7–16.

³ Patent Owner contends Haartsen ’297, Dent, and Haartsen ’928 were considered by the patent examiner, so they “merely repeat[] information already considered by the USPTO” and “add[] nothing new.” PO Resp. 8–9 & n.2. Patent Owner’s arguments are akin to arguments made under 35 U.S.C. § 325(d), but according to that provision such arguments are only applicable “[i]n determining whether to institute or order a proceeding.” Because this proceeding has already been instituted, Patent Owner’s arguments are not apt at this stage and do not undermine Petitioner’s persuasive showing.

1. *Haartsen '297*

Haartsen '297 is a U.S. patent directed to “techniques for enabling a wireless unit to contemporaneously be a member of multiple independently operating self-organized wireless local area networks.” Ex. 1010, 1:5–9. Figure 2 of Haartsen '297 is reproduced below.

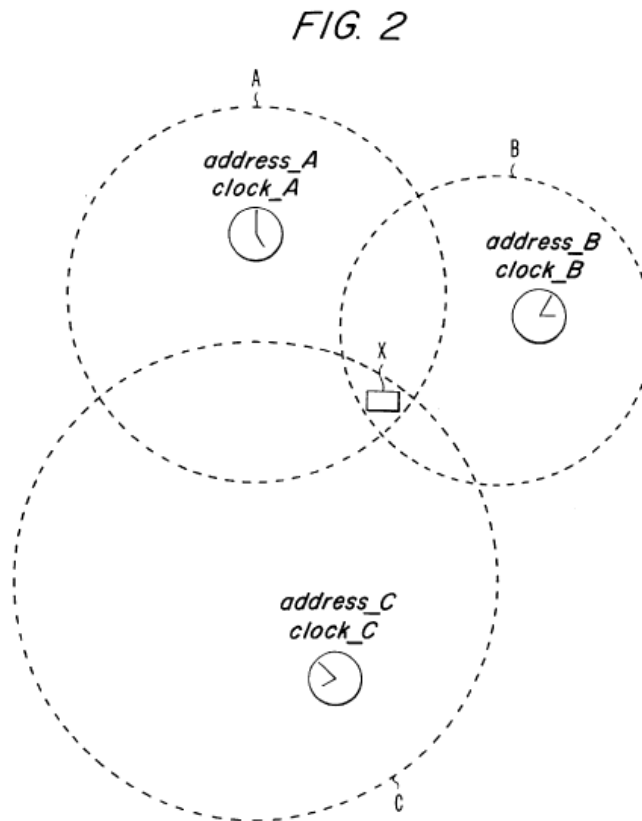


Figure 2 depicts “a wireless unit that contemporaneously participates in piconets.” *Id.* at 3:35–37. Wireless unit X can be a master or slave in any of piconets A, B, and C. *See id.* at 4:62–5:47. The piconets together form a network having a scatter topology, in which only those units that want to share information share the same piconet. *Id.* at 1:17–19. Two units that communicate may hop in synchrony according to a time division

duplex (TDD) scheme with transmit (TX) and receive (RX) slots. *Id.* at 1:63–67.

Haartsen '297 describes a hold mode where “a link enters a hold state in which the two or more communicating [units] keep their clocks running in synchrony, but do not physically exchange packets.” *Id.* at 3:51–54. The communicating units leave the hold mode after an agreed time-out period, whereupon they return to an active mode and exchange data. *Id.* at 3:54–56. “In this way, the several units do not have to disconnect if there is temporarily no information to be exchanged.” *Id.* at 3:60–61.

Petitioner contends Haartsen '297 qualifies as prior art under 35 U.S.C. § 102(e). Pet. 9. Patent Owner does not dispute the prior art status of Haartsen '297. We agree with Petitioner that Haartsen '297 qualifies as prior art under § 102(e) because its application date of September 17, 1997, is before the earliest possible effective filing date for the claims of the '691 patent, which is June 15, 1998. Ex. 1001, [60]; Ex. 1010, [22].

2. *Dent*

Dent is a U.S. patent directed to “a short-range wireless radio communications system in which at least one station can communicate with at least one other station, or simultaneously with two or more other stations, and each station can handle voice and data traffic simultaneously.” Ex. 1011, 1:6–11. The system can be operated in an unlicensed, short-range band and is capable of carrying data, voice, or data and voice traffic simultaneously. *Id.* at 3:13–23, 3:42–44. The system may include a radio receiver section and a radio transmitter section, and it allows a user to select

a network or networks to which the user can transmit information and communicate. *Id.* at 5:13–17, 5:56–58. The system can control the timing of the transmitter and receiver sections and also the frequencies that are used to transmit or receive. *Id.* at 5:28–31.

A random sequence generator may be used to generate a transmission frequency sequence for transmission time slots. *Id.* at 6:26–30. The sequence can be encrypted with a secret number or key so that the key is needed to predict the next frequency in the sequence. *Id.* at 6:30–32. This hinders interception or jamming of voice or data information. *Id.* at 18:55–58.

Petitioner contends Dent qualifies as prior art under 35 U.S.C. § 102(e). Pet. 9. Patent Owner does not dispute the prior art status of Dent. We agree with Petitioner that Dent qualifies as prior art under § 102(e) because its application date of July 23, 1996, is before the earliest possible effective filing date for the claims of the '691 patent, which is June 15, 1998. Ex. 1001, [60]; Ex. 1011, [22].

3. *Haartsen '928*

Haartsen '928 is a U.S. patent directed to “self-organized connectivity in an uncoordinated wireless multi-user system.” Ex. 1012, 1:7–9. To avoid interference between different connections and piconets, Haartsen '928 describes the use of frequency-hop spreading. *See id.* at 9:31–10:21. The hopping pattern represents a virtual channel; each piconet corresponds to a virtual channel using a particular sequence to multiplex (hop) through subchannels and using a particular link address to identify its packets. *Id.* at

10:49–50, 10:63–67. Haartsen '928 describes ad hoc piconet connections as follows:

The link between units uses a Time Division Duplex (TDD) scheme in which a radio transceiver alternately transmits and receives. A TDD frame consists of a transmit slot and a receive slot. The messages to be transmitted are divided into packets. Each TX [transmit] and RX [receive] slot can contain at most one TX packet and one RX packet, respectively. Consecutive slots use different hops as defined by the virtual channel. The virtual channel provides a synchronous link: units that share the same virtual channel hop in synchrony and strictly adhere to the TDD timing.

Id. at 12:50–59.

Because wireless units do not have prior knowledge of all addresses of neighboring units, Haartsen '928 describes an inquiry procedure that enables units to learn of the addresses of nearby units. *Id.* at 13:49–54. The inquiry procedure is similar to a page procedure, with an inquiry message being transmitted with a high repetition rate in different hops. *Id.* at 13:54–57. Units that receive an inquiry message respond on a random return hop with a single packet including the recipient's address, the recipient's system clock, and its class of service. *Id.* at 13:61–66. The inquiring unit collects all responses and makes a list of codes and clock offsets of the units that are within range so that this information can be used later when a connection is desired. *Id.* at 13:66–14:3.

Haartsen '928 also describes an intermediate unit within range of both a source unit and a destination unit that acts as a bridge and is able to connect to two piconets. *Id.* at 14:21–25. Such a bridge unit includes two transceiver units so that it can participate in the two piconets via two virtual channels. *Id.* at 14:28–36.

Petitioner contends Haartsen '928 qualifies as prior art under 35 U.S.C. § 102(e). Pet. 9. Patent Owner does not dispute the prior art status of Haartsen '928. We agree with Petitioner that Haartsen '928 qualifies as prior art under § 102(e) because its application date of September 17, 1997, is before the earliest possible effective filing date for the claims of the '691 patent, which is June 15, 1998. Ex. 1001, [60]; Ex. 1012, [22].

4. *Claim 1*

a. Preamble

In its obviousness analysis for claim 1, Petitioner asserts that Haartsen '297's wireless unit X corresponds to the recited "apparatus" and contends unit X communicates with units in piconets A, B, and C (as depicted in Haartsen '297's Figure 2) that are in close proximity. Pet. 27–28 (citing Ex. 1010, 2:28–29, 2:37–44, Fig. 2). For the recited "short-range wireless radio communications," Petitioner cites the "air-interface" from Dent that is incorporated by reference in Haartsen '297. *Id.* at 28 (citing Ex. 1010, 3:46–51; Ex. 1011, 1:6–11, 3:13–45). Based on this evidence, we find that the combination of Haartsen '297, Dent, and Haartsen '928 teaches the preamble of claim 1.

b. First "Transmitting" Step

For the "transceiver in the apparatus," Petitioner cites Haartsen '297's teachings on transmitting and receiving messages and contends that an ordinarily skilled artisan would have known to use a transceiver for this transmitting and receiving. *Id.* at 29 (citing Ex. 1008, 31–32; Ex. 1010,

4:45–46). Petitioner also cites Dent’s teachings on a transmitter and receiver. *Id.* at 29–30 (citing Ex. 1011, 5:13–17, Fig. 1). In light of these teachings, Petitioner contends, and we agree, that an ordinarily skilled artisan would have known to implement a transceiver in Haartsen ’297’s wireless unit X. *Id.* at 30 (citing Ex. 1008, 31).

For “transmitting . . . a message to an object,” Haartsen ’297 teaches that “wireless unit X is ‘participating in a first piconet, designated piconet A. . . [as] a slave’ and ‘is allowed to respond in the master RX slot.’” *Id.* (citing Ex. 1010, 2:13–21, 3:9–14, 5:53–63) (emphases omitted; alterations in original). Supported by testimony from Dr. Haas, Petitioner persuasively shows this “participating” and “responding” is commensurate with transmitting messages to the master unit of piconet A (“an object”). *Id.* (citing Ex. 1008, 32). Regarding the “wireless network,” Haartsen ’297 teaches that piconets A, B, and C “together form a network having a scatter topology.” *Id.* at 32 (citing Ex. 1010, 1:10–20, Fig. 2). For the “time slotted channel,” Haartsen ’297 teaches a time division duplex (TDD) scheme, which includes “a transmit (TX) slot and a receive (RX) slot” for communication. *Id.* at 33 (citing Ex. 1010, 1:64–67, 5:21). Haartsen ’928 also teaches that “[c]onsecutive slots use different hops as defined by the virtual channel . . . units that share the same virtual channel hop in synchrony and strictly adhere to the TDD timing.” *Id.* (quoting Ex. 1012, 12:54–59) (emphases omitted; alteration in original). Petitioner additionally cites Haartsen ’928’s teaching that “each piconet corresponds to a virtual channel using a particular sequence to multiplex (hop).” *Id.* (quoting Ex. 1012, 10:64–65) (emphases omitted). As such, Petitioner persuasively

shows that Haartsen '928's virtual channel teaches the recited "channel" of claim 1. *Id.*

Regarding the "object" (according to Petitioner, the master unit of piconet A) being "within a short-range wireless communication area of the apparatus," Petitioner establishes that wireless unit X (according to Petitioner, the "apparatus") from Haartsen '297 is in short-range communication with piconets A, B, and C. *Id.* at 34–35 (citing Ex. 1008, 36–37). Haartsen '928 states that these elements must be "in range" in order to communicate. Ex. 1012, 9:14–15, 14:6–8, Fig. 2. For "the apparatus . . . operating in a short-range messaging state," Dent teaches users exchanging "data such as text" in short-range unlicensed frequency bands. Pet. 36 (citing Ex. 1011, 3:13–23, 4:2–14, 12:4–11). Haartsen '297 also states that Dent's "air-interface" teachings can be implemented in Haartsen '297's wireless units. *Id.* (citing Ex. 1010, 1:56–57, 3:46–51).

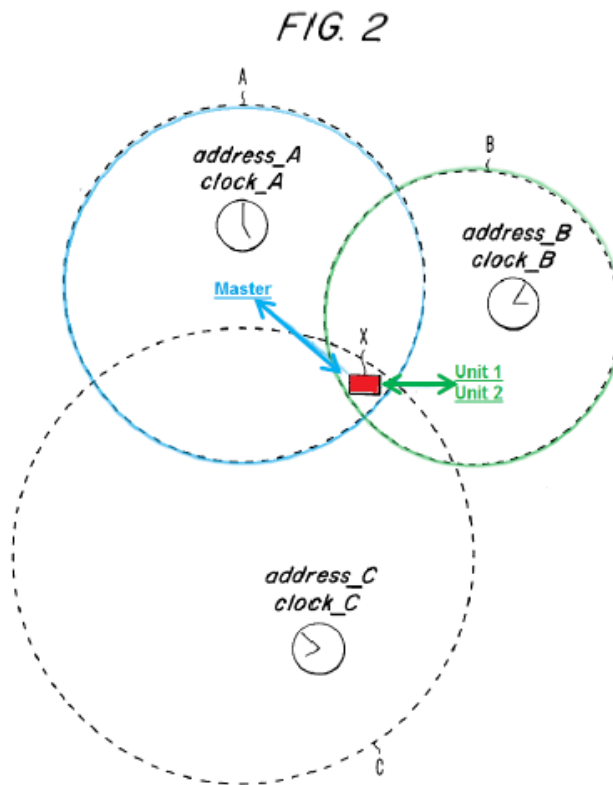
Based on this evidence, we find that the combination of Haartsen '297, Dent, and Haartsen '928 teaches the first "transmitting" step of claim 1.

c. Second "Transmitting" Step

Regarding the limitation that the transceiver transmits "an inquiry message to two or more other objects from the apparatus to determine whether it is within the short-range wireless communication area of the apparatus," Petitioner cites Haartsen '297's paging messages. *Id.* at 37–38. Specifically, Petitioner contends "wireless unit X . . . may 'become a master of a new piconet' by 'send[ing] paging messages to one or more target slave units, and establish[ing] connections for a new piconet, designated

piconet B.’” *Id.* at 37–38 (quoting Ex. 1010, 6:7–11) (emphases omitted; first alteration in original; second alteration added). Haartsen ’928 also teaches repeated transmission of an inquiry message, which is used to “learn of the addresses of nearby units” while the “units are moving.” *Id.* at 38 (citing Ex. 1012, 13:49–14:5) (emphasis omitted).

Citing testimony from Dr. Haas, Petitioner contends an ordinarily skilled artisan would have found it obvious “to have wireless unit X, of *Haartsen* ’297 (while staying in communication with the master of piconet A . . .), to transmit an inquiry message to other units.” *Id.* (citing Ex. 1008, 41; Ex. 1010, 2:33–41). To explain this concept, Petitioner provides an annotated version of Haartsen ’297’s Figure 2, which is reproduced below.



EX1010, FIG. 2 (annotated)

Id. at 39. Petitioner contends this annotated version of Figure 2 from Haartsen '297 depicts the combined teachings of Haartsen '297 and Haartsen '928. *Id.* at 38. More specifically, Petitioner contends “the transceiver of wireless unit X (*‘the apparatus’*) transmits an inquiry message to units 1 and 2 (*‘the . . . other objects’*) of piconet B (green), to determine whether they are within the short-range wireless communication area (the areas of piconets A, B, and C) of wireless unit X (*‘the apparatus’*).” *Id.* at 38–39 (citing Ex. 1008, 41–42). Thus, Petitioner persuasively shows how the system of Haartsen '297 would have transmitted inquiry messages based on the teachings of Haartsen '928.

Regarding the inquiry message being “communicated via another time slotted channel of the wireless network within the short-range wireless communication area of the apparatus,” Petitioner again cites Haartsen '297’s “TDD time slot scheme.” *Id.* at 33, 39–40. Haartsen '928 also teaches that “each piconet corresponds to a virtual channel using a particular sequence to multiplex (hop).” *Id.* at 40 (citing Ex. 1012, 10:44–67, Fig. 5c) (emphases omitted). We agree with Petitioner that, in Haartsen '928, “‘the first . . . channel is different from the second . . . channel,’ because the virtual channel hopping sequence is ‘a function of the [piconet] master address.’” *Id.* (quoting Ex. 1012, 6:47–63) (emphasis omitted; omissions and alteration by Petitioner).

For the “apparatus stay[ing] in communication with the object,” Petitioner cites Haartsen '297’s hold mode and “hold time-out value,” which allow “wireless units to contemporaneously participate in communications taking place in more than one piconet at a time.” *Id.* at 41–42 (citing

Ex. 1010,⁴ 2:38–41, 3:54–62, 5:60–63) (emphasis omitted). Petitioner’s showing is commensurate with the “on-hold communication embodiment” of the ’691 patent that we determine is within the scope of the “stays in communication” limitation. *See supra* § I.F. Petitioner also cites Haartsen ’928’s use of two transceiver units as evidence that a wireless unit may use “two virtual channels (two piconets) instead of one,” which “provides a higher throughput.” Pet. 42 (citing Ex. 1012, 14:29–31, 14:33–35) (emphasis omitted). In light of this, Petitioner contends an ordinarily skilled artisan would have found it obvious to use two transceivers in wireless unit X of Haartsen ’297 so that “wireless unit X can use the first transceiver when communicating with the master unit of piconet A and at the same time—without placing the master unit of piconet A on hold—use the second transceiver to transmit messages to other wireless units in order to set up piconet B.” *Id.* at 42–43 (citing Ex. 1010, 2:33–41). As a result, wireless unit X would be able to participate in additional piconets, which increases utility and achieves higher throughput. *Id.* at 43 (citing Ex. 1008, 46–47; Ex. 1010, 2:31–41, 7:11–13; Ex. 1012, 14:21–36). Petitioner’s showing is commensurate with the “continuous communication embodiment” of the ’691 patent that we determine is within the scope of the “stays in communication” limitation. *See supra* § I.F.

Patent Owner argues “the combination of Haartsen ’297 and Haartsen ’928 does not suggest transmission of the recited inquiry message.” PO Resp. 8. In particular, Patent Owner argues that Petitioner has not provided

⁴ Petitioner mistakenly cites to Exhibit 1012, but the context makes clear Petitioner intended to cite to Exhibit 1010.

any convincing explanation as to why a person of ordinary skill would depart from the explicit teachings of Haartsen '297 concerning the use of paging messages in order for wireless unit X to “become a master of a new piconet” and instead make use of inquiry messages as taught by Haartsen '928 to “learn of the addresses of nearby units.”

Id. at 11. Patent Owner further argues Petitioner merely “hypothesizes” about “some perceived increase in the ‘utility’ of a piconet,” but does not explain “how that utility is benefitted, or even what it is.” *Id.* Patent Owner also notes that “Haartsen '297 is specific about using *paging messages* when creating a new piconet”; Patent Owner emphasizes that “[p]aging messages are not ‘inquiry messages.’” *Id.* at 12 (citing Ex. 1010, 6:7–11, Fig. 3a).

Yet Petitioner specifically addresses the benefit in the Petition. In particular, Petitioner persuasively shows that inquiry messages “allow[a] wireless unit . . . to . . . become informed of what units have moved into the short-range wireless communication area.” Pet. 38; *see also id.* at 24. This benefit is not just hypothetical because Haartsen '928 itself states that the inquiry procedure allows the list of units in range to be updated when units are moving. *See* Ex. 1012, 13:66–14:5 (cited and partially quoted at Pet. 24). Petitioner also persuasively shows that this updated list increases utility based on a statement in Haartsen '297 that distinguishes prior art systems where a master or slave joined to a piconet had no provision for communicating with another coexisting piconet. Pet. 24–25 (citing Ex. 1010, 2:31–41). In particular, Haartsen '297 called this situation a detrimental limitation on “the utility of piconet technology.” Ex. 1010, 2:31–34. Thus, Haartsen '297’s aim of “enabling wireless units to contemporaneously participate in communications taking place in more than one piconet at a time” supports Petitioner’s contention that the combination

of Haartsen '297 and Haartsen '928 would have resulted in increased utility. *Id.* at 2:38–41 (cited at Pet. 24–25). We also note that Dr. Haas's un rebutted testimony links these express teachings from Haartsen '297 and Haartsen '928 in a way that supports Petitioner's reasons for the combination. *See* Ex. 1008 ¶ 62.

We further note that Petitioner does not rely on the use of inquiry messages *instead* of paging messages, as suggested by Patent Owner. *See* PO Resp. 11. Rather, Petitioner cites Haartsen '928's inquiry messages in addition to Haartsen '297's paging messages. *See* Pet. 37–38. Petitioner explains the benefit of adding inquiry messages to Haartsen '297's system: to become informed of units that have moved into the short-range wireless communications area for potential connection so that paging messages can later be sent to that target unit when a connection is desired. *See id.* at 38–39; Pet. Reply 5–6; *see also* Ex. 1012, 13:66–14:3 (stating that the list of responses from inquiry messages can “later be used when a connection is desired”); Tr. 9:21–13:23 (discussion of the use of inquiry messages and paging messages in Petitioner's obviousness combination). We are persuaded by this rationale, which is supported by Haartsen '928.

Based on this evidence, we find that the combination of Haartsen '297, Dent, and Haartsen '928 teaches the second “transmitting” step of claim 1.

d. “Receiving” Step

For “receiving . . . a response message,” Haartsen '928 teaches that responses to the inquiry message mentioned above are collected by the inquiring unit on a return hop. Pet. 44 (citing Ex. 1012, 13:61–67). We

agree with Petitioner that applying this teaching to Haartsen '297 would have resulted in “the response [being] received by wireless unit X via a return hop in the same time slotted channel of piconet B of the wireless network.” *Id.* at 44–45 (citing Ex. 1008, 47–48; Ex. 1010, Fig. 2; Ex. 1012, 10:44–67, 13:61–67). For the limitation “if the at least one of the two or more other objects is set to respond,” Petitioner cites the differences in placing or not placing a wireless unit on hold from Haartsen '297 and Haartsen '928. *Id.* at 46 (citing Ex. 1010, 4:41–46, 6:39–40; Ex. 1012, 14:3–4). We agree with Petitioner that, when wireless unit X is on hold, other wireless units are set to respond. *Id.* (citing Ex. 1008, 50–51). Dent also teaches that a user can select the networks with which the user can communicate. *Id.* at 47 (citing Ex. 1011,⁵ 5:56–59). Based on this selection, Petitioner persuasively shows that a wireless unit can be “set to respond.” *Id.* (citing Ex. 1008, 49–50).

Based on this evidence, we find that the combination of Haartsen '297, Dent, and Haartsen '928 teaches the “receiving” step of claim 1.

e. Rationale for the Combination

Petitioner contends an ordinarily skilled artisan would have combined Haartsen '297 and Dent because Haartsen '297 expressly incorporates Dent by reference and suggests using Dent’s “air-interface.” *Id.* at 18 (citing Ex. 1010, 1:56–63, 3:46–51; Ex. 1008 ¶ 47). Petitioner further contends Dent supplements Haartsen '297 insofar as it “teaches an air-interface with a

⁵ Petitioner mistakenly cites to Exhibit 1012, but the context makes clear Petitioner intended to cite to Exhibit 1011.

transmitter portion, a receiver portion, and an antenna, where the transmission and reception of messages is controlled by selecting a network and setting a transmit/receive frequency.” *Id.* (citing Ex. 1011, 5:24–59). Petitioner additionally contends an ordinarily skilled artisan would have sought out Dent’s “teachings of selecting the network (or networks) for communicating and setting a transmit/receive frequency . . . in the wireless units of *Haartsen* ’297, to obtain the benefit of controlling communication on different networks and channels.” *Id.* at 19 (citing Ex. 1011, 5:24–59). According to Petitioner, having wireless units respond to inquiry messages from a specific piconet master unit only when a user sets the wireless unit to communicate with the specific piconet provides the following benefits: “(1) reducing the utilization of processing resources, (2) conserving energy, (3) reducing network traffic, (4) reducing the chance of packet collisions, and (5) protecting privacy.” *Id.* at 19–20 (citing Ex. 1008 ¶ 51). We are persuaded by this rationale because it would achieve in *Haartsen* ’297’s system Dent’s benefit of controlling “the timing of the transmitter and receiver . . . and also what frequency (or frequencies) are used to transmit or receive.” Ex. 1011, 5:28–31. The fact that *Haartsen* ’297 incorporates Dent’s “air-interface” by reference also supports Petitioner’s combination. *See* Ex. 1010, 1:56–63, 3:46–51.

Petitioner contends an ordinarily skilled artisan would have combined *Haartsen* ’297 and *Haartsen* ’928 because *Haartsen* ’297 expressly incorporates by reference the application that issued as *Haartsen* ’928. Pet. 22–23 (citing Ex. 1010, 1:10–17; Ex. 1008 ¶ 58). Supported by testimony from Dr. Haas, Petitioner also contends an ordinarily skilled artisan

would have found it obvious to use a different virtual channel for each piconet, per the frequency hopping sequence, as *Haartsen* '928 teaches, because it provides the benefit of allowing for wireless units in piconets A, B, and C of *Haartsen* '297 to share a frequency range, which results in statistical multiplexing between the piconets and efficient transmission of data.

Id. at 23 (citing Ex. 1008 ¶¶ 59–60; Ex. 1012, 10:64–67, 11:2–9, 11:19–23, 12:56–59, Fig. 5). Petitioner additionally contends that implementing *Haartsen* '928's inquiry messages in *Haartsen* '297's system would have “(1) allow[ed] for wireless unit X, acting as a master, to become informed of units that just moved in or out of the short-range area of piconet B, and (2) allow[ed] wireless unit X to update its list to include these units.” *Id.* at 24 (citing Ex. 1010, 2:37–41; Ex. 1012, 14:3–4).

Petitioner further cites a drawback of *Haartsen* '297's hold operation whereby a “wireless unit [may] stay in communication but not transmit messages to a device in one piconet while transmitting messages to another device in another piconet.” *Id.* at 25 (citing Ex. 1010, 2:33–41, 3:46–49, 5:53–63). In light of this drawback, Petitioner contends it would have been obvious for an ordinarily skilled artisan

to implement the wireless units in *Haartsen* '297 with two-transceivers that operate over two different channels, as *Haartsen* '928 teaches, because it provides the benefit of obviating the need to place a unit on “hold” when actively communicating on two different channels at the same time and because it provides higher throughput (when compared to a single transceiver approach).

Id. (citing Ex. 1012, 14:27–36). According to Petitioner, this combination also “further[s] the goal of *Haartsen* '297 of increasing the utility of its piconets” and still reduces power consumption of the two transceivers when

both channels are idle. *Id.* at 25–26 (citing Ex. 1008 ¶¶ 63–64; Ex. 1010, 2:31–41).

We are persuaded that an ordinarily skilled artisan would have combined Haartsen '928 with Haartsen '297 to obtain the benefit of more efficient data transmission via Haartsen '928's statistical multiplexing. *See* Ex. 1008 ¶ 60; Ex. 1012, 11:2–9, 11:19–23. We also are persuaded that Haartsen '928's inquiry messages would have benefitted the master wireless unit in Haartsen '297 because inquiry messages would have facilitated communications with units moving in and out of the short-range area. *See* Ex. 1008 ¶ 62; Ex. 1012, 14:3–4. In addition, Haartsen '928 touts the benefit of higher throughput by using two transceivers, which supports Petitioner's proposed implementation of two transceivers in the wireless units of Haartsen '297. *See* Ex. 1012, 14:27–36. Petitioner's obviousness combination is further supported by the fact that Haartsen '928 is incorporated by reference in Haartsen '297. *See* Ex. 1010, 1:10–17.

Patent Owner notes that “Haartsen '297 and Haartsen '928 are two patents by the same inventor, filed on the same date, with one citing the other.” PO Resp. 8–9 (citing Ex. 1010, 1:10–16). In light of this, Patent Owner argues that “even the inventor found no need or reason for making the alterations proposed by Petitioner.” *Id.* at 11. Patent Owner also cites the teachings of a related patent⁶ on “how to enable a master to page, and thereby awaken an idle slave unit in a frequency hopping system.” *Id.* at 13 (citing Ex. 2001). Based on these teachings, Patent Owner contends “[t]he

⁶ Patent Owner cites Haartsen et al., U.S. Patent No. 5,940,431 (Ex. 2001), which is incorporated by reference in Haartsen '297. *See* Ex. 1010, 1:46–55.

use of paging messages, and not inquiry messages, in Haartsen '297 is thus intentional.” *Id.*

We agree with Petitioner (Pet. Reply 6), however, that Patent Owner’s arguments amount to “attorney conjecture as to what a person of skill in the art would have understood from the disclosures of these references.” We further agree with Petitioner (Pet. Reply 2) that Patent Owner’s unsubstantiated attorney argument does not rebut Petitioner’s evidence and testimony from Dr. Haas that an ordinarily skilled artisan would have combined Haartsen '297, Dent, and Haartsen '928. *See Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1371, 1380 (Fed. Cir. 2009) (“[U]nsworn attorney argument . . . is not evidence and cannot rebut . . . evidence.”).

f. Conclusion Regarding Claim 1

Based on Petitioner’s contentions and evidence, summarized above, we find that the combination of Haartsen '297, Dent, and Haartsen '928 teaches every limitation of claim 1. Petitioner also has provided a persuasive rationale for its proposed combination based on Dr. Haas’s testimony (*see* Ex. 1008 ¶¶ 46–67) and the teachings of the references themselves. In addition, we are persuaded that an ordinarily skilled artisan would have had a motivation to combine the references in the manner suggested by Petitioner. On the entire trial record, we determine Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 1 would have been obvious over the combination of Haartsen '297, Dent, and Haartsen '928 under 35 U.S.C. § 103(a).

5. *Claim 2*

Claim 2 depends from claim 1 and recites “the apparatus, object, and the two or more other objects are mobile telephones.” Petitioner notes that “the wireless units of *Haartsen* ’297 (e.g., wireless unit X, master of piconet A, and units 1 and 2 of piconet B) can be implemented using the air-interface disclosed by *Dent*,” as discussed above with respect to claim 1. Pet. 48. Petitioner further cites *Dent*’s teaching that “its air-interface is applicable to ‘Mobile telephones . . . [using] data/voice communications protocol’ and that it can be ‘used for a telephone conversation between two persons.’” *Id.* (quoting Ex. 1011, 2:22–45, 4:6–9) (alterations by Petitioner; emphases omitted). Petitioner also cites *Haartsen* ’928 for teaching that wireless units in the piconet can support voice and data. *Id.* at 48–49 (citing, *inter alia*, Ex. 1012, 4:9–14). We find that this evidence teaches the “mobile telephones” limitation of claim 2.

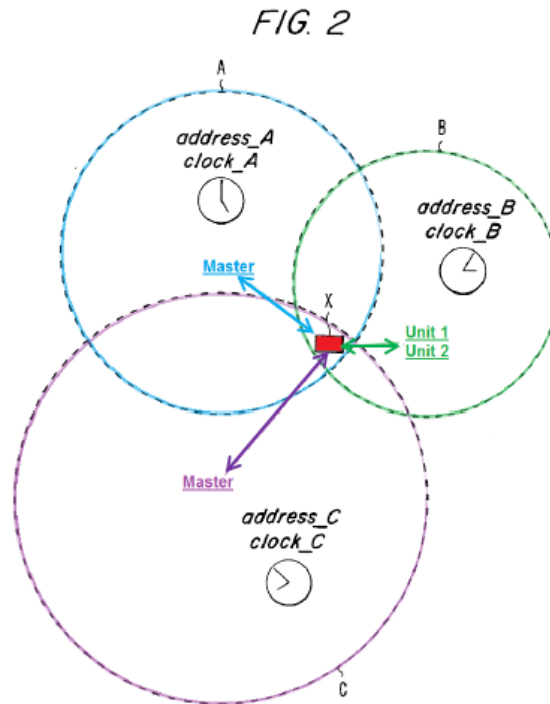
Based on these teachings, Petitioner contends an ordinarily skilled artisan “would have found it obvious to implement each of *Haartsen* ’297’s wireless units . . . as mobile telephones.” *Id.* at 49 (citing Ex. 1008, 52). In particular, Petitioner contends that an ordinarily skilled artisan would have found it obvious “to utilize a short-range messaging state and transmit text messages using an unlicensed band, as *Dent* teaches, with the wireless units of *Haartsen* ’297, which communicate in a wireless network of piconets A, B, and C that are in ‘close proximity.’” *Id.* at 20 (citing Ex. 1010, 1:18–20, 2:28–29, Fig. 2; Ex. 1011, 3:20–24, 3:36–39, 4:5–9). We are persuaded by Petitioner’s contentions. Petitioner’s rationale is supported by *Dent*, which associates its “air-interface” with mobile telephones and text and voice communications. See Ex. 1008 ¶¶ 52–53; Ex. 1011, 2:22–45, 4:6–9.

Based on Petitioner's contentions and evidence, summarized above, we find that the combination of Haartsen '297, Dent, and Haartsen '928 teaches the added limitation of claim 2. Patent Owner relies on the same arguments discussed above with respect to claim 1 (*see* PO Resp. 1–2), which we find unpersuasive for the reasons explained above. On the entire trial record, we determine Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 2 would have been obvious over the combination of Haartsen '297, Dent, and Haartsen '928 under 35 U.S.C. § 103(a).

6. *Claim 4*

Claim 4 depends from claim 1 and further recites “receiving, by the transceiver, a different inquiry message from a different object; and responding to the different inquiry message if the apparatus is set to respond.” For “receiving . . . a different inquiry message,” Petitioner cites Haartsen '297's teachings that “the unit may be willing to become a participant in another piconet without, itself, becoming a master” and that “the unit's participation in piconet B could, itself, include entering a hold mode, and optionally becoming a participant in one or more additional piconets (e.g., piconets, C, D, . . .).” Pet. 49–50 (citing Ex. 1010, 6:38–40, 7:10–13) (emphasis omitted). According to Petitioner, an ordinarily skilled artisan would have understood these teachings as “discussing how wireless unit X acts as a slave in piconet C.” *Id.* at 50 (citing Ex. 1008, 52–53). Petitioner additionally cites Haartsen '928's transmission of an inquiry message by the master unit in order to identify nearby wireless units as potential slave units. *Id.* Petitioner contends it would have been obvious

“that the transceiver of wireless unit X receives a different inquiry message from the master of piconet C, in order to determine if wireless unit X is in range.” *Id.* (citing Ex. 1008, 53). Petitioner illustrates the combination of these teachings in another annotated version of Haartsen ’297’s Figure 2, which is reproduced below.



Id. at 51. Petitioner contends this annotated version of Haartsen ’297’s Figure 2 illustrates “the transceiver in wireless unit X (*‘the apparatus’*) receiv[ing] a different inquiry message from a master unit (*‘different object’*) of piconet C,” which is depicted in purple. *Id.* at 50 (citing Ex. 1008, 53). For reasons similar to those discussed above with respect to claim 1, we are persuaded by Petitioner’s contentions; Petitioner applies the same teachings on transmitting and receiving inquiry messages in an opposite direction from the perspective of wireless unit X. *See, e.g., supra* § II.C.4.c–d.

For “responding to the different inquiry message if the apparatus is set to respond,” Petitioner cites the same “response message” and “set to

respond” teachings from claim 1, as discussed above. *Id.* at 51–52 (citing Ex. 1008, 54–55); *see supra* § II.C.4.d.

Based on Petitioner’s contentions and evidence, summarized above, we find that the combination of Haartsen ’297, Dent, and Haartsen ’928 teaches the added limitations of claim 4. Patent Owner relies on the same arguments discussed above with respect to claim 1 (*see* PO Resp. 1–2), which we find unpersuasive for the reasons explained above. On the entire trial record, we determine Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 4 would have been obvious over the combination of Haartsen ’297, Dent, and Haartsen ’928 under 35 U.S.C. § 103(a).

7. *Claim 7*

Claim 7 depends from claim 1 and recites “the another time slotted channel is a control channel that is accessed for a predetermined period of time.” Petitioner contends Haartsen ’928 teaches that the TDD time slotted channel used for transmitting inquiry messages provides control information to and from the inquiring device. Pet. 52 (citing Ex. 1010, 13:55–65). According to Petitioner, an ordinarily skilled artisan would have understood this to be a control channel. *Id.* at 53 (citing Ex. 1008, 55). Petitioner also cites Haartsen ’297’s agreed time-out period for a hold operation, which Petitioner contends is

a predetermined period of time during which (1) wireless unit X is connected but on hold with the master of piconet A and (2) wireless unit X accesses the another time slotted TDD channel and transmits the inquiry message and receives the response to the inquiry message on the another time slotted TDD channel of piconet B.

Id. (citing Ex. 1008, 56; Ex. 1010, 3:54–57, 5:53–63). Thus, the combination of Haartsen '297 and Haartsen '928 “teaches that the time slotted TDD channel of piconet B is a control channel that is accessed for an agreed period of time.” *Id.*

Based on Petitioner’s contentions and evidence, summarized above, we find that the combination of Haartsen '297, Dent, and Haartsen '928 teaches the added limitation of claim 7. Patent Owner relies on the same arguments discussed above with respect to claim 1 (*see* PO Resp. 1–2), which we find unpersuasive for the reasons explained above. On the entire trial record, we determine Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 7 would have been obvious over the combination of Haartsen '297, Dent, and Haartsen '928 under 35 U.S.C. § 103(a).

8. *Claim 8*

Claim 8 depends from claim 1 and further recites “communicating by the apparatus with the at least one of the two or more other objects subsequent to a security procedure requiring user input.” Referring to its analysis for claim 1, Petitioner contends “wireless unit X (*‘the apparatus’*) sets up piconet B, which includes units 1 and 2 (*‘the...other objects’*) acting as slave units.” Pet. 54 (citing Ex. 1008, 57). In particular, Petitioner cites Haartsen '297’s teachings on “contemporaneously participat[ing] in communications taking place in more than one piconet at a time” and “com[ing] to an agreement with all of the piconet B slave units as to a hold time–out period for piconet B.” *Id.* (quoting Ex. 1010, 2:38–41, 6:12–26) (emphases omitted).

For the recited “security procedure,” Petitioner refers to its analysis for claim 1, which establishes that piconet B has its own time slotted channel and hopping frequency sequence. *Id.* at 55 (citing Ex. 1008, 57–58); *see supra* § II.C.4.c. As cited by Petitioner, Dent teaches pseudorandom number (PRN) generator 62, which “is informed (by a user) about the address of the time slot selected, so that a frequency can be generated.” *Id.* (quoting Ex. 1011, 11:3–8) (emphasis omitted). Dent also teaches that “[t]he sequence [of the frequency and time slot] can be encrypted with a secret number or key,” the purpose of which is “to hinder interception or jamming of the voice or data information.” *Id.* (quoting Ex. 1011, 6:26–32, 11:3–8, 18:55–58) (alteration by Petitioner; emphasis omitted). In Dent, a “group key” is used by PRN generator 62 for encryption, as is depicted in Figure 5 of Dent. *Id.* at 55–56 (reproducing Dent’s Figure 5 with annotations). In light of these teachings, Petitioner contends it would have been obvious to an ordinarily skilled artisan “that in the combination, wireless unit X of *Haartsen* ’297 participates in communication with units 1 and 2 of piconet B subsequent to a security procedure requiring user input, as *Dent* teaches, to hinder interception or jamming of the transmitted voice or data.” *Id.* at 56 (citing Ex. 1008, 59). We are persuaded that an ordinarily skilled artisan would have known to include Dent’s encryption scheme in the system of *Haartsen* ’297 to prevent intercepted communications and jamming. *See* Ex. 1011, 6:26–32, 18:55–58.

Patent Owner criticizes Petitioner’s analysis to the extent it is based on Dr. Haas’s testimony; Patent Owner contends Dr. Haas “simply repeats the attorney argument verbatim.” PO Resp. 15. Patent Owner also contends that the Petitioner and Dr. Haas fail to “explain *how* one of ordinary skill in

the art could employ encrypted transmission frequencies and timeslots for the communication process taught by Haartsen '297 inasmuch as there is no teaching or suggestion of any facility to decrypt that information by the 'other objects.'" *Id.* at 16.

We do not agree with Patent Owner's arguments. First, the notion that Dent's encryption scheme would not have a means for effecting decryption strains credulity. As noted by Petitioner (Pet. Reply 9–10), Dent contemplates that terminals can communicate with one another by utilizing an encryption key. *See* Ex. 1001, 5:49–6:33, 18:8–58, Fig. 5. Second, Dr. Haas's testimony in support of implementing Dent's encryption scheme in the system of Haartsen '297 is consistent with Dent's disclosed encrypted communications "to hinder interception or jamming of the voice or data information." Ex. 1011, 18:8–58. Patent Owner's attorney argument does not undermine Dr. Haas's unrebutted testimony. *See Gemtron*, 572 F.3d at 1380 (Fed. Cir. 2009).

Based on Petitioner's contentions and evidence, summarized above, we find that the combination of Haartsen '297, Dent, and Haartsen '928 teaches the added limitation of claim 8. We also are persuaded that an ordinarily skilled artisan would have combined Haartsen '297, Dent, and Haartsen '928 in the manner suggested by Petitioner. On the entire trial record, we determine Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 8 would have been obvious over the combination of Haartsen '297, Dent, and Haartsen '928 under 35 U.S.C. § 103(a).

9. *Claim 9*

Claim 9 depends from claim 1 and further recites “downloading data by the apparatus from the at least one of the two or more other objects to the apparatus.” Building on its contentions for claim 1, Petitioner cites Haartsen ’297’s teaching that wireless unit X establishes connections in piconet B such that it participates in communications taking place in piconet B. Pet. 57 (citing Ex. 1010, 2:38–41, 6:12–26). In addition, Dent teaches “exchanging data such as text or images to be displayed on a computer monitor in a so-called ‘white board’ communication.” *Id.* (quoting Ex. 1011, 2:22–45, 4:5–9) (emphasis omitted). According to Petitioner, an ordinarily skilled artisan “would have understood that ‘exchanging data’ for display includes the downloading of the data.” *Id.* (citing Ex. 1008, 60–61). Petitioner further contends an ordinarily skilled artisan would have combined Dent’s teachings with those of Haartsen ’297 to obtain the benefit of the “white board” communications. *Id.* (citing Ex. 1008, 61). Petitioner additionally contends that “downloading text messages or images from one device to another is useful since it provides additional modes of communications in addition to voice/telephonic communications.” *Id.* at 57–58 (citing, *inter alia*, Ex. 1008, 61). In light of Petitioner’s rationale, we are persuaded that Dent teaches “downloading data” insofar as Dent’s “white board” communications mode teaches the exchange of data. See Ex. 1011, 4:5–9.

Based on Petitioner’s contentions and evidence, summarized above, we find that the combination of Haartsen ’297, Dent, and Haartsen ’928 teaches the added limitation of claim 9. Patent Owner relies on the same arguments discussed above with respect to claim 1 (*see* PO Resp. 1–2),

which we find unpersuasive for the reasons explained above. On the entire trial record, we determine Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 9 would have been obvious over the combination of Haartsen '297, Dent, and Haartsen '928 under 35 U.S.C. § 103(a).

10. Claim 10

Claim 10 depends from claim 1 and recites “the time slotted channel and the another time slotted channel each comprise two or more frequencies.” Petitioner builds upon its analysis from claim 1, where “the time slotted channel (of piconet A) and the another time slotted channel (of piconet B) use ‘frequency hopping.’” Pet. 58. Haartsen '928 teaches frequency hopping that uses “a particular sequence to multiplex (hop) through the subchannels.” *Id.* at 58–59 (quoting Ex. 1012, 10:63–67 and citing *id.* at 6:36–7:8, 13:12–35, Fig. 2) (emphasis omitted). Figure 5c of Haartsen '928 also “illustrates that each piconet uses a frequency hopping scheme that comprises two or more frequencies/subchannels.” *Id.* at 59 (citing Ex. 1012, Fig. 5c). In light of these teachings, Petitioner contends it would have been obvious to an ordinarily skilled artisan “that the time slotted TDD channel of piconet A and the another time slotted TDD channel of piconet B comprise two or more frequencies used for frequency hopping.” *Id.* (citing Ex. 1008, 62). We are persuaded by Petitioner’s contentions, which are rooted in Haartsen '928’s teachings on frequency hopping. *See, e.g.,* Ex. 1012, Fig. 5c.

Based on Petitioner’s contentions and evidence, summarized above, we find that the combination of Haartsen '297, Dent, and Haartsen '928

teaches the added limitation of claim 10. Patent Owner relies on the same arguments discussed above with respect to claim 1 (see PO Resp. 1–2), which we find unpersuasive for the reasons explained above. On the entire trial record, we determine Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 10 would have been obvious over the combination of Haartsen '297, Dent, and Haartsen '928 under 35 U.S.C. § 103(a).

11. Claim 11

Claim 11 is similar in scope to claim 1 except that claim 11 recites an apparatus with a transceiver that is configured to perform the method of claim 1. Petitioner's obviousness analysis is substantially identical to that of claim 1, including its analysis of the recited apparatus and transceiver. See Pet. 59–63. The only difference pertains to the recited “antenna coupled to the transceiver” in claim 11. See *id.* at 63–64. Petitioner cites Dent's “transmit/receive antenna 214 [that] is connected to the transmitter/receiver unit 210.” *Id.* at 63 (quoting Ex. 1011, 11:58–59, Figs. 1, 6–7) (emphasis omitted). Petitioner contends an ordinarily skilled artisan “would have found it obvious to couple at least one antenna to the transceiver wireless unit X of *Haartsen* '297 because it would facilitate wireless communication with wireless units of piconets A, B, and C.” *Id.* (citing Ex. 1008, 66–67). Patent Owner's arguments against claim 11 are the same that it made against claim 1, which we discuss above. See PO Resp. 7–14.

For the reasons explained above in connection with claim 1, and because Petitioner persuasively shows that the combination teaches the recited apparatus, transceiver, and antenna of claim 11, we find that the

combination of Haartsen '297, Dent, and Haartsen '928 teaches all the limitations in claim 11. We also are persuaded by Petitioner's rationale for combining Haartsen '297, Dent, and Haartsen '928, which we discuss above. On the entire trial record, we determine Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 11 would have been obvious over the combination of Haartsen '297, Dent, and Haartsen '928 under 35 U.S.C. § 103(a).

12. Claims 12, 14, and 17–20

Claims 12, 14, and 17–20 depend from claim 11 and are substantially identical to claims 2, 4, and 7–10, respectively. Petitioner relies on the same analysis from claims 2, 4, and 7–10. *See* Pet. 64–65. Regarding these claims, Patent Owner provides arguments only against claim 18, which we have discussed above with respect to claim 8. *See* PO Resp. 14–16. Otherwise, Patent Owner relies on the same arguments made with respect to claim 1, as discussed above (*see* PO Resp. 1–2), which we find unpersuasive for the reasons explained above.

For the reasons explained above in connection with claims 2, 4, and 7–10, and because Petitioner persuasively shows that the combination teaches the recited apparatus, transceiver, and antenna of claim 11, we find that the combination of Haartsen '297, Dent, and Haartsen '928 teaches all the limitations in claims 12, 14, and 17–20. We also are persuaded by Petitioner's rationale for combining Haartsen '297, Dent, and Haartsen '928, which we discuss above. On the entire trial record, we determine Petitioner has shown, by a preponderance of the evidence, that the subject matter of

claims 12, 14, and 17–20 would have been obvious over the combination of Haartsen '297, Dent, and Haartsen '928 under 35 U.S.C. § 103(a).

D. Obviousness Ground Based on Haartsen '297, Dent, Haartsen '928, and Cushman

Petitioner contends that the subject matter of claims 3 and 13 would have been obvious over Haartsen '297, Dent, Haartsen '928, and Cushman. Pet. 65–71. Patent Owner disputes Petitioner's contentions. PO Resp. 16–18.

1. Cushman

Cushman is a U.S. patent directed to a user interface for a wireless telephone. Ex. 1013, 1:7–9. Cushman discloses that a liquid crystal display (LCD) or other suitable type of flat-panel display may serve as the display screen for the wireless telephone. *Id.* at 2:63–66. According to Cushman, directory entries can be displayed as a list on the screen, and a user can browse through the list. *Id.* at 3:65–4:3.

Petitioner contends Cushman qualifies as prior art under 35 U.S.C. § 102(e). Pet. 9. Patent Owner does not dispute the prior art status of Cushman. We agree with Petitioner that Cushman qualifies as prior art under § 102(e) because its application date of September 5, 1997, is before the earliest possible effective filing date for the claims of the '691 patent, which is June 15, 1998. Ex. 1001, [60]; Ex. 1013, [22].

2. Claim 3

Claim 3 depends from claim 1 and recites: “generating a list by the apparatus that includes the at least one of the two or more other objects

based on the receiving the response message therefrom; and displaying the list identifying the at least one of the two or more other objects using a graphical user interface.” For “generating a list,” Petitioner contends Haartsen ’928 teaches receiving response messages and making a list of the responses, which can then later be used when a connection is desired. Pet. 44, 67–68 (citing Ex. 1012, 13:61–14:3). For “displaying the list . . . using a graphical user interface,” Petitioner argues Cushman teaches browsing through a graphically displayed list in a wireless telephone. *Id.* at 68–69 (citing Ex. 1013, 3:65–4:12, Figs. 2h, 2i, 2j). According to Petitioner, “*Cushman* teaches that it was well known that a wireless unit uses an LCD circuit and memory to display a list to a user in a graphical interface, which can be used to activate communications with other wireless units.” *Id.* at 66 (citing Ex. 1013, 3:65–4:12, Figs. 1, 2h, 2i, 2j). We are persuaded by Petitioner’s assertion based on Cushman’s graphical display of a list on a wireless device.

Citing Dr. Haas’s testimony, Petitioner contends an ordinarily skilled artisan would have applied “the teachings of *Cushman* to the wireless units of *Haartsen* ’297, to display the list of found wireless units to the user because (1) it would allow the user to become informed of other nearby wireless units, and (2) [it would] allow the user to select specific wireless units to initiate communications.” *Id.* at 66–67 (citing Ex. 1008 ¶ 70). Petitioner cites the benefit of “inform[ing] the user of nearby wireless units that it can communicate with.” *Id.* at 69 (citing Ex. 1008, 72–73). In light of Cushman’s teachings (*see* Ex. 1013, 3:65–4:12, Figs. 2h, 2i, 2j), we are persuaded that an ordinarily skilled artisan would have recognized the

benefit to the user of graphically displaying in the system of Haartsen '297 nearby wireless units available for communication.

Patent Owner argues Petitioner has not provided a “reasoned analysis as to why a person of ordinary skill in the art would include a screen displaying a list such as that described by Haartsen '928.” PO Resp. 17. In particular, Patent Owner contends Haartsen '928 provides “no indication that any of the address information would be meaningful to a user and, hence, no compelling reason for displaying that address information in a list or otherwise, to the user.” *Id.* Patent Owner also contends we should accord Dr. Haas’s supporting testimony little weight because it is “simply a repetition of the attorney argument set forth in the petition.” *Id.*

We do not agree with Patent Owner’s arguments. Petitioner points to a specific teaching in Haartsen '928 that the list of units responding to an inquiry message is useful later “when a connection is desired.” Pet. 67–68 (quoting Ex. 1012, 13:66–14:3). Dr. Haas testifies that displaying this list to the user, as taught by Cushman, would have informed the user of nearby available units and would have allowed the user to initiate communications with those units. Ex. 1008 ¶ 70. We are persuaded by this reasoning, which is rooted in the teaching of Haartsen '928.

Based on Petitioner’s contentions and evidence, summarized above, we find that the combination of Haartsen '297, Dent, Haartsen '928, and Cushman teaches all the limitations in claim 3. We also are persuaded by Petitioner’s rationale for combining Haartsen '297, Dent, Haartsen '928, and Cushman. On the entire trial record, we determine Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 3 would

have been obvious over the combination of Haartsen '297, Dent, Haartsen '928, and Cushman under 35 U.S.C. § 103(a).

3. *Claim 13*

Claim 13 depends from claim 11 and is similar in scope to claim 3 except that it is written in apparatus form. Petitioner's obviousness analysis is substantially identical to that of claim 3. *See* Pet. 69–71. Patent Owner's arguments against claim 13 are the same that it made against claim 3, which we discuss above. *See* PO Resp. 16–18.

For the reasons explained above in connection with claim 3, and because Petitioner persuasively shows that the combination teaches the recited apparatus, transceiver, and antenna of claim 11, we find that the combination of Haartsen '297, Dent, Haartsen '928, and Cushman teaches all the limitations in claim 13. We also are persuaded by Petitioner's rationale for combining Haartsen '297, Dent, Haartsen '928, and Cushman, which we discuss above. On the entire trial record, we determine Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 13 would have been obvious over the combination of Haartsen '297, Dent, Haartsen '928, and Cushman under 35 U.S.C. § 103(a).

III. CONCLUSION

Petitioner has shown, by a preponderance of the evidence, that the subject matter of claims 1, 2, 4, 7–12, 14, and 17–20 would have been obvious over the combination of Haartsen '297, Dent, and Haartsen '928. Petitioner also has shown, by a preponderance of the evidence, that the

subject matter of claims 3 and 13 would have been obvious over the combination of Haartsen '297, Dent, Haartsen '928, and Cushman.

IV. ORDER

Accordingly, it is:

ORDERED that claims 1–4, 7–14, and 17–20 of the '691 patent 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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