

Filed on behalf of: Cellco Partnership d/b/a Verizon Wireless

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS
Petitioner

v.

GENERAL ACCESS SOLUTIONS, LTD.
Patent Owner

IPR2023-01147
U.S. Patent No. 9,426,794

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,426,794**

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3.	[1.b] a second wireless transceiver coupled to the first wireless transceiver and operable to directly communicate with a first mobile station and a second mobile station, wherein the second wireless transceiver communicates with the first mobile station and the second mobile station according to a local area wireless communication protocol, ...	20
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5.	[1.d] wherein the second transceiver monitors first signal characteristics of the second downlink signal of the first mobile station and monitors second signal characteristics of the second mobile station, and based on the first signal characteristics and the second characteristics, routes information to the first mobile station and the second mobile station, respectively.	24
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1. [6.preamble] A method for communicating with a wireless communication device, comprising: 31
2. [6.a] a first wireless transceiver operable to communicate with a base station, wherein the base station communicates with the first wireless transceiver and a plurality of other wireless communication devices according to a wide area wireless communication protocol; and 32
3. [6.b] a second wireless transceiver coupled to the first wireless transceiver and operable to directly communicate with a first mobile station and a second mobile station, wherein the second wireless transceiver communicates with the first mobile station and the second mobile station according to a local area wireless communication protocol, ...32
4. [6.c] the method comprising: receiving, using the first wireless transceiver from the base station, a first downlink signal intended for the first mobile station; providing, using the first wireless transceiver, the first downlink signal to the second wireless transceiver; receiving, using the second wireless transceiver, the first downlink signal and re-transmitting the first downlink signal to the first mobile station as a second downlink signal according to the local area wireless communication protocol; 32
5. [6.d] monitoring, using the second transceiver, first signal characteristics of the second downlink signal of the first mobile station; monitoring, using the second transceiver, second signal characteristics of the second mobile station; and based on the first signal characteristics and the second characteristics, routing, using the second transceiver, information to the first mobile station and the second mobile station, respectively. 32

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4. [1.c] wherein the first wireless transceiver receives from the base station a first downlink signal intended for the first mobile station and provides the first downlink signal to the second wireless transceiver and wherein the second wireless transceiver receives the first downlink signal and re-transmits the first downlink signal to the first mobile station as a second downlink signal according to the local area wireless communication protocol, and.....	56
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3.	[6.b] a second wireless transceiver coupled to the first wireless transceiver and operable to directly communicate with a first mobile station and a second mobile station, wherein the second wireless transceiver communicates with the first mobile station and the second mobile station according to a local area wireless communication protocol, ...	66
4.	[6.c] the method comprising: receiving, using the first wireless transceiver from the base station, a first downlink signal intended for the first mobile station; providing, using the first wireless transceiver, the first downlink signal to the second wireless transceiver; receiving, using the second wireless transceiver, the first downlink signal and re-transmitting the first downlink signal to the first mobile station as a second downlink	

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5.	[6.d] monitoring, using the second transceiver, first signal characteristics of the second downlink signal of the first mobile station; monitoring, using the second transceiver, second signal characteristics of the second mobile station; and based on the first signal characteristics and the second characteristics, routing, using the second transceiver, information to the first mobile station and the second mobile station, respectively.	67
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<i>Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.</i> , 868 F.3d 1013 (Fed. Cir. 2017)	11
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EXHIBIT LIST

Ex. No.	Description
1001	U.S. Patent No. 9,426,794 (“’794 patent”)
1002	Declaration of Kevin Almeroth, Ph.D.
1003	<i>Curriculum Vitae</i> of Kevin Almeroth, Ph.D.
1004	U.S. Patent No. 6,556,553 (“Palmer”)
1005	U.S. Patent No. 6,816,706 (“Hohnstein”)
1006	U.S. Patent No. 5,790,536 (“Mahany”)
1007	U.S. Patent No. 5,722,051 (“Agrawal”)
1008	Prosecution History of U.S. Patent No. 9,426,794
1009	U.S. Patent No. 9,225,555
1010	<i>Unified Patents Inc. v. General Access Solutions, Ltd., f/k/a/ Access Solutions, Ltd.</i> , IPR2017-01178, Paper 21 (Final Written Decision) (PTAB Sept. 25, 2018) (“’555 FWD”)
1011	Excerpts from Newton’s Telecom Dictionary, 16 th Expanded and Updated Edition (2000)
1012	Wikipedia, “Rack Unit” (last visited June 26, 2023)
1013	Charles S. Demarest, “Telephone Equipment for Long Cable Circuits”, Bell System Technical Journal. Vol. 2, No. 3, pp. 112-140 (July 1923)
1014	Excerpts from William C. Y. Lee, Mobile Cellular Telecommunications, 2 nd ed. (1995)
1015	Excerpts from Roger L. Freeman, Fundamentals of Telecommunications (1999)

CLAIM LISTING

The following claim listing adds bracketed labels ([preamble], [a], [b], etc.)
for reference:

1. [preamble] A wireless communication device, comprising:
 - [a] a first wireless transceiver operable to communicate with a base station, wherein the base station communicates with the first wireless transceiver and a plurality of other wireless communication devices according to a wide area wireless communication protocol; and
 - [b] a second wireless transceiver coupled to the first wireless transceiver and operable to directly communicate with a first mobile station and a second mobile station, wherein the second wireless transceiver communicates with the first mobile station and the second mobile station according to a local area wireless communication protocol,
 - [c] wherein the first wireless transceiver receives from the base station a first downlink signal intended for the first mobile station and provides the first downlink signal to the second wireless transceiver and wherein the second wireless transceiver receives the first downlink signal and re-transmits the first downlink signal to the first mobile station as a second downlink signal according to the local area wireless communication protocol, and
 - [d] wherein the second transceiver monitors first signal characteristics of the second downlink signal of the first mobile station and monitors second signal characteristics of the second mobile station, and based on the first signal characteristics and the second characteristics, routes information to the first mobile station and the second mobile station, respectively.
2. The wireless communication device of claim 1, wherein the second wireless transceiver is coupled to the first wireless transceiver by a wireline connection.
3. The wireless communication device of claim 2, wherein the second wireless transceiver is removably coupled to the first wireless transceiver.

4. The wireless communication device of claim 1, wherein the first wireless transceiver and second wireless transceiver are disposed in a fixed site subscriber station.

5. The wireless communication device of claim 1, wherein the first wireless transceiver and the second wireless transceiver are part of an integrated device.

6. [preamble] A method for communicating with a wireless communication device, comprising:

[a] a first wireless transceiver operable to communicate with a base station, wherein the base station communicates with the first wireless transceiver and a plurality of other wireless communication devices according to a wide area wireless communication protocol; and

[b] a second wireless transceiver coupled to the first wireless transceiver and operable to directly communicate with a first mobile station and a second mobile station, wherein the second wireless transceiver communicates with the first mobile station and the second mobile station according to a local area wireless communication protocol,

[c] the method comprising:

receiving, using the first wireless transceiver from the base station, a first downlink signal intended for the first mobile station;

providing, using the first wireless transceiver, the first downlink signal to the second wireless transceiver;

receiving, using the second wireless transceiver, the first downlink signal and re-transmitting the first downlink signal to the first mobile station as a second downlink signal according to the local area wireless communication protocol;

[d] monitoring, using the second transceiver, first signal characteristics of the second downlink signal of the first mobile station;

monitoring, using the second transceiver, second signal characteristics of the second mobile station; and

based on the first signal characteristics and the second characteristics, routing, using the second transceiver, information to the first mobile station and the second mobile station, respectively.

I. INTRODUCTION

Cellco Partnership d/b/a Verizon Wireless (“Verizon”) requests *inter partes* review of claims 1-6 of U.S. Patent No. 9,426,794 (“’794 patent”) (Ex. 1001), owned by General Access Solutions, Ltd. (“GAS”). The challenged claims recite features, including wireless communication and re-transmitting received wide-area-network signals over a local area network, that were known and commonly employed well before the ’794 patent’s filing date.

Importantly, the Board has already found—in a prior IPR petition—extremely similar claims of a related patent unpatentable over the Hohnstein reference applied in this Petition. The small differences between the claims at issue in that prior IPR petition and the challenged claims are both insubstantial and disclosed in the art.

Moreover, this Petition applies the Palmer reference, which demonstrates even more convincingly that the claimed subject matter of the ’794 patent was well known in the prior art.

Because the prior art teaches the challenged claims, the Board should institute review and find the claims unpatentable.

II. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8

A. Real Parties-in-Interest

The real party in interest is Cellco Partnership d/b/a Verizon Wireless. Additionally, out of an abundance of caution in light of prior challenges to the named real parties-in-interest in separate and unrelated IPR petitions, Petitioner further identifies Verizon Communications Inc. and Verizon Corporate Resources Group LLC as real parties-in-interest for the IPR requested by this Petition, solely to the extent that Patent Owner contends that these separate legal entities should be named real parties-in-interest in the requested IPR, and Petitioner does so to avoid the potential expenditure of resources to resolve such a challenge. No unnamed entity is funding, controlling, or otherwise has an opportunity to control or direct this Petition or Petitioner's participation in any resulting IPR. Also, Petitioner notes that Petitioner has several hundred affiliated entities and each of these entities agrees to be estopped under the provisions of 35 U.S.C. § 315 as a result of any final written decision in the requested IPR to the same extent that Petitioner is estopped.

B. Related Matters

The '794 patent is asserted in the following case that may be affected by a decision in this proceeding:

- *General Access Solutions, Ltd. v. Cellco Partnership d/b/a*

Verizon Wireless, 2-22-cv-00394 (E.D. Tex.)

The '794 patent shares substantial subject matter with U.S. Patent No. 9,225,555 ("555 patent"), which was the subject of the following IPR:

- *Unified Patents Inc. v. General Access Solutions, Ltd., f/k/a/ Access Solutions, Ltd.*, IPR2017-01178 (instituted September 26, 2017; Final Written Decision issued September 25, 2018 (Ex. 1010)) ("555 IPR")

C. Grounds for Standing

Verizon certifies that the '794 patent is available for *inter partes* review and that Verizon is not barred from requesting this proceeding.

D. Lead and Backup Counsel and Service Information

Pursuant to 37 C.F.R. §§ 42.8(b)(3), 42.8(b)(4), and 42.10(a), Verizon designates the following counsel:

<u>Lead Counsel</u>	<u>Backup Counsel</u>
Justin J. Oliver Reg. No. 44,986 VENABLE LLP 600 Massachusetts Avenue, NW Washington, D.C. 20001 Telephone: 202-721-5423 Facsimile: 202-344-8300 JOliver@Venable.com	Stephen K. Yam Reg. No. 64,927 VENABLE LLP 600 Massachusetts Avenue, NW Washington, D.C. 20001 Telephone: 202-721-5429 Facsimile: 202-344-8300 SYam@Venable.com

Pursuant to 37 C.F.R. § 42.10(b), a Power of Attorney from Verizon is attached. Verizon consents to electronic service.

E. Fee for *Inter Partes* Review

The Director is authorized to charge the fee specified by 37 C.F.R. § 42.15(a) to Deposit Account No. 22-0261.

III. IDENTIFICATION OF CHALLENGES

Verizon requests *inter partes* review of claims 1-6 of the '794 patent on the following grounds:

Ground 1: Claims 1-4 and 6 are unpatentable under 35 U.S.C. § 102 and/or § 103 by U.S. Patent No. 6,556,553 (“Palmer”).

Ground 2: Claims 1-6 are unpatentable under 35 U.S.C. § 103 over U.S. Patent No. 6,816,706 (“Hohnstein”) and Palmer.

Ground 3: Claims 1-6 are unpatentable under 35 U.S.C. § 103 over Palmer and U.S. Patent No. 5,790,536 (“Mahany”).

Ground 4: Claims 1-4 and 6 are unpatentable under 35 U.S.C. § 103 over Palmer and U.S. Patent No. 5,722,051 (“Agrawal”).

Ground 5: Claim 5 is unpatentable under 35 U.S.C. § 103 over Palmer, Agrawal, and Mahany.

Ground 6: Claims 1-6 are unpatentable under 35 U.S.C. § 103 over Hohnstein and Agrawal.

Palmer issued on April 29, 2003, from an application filed April 12, 1999, making it prior art at least under pre-AIA 35 U.S.C. § 102(e).

Hohnstein issued on Nov. 9, 2004, from an application filed Sept. 8, 2000 that claims the benefit of provisional applications filed Sept. 8, 1999 and Feb. 29, 2000, making it prior art at least under pre-AIA 35 U.S.C. § 102(e).

Mahany issued on August 4, 1998, making it prior art at least under pre-AIA 35 U.S.C. §§ 102(a), (b), and (e).

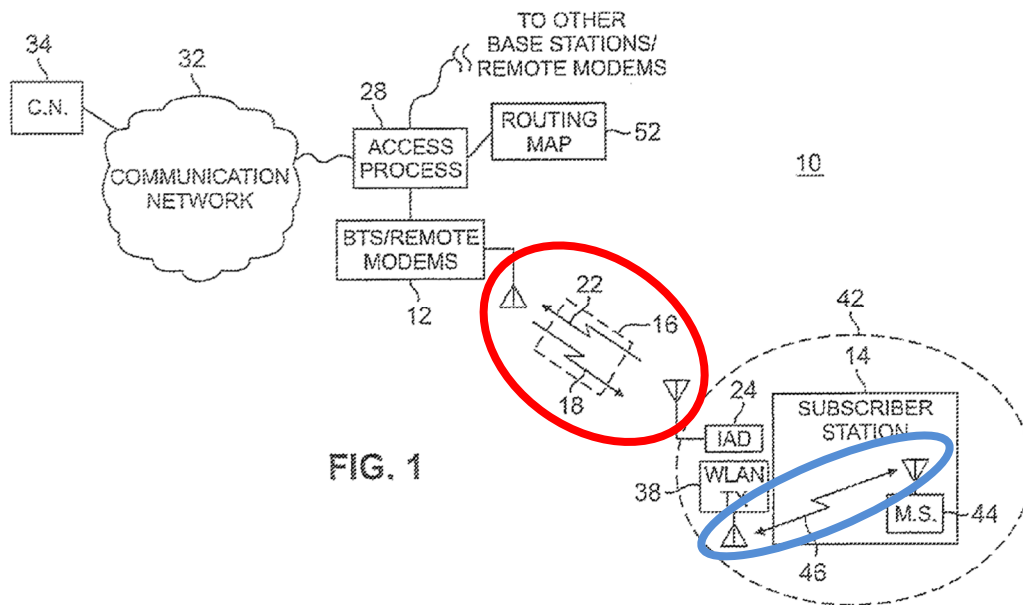
Agrawal issued on February 24, 1998, making it prior art at least under pre-AIA 35 U.S.C. §§ 102(a), (b), and (e).

IV. TECHNICAL BACKGROUND

A. '794 Patent Overview

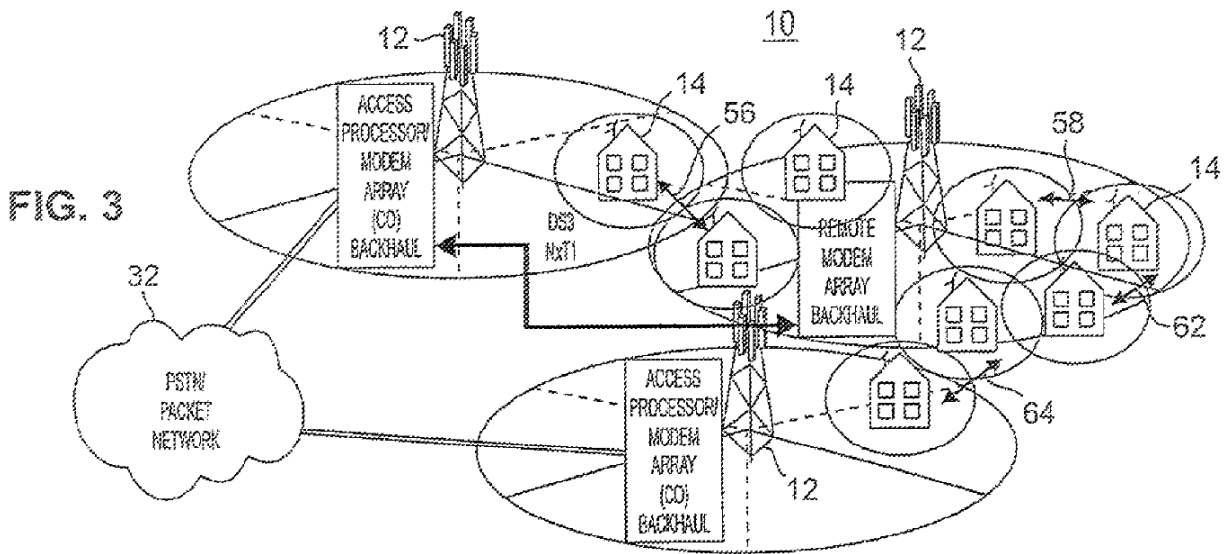
The '794 patent contains 6 claims, with claims 1 and 6 being independent.

The '794 patent is directed to a device that operates as an intermediary bridge between two networks, providing pass-through connectivity between the networks. One network is a wireless wide area network (“wireless WAN” or “WWAN”), while the other network is a wireless local area network (“wireless LAN” or “WLAN”). Figure 1 of the '794 patent illustrates these networks and the bridge device, which includes (i) an “integrated access device” (“IAD”) 24 communicating over the WWAN with a base station 12 and (ii) a WLAN transceiver 38 communicating over the WLAN with a mobile station 44. Ex. 1001, 3:41-49, 5:2-11, 5:55-6:13, 7:36-43, 7:65-8:14; Ex. 1011, pp. 126-27.



Ex. 1001, Fig. 1 (WWAN and WLAN radio links annotated in red and blue, respectively). The device facilitates two-way communication between the mobile station 44 and the base station 12 by (i) forwarding signals sent by the base station 12 via the WWAN link and destined for a mobile station 44, to that mobile station and (ii) forwarding signals sent by the mobile station 44 via the WLAN link and destined for the base station 12, to that base station. *Id.*, 9:4-19, 8:15-27, 8:36-43. The WLAN transceiver 38 defines a wireless coverage area 42 for the WLAN. *Id.*, 8:2-5.

The '794 patent also describes a system with multiple instances of these devices, each defining their individual WLAN coverage areas.



Id., Fig. 3 (each house defining its own circled WLAN coverage area), 9:20-56.

The system allows for mobile stations to travel between different WLAN coverage areas while still maintaining continuous communications, via a handover operation. *Id.*, 6:20-26, 9:20-56.

The '794 patent further notes that a determination of when to initiate handover is made based on "measurements of signal characteristics of communication signals communicated between the WLAN transceiver and the mobile station." *Id.*, 8:61-64. The '794 patent states:

In one implementation signal characteristics are measured, or otherwise determined, at the mobile station and results of such measures or determinations of are reported back to the WLAN transceiver and appropriate control circuitry. Thereafter, if appropriate, the handover of communications is effectuated.

Id., 8:64-9:3.

Notably, the '794 patent does *not* identify any specific “signal characteristics” to be measured. Nor does the '794 patent explicitly teach the WLAN transceiver or access point performing any monitoring action beyond just receiving the reported measurements.¹ Ex. 1002, ¶¶47-55.

B. Prosecution history

The underlying application to the '794 patent was filed on June 4, 2012. Ex. 1008, pp. 707-55. At the time of filing, the application claimed priority only to U.S. Application No. 11/982,424, filed October 31, 2007. *Id.*, pp.707, 633.

The Examiner issued an initial Office Action on October 17, 2012, rejecting all pending claims based on prior art. *Id.*, pp.611-18. In response, the applicant only corrected minor typographical errors in the claims and presented arguments against the rejections. *Id.*, pp.597-604. The Examiner issued a final Office Action on July 1, 2013. *Id.*, pp.580-89.

¹ Given the lack of any other disclosure within the '794 patent regarding “monitoring,” Petitioner interprets the WLAN transceiver’s receiving of reported measurements as corresponding to the claimed “monitoring” for purposes of this IPR. Petitioner reserves the right in district court to argue that the claimed “monitoring” limitations fail the written description, enablement, and/or definiteness requirements under 35 U.S.C. § 112.

After the applicant filed a Request for Continued Examination (RCE) along with claim amendments, the Examiner allowed the application on March 11, 2014. *Id.*, pp.564-73, 546-53. In response, the applicant filed a Request for Continued Examination (RCE) along with an Information Disclosure Statement (IDS), and the Examiner again allowed the application on June 20, 2014. *Id.*, pp.447-63, 418-25. In response, the applicant filed another RCE and claim amendments which added new method claim 6, and the Examiner yet again allowed the application on October 21, 2014. *Id.*, pp.403-11, 381-88.

In response, the applicant filed another RCE and IDS on January 21, 2015, and the Examiner issued a Notice of Withdrawal from issue on February 11, 2015. *Id.*, pp.375-79, 373-74. On March 20, 2015, the applicant filed a petition to accept an unintentionally delayed priority claim, now asserting priority claims to applications dating as far back as January 19, 2001. *Id.*, pp.366-70.

The USPTO granted the petition on October 27, 2015. *Id.*, pp.344-53. The Examiner again allowed the application on January 26, 2016, indicating consideration of applicant's IDS filed January 21, 2015, and stating that "[c]laims 1-6 are allowed for the same reasons discussed in previous Notice of Allowance dated October 21, 2014". *Id.*, pp.325-31.

After two more rounds where the applicant filed an IDS (the first being filed with an RCE) and the Examiner again allowed the application, the application issued as the '794 patent on August 23, 2016. *Id.*, pp.55-68, 35-44, 26-29, 20-25.

V. PERSON OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSA”) at the time of the purported invention would have had either: (1) a Bachelor of Science degree in computer science, electrical or computer engineering, or a related field, and at least 2 years of work or research experience in digital communications systems, such as wireless communications systems and networks, or equivalent, or a Master’s degree in electrical engineering, computer engineering, computer science or similar field. Additional education could compensate for less practical experience and vice versa. Ex. 1002, ¶¶1-46.

VI. CLAIM CONSTRUCTION

Claims 1-6 would have been anticipated and/or obvious under any reasonable construction pursuant to *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).² Petitioner submits that no claim terms require construction,

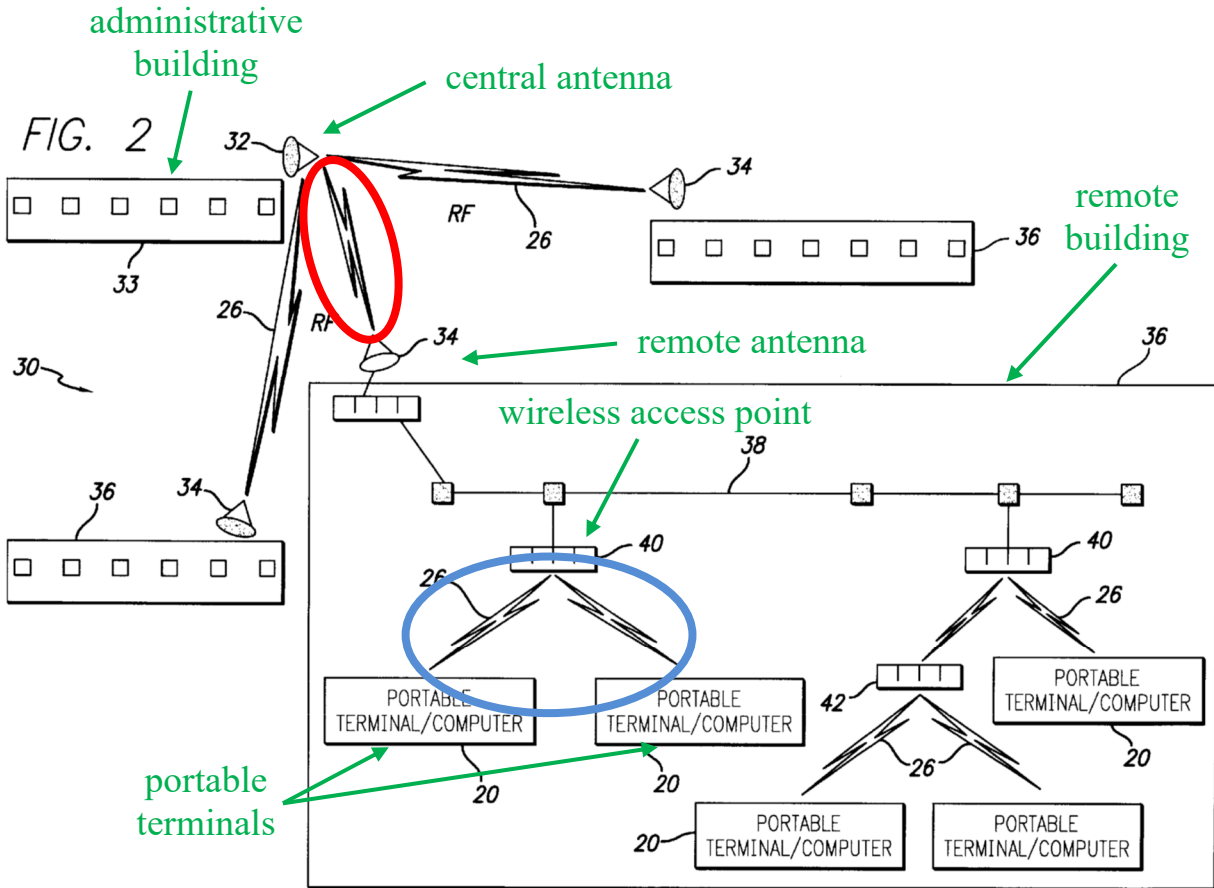
² Verizon reserves the right to argue alternative constructions before a district court, including indefiniteness.

but reserves the right to advance constructions should Patent Owner raise a controversy involving claim construction. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“only those terms need be construed that are in controversy, and only 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) (citing *Vivid Techs.* in the context of an *inter partes* review). Ex. 1002, ¶¶56-57.

VII. GROUND 1: CLAIMS 1-4 AND 6 ARE ANTICIPATED BY AND/OR OBVIOUS OVER PALMER

A. Summary of Palmer

Like the challenged claims, Palmer describes a wireless communication system providing connectivity between a WWAN and a WLAN. Palmer’s system includes a central antenna 32 provided on a central administration building 33 that communicates wirelessly with remote antennas 34 in various remote buildings 36. Ex. 1004, 4:26-5:9. A remote building 36 itself also includes a local area network therein, including a wired network 38 that interconnects the remote antenna 34 and one or more wireless access points 40 providing wireless network connectivity to portable terminals 20. *Id.*



Ex. 1004, Fig. 2 (annotated, and WWAN and WLAN links circled in red and blue, respectively).

Each access point 40 defines a service area of wireless coverage and operates as a bridge between the wireless coverage area and the wired network. *Id.*, 4:36-44, 4:64-5:9; *see also* Fig. 1 (illustrating coverage areas 18 for access points). A remote building 36 may have multiple access points 40, such that as a mobile worker for the portable terminal 20 moves between two coverage areas (*e.g.*, within the building or from one building to another), the portable terminal 20

may switch its connection from one WLAN to another (*e.g.*, “roam”) to maintain network connectivity without loss of connection. *Id.*, 1:53-2:6, 5:10-19.

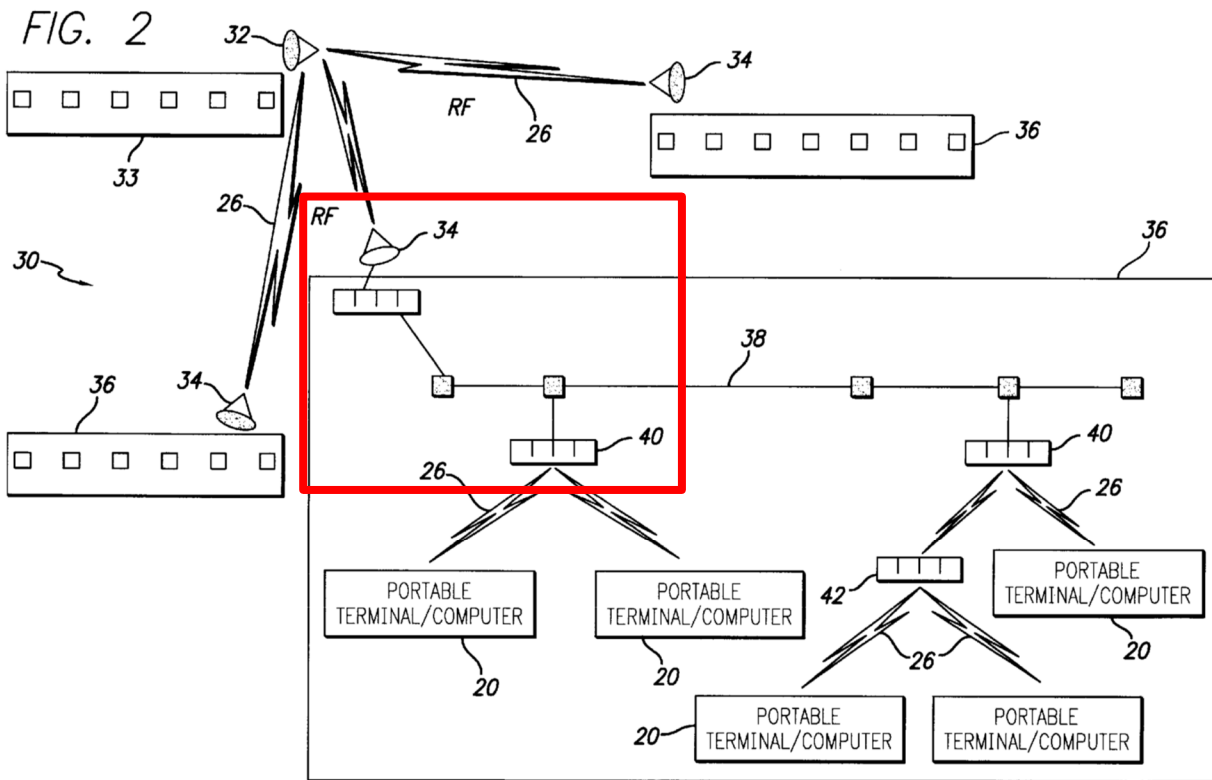
Palmer also describes the network performing measurements of various characteristics of the wireless network connection between an access point 40 and a portable terminal 20, such as signal-to-noise ratio (SNR), bit error rate (BER), number of transmission retries (NTR), received signal strength indicator (RSSI), bit energy-to-noise density (E_b/N_0), global position information (GPS), and cell congestion information (also known as load factor). *Id.*, 5:10-49, 5:34-36 (measurements performed by “the network”). Based on these measurements, the network determines if a radio frequency (RF) connection between the access point 40 and the portable terminal 20 has degraded and whether to either reduce the information bit rate of the network connection or switch (*e.g.*, roam) the portable terminal 20 to another access point. *Id.*, 5:10-49, 6:20-54; Ex. 1002, ¶¶58-64.

B. Claim 1

Claim 1 is anticipated by and/or obvious over Palmer.

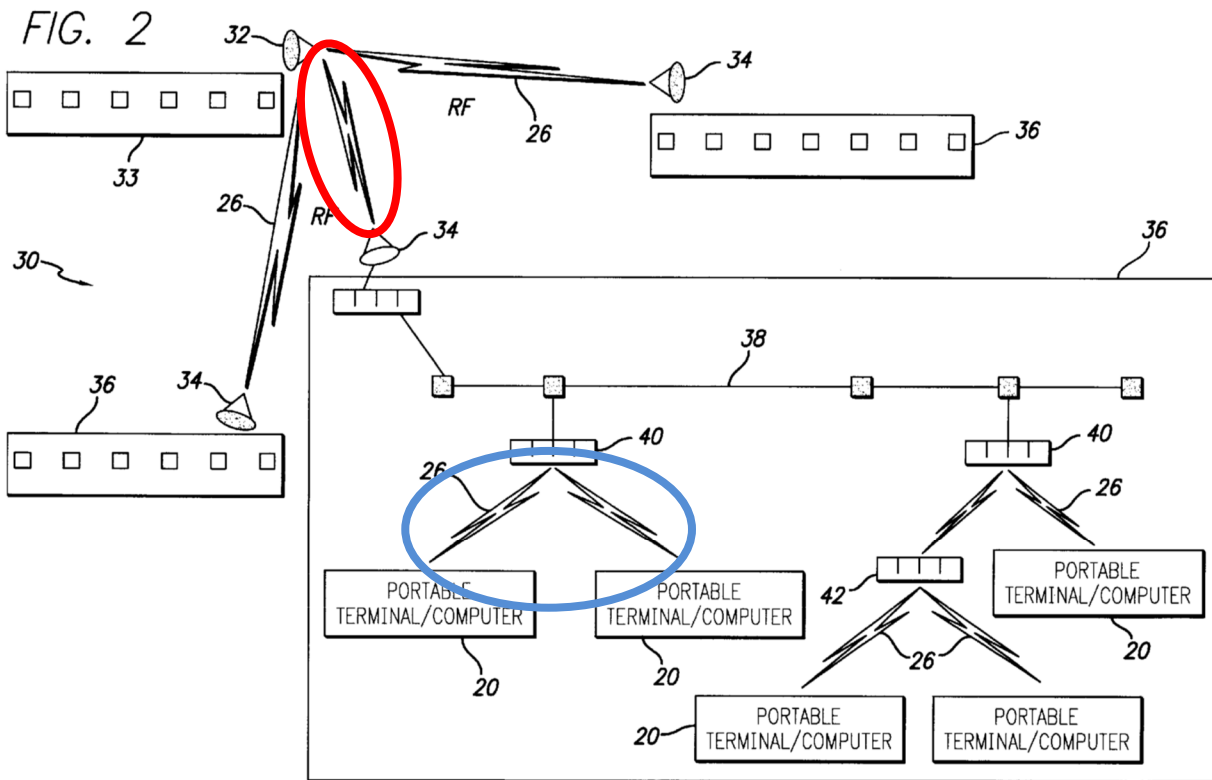
1. [1.preamble] A wireless communication device, comprising:

Palmer describes a wireless communication device, such as a remote antenna 34 in combination with an access point 40.



Ex. 1004, Fig. 2 (annotated), 4:42-44, 4:65-5:3. The antenna/access-point device communicates wirelessly with a central antenna 32 via a wide area network (WAN) link (annotated below in red) and also communicates wirelessly with portable terminals 20³ via a wireless local area network (LAN) link (annotated below in blue). *Id.*, 4:57-5:3, 1:53-2:6.

³ Palmer also describes portable terminals 20 as “wireless communication devices 20” in the specification. Ex. 1004, 4:36-40, 1:38-42 (“the wireless communication devices may comprise portable units”), 1:53-55 (“wireless communication device such as a portable terminal or computer”).



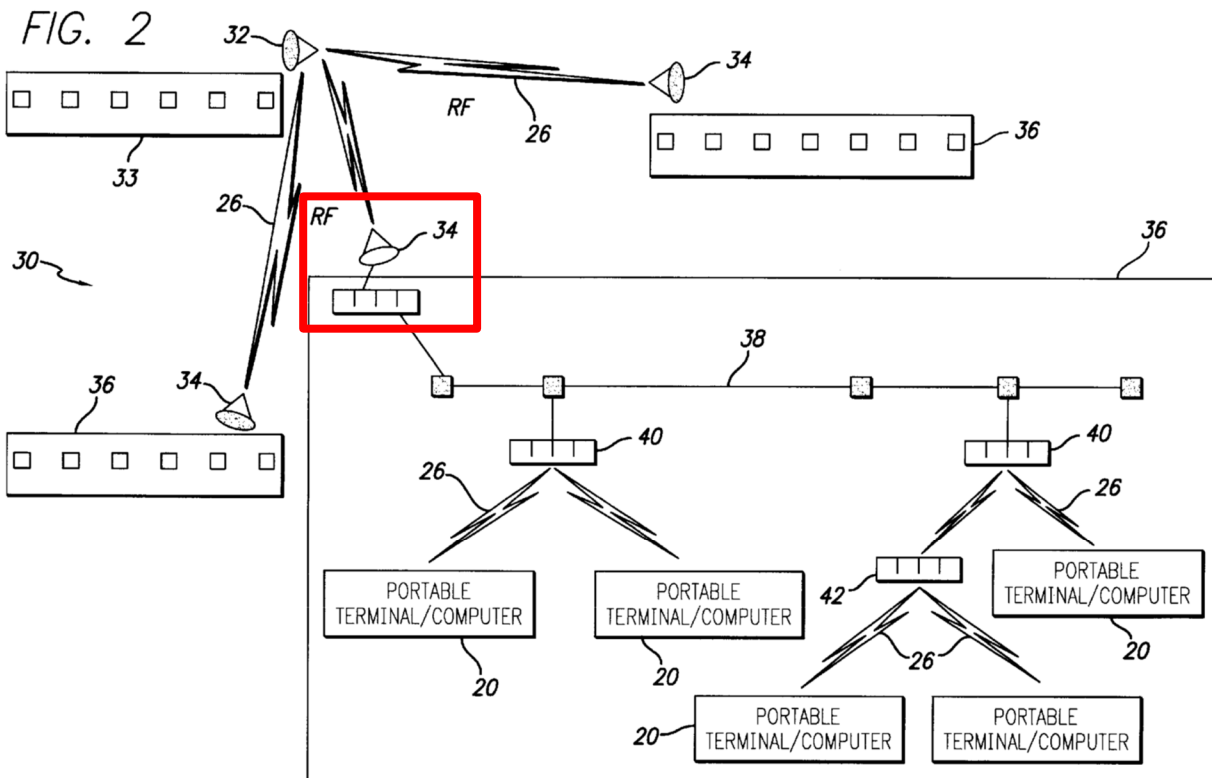
Id., Fig. 2 (annotated)

It is noted that since dependent claim 5 recites that certain device components “are part of an integrated device,” the principle of claim differentiation holds that independent claim 1 is not so limited to require such integration. But to the extent the Board finds that claim 1 requires the device be an integrated one and that Palmer does not disclose such integration, such integration would have nonetheless been an obvious variant. *In re Larson*, 340 F.2d 965, 968 (C.C.P.A. 1965); MPEP 2144.04 (noting “Making Integral” as an example of a “common practice[] which the court has held normally require only ordinary skill

in the art and hence are considered routine expedients,” citing *Larson*); Ex. 1002, ¶¶65-72; Ex. 1012; Ex. 1013.

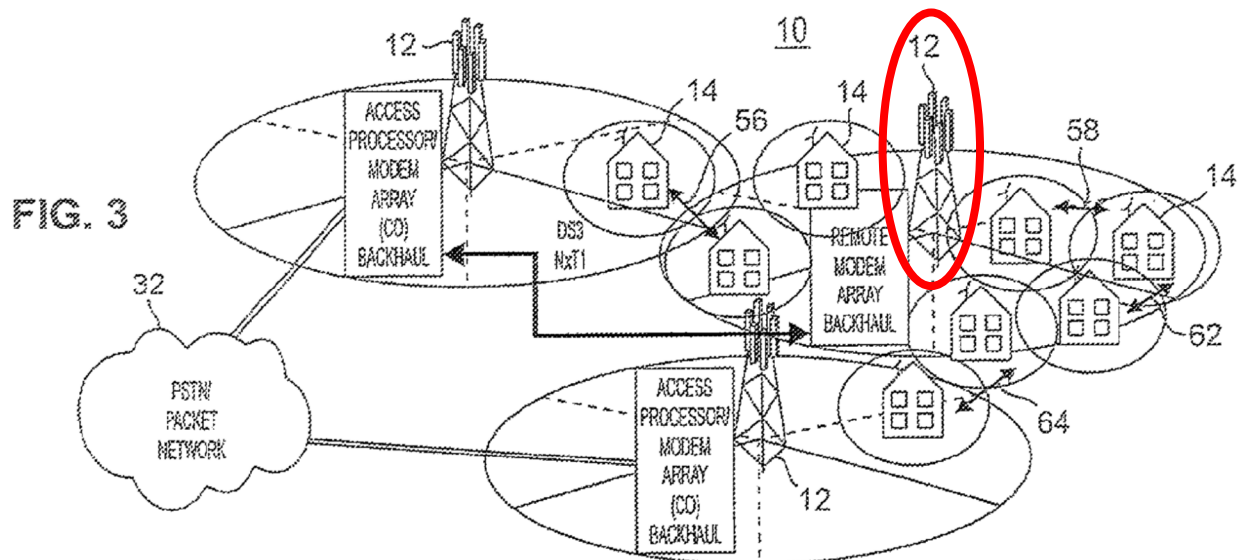
2. [1.a] a first wireless transceiver operable to communicate with a base station, wherein the base station communicates with the first wireless transceiver and a plurality of other wireless communication devices according to a wide area wireless communication protocol; and

Palmer describes a first wireless transceiver (*e.g.*, remote antenna 34 attached to remote building 36) operable to communicate with a base station (*e.g.*, central antenna 32 attached to administration building 33).



Ex. 1004, Fig. 2 (annotated); 4:53-64. The remote antenna 34 is wireless, as the “central antenna 32 ... communicates through RF links 26 to ... remote antennas 34.” *Id.*, 4:57-59.

While the '794 patent does not define the term “base station,” Palmer’s central antenna 32 is a “base station” at least because it is provided at a “central location based upon the location of the remote antennas 34.” Ex. 1004, 4:59-62. Indeed, the '794 patent itself presents a similar arrangement of a base station 12 centrally located and communicating with subscriber stations 14 in various buildings:



Ex. 1001 ('794 patent), Fig. 3 (“base station 12” annotated); 7:27-31. Nonetheless, to the extent the Board disagrees that Palmer teaches a “base station,” a POSA would have nonetheless found it obvious to configure Palmer’s central antenna 32

as a “base station” (*e.g.*, using a cellular network), inasmuch as a base-station topology was already well established and commonly utilized in the telecommunications industry. Ex. 1002, ¶¶75-76; Ex. 1014, pp.7-9 (describing a “basic cellular system,” with Figure 1.3 referring to “Cell sites (Radio ***base station*** sites)” (emphasis added)).

Palmer’s central antenna 32 (*i.e.*, the “base station”) also communicates with, in addition to the remote antenna 34 (as annotated in Palmer’s Fig. 2 reproduced above), a plurality of other wireless communication devices (*e.g.*, other instances of antennas 34 in additional remote buildings 36 illustrated in Figure 2). Ex. 1004, Fig. 2; 4:57-64 (“central antenna 32 ... communicates through RF links 26 to a ***plurality of*** remote antennas 34” (emphasis added); “remote antennas 34 may be located on various buildings 36 or other convenient remote locations”).

The communications between central antenna 32 and the multiple remote antennas 34 involve a wide area wireless communication protocol⁴, as Palmer

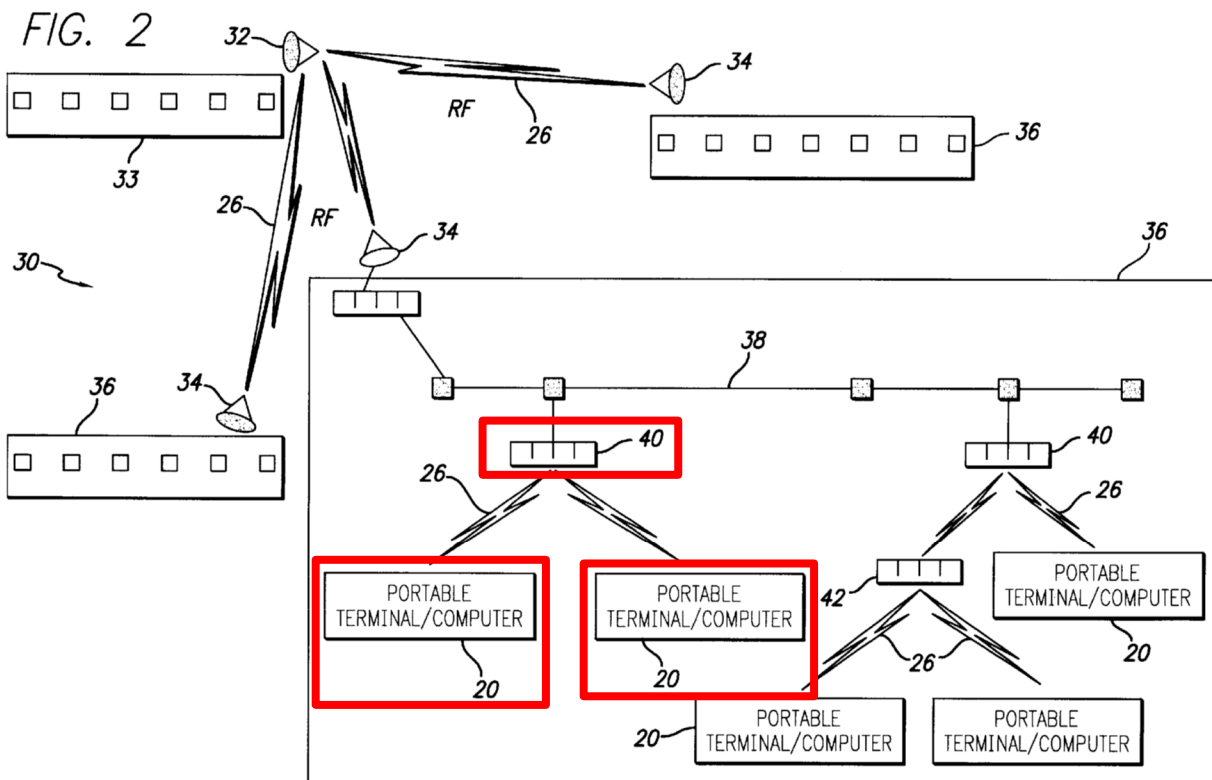
⁴ Palmer has at least the same level of disclosure of wide area network as the ’794 patent, which lacks any detail concerning “wide area wireless communication protocol,” and only uses this term thrice—in claims 1 and 6 and broadly in the abstract. Beyond these three instances, the ’794 patent does not even mention the term “wide” or even “WAN” (*i.e.*, wide area network).

describes that its system in Figures 1-2 could span an entire “city” (*id.*, 4:53-57) and also refers to its invention incorporating “the use of *industry standard network protocols* by the wireless media.”⁵ *Id.*, 2:52-55. A POSA would have understood those industry standard protocols to include wireless wide area communication protocols such as cellular protocols. Ex. 1002, ¶¶78-81; Ex. 1015, pp.479, 505. To the extent the Board disagrees that such communications in Palmer involve a wide area wireless communication protocol, a POSA would have nonetheless found it obvious to utilize such a protocol, especially given Palmer explicitly contemplates its communication system spanning an entire “city” (*id.*, 4:53-57) which would have prompted use of wide area protocols. Ex. 1002, ¶¶73-82.

⁵ Palmer has at least the same level of disclosure of protocols as the ’794 patent disclosure, which does not even use the word “protocol” beyond generically in the abstract and the claims, nor does the ’794 patent even describe or identify a single example of a “wide area wireless communication protocol.”

3. **[1.b] a second wireless transceiver coupled to the first wireless transceiver and operable to directly communicate with a first mobile station and a second mobile station, wherein the second wireless transceiver communicates with the first mobile station and the second mobile station according to a local area wireless communication protocol,**

Palmer describes a second wireless transceiver (*e.g.*, access point 40) coupled to the first wireless transceiver (*e.g.*, through wired network 38). Ex. 1004, Fig. 2; 4:65-5:1 (access point 40 including “a transmitter/receiver defining a cell [site] 18 that provides RF coverage for the wireless communication devices 20”). Access point 40 directly communicates with a first mobile station and a second mobile station (*e.g.*, portable terminals 20). Ex. 1004, 4:38-40 (describing portable terminals 20 as “wireless communication device[s]”), 4:65-5:3 (access point 40 “provides RF coverage ... [and] a bridge for the wireless communication devices 20”), 5:10-14 (“mobile worker, with the wireless communication device 20, moves throughout the work area”).



Ex. 1004, Fig. 2 (annotated).

Palmer's access point 40 communicates with the portable terminals 20 according to a local area wireless communication protocol,⁶ since the terminals 20

⁶ The '794 patent disclosure, as discussed above, does not use the word "protocol" beyond generically in the abstract and the claims, nor does the '794 patent even describe or identify a single example of a "local area wireless communication protocol." Nevertheless, using "protocols" in wireless communications was well known in the field and would have formed, at least, an obvious part of the system.

Ex. 1002, ¶¶87-88.

connect wirelessly to a wireless *local area* network. *Id.*, 5:10-14 (“mobile worker, with the wireless communication device 20, mov[es] through the work area”), 1:23-27 (referring to a “wireless *local area* network (WLAN)” (emphasis added)), 1:53-55 (“in a WLAN, a mobile worker may move throughout the work area carrying a wireless communication device such as a portable terminal or computer”), 5:1-3 (access point 40 “provide[s] a bridge for the wireless communication devices 20 to the wired network 38”), 2:52-55 (referring to “the use of *industry standard network protocols* by the wireless media” (emphasis added)); Ex. 1002, ¶¶85-88. A POSA would have readily understood that those industry standard network protocols would include well-known local area network protocols such as IEEE 802.11 (WiFi). Ex. 1002, ¶¶83-88.

4. **[1.c] wherein the first wireless transceiver receives from the base station a first downlink signal intended for the first mobile station and provides the first downlink signal to the second wireless transceiver and wherein the second wireless transceiver receives the first downlink signal and re-transmits the first downlink signal to the first mobile station as a second downlink signal according to the local area wireless communication protocol, and**

Palmer describes the remote antenna 34 (i) receiving from the central antenna 32, a first downlink signal (*e.g.*, voice or data signal sent from the central antenna 32 to the remote antenna 34) intended for the first portable terminal 20 and (ii) providing the first downlink signal to the access point 40, as “the wired

network 38 [of building 36] is ... linked to the administration building 33 and its associated network through the remote antenna 34 to the central antenna 32 and finally through its link to a wired network (not shown) within the administration building 33.” Ex. 1004, 5:4-9, 2:26-30 (referring to a “network connection, such as a TCP/IP network connection, between the wireless communication device and the central host processing unit”), 5:19-22 (“the wireless communications can consist of voice or data information”), 1:32-36 (wireless communication device receives information from a central host processing unit); *see also* 6:11-12, 6:30-33, and 6:45-47 (referring to both transmission and reception).

The remote antenna 34 provides the first downlink signal to the access point 40, as the access point 40 is a bridge that interconnects the portable terminals 20 to the administration building 33 via the access point 40, remote antenna 34, and the wired network 38 (which connects the two). *Id.*, 5:1-9 (“access point 40 would provide a bridge for the wireless communication devices 20 to the wired network 38” and “wired network 38 is then linked to the administration building 33 ... through the remote antenna 34”). In particular, a POSA would have understood that a “bridge” “connects two or more network segments and forwards packets between them,” *i.e.*, “accept[s] data packets, perhaps buffering them during periods of network congestion, and forward[s] them.” Ex. 1011, pp.126-27.

The access point 40 receives the first downlink signal and re-transmits the first downlink signal to the first mobile station as a second downlink signal, again as access point 40 operates as a “bridge” (Ex. 1004, 4:40-44, 5:1-3) and therefore “forwards packets” from the remote antenna 34 to the portable terminal 20 by “accept[ing] data packets ... and forward[ing] them” (Ex. 1011, pp.126-27). Such re-transmission is performed according to the local area wireless communication protocol, since Palmer discloses “the use of industry standard network protocols by the wireless media.” Ex. 1004, 2:52-55; Ex. 1002, ¶¶89-92.

5. **[1.d] wherein the second transceiver monitors first signal characteristics of the second downlink signal of the first mobile station and monitors second signal characteristics of the second mobile station, and based on the first signal characteristics and the second characteristics, routes information to the first mobile station and the second mobile station, respectively.**

Palmer describes the access point 40 monitoring first signal characteristics (*e.g.*, signal-to-noise ratio (SNR), received signal strength indicator (RSSI), and/or bit energy-to-noise density (E_b/N_0)) of the second downlink signal of the first portable terminal 20 (*i.e.*, the wireless signal from the access point 40 to a portable terminal 20).

... a predictive method for determining when a communication device should rate shift or roam in a wireless environment is provided. FIG. 3 illustrates the basic steps, in flowchart form, of the predictive method. The method would utilize various

measurements to evaluate connection quality, the measurement data obtained at step 50. These measurements may include but are not limited to: 1) **signal-to-noise ratio (SNR)**, 2) bit error rate (BER), 3) number of transmission retries (NTR), 4) **received signal strength indicator (RSSI)**, 5) bit energy-to-noise density (E_b / N_0), 6) global position information (GPS), and 7) cell congestion information (also known as load factor).

Ex. 1004, 5:37-49 (emphasis added). Palmer teaches that the monitoring includes the downlink signals from the access point 40 to a portable terminal 20, since it refers to measurements “[w]ith each transmission or reception,” *i.e.*, for both downlink and uplink signals. *Id.*, 6:45-47.

Palmer’s access point 40 performs such monitoring,⁷ as Palmer describes the monitoring “may be performed centrally, for example, ***by the network***” (*id.*, 5:34-36) and the access point 40 is part of the network and the specific component directly interacting wirelessly with the portable terminals 20 and therefore collecting such measurements. And to the extent the Board disagrees that Palmer’s

⁷ As noted, the ’794 patent does not specifically disclose that the “monitoring” require the actual measurements of the signal characteristics be performed by its WLAN transceiver; thus Palmer discloses this limitation at least to the level that the ’794 patent does. *See supra* Section IV.A.

access point 40 performs the monitoring, it would have nonetheless been obvious to a POSA to select the access point 40 to perform the monitoring, since it directly communicates with the portable terminals 20. Ex. 1002, ¶96.

Palmer's access point 40 also monitors second signal characteristics⁸ (e.g., SNR, RSSI, and/or E_b/N_0) of the second portable terminal 20, since it monitors these signal characteristics for all portable terminals 20. Ex. 1004, 5:37-49, 6:45-47 (measurements "[w]ith *each* transmission or reception" (emphasis added)).

The access point 40 routes information to the first mobile station and the second mobile station, respectively, based on the monitored first signal characteristics and the second characteristics, as the access point 40 determines whether roaming by a portable terminal 20 should take place and routes data

⁸ While neither the '794 patent claims nor the specification provides any indication of what signal characteristics constitute "second" characteristics, this limitation is taught by the prior art regardless of its construction. Nonetheless, Petitioner reserves the right to argue in district court that this term (and the parallel term in claim 6) are indefinite.

packets accordingly. *Id.*, 5:20-36.⁹ For instance, the access point 40 determines when the wireless RF connection (involving both transmissions and receptions) between itself and the portable terminal 20 becomes unstable based on the measurements, and determines whether or not to reduce the data rate or to hand off the wireless connection to another access point. *Id.* (determining whether the wireless RF signal with the portable terminal 20 “begins to degrade,” and determining data rate reduction or roaming decisions based on measurements, all of which “may be performed centrally, for example, *by the network*”). Once a mobile station has been handed off to a new access point based on the signal monitoring, the original access point no longer routes downlink signals to the mobile station to which it is no longer connected. Ex. 1002, ¶¶93-98.

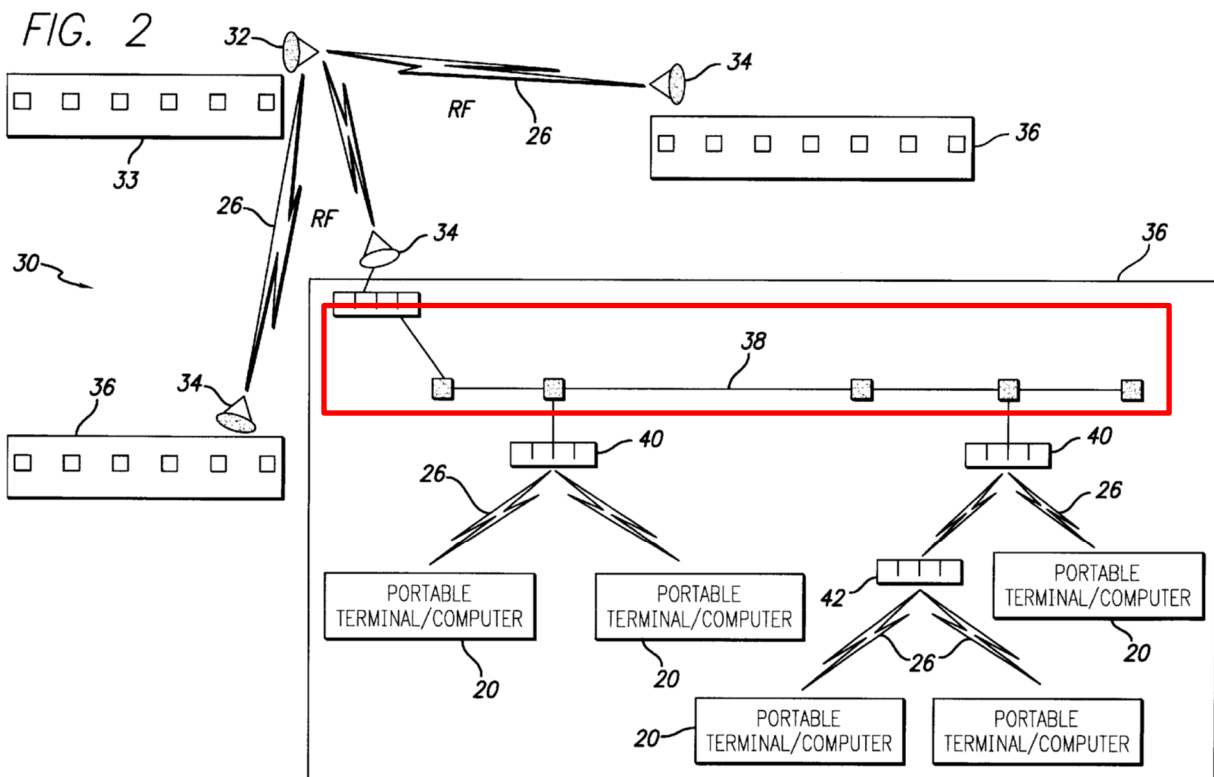
⁹ To the extent the '794 patent specification describes this limitation at all, it likewise uses these measured characteristics to determine whether to initiate handoff (“handover”) of a mobile station from one wireless transceiver to another. Ex. 1001, 8:50-9:3, 8:61-64 (“Determination of when to initiate handover of communications is made responsive to measurements of signal characteristics of communication signals communicated between the WLAN transceiver and the mobile station.”).

C. Claim 2

Claim 2 recites:

The wireless communication device of claim 1, wherein the second wireless transceiver is coupled to the first wireless transceiver by a wireline connection.

Claim 2 is anticipated by and/or obvious over Palmer. Palmer describes the second wireless transceiver (*e.g.*, access point 40) coupled to the first wireless transceiver (*e.g.*, remote antenna 34) by a wireline connection (*e.g.*, wired network 38).



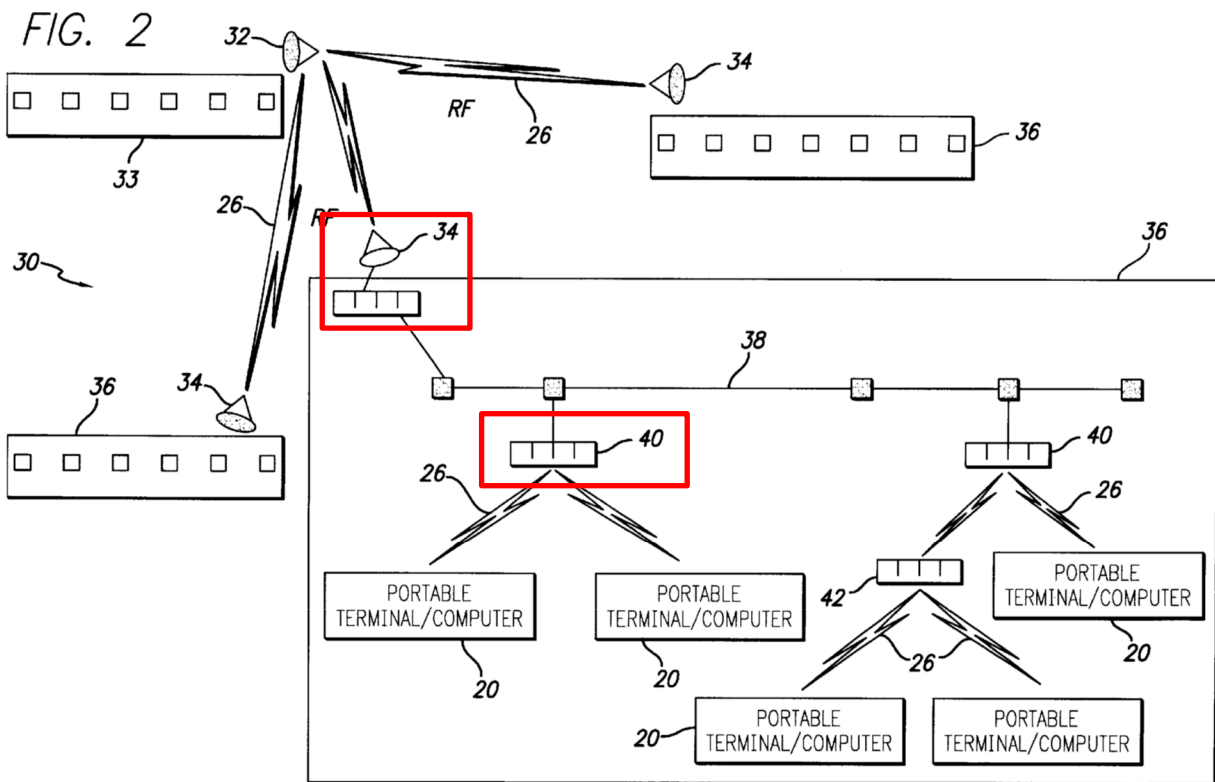
Ex. 1004, Fig. 2 (annotated), 5:1-9 (“access point 40 would provide a bridge for the wireless communication devices 20 to the wired network 38” and “wired network 38 is then linked to the administration building 33 ... through the remote antenna 34”), 4:31-34 (describing “Ethernet” as an example of a wired network); Ex. 1002, ¶¶99-101.

D. Claim 3

Claim 3 recites:

The wireless communication device of claim 2, wherein the second wireless transceiver is removably coupled to the first wireless transceiver.

Claim 3 is anticipated by and/or obvious over Palmer. Palmer describes that the second wireless transceiver (*e.g.*, access point 40) is removably coupled to the first wireless transceiver (*e.g.*, remote antenna 34), since Figure 2 presents them as separate components connected by a wired network 38 such as Ethernet (and therefore detachable Ethernet cables).



Ex. 1004, Fig. 2 (annotated), 5:1-9, 4:31-34 (describing “Ethernet” as an example of a wired network).

At the very least, a POSA would have found it obvious that separate components wired together by Ethernet could be removably coupled (as opposed to permanently attached) as a design choice (*e.g.*, to make repairs easier). Ex. 1002, ¶¶102-05.

E. Claim 4

Claim 4 recites:

The wireless communication device of claim 1, wherein the first wireless transceiver and second wireless transceiver are disposed in a fixed site subscriber station.

Claim 4 is anticipated by and/or obvious over Palmer. Palmer describes the first wireless transceiver and second wireless transceiver disposed in a fixed site subscriber station (*e.g.*, building 36). Ex. 1004, Fig. 2, 4:62-5:9, 4:53-57.

To the extent the Board disagrees that Palmer teaches this claim, it would have nonetheless been obvious to a POSA to dispose the first wireless transceiver and second wireless transceiver in a fixed site subscriber station, to provide WLAN access having a static and consistent coverage area. Ex. 1002, ¶¶106-09.

F. Claim 6

Claim 6 is anticipated by and/or obvious over Palmer.

1. [6.preamble] A method for communicating with a wireless communication device, comprising:

Palmer describes a method for communicating with a wireless communication device (*e.g.*, portable terminals 20). *See* [1.preamble], *supra*; Ex. 1002, ¶¶110-11.

2. **[6.a] a first wireless transceiver operable to communicate with a base station, wherein the base station communicates with the first wireless transceiver and a plurality of other wireless communication devices according to a wide area wireless communication protocol; and**

See [1.a], *supra*; Ex. 1002, ¶112.

3. **[6.b] a second wireless transceiver coupled to the first wireless transceiver and operable to directly communicate with a first mobile station and a second mobile station, wherein the second wireless transceiver communicates with the first mobile station and the second mobile station according to a local area wireless communication protocol,**

See [1.b], *supra*; Ex. 1002, ¶113.

4. **[6.c] the method comprising: receiving, using the first wireless transceiver from the base station, a first downlink signal intended for the first mobile station; providing, using the first wireless transceiver, the first downlink signal to the second wireless transceiver; receiving, using the second wireless transceiver, the first downlink signal and re-transmitting the first downlink signal to the first mobile station as a second downlink signal according to the local area wireless communication protocol;**

See [1.c], *supra*; Ex. 1002, ¶114.

5. **[6.d] monitoring, using the second transceiver, first signal characteristics of the second downlink signal of the first mobile station; monitoring, using the second transceiver, second signal characteristics of the second mobile station; and based on the first signal characteristics and the second characteristics, routing, using the second transceiver, information to the first mobile station and the second mobile station, respectively.**

See [1.d], *supra*; Ex. 1002, ¶115.

VIII. GROUND 2: CLAIMS 1-6 ARE OBVIOUS OVER HOHNSTEIN AND PALMER

A. The Board Already Found Unpatentable a Related Patent Containing Similar Claims, Based on Hohnstein

The petition in IPR2017-01178 (“’555 IPR”) challenged all claims of U.S. Patent No. 9,225,555 (“’555 patent”; Ex. 1009), which shares overlapping priority claims and almost identical disclosure to the ’794 patent.¹⁰ In the ’555 IPR, the Board issued a Final Written Decision (“’555 FWD”; Ex. 1010), finding all ’555 patent claims unpatentable based substantially on Hohnstein.

A comparison of the ’794 and ’555 patent claims is presented below, alongside the ’555 FWD’s conclusions involving Hohnstein:

’794 limitations	’555 limitations	’555 FWD
[1.preamble] A wireless communication device, comprising:	1. A wireless communication device, comprising:	“We find, on the basis of the evidence and explanation provided by Petitioner, that Hohnstein discloses a wireless communication device.” (p.32)
[1.a] a first wireless transceiver operable to communicate with a base station,	a first transceiver in direct wireless communication with a terrestrial base station,	“We find, on the basis of the evidence and explanation provided by Petitioner, that Hohnstein

¹⁰ Both the ’794 and ’555 patents are continuations of respective parent applications, each of which, in turn, is a continuation of Application No. 09/839,499.

'794 limitations	'555 limitations	'555 FWD
wherein the base station communicates with the first wireless transceiver and a plurality of other wireless communication devices according to a wide area wireless communication protocol; and	wherein the terrestrial base station is in direct wireless communication with a plurality of wireless communication devices; and	discloses ‘a first transceiver in direct wireless communication with a terrestrial base station.’” (p.33) “We find, on the basis of the evidence and explanation provided by Petitioner, that Hohnstein discloses ‘wherein the terrestrial base station is in direct wireless communication with a plurality of wireless communication devices.’” (p.34)
[1.b] a second wireless transceiver coupled to the first wireless transceiver and operable to directly communicate with a first mobile station and a second mobile station, wherein the second wireless transceiver communicates with the first mobile station and the second mobile station according to a local area wireless communication protocol,	a second wireless local area network transceiver in direct wireless broadband communication with a plurality of computing devices located within a coverage area of the second transceiver, the second transceiver being coupled to the first transceiver,	“We find, on the basis of the evidence and explanation provided by Petitioner, that Hohnstein [<i>sic</i>] discloses ‘[the wireless communication device comprising:] a second wireless local area network transceiver in direct wireless broadband communication with a plurality of computing devices located within a coverage area of the second transceiver.’” (p.43) “We find, on the basis of the evidence and explanation provided by

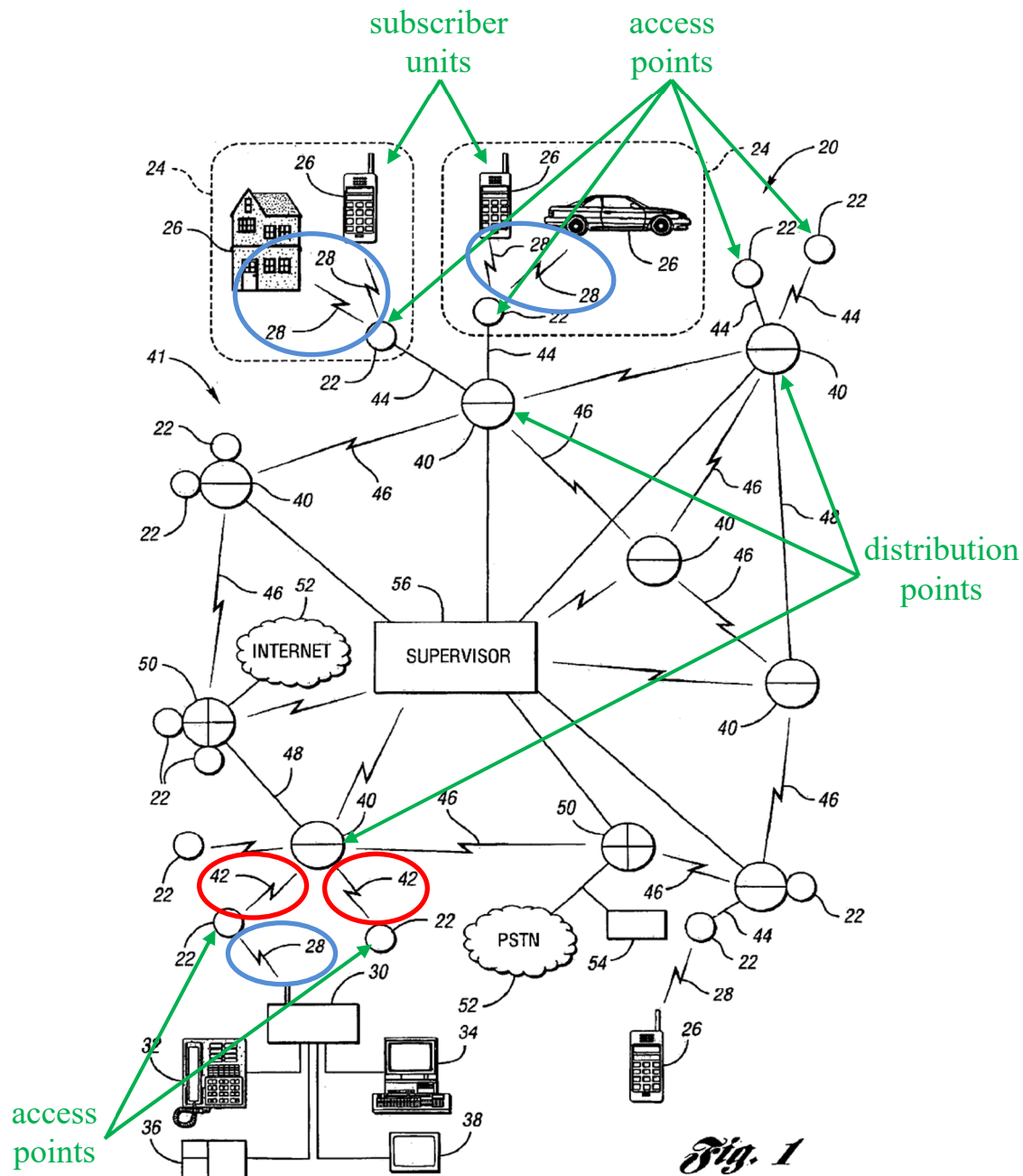
'794 limitations	'555 limitations	'555 FWD
		Petitioner, that Hohnstein discloses this limitation ...” (p.44)
[1.c] wherein the first wireless transceiver receives from the base station a first downlink signal intended for the first mobile station	wherein; the first transceiver receives a first signal from the base station, the first signal intended for a first computing device of the plurality of computing devices,	“We find, on the basis of the evidence and explanation provided by Petitioner, that Hohnstein discloses this limitation ...” (p.44)
and provides the first downlink signal to the second wireless transceiver and wherein the second wireless transceiver receives the first downlink signal and re-transmits the first downlink signal to the first mobile station as a second downlink signal according to the local area wireless communication protocol, and	the second wireless local area network transceiver determines signal characteristics of the first computing device, and the second transceiver transmits the first signal to the first computing device based on the determined signal characteristics of the first computing device, and ...	“We find, on the basis of the evidence and explanation provided by Petitioner, that Hohnstein discloses ‘the second wireless local area network transceiver determines signal characteristics of the first computing device, and the second transceiver transmits the first signal to the first computing device based on the determined signal characteristics of the first computing device.’” (p.45)
[1.d] wherein the second transceiver monitors first signal characteristics of the second downlink signal of the first mobile station and monitors second signal characteristics of the second mobile station, and based on the first		

'794 limitations	'555 limitations	'555 FWD
signal characteristics and the second characteristics, routes information to the first mobile station and the second mobile station, respectively.		
3. The wireless communication device of claim 2, wherein the second wireless transceiver is removably coupled to the first wireless transceiver.	2. The wireless communication device of claim 1, wherein the second transceiver is removably coupled to the first transceiver.	“We determine Petitioner has shown terminal 566 is removably coupled to terminal 544.” (pp.47-48)
4. The wireless communication device of claim 1, wherein the first wireless transceiver and second wireless transceiver are disposed in a fixed site subscriber station.	4. The wireless communication device of claim 1, wherein the wireless communication device is a fixed-site subscriber station.	“We credit Petitioner’s argument and Dr. Kotzin’s testimony that Hohnstein’s antenna module 502 (asserted wireless communication device) is a fixed-site subscriber station based on disclosure that module 502 is fixed and mounted to vertical pole 504, and subscribes to base station 40 which it serves.” (p.48)

To the extent the '794 patent claims contain additional substantive differences compared to in the '555 patent claims, these limitations are taught by Hohnstein and/or additional prior art, as articulated below.

B. Summary of Hohnstein

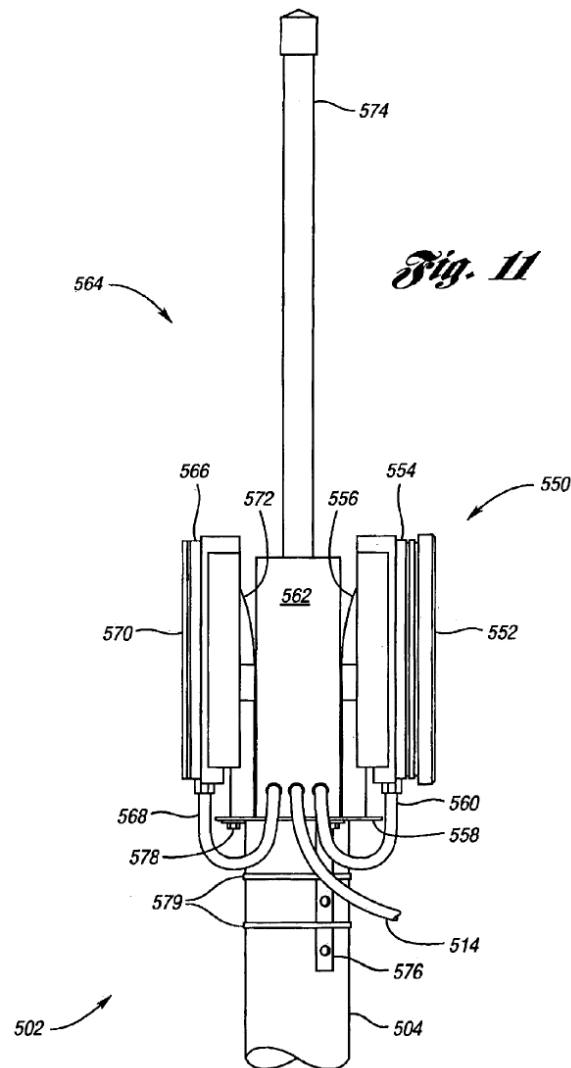
Hohnstein describes a wireless communication system providing connectivity between a WWAN and a WLAN. Hohnstein's system includes distribution points 40 that communicate wirelessly (*i.e.*, over a WWAN) with access points 22 (which in turn may also themselves operate as other distribution points 40). Ex. 1005, 5:43-65. Each access point 22 defines a wireless coverage area 24 and provides network connectivity (*i.e.*, over a WLAN) to subscriber units 26 such as mobile telephones. *Id.*, 4:7-28.



Ex. 1005, Fig. 1 (annotated, and WWAN and WLAN links circled in red and blue, respectively).

Hohnstein describes that access point 22 may be embodied as an antenna module 502 (illustrated in Figs. 9-13) for mounting, *e.g.*, on a light pole, and

includes a backhaul system 550 and an access system 564. *Id.*, 13:40-46, 15:1-18, 15:29-33, 16:35-37 (antenna system “implements a combined access point 22 and distribution point 40”). The access point’s backhaul system 550 includes a backhaul antenna 552 attached to a backhaul data terminal 554, for communicating wirelessly with other distribution points 40 (*i.e.*, over a WWAN). *Id.*, 16:7-22, 8:49-55 (communications between distribution points 40 being “backhaul communication”), Abstract (“backhaul antenna interconnects the access point with the remainder of a wireless communication system”). The access point’s access system 564 includes a directional access antenna 570 and an omnidirectional antenna 574, both attached to an access data terminal 566, to form a coverage area 24 (as illustrated in Figure 1) for communicating wirelessly with subscriber units 26 (*i.e.*, over a WLAN). *Id.*, 15:29-40, 15:44-45. The backhaul system 550 and access system 564 are coupled to each other to interconnect the subscriber units 26 with the communication system. *Id.*, Abstract (“Access data terminals and backhaul data terminals within the access point exchange information through baseband digital packets.”), 16:8-32, 2:66-3:10.



Id., Fig. 11.

Hohnstein also describes that a “subscriber unit 26 may move out of coverage area 24 for one access point 22 and into coverage area 24 for a new access point 22.” *Id.*, 13:25-39, 5:1-21, 8:7-31; Ex. 1002, ¶¶116-21.

C. Claim 1

Claim 1 is obvious over Hohnstein and Palmer. A general description of Hohnstein is set forth above. As explained below, Hohnstein describes a first

wireless transceiver (*e.g.*, backhaul system 550) communicating with a base station (*e.g.*, another distribution point 40) according to a wide area wireless communication protocol, and a second wireless transceiver (*e.g.*, access system 564) coupled to the backhaul system 550 and communicating wirelessly with mobile stations (*e.g.*, subscriber units 26). Further, the access system 564 receives a first downlink signal from the backhaul system 550 and re-transmits it to a subscriber unit 26 (*e.g.*, mobile telephone) as a second downlink signal according to a local area wireless communication protocol. Hohnstein teaches monitoring signal characteristics of downlink signals of subscriber units, as a quality error bit rate, and also describes the access point 22 routing information to first and second subscriber units 26 based on whether the respective subscriber unit is connected to the access point 22 or has been handed off to another access point.

To the extent any colorable substantive difference exists between claim 1 (and claim 6) of the '794 patent and claim 1 of the '555 patent, it relates solely to '794 patent claims 1 and 6 reciting the second transceiver monitoring first signal characteristics of the second downlink signal of the first mobile station and monitoring second signal characteristics of the second mobile station. But to the extent Hohnstein's monitoring is found to differ from the claimed monitoring limitations, Palmer discloses these limitations.

Like Hohnstein, Palmer describes a wireless communication system providing connectivity between a WWAN and a WLAN. *See supra* Ground 1. Palmer describes a first wireless transceiver (*e.g.*, remote antenna 34) that communicates with a base station (*e.g.*, central antenna 32), the base station also communicating with a plurality of other wireless communication devices (*e.g.*, other remote antennas 34 in other remote buildings 36). *See supra* Ground 1, [1.a]. Palmer also describes a second wireless transceiver (*e.g.*, access point 40) that communicates with multiple mobile stations (*e.g.*, portable terminals 20), and receives a first downlink signal from the central antenna 32 and re-transmits the first downlink signal to a portable terminal 20) as a second downlink signal according to a local area wireless communication protocol. *See supra* Ground 1, [1.b]-[1.c]. Palmer further describes the access point 40 monitoring first signal characteristics of the second downlink signal of a first portable terminal 20 and monitoring second signal characteristics of a second portable terminal 20. Based on the first signal characteristics and the second characteristics, Palmer's system routes information to the first and second portable terminals, respectively. *See supra* Ground 1, [1.d].

A POSA would have had reason to have Hohnstein's access system 564 monitor first signal characteristics of the second downlink signal of a first subscriber unit 26 and monitor second signal characteristics of a second subscriber unit 26, and

based on the first signal characteristics and the second characteristics, route information to the first and second subscriber units 26, respectively, as taught by Palmer. Hohnstein describes a subscriber unit 26 may be a mobile device such as a mobile telephone. Ex. 1005, 4:24-28, 13:25-26, Fig. 1. Hohnstein and Palmer both disclose providing roaming capabilities to switch a mobile device's wireless network connection from one wireless access point to another, for instance as the mobile device user is moving from one coverage area (cell site) to another. Ex. 1005, 13:25-39, 5:1-21; Ex. 1004, 1:53-2:6, 5:10-19. Hohnstein discloses that its access points 22 oversee the handoff of the mobile device from one access point to another. Ex. 1005, 8:7-31 (“Each subscriber unit 26 maintains registration as subscriber unit 26 moves from one coverage area 24 into another coverage area 24 within communication system 20 ... Access point 22 may determine the absence of subscriber unit 26 from coverage area 24 if no communication is received after a particular time interval.”), 13:23-39. Hohnstein further describes that the system registers and deregisters subscriber units using “[a]lgorithms ... based on various factors including quality of service” (*id.*, 8:25-31, 8:7-15) and that a “quality error bit rate” may be based on “changing conditions such as noise” (*id.*, 5:1-17).

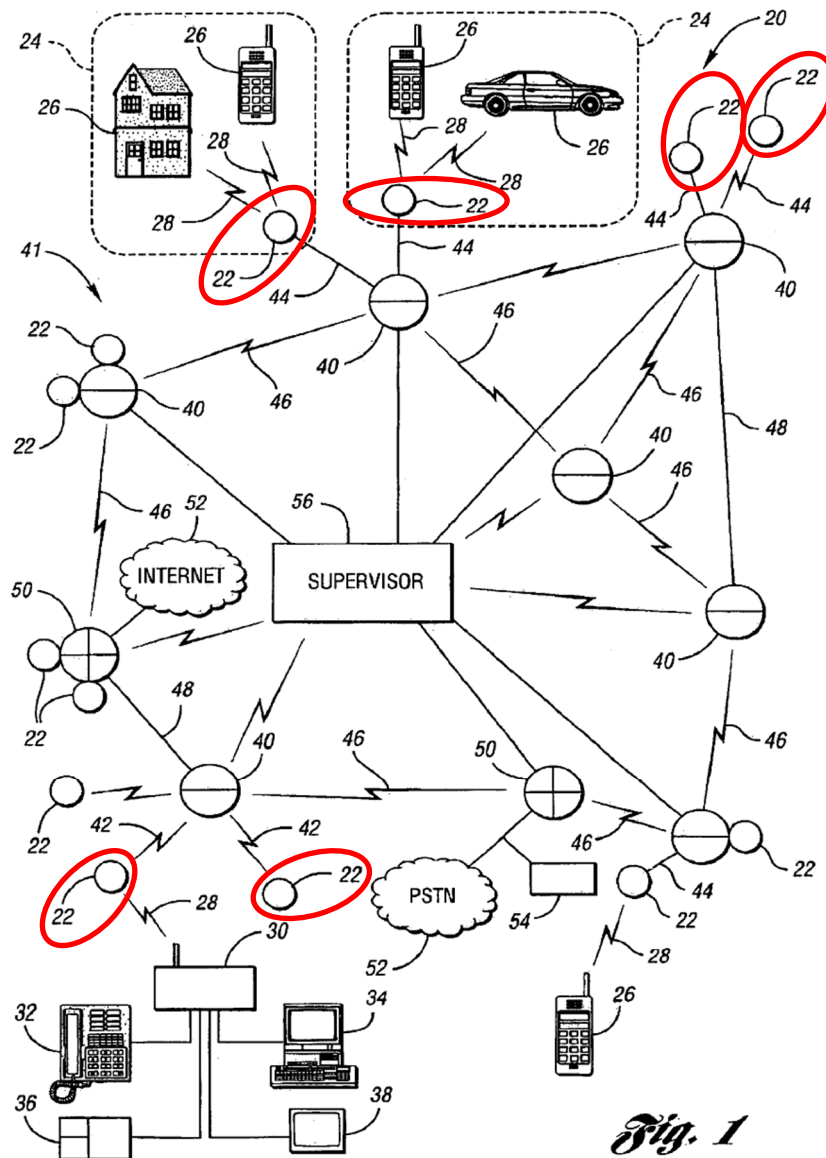
Palmer discloses that its access point determines whether or not to execute a roaming handoff by monitoring signal characteristics—such as signal-to-noise ratio, received signal strength indicator, and/or bit energy-to-noise density—of

each downlink signal between the access point and the mobile device, and executing a roaming handoff based on comparing these measured signal characteristics with historical data. Ex. 1004, 5:37-49, 6:45-47 (measurements for “each transmission or reception”), 6:8-40. A POSA would have recognized that Palmer’s approach of monitoring downlink signal characteristics would have provided the ability in Hohnstein’s access points to determine when to perform a roaming handoff (*e.g.*, diminished wireless connection based on these continuously-measured signal characteristics), a function that Hohnstein already discloses that the access points are responsible for overseeing, and that such handoff determines how downlink signals are routed to respective mobile devices. A POSA would have appreciated that such monitoring would have allowed Hohnstein’s access points 22 to provide a continuous wireless network connection in a transparent fashion, a benefit appreciated in both Hohnstein and Palmer. Ex. 1005, 5:19-21 (“automatically chang[ing]” an “information rate” if “subscriber unit 26 moves between coverage areas 24”); Ex. 1004, 1:58-61 (“The wireless device must maintain a wireless connection that is transparently maintained”), 4:22-26 (“The wireless connection should be transparent to the mobile worker as the wireless communication device 20 roams from cell to cell or rate shifts. There should be no loss of connection or service degradation and it should appear as if there is a wired connection.”). Ex. 1002, ¶¶122-131.

A POSA would also have had a reasonable expectation of success in implementing such monitoring and routing based thereon. Hohnstein already discloses its access points 22 overseeing the handoff functions, so incorporating the monitoring functionality would have been a straightforward implementation involving measuring the signals already being transmitted from these access points 22 and integrating such measurements into the existing handoff determinations and existing routing operations. Ex. 1002, ¶132.

1. [1.preamble] A wireless communication device, comprising:

Hohnstein describes a wireless communication device, such as an access point 22.



Ex. 1005, Fig. 1 (annotated), 2:14-15. Hohnstein's access point 22 communicates with a base station 40 via a WAN link (such as wireless radio link

42, annotated below in red, or a wireline link 44)¹¹ and also communicates wirelessly with subscriber units 26 via a wireless LAN link (such as wireless link 28, annotated below in blue). *Id.*, 4:17-21 (“Subscriber unit 26 within coverage area 24 may establish two-way wireless link 28 with access point 22”), 4:29-57, 5:42-47 (“Access point 22 may be in contact with one or more radio access distribution points 40 over radio link 42, may be wired or cabled to distribution point 40 through wireline link 44”).

¹¹ A POSA would have understood that Hohnstein teaches the interchangeability between wireless link 42 and wireline link 44 in any example, given that Hohnstein describes both link types as acceptable connectivity options and utilizes a variety of each link type in the exemplary arrangement of Fig. 1. Ex. 1005, 5:45-49.

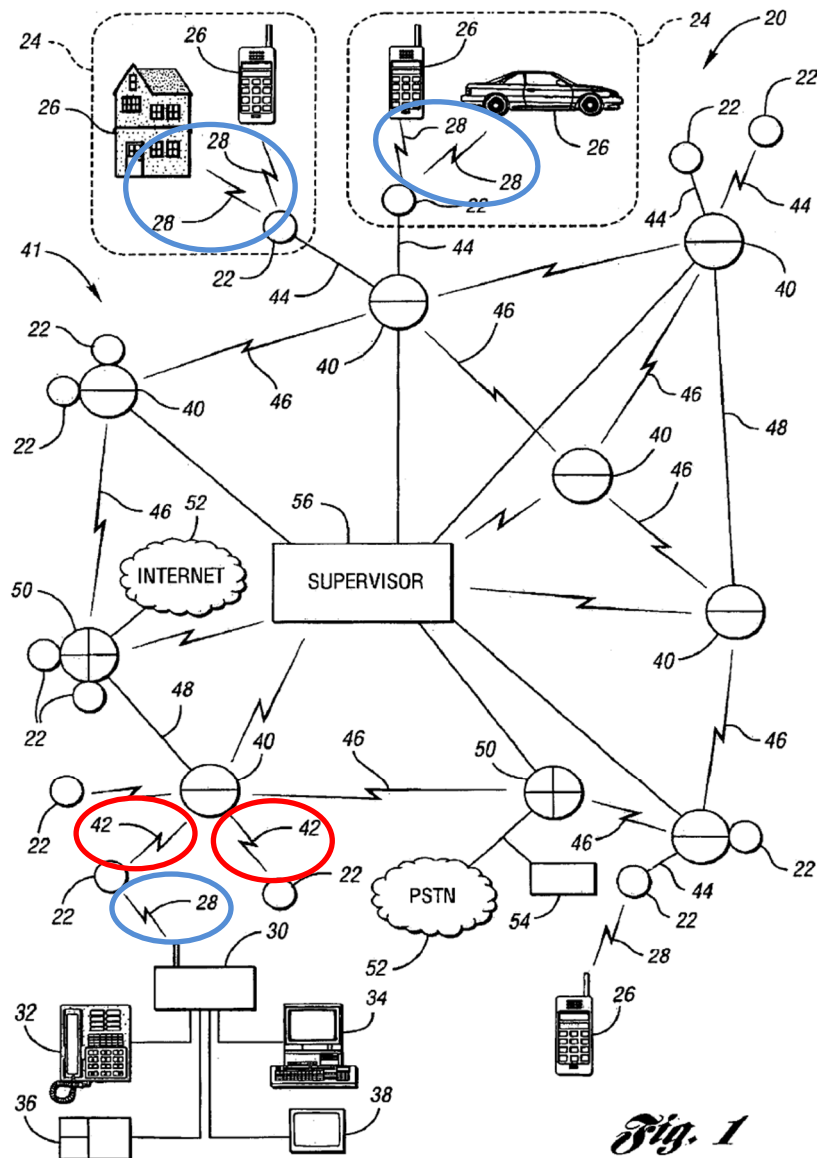


Fig. 1

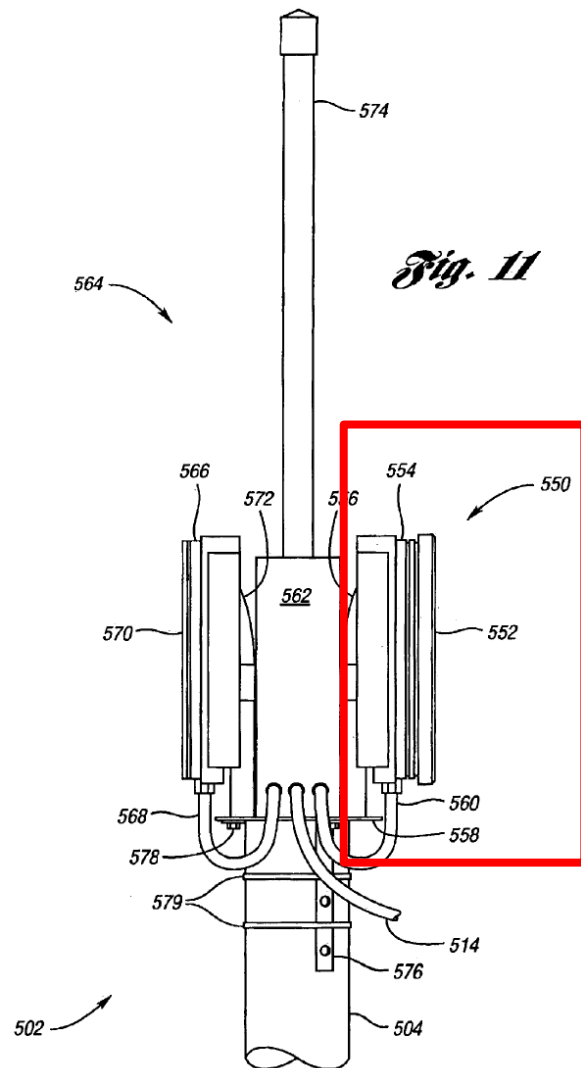
Id., Fig. 1 (annotated).

As described above, access point 22 may also function as a distribution point 40 and be embodied as an antenna module 502 illustrated in Figs. 9-13, including a backhaul system 550 and an access system 564. *Id.*, 13:40-46, 15:7-1-18, 15:29-33, 16:35-37 (antenna system “implements a combined access point 22 and distribution point 40”); Ex. 1002, ¶¶133-36.

Notably, the Board in the '555 IPR concluded that “Hohnstein discloses a wireless communication device.” Ex. 1010, p.32.

2. **[1.a] a first wireless transceiver operable to communicate with a base station, wherein the base station communicates with the first wireless transceiver and a plurality of other wireless communication devices according to a wide area wireless communication protocol; and**

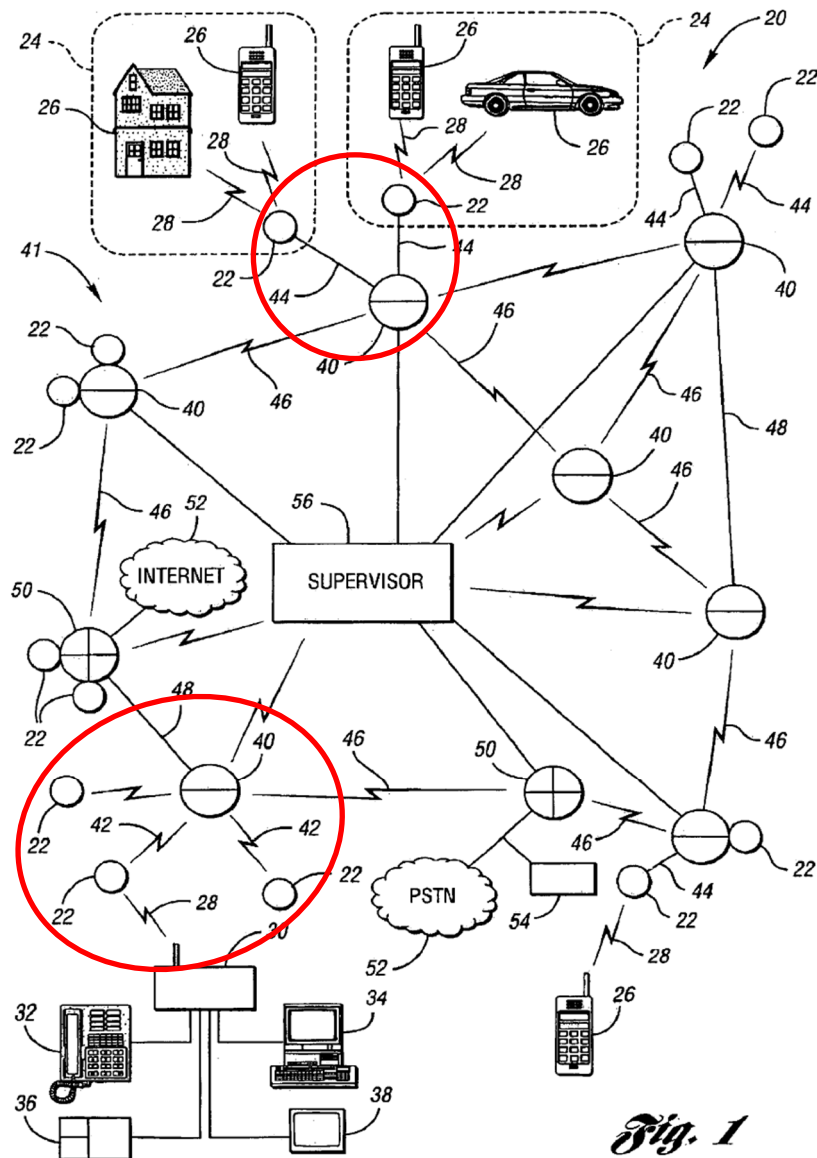
Hohnstein describes a first wireless transceiver (*e.g.*, backhaul system 550, including backhaul antenna 552 and backhaul data terminal 554) operable to communicate with a base station (*e.g.*, another distribution point 40) over a wireless link 42 (also referenced in Hohnstein as “backhaul communication”).



Ex. 1005, Fig. 11 (annotated), 16:7-22, 8:49-55.

Backhaul system 550 is a wireless transceiver, as it “receive[s]” information packets for “downstream communication” and “transmit[s]” information packets for “upstream communication.” *Id.*, 2:49-59, 6:38-43, 7:7-20, 16:46-49, 3:8-10.

Hohnstein’s distribution point 40 communicates with the access point 22 and additional access points 22.



Id., Fig. 1 (annotated).

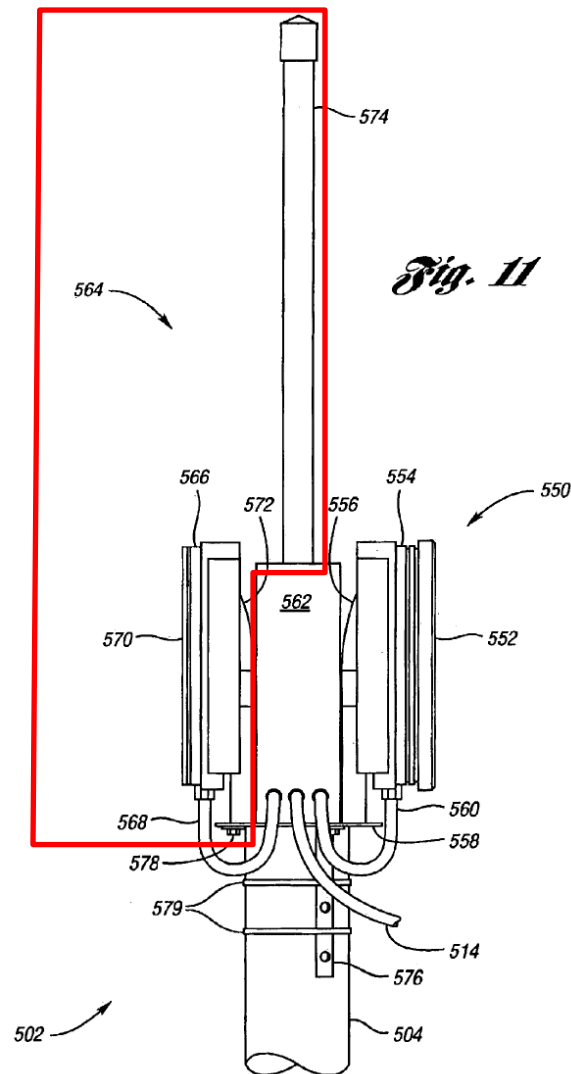
The communications between the distribution point 40 and the multiple access points 22 via wireless link 42 involve a wide area communication protocol, as Hohnstein describes such communications as “backhaul communication” that includes communication over the Internet, which involves wide area networks and communication protocols. *Id.*, 16:15-21, 8:49-55. Moreover, while Hohnstein

describes wireless links 28 of access points 22 as having a limited wireless coverage area 24 (illustrated in Fig. 1), Hohnstein offers no parallel limiting description of coverage area for wireless links 42—a POSA would therefore have understood that wireless links 42 are wide area links (communicating via a wide area communication protocol), as distinguished from wireless links 28 which are local area links (communicating via a local area communication protocol). Ex. 1002, ¶¶137-41.

Notably, the Board in the '555 IPR concluded that “Hohnstein discloses ‘a first transceiver in direct wireless communication with a terrestrial base station’” and “discloses ‘wherein the terrestrial base station is in direct wireless communication with a plurality of wireless communication devices.’” Ex. 1010, pp.33-34.

3. **[1.b] a second wireless transceiver coupled to the first wireless transceiver and operable to directly communicate with a first mobile station and a second mobile station, wherein the second wireless transceiver communicates with the first mobile station and the second mobile station according to a local area wireless communication protocol,**

Hohnstein describes a second wireless transceiver (*e.g.*, access system 564, including directional access antenna 570, omnidirectional antenna 574, and access data terminal 566) coupled to the backhaul data terminal 554 (*e.g.*, via access cable 568, junction box 562, and backhaul cable 560).

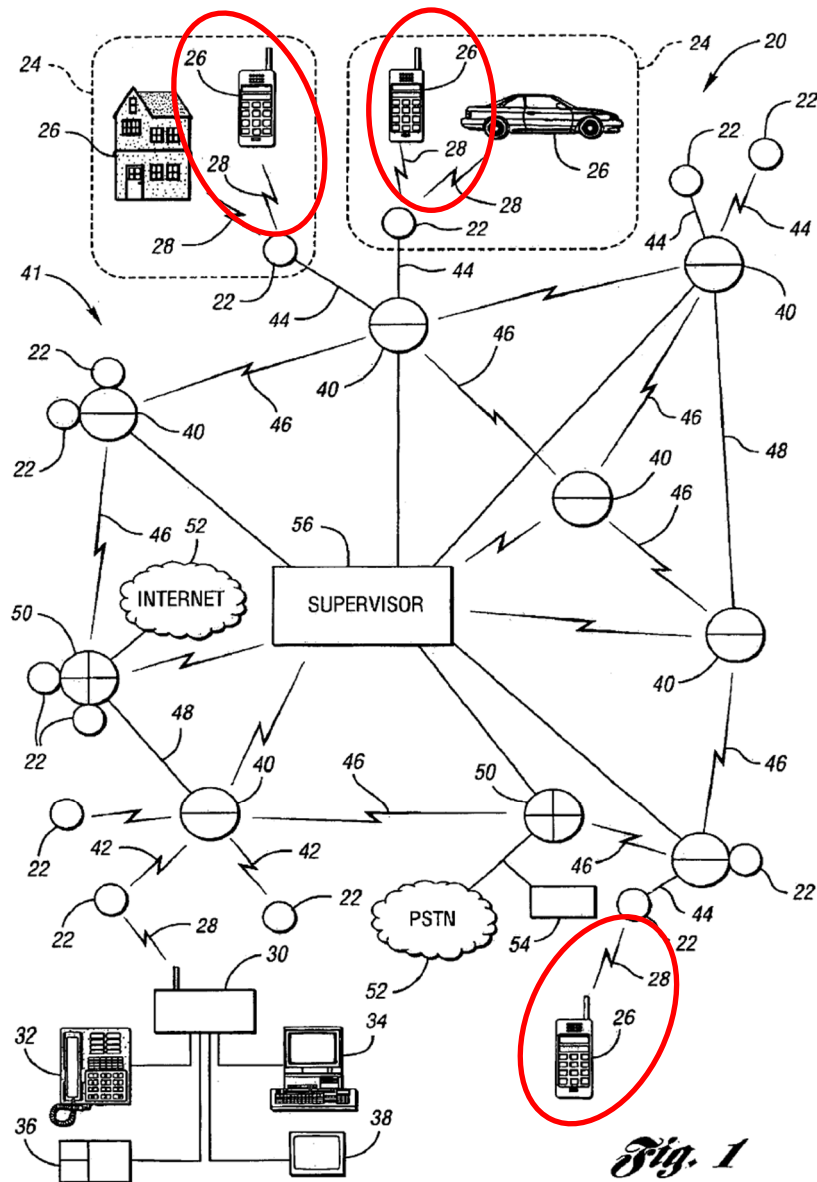


Ex. 1005, Fig. 11 (annotated), 15:24-25 (“Backhaul cable 560 connects backhaul data terminal 554 with junction box 562”), 15:29-31 (“access data terminal 566 connected to junction box 562 through access cable 568”), Abstract (“At least one backhaul antenna interconnects the access point with the remainder of a wireless communication system ... Access data terminals and backhaul data terminals within the access point exchange information through baseband digital packets”), 3:6-8

(“Each access point also includes at least one backhaul antenna interconnecting the access point with the remainder of the wireless communication system.”).

Hohnstein’s access system 564 is a wireless transceiver, as it “transmit[s]” information packets received from the backhaul system 550 destined for a subscriber unit 26 and also “receives” information packets from a subscriber unit 26 to be transmitted via the backhaul system 550. *Id.*, 2:49-59, 6:38-43, 7:7-20, Abstract, 3:2-6.

Hohnstein’s access system 564, including its antennas 570 and 574, communicates with first and second mobile stations (*e.g.*, subscriber units 26). *Id.*, 16:27-32 (“Omnidirectional access antenna 574 may operate at 5.8 GHz providing 57.9 Mbps peak data rate to fixed and portable subscriber units 26 such as terminal network controllers 30. A plurality of directional access antennas 570 may operate at 700 MHz providing 2.4 Mbps data rate per sector to portable subscriber units 26 such as wireless telephones.”), Abstract (“A wireless access point includes at least one access antenna for communicating with wireless subscriber units. An access data terminal formats information packets for transmission by and after reception from each access antenna”), 3:2-3 (“Each access point includes at least one access antenna for communicating with wireless subscriber units.”)



Id., Fig. 1 (annotated).

Such wireless communication between access system 564 and subscriber unit 26 via wireless link 28 uses a local area wireless communication protocol, as discussed *supra* for [1.a]. Ex. 1002, ¶¶142-45.

Notably, the Board in the '555 IPR concluded that “Hoh[ns]tein discloses ... a second wireless local area network transceiver in direct wireless broadband communication with a plurality of computing devices located within a coverage area of the second transceiver” and discloses “the second transceiver being coupled to the first transceiver.” Ex. 1010, pp.43-44.

4. **[1.c] wherein the first wireless transceiver receives from the base station a first downlink signal intended for the first mobile station and provides the first downlink signal to the second wireless transceiver and wherein the second wireless transceiver receives the first downlink signal and re-transmits the first downlink signal to the first mobile station as a second downlink signal according to the local area wireless communication protocol, and**

Hohnstein describes the backhaul system 550 receiving, from another distribution point 40, a first downlink signal (*e.g.*, information packet contained in a backhaul signal) intended for the first mobile station (*e.g.*, subscriber unit 26).

During operation, backhaul data terminal 554 formats baseband digital packetized information for transmission by backhaul antenna 552 ***and converts information received by backhaul antenna 552*** into baseband digital information.

...

If an information packet ***received by antenna system 590*** is ***destined for subscriber unit 26***, 30 communicating with access point 22 through antenna 570, 574, the packet is routed to access data terminal 566.

Ex. 1005, 16:8-49 (emphasis added), 16:25-26 (“backhaul antenna 522 may operate at 23 GHz providing 579 Mbps peak data rate”).

For downstream communication, information packets are ***received through a backhaul antenna*** and converted to a digital baseband format. The information packets are ***then converted*** from the digital baseband format to a broadband format ***and transmitted*** from an access antenna.

Id., 2:50-54 (emphasis added), 3:13-17.

Hohnstein describes the backhaul system 550 providing the first downlink signal to the access system 564, as backhaul terminal 554 “converts information received by backhaul antenna 552 into baseband digital information” (*id.*, 16:10-11) and provided to the access system 564. *Id.*, 2:49-54, 2:60-64 (“information packet in a digital baseband format is routed to an access antenna”), 2:26-28, 3:6-8, Abstract (“Access data terminals and backhaul data terminals within the access point exchange information through baseband digital packets.”).

Hohnstein describes that the access system 564 receives the first downlink signal and re-transmits the first downlink signal to the subscriber unit 26 as a second downlink signal, since the access system 564 “convert[s] ... the digital baseband format [received from the backhaul system 550] to a broadband format and transmit[s] [the information packet] from an access antenna.” *Id.*, 2:50-54,

2:60-64, 3:4-6, 16:12-15 (“access data terminal 566 formats baseband digital packetized information for transmission by access antenna 570, 574”), Abstract.

This re-transmission is performed according to the local area wireless communication protocol. *See supra* [1.b]. Ex. 1002, ¶¶146-48.

Notably, the Board in the ’555 IPR concluded that Hohnstein discloses “the first transceiver receives a first signal from the base station, the first signal intended for a first computing device of the plurality of computing devices” and “discloses ‘the second wireless local area network transceiver determines signal characteristics of the first computing device, and the second transceiver transmits the first signal to the first computing device based on the determined signal characteristics of the first computing device.’” Ex. 1010, pp.44-45.

5. **[1.d] wherein the second transceiver monitors first signal characteristics of the second downlink signal of the first mobile station and monitors second signal characteristics of the second mobile station, and based on the first signal characteristics and the second characteristics, routes information to the first mobile station and the second mobile station, respectively.**

Hohnstein describes the access system 564 in an access point 22 monitoring signal characteristics of downlink signals of subscriber units, since Hohnstein teaches that “a quality error bit rate is established for each subscriber unit 26” which “reflect[s] *changing conditions* such as *noise*, demand, connectivity, or any other suitable parameter.” Ex. 1005, 5:1-21 (emphasis added), 5:22-24 (describing

a subscriber unit 26 “monitor[ing]” a signal transmitted by access point 22), 5:38-42. Hohnstein also describes the access point 22 routing information to first and second subscriber units 26. *Id.*, 16:46-54, 2:50-54, 2:60-64, 3:4-6, 16:12-15. Hohnstein further describes the access points 22 performing a hand off operation from one access point 22 to another as a “subscriber unit 26 ... move[s] out of coverage area 24 for one access point 22 and into coverage area 24 for a new access point 22.” *Id.*, 13:25-39.

To the extent Hohnstein does not explicitly disclose its access system 564 monitoring first signal characteristics of the second downlink signal of the first mobile station and monitors second signal characteristics of the second mobile station, and based on the first signal characteristics and the second characteristics, routing information to the first mobile station and the second mobile station, respectively, Palmer teaches this limitation. *See supra* Ground 1, [1.d]. It would have been obvious to a POSA to monitor a signal characteristic of the downlink signals to each subscriber unit 26 in Hohnstein and perform routing to the mobile hosts based on such monitored characteristics, to determine when to perform a roaming handoff from one access point to another to maintain a continuous wireless connection, as already discussed above. Ex. 1002, ¶¶150-54.

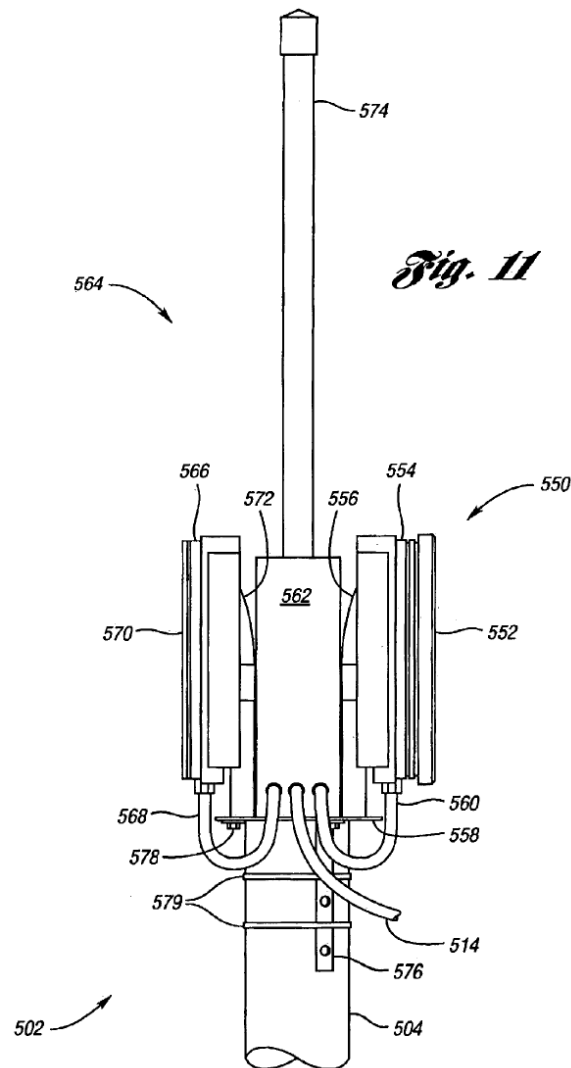
Notably, the Board in the ’555 IPR concluded that “Hohnstein discloses ‘the second wireless local area network transceiver determines signal characteristics of

Ex. 1005, Fig. 11 (annotated), 15:13-53 and 15:66-16:7 and 16:37-46 (describing connection), Abstract (“Access data terminals and backhaul data terminals within the access point exchange information through baseband digital packets”).

Additionally, Palmer discloses a wireline connection connecting the first and second wireless transceivers (*see supra* Section VII.C; Ex. 1004, 5:1-9, 4:31-34; Fig. 2), and a POSA would have at least found it obvious to connect components via a wireline connection to allow for easier component replacement while providing a stable data transfer mechanism between components. Ex. 1002, ¶¶155-58.

E. Claim 3

Hohnstein describes that the second wireless transceiver (access system 564) is removably coupled to the first wireless transceiver (backhaul system 550), because access system 564 utilizes an access data terminal mounting support 572 to mount itself to pole 504 and base plate 558 and is data-connected via access cable 568, while backhaul system 550 utilizes a backhaul mounting support 556 to mount itself to pole 504 and base plate 558 and is data-connected via backhaul cable 560.



Ex. 1005, Fig. 11 (annotated); 15:17-24, 15:29-37.

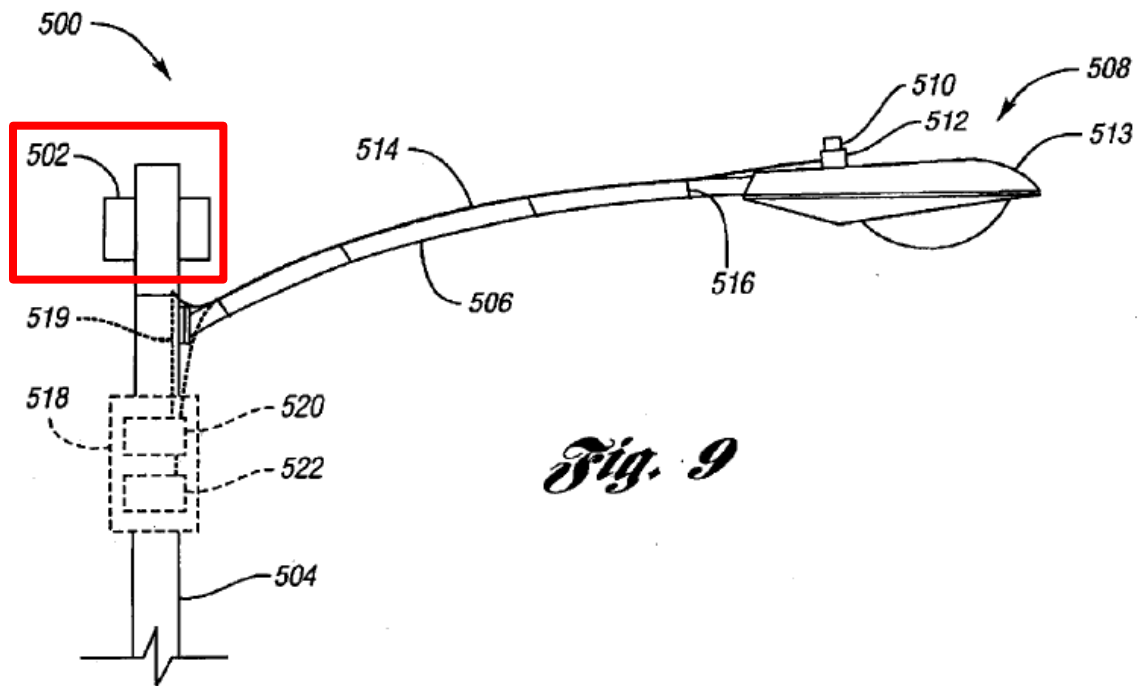
Since the access system 564 and the backhaul system 550 are removable from the pole by virtue of their respective supports, a POSA would have understood that these components are removably coupled to each other. At the very least, a POSA would have found it obvious that separate components wired together could be removably coupled (as opposed to permanently attached) as a design choice (*e.g.*, to make repairs or replacement of faulty components easier).

Notably, the Board in the '555 IPR concluded that Hohnstein discloses “the second transceiver is removably coupled to the first transceiver.” Ex. 1010, pp.47-48; Ex. 1002, ¶¶159-63.

F. Claim 4

Claim 4 recites the first wireless transceiver and second wireless transceiver of the wireless communication device are disposed in a fixed site subscriber station. This claim does not further define any structural features of the wireless communication device. The placement of the device is merely an intended use and therefore should not be given any patentable weight.

Nonetheless, Hohnstein discloses and/or suggests this feature by describing the antenna module 502 provided in a fixed site subscriber station by being mounted on a fixed light pole 504. Ex. 1005, Figs. 9-13, 13:40-47, 14:63-15:12, 1:43-47 (describing wireless communication system being provided on a building, tower, etc.), 9:21-23.

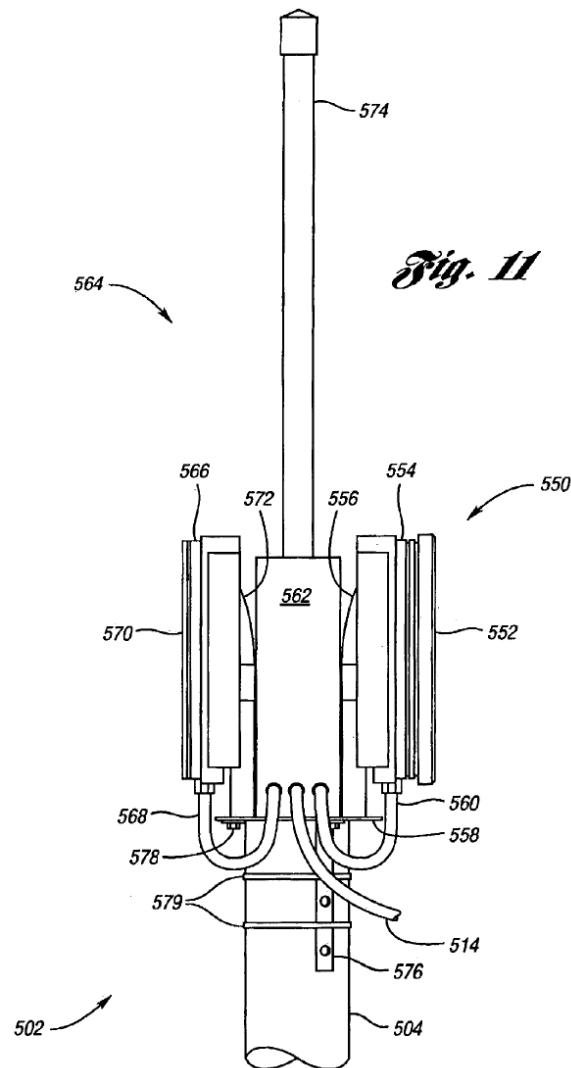


Id., Fig. 9.

Notably, the Board in the '555 IPR concluded that Hohnstein discloses “the wireless communication device is a fixed-site subscriber station.” Ex. 1010, p. 48; Ex. 1002, ¶¶164-68.

G. Claim 5

Hohnstein describes and/or suggests that the first wireless transceiver and the second wireless transceiver are part of an integrated device because they are integrated in *e.g.*, antenna module 502.



Ex. 1005, Fig. 11; 15:13-15.

At the very least, a POSA would have recognized that such integration would have been an obvious variant. *Larson*, 340 F.2d at 968; MPEP 2144.04 (noting “Making Integral” as an example of a “common practice[] which the court has held normally require only ordinary skill in the art and hence are considered routine expedients,” citing *Larson*); Ex. 1002, ¶¶168-73; Ex. 1012; Ex. 1013.

H. Claim 6

Claim 6 is obvious over Hohnstein and Palmer.

1. **[6.preamble] A method for communicating with a wireless communication device, comprising:**

Hohnstein describes a method for communicating with a wireless communication device (*e.g.*, subscriber units 26). *See* [1.preamble], *supra*; Ex. 1002, ¶¶174-75.

2. **[6.a] a first wireless transceiver operable to communicate with a base station, wherein the base station communicates with the first wireless transceiver and a plurality of other wireless communication devices according to a wide area wireless communication protocol; and**

See [1.a], *supra*; Ex. 1002, ¶176.

3. **[6.b] a second wireless transceiver coupled to the first wireless transceiver and operable to directly communicate with a first mobile station and a second mobile station, wherein the second wireless transceiver communicates with the first mobile station and the second mobile station according to a local area wireless communication protocol,**

See [1.b], *supra*; Ex. 1002, ¶177.

4. **[6.c] the method comprising: receiving, using the first wireless transceiver from the base station, a first downlink signal intended for the first mobile station; providing, using the first wireless transceiver, the first downlink signal to the second wireless transceiver; receiving, using the second wireless transceiver, the first downlink signal and re-transmitting the first downlink signal to the first mobile station as a second downlink signal according to the local area wireless communication protocol;**

See [1.c], supra; Ex. 1002, ¶178.

5. **[6.d] monitoring, using the second transceiver, first signal characteristics of the second downlink signal of the first mobile station; monitoring, using the second transceiver, second signal characteristics of the second mobile station; and based on the first signal characteristics and the second characteristics, routing, using the second transceiver, information to the first mobile station and the second mobile station, respectively.**

See [1.d], supra; Ex. 1002, ¶179.

IX. GROUND 3: CLAIMS 1-6 ARE OBVIOUS OVER PALMER AND MAHANY

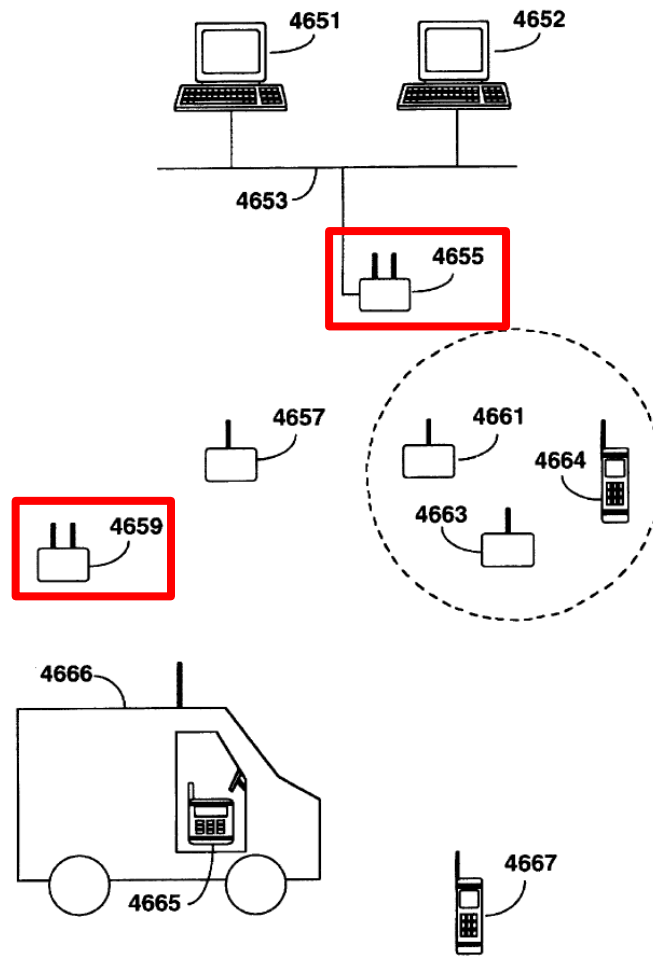
A. Summary of Mahany

Mahany describes a hierarchical communication system providing connectivity between a wireless wide area network (WAN) and a wireless local area network (LAN). Mahany describes a LAN¹² (*e.g.*, within a building or

¹² Mahany refers to this LAN as a “premises” LAN. Ex. 1006, 10:48-58, 25:55-62, 43:59-44:15.

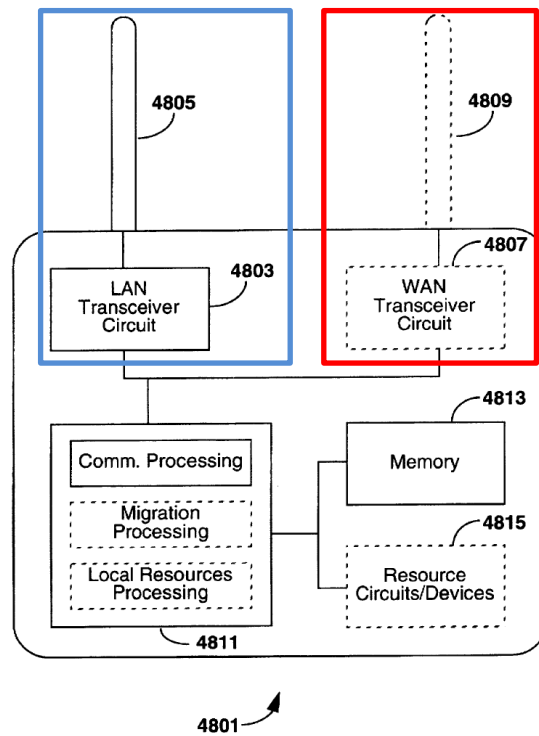
campus) including (i) “a plurality of computing devices at least one of which is a mobile terminal device configured with a wireless transceiver” and (ii) “a plurality of access devices ... to support communications among the plurality of computing devices, and at least one of the plurality of access devices is configured to selectively intercept, store and forward requested data.” Ex. 1006, 4:7-18, 8:61-9:3, 10:48-58, 25:55-62 (referring to a LAN for a “building”), 43:59-62. The access devices “are arranged to provide a communication pathway between the mobile terminal device and the computing device.” *Id.*, 4:43-45. Mahany describes such access devices include “access points” and “access servers,” both of “which participate in routing and relaying data throughout the communication network.” *Id.*, 8:61-9:17.

Mahany’s Figure 46b illustrates an exemplary LAN network configuration that includes a portable computer terminal 4667 and various access devices 4655, 4657, 4659, 4661, 4663 configured with radio transceivers for wirelessly communicating in the LAN. *Id.*, 10:42-44. Figure 46b illustrates certain access devices 4655 and 4659 having two antennas, which include, in addition to a first radio transceiver and antenna for a wireless LAN connection, “a second higher power radio and associated antenna. e.g., WAN, paging, cellular, etc.,” “for long distance, wireless communication with the access server 4665.” *Id.*, 69:19-24.



Ex. 1006, Fig. 46b (annotated).

Mahany's Figure 48 illustrates an example of such an access device, in particular an access server 4801 that includes (i) "transceiver circuitry 4803 and associated antenna 4805 for participating in the premises [LAN]" and (ii) "another transceiver, a transceiver circuit 4807, and associated antenna 4809 [that] might be added ... to support WAN or cellular communications." *Id.*, 75:8-20.



Ex. 1006, Fig. 48 (WWAN and WLAN transceivers annotated in red and blue, respectively); Ex. 1002, ¶¶180-82.

B. Claims 1-4 and 6

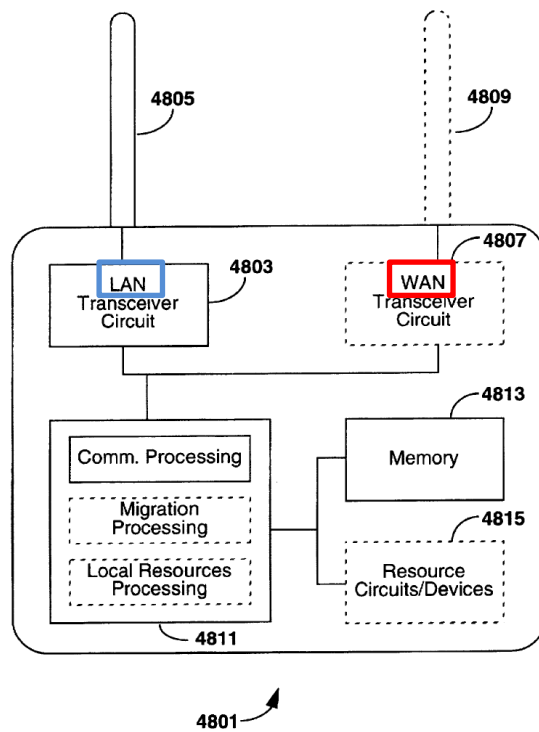
As set forth in Ground 1, claims 1-4 and 6 are anticipated and/or obvious over Palmer. But to the extent Patent Owner alleges that Palmer alone does not disclose or render obvious any aspect of these claims, such aspects are trivial and are taught by Mahany.

For example, to the extent Patent Owner alleges that claims 1 and/or 6 require the claimed device be integrated and that Palmer does not disclose such integration, Mahany discloses a device with integrated first and second wireless transceivers, and a POSA would have found it obvious to form Palmer's device as

an integrated device based on Mahany's teachings. *See infra* Section IX.C; Ex. 1002, ¶¶183-88; Ex. 1012; Ex. 1013.

To the extent Patent Owner disagrees that Palmer teaches a "base station" (limitations [1.a], [6.a]), Mahany discloses a wireless base station topology for a WWAN. Ex. 1006, Figures 1b-1c, Figure 45, 63:63-64:5 (describing antenna tower 4523 for WAN). A POSA would have found it obvious to configure Palmer's central antenna 32 as a "base station" (*e.g.*, using a cellular network) based on Mahany's teachings, inasmuch as a base-station topology was already well established and commonly utilized in the telecommunications industry. Ex. 1002, ¶¶189-90.

To the extent Patent Owner disagrees that the first wireless transceiver's communications in Palmer involve a wide area wireless communication protocol (limitations [1.a], [6.a]) and the second wireless transceiver's communications involve a local area wireless communication protocol (limitations [1.b], [6.b]), Mahany discloses and/or suggests such distinctive protocols by virtue of transceiver circuitry 4803 being a wireless "LAN" transceiver circuit (*see* Figure 48) while transceiver circuit 4807 being a wireless "WAN" transceiver circuit:



Ex. 1006, Fig. 48 (annotated). Additionally, Mahany touts that its system “provides a series of tightly coupled *radio LANs and WANs with radio transceiver and communication protocol designs* which take into consideration such factors as cost, weight, power conservation, channel loading, response times, interference, communication flow, etc., as modified by a primary factor of multiple participation.” *Id.*, 10:22-28 (emphasis added), 59:55-67 (referring to “a *plurality of software protocols, one for each LAN/WAN* to be supported, which *define how the radio is to participate* on the corresponding LAN[/WAN]” (emphasis added)); *see also* 10:62-67 (referring to the “protocol *designed for* operation on the premises *LAN*” (emphasis added)), 12:60-63 (“transceiver and *protocol analysis* also takes place when considering additional multiple participation in the vehicular

LAN and WAN environments” (emphasis added)). A POSA would have found it obvious to utilize WLAN and WWAN protocols based on Mahany’s teachings, especially given Palmer explicitly contemplates its communication system covering a set of buildings or even spanning an entire “city” (Ex. 1004, 4:53-57), which would have prompted use of wide area protocols to cover sufficient distances, while also prompting use of local area protocols within a building for easier connection to individual wireless devices. Ex. 1002, ¶¶191-93.

C. Claim 5

Claim 5 depends from claim 1, and recites that the first wireless transceiver and the second wireless transceiver are part of an integrated device. To the extent Palmer does not suggest to a POSA that the first and second wireless transceivers are part of an integrated device, Mahany discloses and/or suggests this limitation.

Like Palmer, Mahany describes a communications system involving WANs and LANs, including access devices that route and relay data throughout the network. Ex. 1006, 8:61-9:17, 4:7-18, 8:61-9:3, 10:48-58, 25:55-62, 43:59-62. Mahany describes one such access device 4801 that includes a first wireless transceiver 4807/4809 (“WAN transceiver circuit” and associated antenna) to communicate with a WAN, and a second wireless transceiver 4803/4805 (“LAN transceiver circuit and associated antenna) to communicate with a wireless LAN.

Id. Fig. 48, 75:8-20. As illustrated in Figure 48, the WAN and LAN transceiver circuits are part of an integrated device (*e.g.*, access device 4801).

A POSA would have had reason to implement Palmer's remote antenna 34 and one of its access points 40 as an integrated device, as taught by Mahany. First, it is well understood (and even recognized in the MPEP) that "that the use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice." *Larson*, 340 F.2d at 968; MPEP 2144.04 (noting "Making Integral" as an example of a "common practice[]" which the court has held normally require only ordinary skill in the art and hence are considered routine expedients," citing *Larson*). Second, a POSA would have recognized that implementing Palmer's remote antenna 34 and one of its access points 40 as a single integrated device would have provided a benefit of avoiding the purchase of two separate components as a design choice. A POSA would have also had a reasonable expectation of success in integrating the two Palmer components, given the teachings of Mahany and since combining multiple networking functionalities into a single device (*e.g.*, combining a router and wireless access point into a single wireless router) or in a common

enclosure/frame¹³ is a common implementation for networking devices. Ex. 1002, ¶¶194-202; Ex. 1012; Ex. 1013.

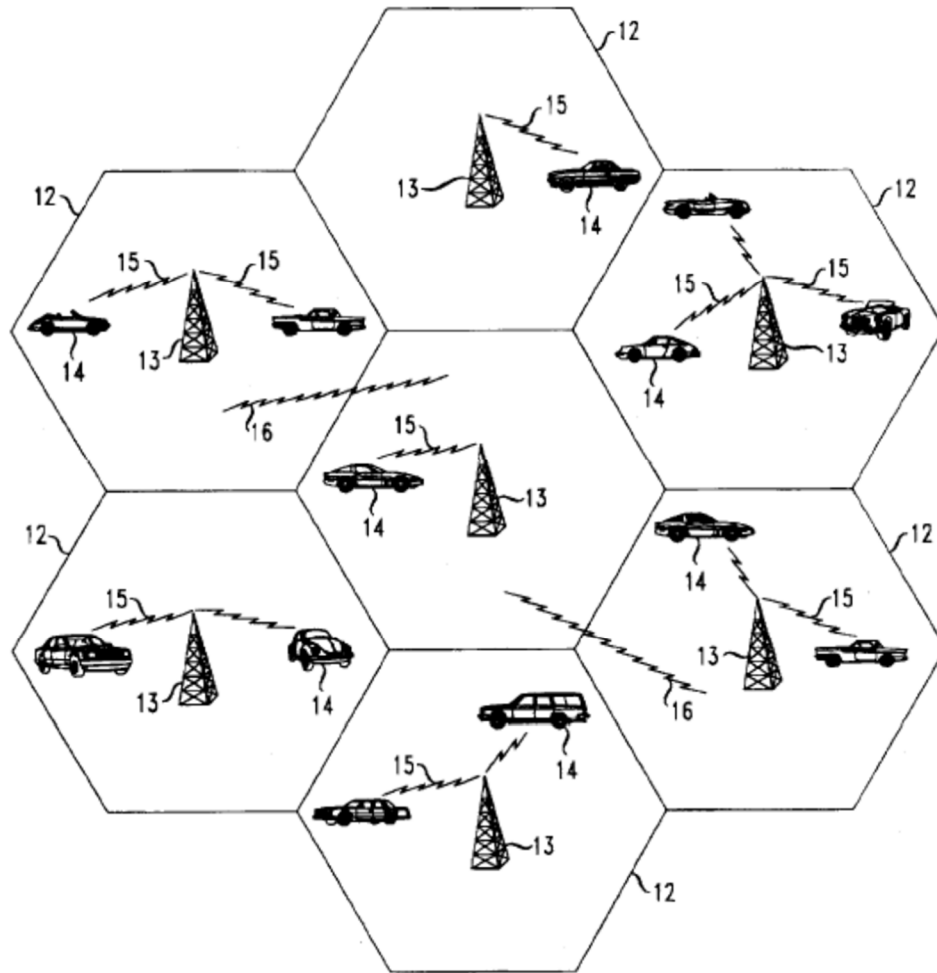
X. GROUND 4: CLAIMS 1-4 AND 6 ARE OBVIOUS OVER PALMER AND AGRAWAL

A. Summary of Agrawal

Agrawal describes a mobile wireless communications system including a base station 13 defining a coverage area 12 of wireless coverage for communicating with a plurality of mobile units 14. Ex. 1007, 3:51-62.

¹³ For instance, the '794 patent describes that a device is “integrated” merely by installing its components in a rack-assembly. Ex. 1001, 8:28-36.

FIG. 1



Id., Fig. 1.

Agrawal's system monitors the quality of the wireless link between a base station 13 and a mobile unit 14—a receiver monitors signal characteristics such as received signal strength, word-error-rate (“WER”), and noise or interference level, and a transmitter uses such monitored signal characteristics to control its transmission. *Id.*, 5:24-29 (“[T]he receiver periodically monitors the received signal strength and the average WER. ... [T]he transmitter uses the monitored

signal strength and the WER on the channel between the two for setting the power and the encoding levels.”), 5:29-35 (referring to other signal characteristics such as “carrier-to-interference ratio, channel throughput, reliability, BER”), 1:29-33 (“BER” as bit-error rate; “WER” as word-error-rate), 5:47-52.

For instance, in monitoring a downlink signal (*e.g.*, involving “base station sending data to a mobile receiver [unit]”), the mobile unit monitors the WER and if the WER “increases beyond a predetermined upper limit, ... the mobile unit advantageously informs the base station” and the base station controls transmissions accordingly. *Id.*, 5:39-44. The transmitter utilizes the monitored signal characteristics to control transmission, including to “set[] the power and the encoding levels.” *Id.*, 5:26-29, 2:58-3:1. For example, in response to a “drop in the channel quality” measured by a mobile unit and conveyed to the base station, the transmitter may change the encoding level. *Id.*, 5:26-29. By increasing the encoding level, the transmitter compensates for the drop in signal quality at the sacrifice of reduced “throughput of the wireless channel” as a result of requiring “more redundant bits ... to be transmitted for the same number of information bits.” *Id.*, 2:58-3:1.

As such, Agrawal describes a transceiver (*e.g.*, base station 13) that directly communicates with first and second mobile stations (mobile units 14), and that monitors first signal characteristics of the second downlink signal of the first

mobile station and monitors second signal characteristics of the second mobile station, per limitations [1.d] and [6.d]. Ex. 1002, ¶¶203-08.

In the '555 IPR, Agrawal was presented as a reference in one unpatentability ground but the Board did not substantively address Agrawal as it found the '555 challenged claims unpatentable on another ground. Ex. 1010.

B. Claim 1-4 and 6

As discussed in Ground 1, *supra*, Palmer describes and/or suggests each limitation of claims 1-4 and 6. However, to the extent Patent Owner alleges Palmer does not describe its monitoring as being the second transceiver monitoring first signal characteristics of the second downlink signal of the first mobile station and monitoring second signal characteristics of the second mobile station, Agrawal describes these features, as discussed above.

A POSA would have had reason to have Palmer's access point 40 monitor first signal characteristics of the second downlink signal of the first portable terminal 20 and monitor second signal characteristics of the second portable terminal 20, respectively, as taught by Agrawal.¹⁴ Palmer and Agrawal both disclose using

¹⁴ The '794 patent describes the same general approach as Agrawal, where a mobile station measures signal characteristics and reports these measurement results back to the transceiver. Ex. 1001, 8:64-9:1.

monitored signal characteristics to determine whether a downlink connection has degraded so as to necessitate reducing the connection's data rate. Ex. 1004, 5:10-49, 6:20-54; Ex. 1007, 5:26-29, 2:58-3:1. Palmer additionally utilizes these monitored signal characteristics to determine whether to switch (*e.g.*, roam) a portable terminal 20 to another access point, while Agrawal describes its monitored signal characteristics indicating “[i]f the mobile unit is moving away from the base station.” Ex. 1004, 5:10-49, 6:8-54; Ex. 1007, 5:36-47, 2:7-15. A POSA would have recognized and appreciated that Agrawal's approach of monitoring downlink signal characteristics at the mobile unit and reporting the results back to the transceiver (*e.g.*, base station in Agrawal) would have provided Palmer's system with continuous monitoring of the condition of the downlink channel as a “feedback loop” (Ex. 1007, 8:16-19, 5:39-45), including continued monitoring when the downlink channel “is idle,” which would have smoothened Palmer's handoff procedure. *Id.*, 4:34-37, 5:48-51. Ex. 1002, ¶¶209-13.

A POSA would also have had a reasonable expectation of success in implementing such monitoring. Palmer already discloses such monitoring of signal quality being performed in its system, so incorporating the particular monitoring approach of Agrawal would have been a straightforward adaptation of existing monitoring operations already being performed in Palmer. Ex. 1002, ¶214.

XI. GROUND 5: CLAIM 5 IS OBVIOUS OVER PALMER, AGRAWAL, AND MAHANY

Claim 5 depends from claim 1, and is obvious over Palmer, Agrawal, and Mahany for at least the reasons set forth in Ground 1 (addressing parent claim 1) and Ground 3 (addressing claim 5's limitations). Ex. 1002, ¶¶215-16.

XII. GROUND 6: CLAIMS 1-6 ARE OBVIOUS OVER HOHNSTEIN AND AGRAWAL

As discussed in Ground 2, *supra*, Hohnstein describes and/or suggests various limitations of claims 1-6.

In Ground 2, Hohnstein was supplemented with teachings from Palmer pertaining to second transceiver monitoring first signal characteristics of the second downlink signal of the first mobile station and monitoring second signal characteristics of the second mobile station. Agrawal discloses these limitations. *See* Ground 4, *supra*. Thus, in this Ground, Agrawal replaces Palmer for this aspect of claim 1, with the remainder of the application of Hohnstein against the claims being already set forth above in Ground 2.

A POSA would have had reason to have Hohnstein's access system 564 monitor first signal characteristics of the second downlink signal of a first subscriber unit 26 and monitor second signal characteristics of a second subscriber unit 26, as taught by Agrawal, so as to route information to the first and second subscriber units 26, respectively, based on the first signal characteristics and the

second characteristics (as well as for other reasons set forth above in Ground 2).

Hohnstein and Agrawal both disclose using monitored signal characteristics to determine whether a downlink connection has degraded so as to necessitate reducing the connection's data rate. Ex. 1005, 5:1-29 (reducing "information rate" if "noise increases," "conditions continue to worsen," or "subscriber unit 26 moves between coverage areas 24"); Ex. 1007, 5:26-29, 2:58-3:1). Hohnstein additionally describes handing off a subscriber unit 26 to another access point as the subscriber unit 26 moves between coverage areas 24, while Agrawal describes its monitored signal characteristics indicating "[i]f the mobile unit is moving away from the base station." Ex. 1005, 13:25-39, 5:1-21, 8:7-31; Ex. 1007, 5:36-47, 2:7-15. A POSA would have recognized and appreciated that Agrawal's approach of monitoring downlink signal characteristics at the mobile unit and reporting the results back to the transceiver (*e.g.*, base station in Agrawal) would have provided Hohnstein's system with continuous monitoring of the condition of the downlink channel as a "feedback loop" (Ex. 1007, 8:16-19, 5:39-45), including continued monitoring when the downlink channel "is idle," which would have smoothened Hohnstein's handoff procedure. *Id.*, 4:34-37, 5:48-51; Ex. 1002, ¶¶217-23.

A POSA would also have had a reasonable expectation of success in implementing such monitoring. Hohnstein already discloses such monitoring of signal quality being performed in its system, so incorporating the particular

monitoring approach of Agrawal would have been a straightforward adaptation of existing monitoring operations already called for in Hohnstein. Indeed, because Hohnstein calls for monitoring, a POSA would have looked to existing monitoring techniques so as to perform the functions called for in Hohnstein, with Agrawal being a preferred and suitable way of doing so. Ex. 1007, 4:34-37, 5:48-51; Ex. 1002, ¶¶224-25.

XIII. SECONDARY CONSIDERATIONS

There are no secondary considerations known to Petitioner that affect the strong cases of obviousness herein. Ex. 1002, ¶226.

XIV. DISCRETIONARY DENIAL IS UNWARRANTED UNDER *FINTIV*

In view of the Director’s recent guidance on *Fintiv*, the time to trial is not a dominating factor in the *Fintiv* analysis. *Memorandum for the Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation*, at 8 (June 21, 2022). Instead, a “compelling unpatentability challenge” is a more important consideration. *Id.* at 4. Such compelling evidence refers to a high likelihood of success on the merits for at least one claim.

Commscope Tech. LLC v. Dali Wireless, Inc., IPR2022-01242, Paper 23 at 3-4 (PTAB Feb. 27, 2023) (precedential).

For the reasons set forth above, this case presents a compelling unpatentability challenge. Should Patent Owner present a *Fintiv* challenge based

on the developments in the trial subsequent to the filing of this Petition, Petitioner will seek to address the developments.

XV. CONCLUSION

Verizon requests *inter partes* review of claims 1-6 of the '794 patent.

DATED: June 28, 2023

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CERTIFICATE OF COMPLIANCE WITH 37 C.F.R. § 42.24

I hereby certify that this petition complies with the word count limitation of 37 C.F.R. § 42.24(a)(1)(i) because the petition contains a total of 11,871 words. This total excludes the cover page, signature block, and the parts of the petition exempted by 37 C.F.R. § 42.24(a)(1).

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CERTIFICATE OF SERVICE

The undersigned certifies that a complete copy of this Petition for *Inter Partes* Review of U.S. Patent No. 9,426,794 and all Exhibits and other documents filed together with this Petition were served on the official correspondence address for the patent shown in PAIR via FEDERAL EXPRESS next business day delivery, on this date:

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