

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC. and CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS,
Petitioners,

v.

PROCOMM INTERNATIONAL PTE. LTD.,
Patent Owner.

U.S. Patent No. 8,583,100

Issue Date: Nov. 12, 2013

Title: DISTRIBUTED REMOTE BASE STATION SYSTEM

Inter Partes Review No.: IPR2024-01452

**PETITIONERS' OPPOSITION TO PATENT OWNER'S REQUEST
FOR DISCRETIONARY DENIAL OF INSTITUTION**

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TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	STIPULATION.....	2
III.	THE DIRECTOR SHOULD NOT DENY INSTITUTION PURSUANT TO <i>FINTIV</i>	2
A.	Factor 1: whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted.....	3
B.	Factor 2: proximity of the court's trial date to the Board's projected statutory deadline	4
C.	Factor 3: investment in the parallel proceeding by the court and the parties	5
D.	Factor 4: overlap between issues raised in the petition and in the parallel proceeding.	6
E.	Factor 5: whether the petitioner and the defendant in the parallel proceeding are the same party.	6
F.	Factor 6: other circumstances that impact the Board's exercise of discretion, including merits.....	7
1.	The Merits of the Petition Are Strong.....	7
a.	Overview.....	7
b.	Summary of the '100 Patent.....	12
c.	State of the Art.....	17
d.	Ground 1 Plainly Demonstrates that at Least Independent Claim 1 is Unpatentable.....	21
IV.	OTHER CONSIDERATIONS.....	30
A.	The Settled Expectations of the Parties.....	30

*Petitioners’ Opposition to Patent Owner’s
Request for Discretionary Denial of Institution*

B. The Petition is Properly Supported by Expert Testimony That
Cites the Underlying Factual Support 30

V. CONCLUSION.....31

PETITIONERS' EXHIBIT LIST

<i>Exhibit</i>	<i>Description</i>
1001	U.S. Patent No. 8,583,100 (the "'100 Patent")
1002	Select portions of prosecution history of the '100 Patent ("File History")
1003	Declaration of Petitioners' Expert Henry Houh ("Houh")
1004	U.S. Patent No. 8,908,650 to Aarflot et. al. ("Aarflot")
1005	U.S. Patent Application Publication No. 2008/0045254 to Gupta et. al. ("Gupta")
1006	U.S. Patent No. 6,785,558 to Stratford et al. ("Stratford")
1007	U.S. Patent No. 6,963,552 to Sabat et al. ("Sabat")
1008	U.S. Patent Publication 20090129314 A1 to Weniger et. Al. ("Weniger")
1009	U.S. Patent No. 6,985,454 to Wiedeman et al. ("Wiedeman")
1010	U.S. Patent No. 7,899,495 B2 to Laroia et al. ("Laroia")
1011	J. Kerpez, "A radio access system with distributed antennas," in <i>IEEE Transactions on Vehicular Technology</i> , vol. 45, no. 2, pp. 265-275, May 1996, ("Kerpez")
1012	J. H. Winters, J. Salz and R. D. Gitlin, "The impact of antenna diversity on the capacity of wireless communication systems," in <i>IEEE Transactions on Communications</i> , vol. 42, no. 234, pp. 1740-1751, FEBRUARY/MARCH/APRIL 1994 ("Winters").
1013	Related Patents
1014	UTRAN Iub Interface Data Transport and Transport Signalling for Common Transport Channel Data Streams (Release 4) 3GPPTS 25.434 V.4.4.0 (2002-2006)
1015	Common Public Radio Interface (CPRI); Interface Specification, CPRI Specification V2.0 (2004-10-01)

*Petitioners' Opposition to Patent Owner's
Request for Discretionary Denial of Institution*

<i>Exhibit</i>	<i>Description</i>
1016	U.S. Patent No. 8,380,198 to Etemad et al. ("Etemad")
1017	International Publication No. WO 2006/040653 to Aarflot.
1018	ORDER denying Defendants' Opposed Motion to Stay Pending <i>Inter Partes</i> Review as premature in <i>Procomm International Ptd. Ltd. v. Verizon Communications, Inc. et al.</i> , No. 2:24-cv-009-RWS-RSP (E.D.Tex.)
1019	Defendants' Opposition to Plaintiff Procomm International Pte. LTS.'s Motion for Leave to Amend Infringement Contentions (Dkt. 52) in <i>Procomm International Ptd. Ltd. v. Verizon Communications, Inc. et al.</i> , No. 2:24-cv-009-RWS-RSP (E.D.Tex.)
1020	ORDER granting in part Procomm's Motion for Leave to Amend Infringement Contentions (Dkt. 76) in <i>Procomm International Ptd. Ltd. v. Verizon Communications, Inc. et al.</i> , No. 2:24-cv-009-RWS-RSP (E.D.Tex.)
1021	Joint Request to Amend the Docket Control Order (Dkt. 77) in <i>Procomm International Ptd. Ltd. v. Verizon Communications, Inc. et al.</i> , No. 2:24-cv-009-RWS-RSP (E.D.Tex.)
1022	Second Amended Docket Control Order (Dkt. 100) in <i>Aspen Networks, Inc. v. AT&T Mobility, LLC</i> , No. 2:23-cv-00476-RWS-RSP (E.D.Tex.)

I. INTRODUCTION

Patent Owner (“Procomm”) has requested discretionary denial of institution of the Petition for *inter partes* review of the ’100 Patent on the basis that “all six *Fintiv* factors favor discretionary denial” in view of the related district court litigation, *Procomm International Ptd. Ltd. v. Verizon Communications, Inc. et al.*, No. 2:24-cv-009-RWS-RSP (E.D.Tex.) (“Related Litigation”). Req. 1. However, the primary premise from which Procomm bases its arguments – that “[t]he district court trial is scheduled nine months in advance of the deadline for a Final Written Decision in this IPR” – is no longer true, highlighting the real-world uncertainties that accompany patent “rocket docket” trial schedules. *See* EX-1022.

This Opposition demonstrates that Procomm’s Request should be denied in the interest of efficiency, fairness, and patent quality. A proper analysis of the *Fintiv* factors, particularly in view of the uncertain but delayed trial schedule, Petitioners’ *Sotera* stipulation, and the strength of the grounds set forth in the Petition, shows that discretionary denial is not warranted pursuant to *Fintiv*.

Accordingly, Petitioners’ hereby respectfully request that the Director deny Procomm’s Request for discretionary relief from a meritorious petition for IPR.

II. STIPULATION

Petitioners hereby present a *Sotera* stipulation. Petitioners stipulate that if the Board grants the Petition and institutes an *inter partes* review, Petitioners will not pursue in the Related Litigation the specific grounds asserted in the Petition, or any other ground that could have been reasonably raised in an IPR. See *Sotera Wireless, Inc. v. Masimo Corporation*, IPR2020-01019, Paper 12 (P.T.A.B. Dec. 1, 2020) (precedential).

III. THE DIRECTOR SHOULD NOT DENY INSTITUTION PURSUANT TO *FINTIV*

Procomm seeks discretionary denial of the Petition on the basis that “all six *Fintiv* factors favor discretionary denial.” Req. 1. The primary basis for seeking denial was the scheduled trial date in the Related Litigation in October 2024. However, the Court recently granted Procomm’s motion for leave to amend its infringement contentions (*See* EX-1020) which the parties in the Related Litigation have recognized will necessitate a later trial date, as reflected in the filing of a joint motion to amend the docket control order with a new trial date to be determined. *See* EX-1022. Petitioners are aware of at least one case before the same judge where the trial was recently rescheduled from October 2025 to April 2026 under similar circumstances, thus indicating that the trial in the Related Litigation may not be rescheduled at least until April 2026. *See* EX-1022.

*Petitioners' Opposition to Patent Owner's
Request for Discretionary Denial of Institution*

Moreover, Petitioners' *Sotera* stipulation proffered herein eliminates any overlap of issues presented in the Petition and issues to be tried in the Related Litigation.

Procomm's Request also demonstrates the strength of Petitioners' unpatentability challenges because the Request resorts to mischaracterizing the prior art and the arguments in the Petition in an attempt to traverse the grounds.

As demonstrated below, a proper *Fintiv* analysis shows that discretionary denial is not warranted in the interest of efficiency, fairness, and patent quality.

A. Factor 1: whether the court granted a stay, or evidence exists that one may be granted if a proceeding is instituted.

Factor 1 favors institution.

The Board in *Fintiv* recognized that “[a] district court stay of the litigation pending resolution of the PTAB trial allays concerns about inefficiency and duplication of efforts” and that “[t]his fact has strongly weighed against exercising the authority to deny institution under *NHK*.” *Fintiv* 6. The Board also recognized that a denial of a motion to stay as premature pending a decision on institution “usually weighed against exercising authority to deny institution under *NHK*,” noting that the “proximity of the court’s trial date and investment of time are relevant to how much weight to give to the court’s willingness to reconsider a stay.” *Fintiv* 7.

*Petitioners' Opposition to Patent Owner's
Request for Discretionary Denial of Institution*

Here, Petitioners filed a motion for a stay pending *inter partes* review that was denied by the Court as premature pending the Board's decision on institution. *See* EX-1018. Thus, Factor 1 weighs in favor of institution.

Notably, Procomm opposed a stay of the Related Litigation pending resolution of this proceeding, which has been recognized by the Board as the mechanism that "allays concerns about inefficiency and duplication of efforts," yet seeks to invoke the Board's discretion to deny institution on the bases of inefficiency and duplication of efforts based on that same stay being denied. Procomm's "heads I win, tails you lose" approach should be rejected.

B. Factor 2: proximity of the court's trial date to the Board's projected statutory deadline

Factor 2 is neutral, and to the extent it may favor denial, is heavily outweighed by the other factors.

Procomm's Request is based on the now erroneous premise that the trial in the Related Litigation was scheduled in October 2024. However, the Court recently granted Procomm's motion for leave to amend its infringement contentions (*See* EX-1020) which the parties in the Related Litigation have recognized will necessitate a later trial date, as reflected in the filing of a joint motion to amend the docket control order with a new trial date to be determined. *See* EX-1022. Petitioners are aware of at least one case before the same judge

*Petitioners' Opposition to Patent Owner's
Request for Discretionary Denial of Institution*

where the trial was recently rescheduled from October 2025 to April 2026 under similar circumstances, thus indicating that the trial in the Related Litigation may not be rescheduled at least until April 2026. *See* EX-1022.

In addition, trial dates in this district court are often delayed for various reasons, as counsel in the Related Litigation is well aware. *See, e.g. Multimedia Techs. PTE Ltd. v. LG Elecs. Inc., et al.*, 2:22-cv-00494-JRG-RSP, Dkt. 273 (E.D. Tex. Mar. 18, 2025) (noting that “[t]his case has been set for trial five times: November 18, 2024, January 27, 2025, February 7, 2025, March 3, 2025, and March 17, 2025. The parties have also been notified that other cases are preferentially set ahead of them for the April 7, 2025 and April 21, 2025 trial settings.”).

C. Factor 3: investment in the parallel proceeding by the court and the parties

Factor 3 favors institution.

As held by the Board in *Fintiv*, “[i]f, at the time of the institution decision, the district court has not issued orders related to the patent at issue in the petition, this fact weighs against exercising discretion to deny institution under *NHK*.”

Fintiv 10. No orders have been issued or are expected to be issued by the district court.

*Petitioners' Opposition to Patent Owner's
Request for Discretionary Denial of Institution*

Procomm argues that by the expected July 29, 2025, institution decision date, the *Markman* hearing will have been held in the district court. However, there are no claim construction issues regarding the '100 Patent that have been raised that have any bearing on the grounds set forth in the Petition because the prior art relied on in the Petition meets each of the claim terms under any reasonable interpretation. Pet. 21.

D. Factor 4: overlap between issues raised in the petition and in the parallel proceeding.

Factor 4 favors institution.

In view of Petitioners' *Sotera* stipulation, there will be no overlap between the issues raised in the Petition and issues to be adjudicated in the Related Litigation. In addition, Petitioners are not relying on any system art in the Related Litigation that corresponds to the prior art relied upon in the Petition to challenge the '100 Patent.

In the Related Litigation, Procomm asserts only Claims 15 and 19. EX-2007. The Petition challenges Claims 1-4, 6, 8-11, 14, 15, and 17-19, thus only a subset of the challenged claims is asserted in the Related Litigation.

E. Factor 5: whether the petitioner and the defendant in the parallel proceeding are the same party.

Factor 5 is neutral.

Each of the Petitioners is a defendant in the Related Litigation. Nothing within *Fintiv* suggests that the same party between the proceedings weighs in favor of discretionary denial. *See HP Inc. v. Slingshot Printing LLC*, IPR2020-01084, Paper 13 at 9 (having the “same parties as parallel proceeding” makes factor 5 “neutral”)).

F. Factor 6: other circumstances that impact the Board’s exercise of discretion, including merits.

1. The Merits of the Petition Are Strong

The merits of the Petition are particularly strong and warrant institution in the interest of the public benefit in strengthening the patent system by allowing the review of patents challenged with sufficiently strong merits showing unpatentability of at least one claim. Here, the Petition sets forth grounds that plainly demonstrate the unpatentability of the challenged claims.

a. Overview

As set forth in the Overview (Section II) of the Petition, the challenged claims are directed to prior art systems and combinations of conventional components of a distributed antenna system and base station system that distribute base station functions to a plurality of remote antenna units, all of which was well-known in the art. For example, at the time that the ’100 Patent was filed, the

Aarflot reference disclosed the same structure and method including the distribution of base station functions into the remote antennas.

The '100 Patent discloses distributing base station functionality in a distributed antenna system (DAS). As illustrated in annotated Fig. 8, the system includes a host (purple) that provides RF sampled data in the downlink direction (yellow) to, and receives RF sampled data in the uplink direction (green) from, a first one (806) of several remote stations (blue) (806, 810, 810, 812). Each remote station (blue) includes an antenna so that it may function as the air interface to user equipment within range of its antenna via RF downlink signals (dashed yellow) and RF uplink signals (dashed green). The downlink RF data signals and uplink RF data signals are created and routed among the remote stations via the routers (red).

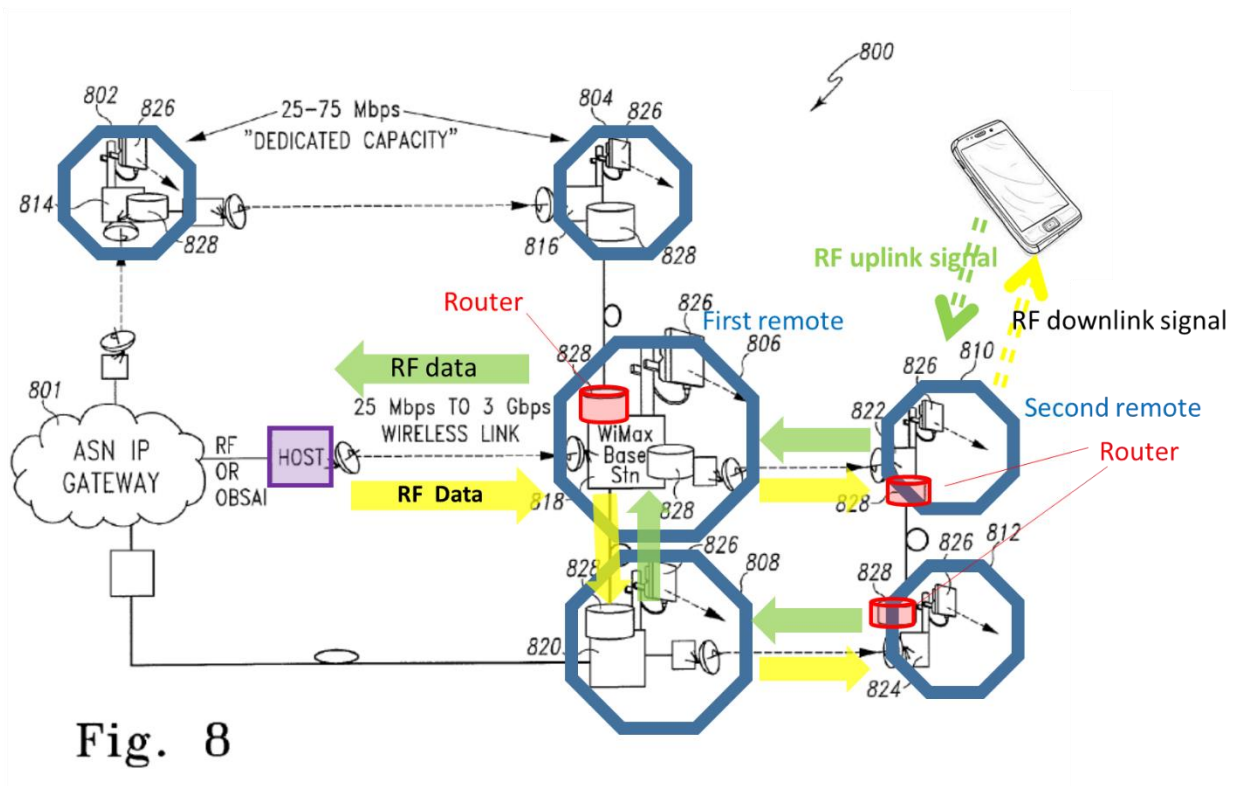


Fig. 8

EX-1001, FIG. 8¹; EX-1003 ¶31.

The communications between the host and the first remote station (806), and between individual remote stations, can be in the common public radio interface (CPRI) format, in which RF sampled data (baseband) is transported to a first remote station and up converted into an RF signal. Where the RF signal is destined for a second remote station (810), the first remote station (806) includes base station functionality to process the RF signal and forward the RF sampled data to the second remote station (810). EX-1003 ¶32.

¹ All colored figures are annotated by Petitioners.

*Petitioners' Opposition to Patent Owner's
Request for Discretionary Denial of Institution*

Aarflot includes a parallel disclosure that includes the same architecture as the '100 Patent but uses different terms. Below, the elements of distributing base station functionality in a DAS described in Aarflot are highlighted in the same colors corresponding to the common elements illustrated for the '100 Patent.

Aarflot discloses a system including a radio equipment control node (REC) [host] (purple) that provides RF sampled data in the downlink direction (yellow) to, and receives RF sampled data in the uplink direction (green) from, a first one 14a of several remote radio equipment nodes (RE) [remote antenna units] (blue). Each remote antenna unit 14a-c includes an antenna (85a, 85b, 85c) so that it may function as the air interface to user equipment within range of its antenna via RF downlink signals (dashed yellow) and RF uplink signals (dashed green). The downlink RF data signals and uplink RF data signals are created and routed among the radio antenna units (RE) via the routers [framer/deframer] (red).

Aarflot

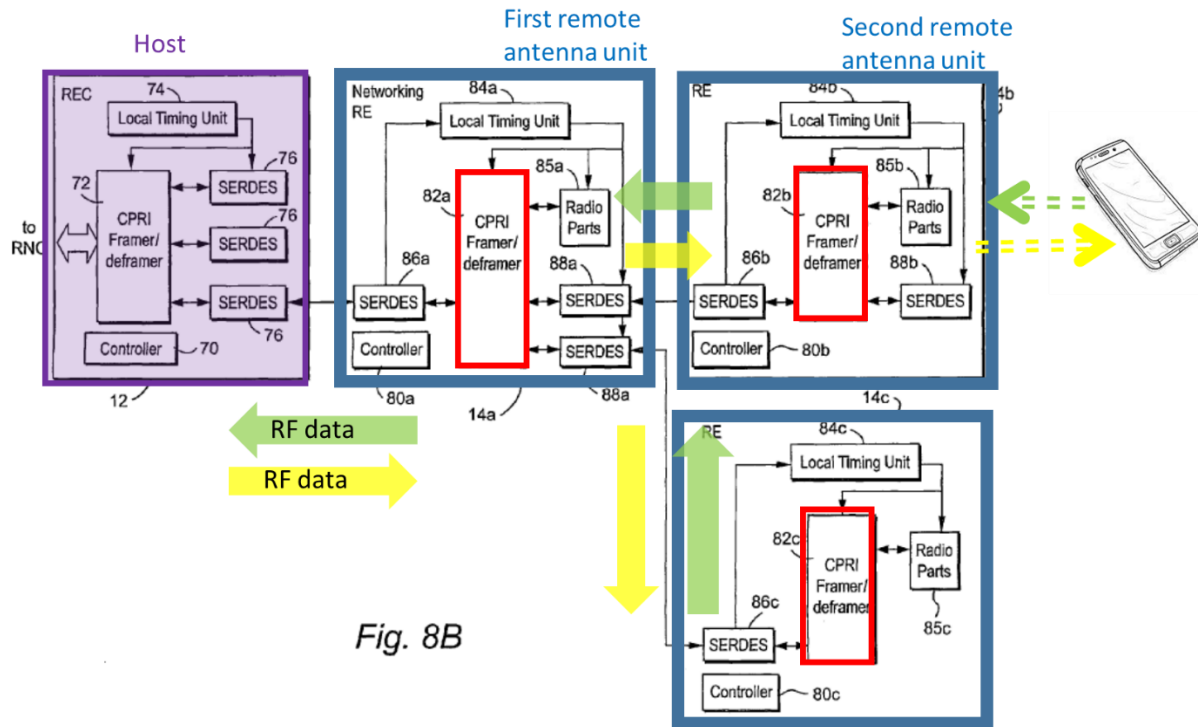


Fig. 8B

EX-1004, FIG. 8B; EX-1003 ¶33.

In Aarflot, the communications between the host [REC] and the first remote antenna unit 14a, and between remote antenna units (14a, 14b, 14c), can be in the CPRI format, in which, for RF signals destined to remote antenna units 14b or 14c, the first remote antenna unit 14a includes base station functionality to frame and route RF sampled data to the other antenna unit (14b, 14c). Likewise, uplink RF signals received at antenna unit 14b are framed and routed through first antenna unit 14a to the host [REC]. EX-1003 ¶34.

Both Aarflot and the '100 Patent disclose distributing base station functionality to multiple, geographically separated antenna stations in a manner

that increases bandwidth utilization and reduces latency, both desirable attributes in a network. EX-1001 9:39-57; EX-1004, 2:26-37; EX-1003 ¶35.

b. Summary of the '100 Patent

The '100 Patent is directed to systems and methods for a distributed base station. System 100 is a field-configurable distributed antenna system (DAS) that provides bidirectional transport of a fixed portion of RF spectrum from a gateway 101 to a remote antenna 108. EX-1003 ¶36.

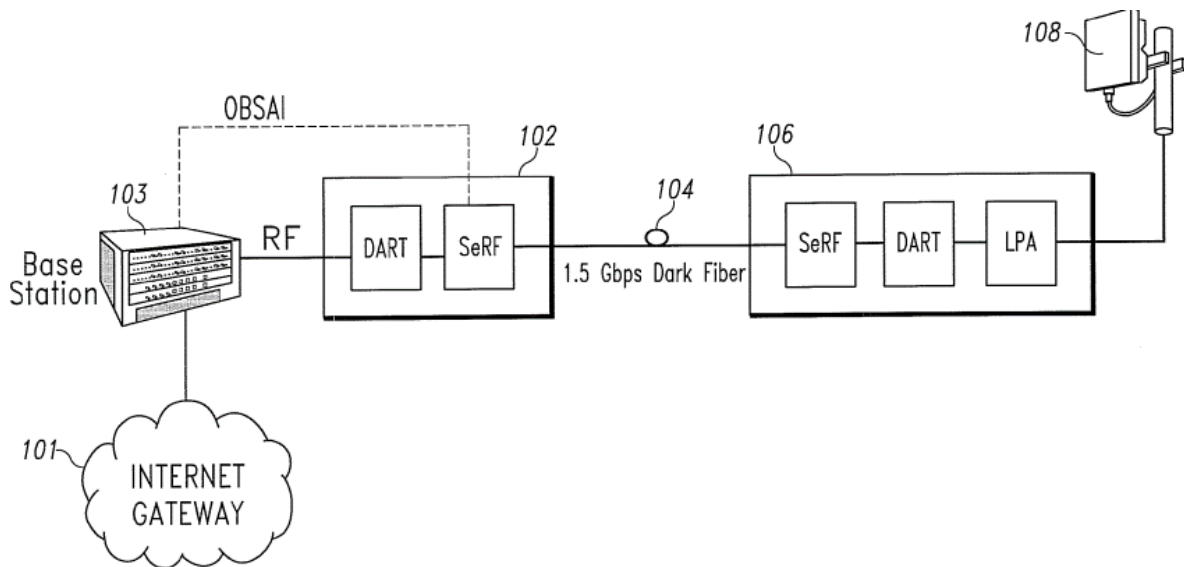
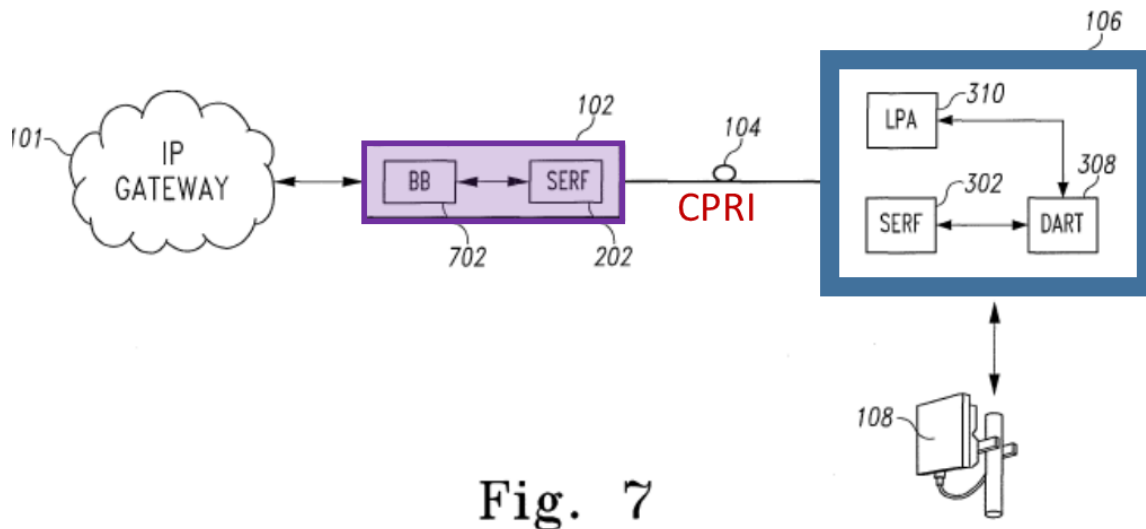


Fig. 1

Along with IP gateway 101 and remote antenna 108, system 100 includes base station 103, host unit 102, transport mechanism 104, and remote unit 106. The host unit 102, a modular host transceiver, and remote unit 106, a modular remote radio head, work together to transmit and receive data to/from remote antennas. EX-1001 2:63-3:13; EX-1003 ¶37.

The base station 103 creates the protocol and modulation type for the channel. The base station 103 sends the RF signal to host unit 102. Host unit 102 has a serial radio frequency (SeRF) communicator that is coupled to a digital-to-analog radio frequency transceiver (DART) interface. Remote unit 106 converts the received signal back into an RF signal and transmits the signal over antenna 108 to consumer mobile devices. EX-1001 3:23-34; EX-1003 ¶38.

FIG. 7 illustrates a “configuration of a system 100 in which remote unit 106 performs the functionality of a base station”, a configuration that the patent states provides increased capacity to a network of antennas.

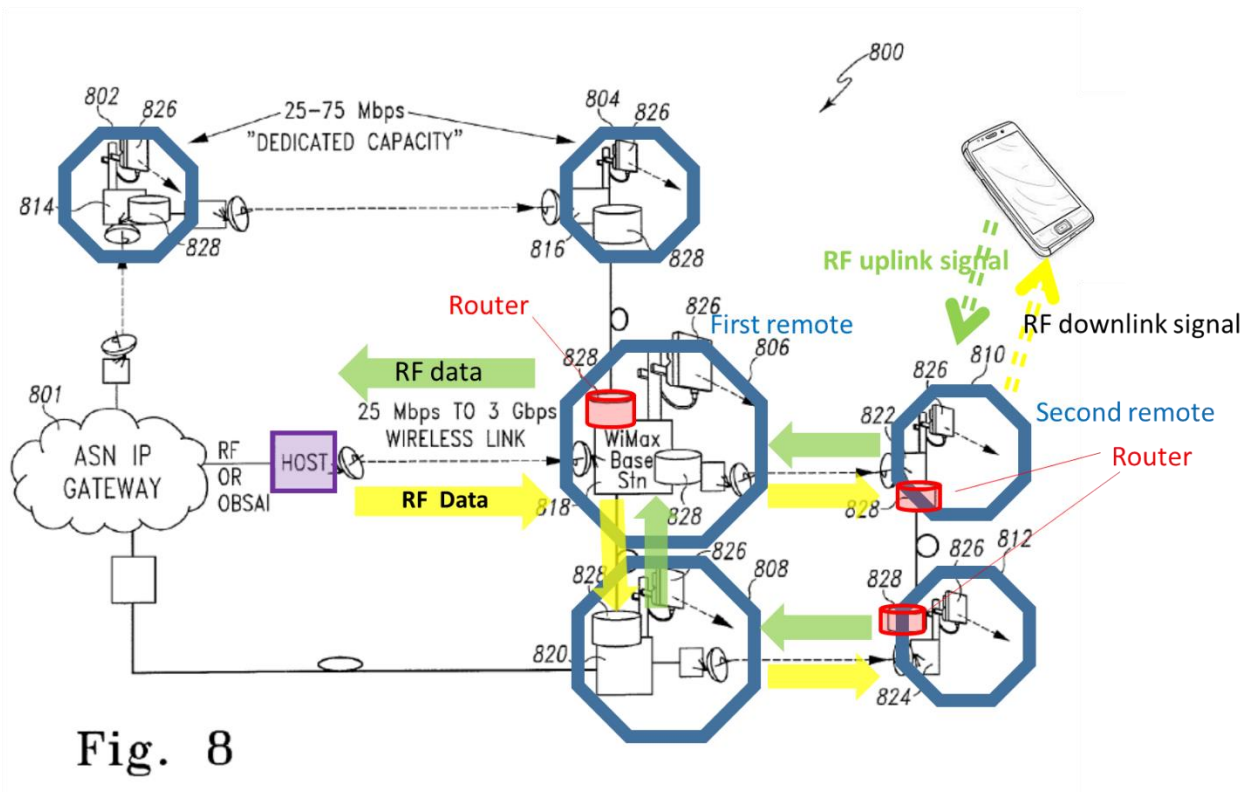


EX-1001 FIG. 7; 8:30-48, 7:62-66; EX-1003 ¶39.

In this system 100 configuration, IP data is not processed by a base station before sending to remote unit 106. Instead, IP data is received at host unit 102,

directly from IP gateway 101, and is converted into data conforming to a standardized protocol (*e.g.*, OBSAI, CPRI) within host unit 102. In this configuration, therefore, the signal does not travel through a DART module of host unit 102. Instead, the IP data is converted to CPRI (or OBSAI) data and transmitted over transport mechanism 104 to remote unit 106. Remote unit 106 receives the CPRI (or OBSAI) data at SeRF communicator 302, which converts the CPRI (or OBSAI) data into digital RF sampled data. *Id.*; see also FIG. 6, 7:62-8:29 (describing “another configuration of a system 100 where base station functionality is performed at remote unit 106”); EX-1003 ¶40.

FIG. 8 illustrates one embodiment of a distributed base station system 800, including a central node 801 having an IP gateway and a plurality of remote wireless communication stations 802, 804, 806, 808, 810, 812 (blue). Each remote station 802, 804, 806, 808, 810, 812 includes a remote unit 814, 816, 818, 820, 822, 824 (with base station functionality), an antenna 826, and a router 828 (red). EX-1001 8:66-9:8; EX-1003 ¶41.



EX-1001 FIG. 8; EX-1003 ¶41.

In one embodiment, remote station 806 is equipped with base station functionality 818 which receives an RF signal via antenna 826 and processes the RF signal to form a second RF signal which is then routed toward the destination of the RF signal. EX-1001 9:19-32; EX-1003 ¶42. The '100 Patent describes that one advantage of having a remote station equipped with base station functionality (*e.g.*, configurations in FIGS. 6, 7 or 8) is that the remote station does not need to transmit signals back to central node 801 for base station processing, which simplifies and speeds up wireless signal processing. EX-1001 2:56-59, 7:24-27, 7:31-40, 9:19-23; 9:39-41. Additionally, because each remote station is equipped

with base station functionality with a dedicated amount of capacity, it provides increased capacity over a system where each remote station shares the capacity of a single central base station. EX-1001 9:47-57. EX-1003 ¶42.

During prosecution, the independent claims recited a distributed base station system including a plurality of remote stations, each coupled to a co-located, network layer router, transmitting/receiving an RF signal via antennas of the remote stations, and routing an RF signal from one remote station to another. As discussed below in §V.B, the examiner rejected the independent claims over the prior art, which the Applicant overcame by amending the independent claims to add the features of transporting a duplicate RF signal from a first remote station to a second remote station, and transmitting the duplicate RF signal from an antenna of the second remote station.

The '100 Patent, however, does NOT disclose the details of duplicating an RF signal at a first remote station, transporting the duplicate RF signal from the first remote station to a second remote station, transmitting the RF signal from a first remote station antenna, and transmitting the duplicate RF signal from a second remote station antenna. In fact, the '100 Patent specification does not even use the term “duplicate” nor does it describe why or how such a practice would have been implemented. This lack of detail in the '100 Patent is not surprising, as a well-known feature of a DAS (including those with distributed base station

functionality) was to transmit the same RF signals from multiple remote stations. For example, Laroia discloses a prior art DAS with distributed base station functionality that includes this feature. See §V.F.3, §VII.A.2. Thus, the features that Applicant added to the independent claims to gain allowance were well-known in the art and were commonly used before the time of invention of the '100 Patent. EX-1003 ¶45.

c. State of the Art

The following section describes the state of the art for distributed base station systems as of early 2007. The prior art references, and the discussions of what was known to a POSA, provide the factual support for the general description of the state of the art at the time of the invention, and provide additional motivation to modify or combine the references. Accordingly, these references should be considered by the Board. EX-1003 ¶50.

i. DAS

A DAS is a network of spatially separated antenna nodes connected to a common node via a transport medium that provides wireless service within a geographic area or structure. Common wireless communication system configurations employ a host unit as the common node, which is located at a centralized location (*e.g.*, at a facility controlled by a wireless service provider). The antenna nodes and related broadcasting and receiving equipment, located at a

location that is remote from the host unit (*e.g.*, at a facility or site that is not controlled by the wireless service provider), are also referred to as “remote units.” Radio frequency (RF) signals are communicated between the host unit and one or more remote units. In such a DAS, the host unit is typically communicatively coupled to one or more base stations (*e.g.*, via wired connection or via wireless connection) which allow bidirectional communications between wireless subscriber units within the DAS service area and communication networks such as, but not limited to, cellular phone networks, the public switch telephone network (PSTN) and the Internet. A DAS can provide, by its nature, an infrastructure within a community that can scatter remote units across a geographic area for providing wireless services across that area. EX-1005, [0017-0019] [0031]; EX-1006 Abstract, FIGS. 6-8; EX-1003 ¶51.

DAS configurations were known to include star, chain, tree and ring topologies, as well as combinations of the same, and the distributed antenna units may communicate across communication links using CPRI or other interfaces. The communication links in prior art DAS utilized electrical and/or optical transport. EX-1015 4, 9-10; EX-1003 ¶52.

The benefits of DAS were also well known. A “significant increase in system capacity can be achieved by the use of spatial diversity (multiple antennas), and optimum combining” in DAS systems where an additional 2 to 3 antennas could

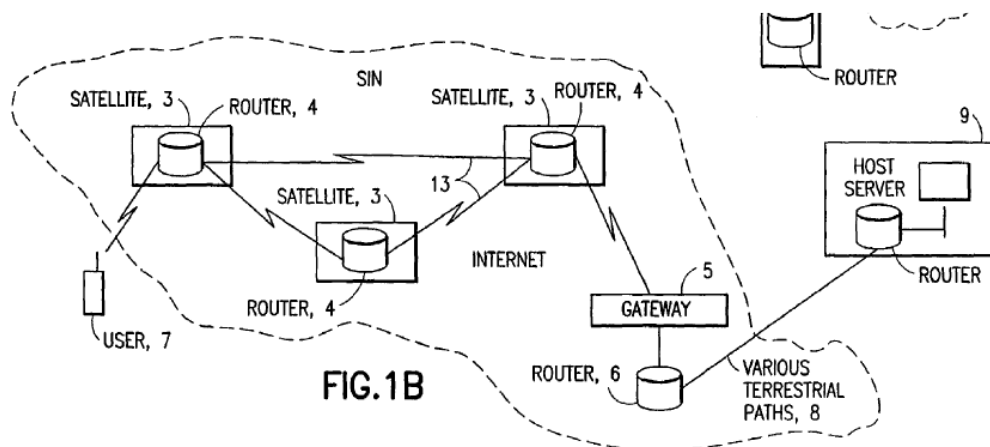
double the capacity and 5 additional antennas could result in a 7-fold increase.

EX-1012 Abstract; EX-1003 ¶53.

ii. Network Routing

Network routing was well-known in the art. Network routing, as known to a POSA, is the mechanism for transporting information across a network from node to node (*e.g.*, the transport of IP packets). For example, Sabat discloses using network layer routers co-located at each Radio Frequency (RF) Access Node (RAN) for routing information. EX-1007 FIG. 8, 10:6-11, 5:22-25; §V.B, EX-1003 ¶54.

Similarly, Wiedeman discloses a satellite communication system that includes a plurality of satellites each with co-located routers. The satellite communication system is coupled to a terrestrial communication system to form a data communication system. Packets are “routed, using a least in part satellite-resident routers.” EX-1009 Abstract; EX-1003 ¶55.



EX-1009 FIG. 1B; EX-1003 ¶55.

iii. Macrodiversity and Simulcasting

Macrodiversity is a space diversity technique in wireless communication that uses multiple receiver or transmitter antennas to transmit the same signal (*i.e.*, simulcasting). The distance between the transmitters is much longer than the wavelength, and the antennas are typically located in different base station sites or access points. Transmitter macrodiversity may be in the form of simulcasting, where the same signal is sent from several nodes. Macrodiversity may be used to combat fading and to increase the received signal strength and signal quality in exposed positions in between the base stations. Macrodiversity may also facilitate efficient multicast services, where the same frequency channel can be used for all transmitters sending the same information. EX-1011, Abstract; EX 1007 7:65-9:13; EX-1003 ¶56. As described in detail below, Laroia describes implementing macrodiversity in a wireless communication system as well as identifying the benefits derived therefrom. EX-1010 5:55-6:8; EX-1003 ¶56.

Macrodiversity also is advantageous in handoffs when mobile devices leave the geographic area handled by one antenna unit into the area of another. A soft handoff allows the mobile to receive the same RF signal from different antennas and select from the strongest signal. Thus, at the boundary where the geographic regions served by different antennas overlap, the mobile station receives and

continues to rely upon a first signal received from the first antenna serving the geographic area the mobile is leaving, until a second signal from a second antenna serving the geographic area the mobile station is entering exceeds the first signal. In soft handoffs, the mobile device is able to receive the strongest signal and avoid drop outs during transitions between coverage areas. EX-1010 6:9-28; EX-1016 1:28-50; EX-1003 ¶57.

Broadcasting, as well-known in the art, also offers similar advantages, but over multiple coverage areas and enabling the same signal to be received by multiple mobile devices. EX-1003 ¶58.

**d. Ground 1 Plainly Demonstrates that at Least
Independent Claim 1 is Unpatentable**

Under Ground 1, the Petition challenges Claims 1-4, 6, 8-11, 14-15, and 17-19 as obvious over Aarflot alone, or in view of Laroia and Wiedman. As set forth in the Petition and reiterated below, Ground 1 plainly demonstrates that at least independent Claim 1 and 14 is unpatentable. The strength of Ground 1 is confirmed by Procomm's mischaracterizations of the Petition and the plain disclosure of Aarflot in its attempt to traverse the ground.

For example, Procomm asserts that "Aarflot—discloses exactly the sort of 'centralized base station' that the '100 patent distinguishes over and improves on," admits that Aarflot discloses a "distributed radio base station" but then ignores the

“distributed” aspect of Aarflot’s system in arguing that Aarflot’s “distributed base station” is centralized. Req. 13.

In fact, Aarflot contains a parallel disclosure to the ’100 patent. Aarflot expressly states that its “invention is directed to distributed radio base stations,” and similar to the ’100 patent, distinguishes its distributed radio base station from a centralized base station:

A conventional radio base station in a cellular communications system is generally located in a single location, and the distance between the baseband circuitry and the radio circuitry is relatively short, e.g., on the order of one meter. A distributed radio base station includes the radio equipment control (REC) and the radio equipment (RE). Both parts may be physically separated, (i.e., the RE may be close to the antenna, whereas the REC is located in a conveniently accessible site), or both may be co-located as in a conventional radio base station design.

EX-1004 1:24-25; 1:58-67.

Procomm’s resort to mischaracterizing Aarflot in attempting to traverse the grounds confirms the strength of the grounds.

i. The Aarflot Reference

Aarflot discloses a distributed base station system which includes a host [radio equipment control (REC) node] (purple) that provides RF sampled data in the downlink direction (yellow) to, and receives RF sampled data in the uplink

direction (green) from, a first one 14a of several remote antenna units [radio equipment (RE) nodes] (blue). The remote antenna units 14a-c function as the air interface to the user equipment via RF downlink signals (dashed yellow) and uplink signals (dashed green). The downlink RF data signals and uplink RF data signals are created and routed via respective routers [framer/deframer] (red).

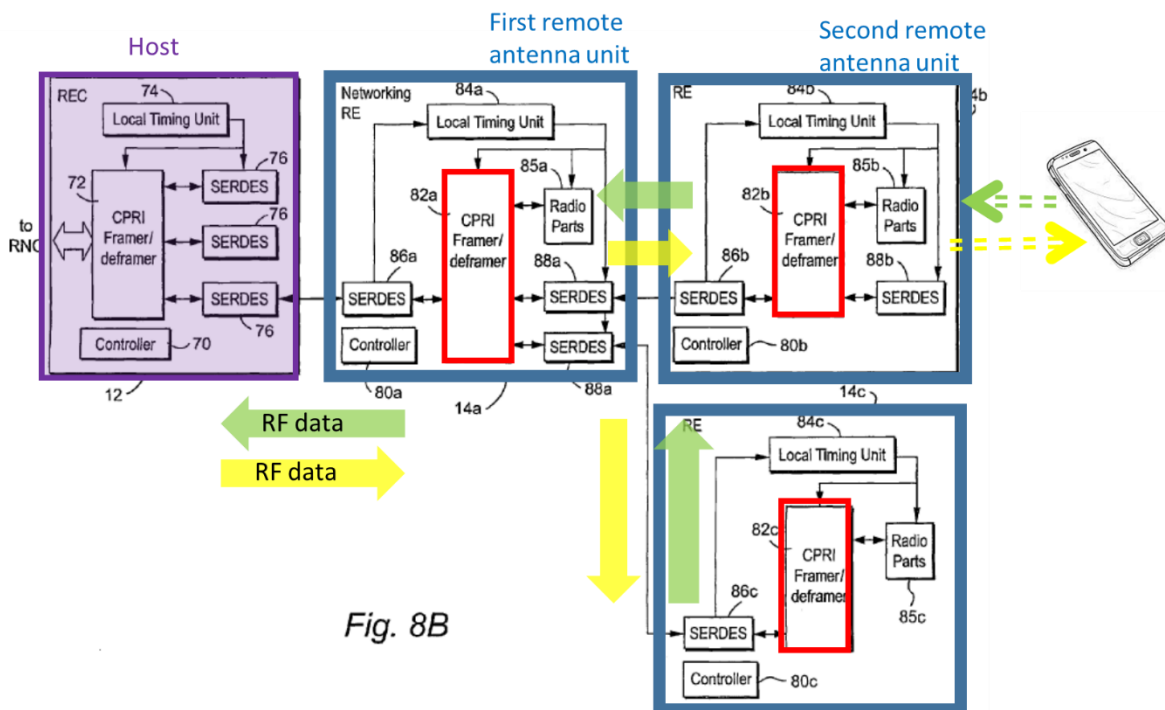


Fig. 8B

EX-1004, FIG. 8B; EX-1003 ¶60.

Aarflot discloses several network configurations of the distributed base station system. For example, FIG. 2D illustrates a daisy chain configuration;

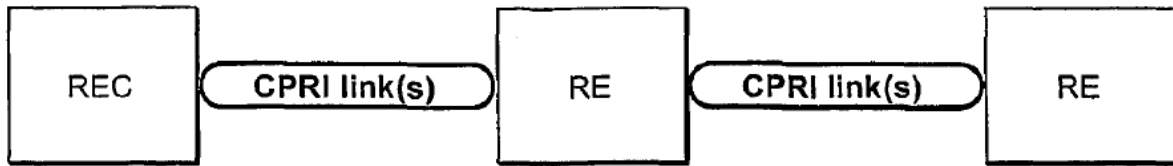


Fig. 2D

EX-1004, FIG. 2D; EX-1003 ¶61.

FIG 2E illustrates a tree configuration:

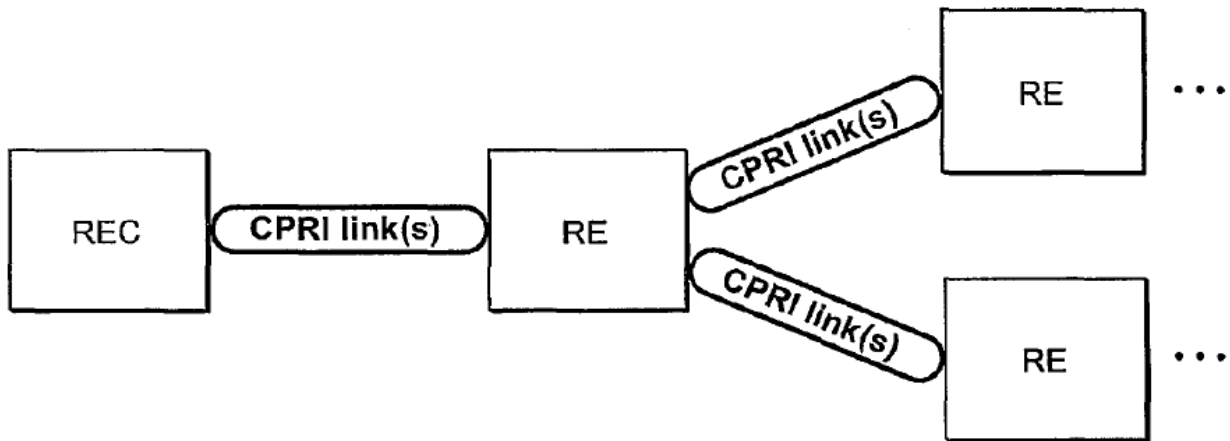


Fig. 2E

EX-1004, FIG. 2E; EX-1003 ¶62.

And FIG. 2F illustrates a ring arrangement.

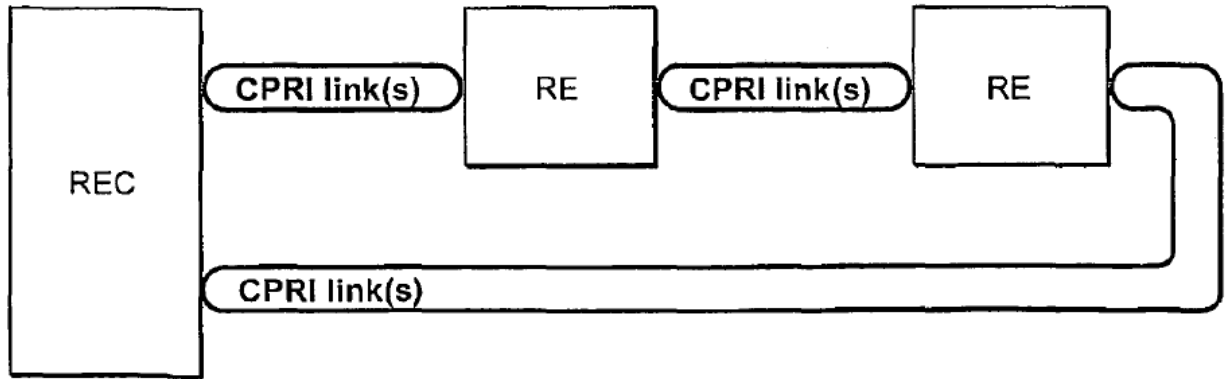


Fig. 2F

EX-1004, FIG. 2F; EX-1003 ¶63.

Aarflot, as shown in FIG. 6 below, discloses the REC provides access to the Radio Network Controller via the Iub interface (lavender) in a UMTS radio access network, whereas each RE node serves as the air interface to the user equipment (pink) (in the UMTS network the air interface is called the Uu interface). EX-1004, 6:42-47; EX-1003 ¶64.

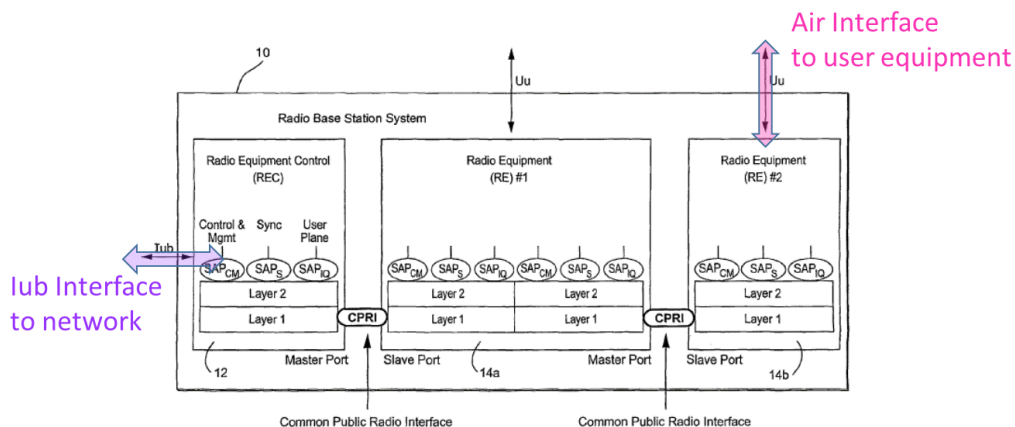


Fig. 6

EX-1004, FIG. 6; EX-1003 ¶64.

ii. Claim 1

In its attempt to distinguish Claim 1, Procomm resorts to mischaracterizing the DAS of Aarflot by ignoring the plain disclosure in Aarflot of a distributed radio base station.

As described above and noted by PO, Aarflot explicitly describes “[t]he present invention is directed to distributed radio base stations.” EX-1004 1:24-25. Contrary to PO’s contention, Aarflot does not describe a centralized base station but actually discloses a parallel infrastructure to the ’100 Patent.

PO attempts to distinguish the disclosure of ’100 Patent from the disclosure of Aarflot by noting “the ’100 Patent discloses several solutions, including that each remote antenna can be co-located with its own router (id., 1:43-45), and that one or more remote antenna units can be co-located with its own base station.” Request p. 14.

However like the ’100 Patent, Aarflot discloses these same solutions.

1. Aarflot discloses each remote antenna unit co-located with its own router

Aarflot discloses the REs [*remote antenna units*] are each coupled to processing circuitry/CPRI Framer/deframer [*router*], and that functionality within the networking RE 14a, and within the REC, [*coupled to and co-located*] is that of a distributed radio base station [*remote base station*].

EX-1004, 13:29-3423:58-62; 24:13-16 EX-1003 ¶¶79, 80.

The routers for each remote antenna (RE) is shown in red in annotated FIG. 8A below:

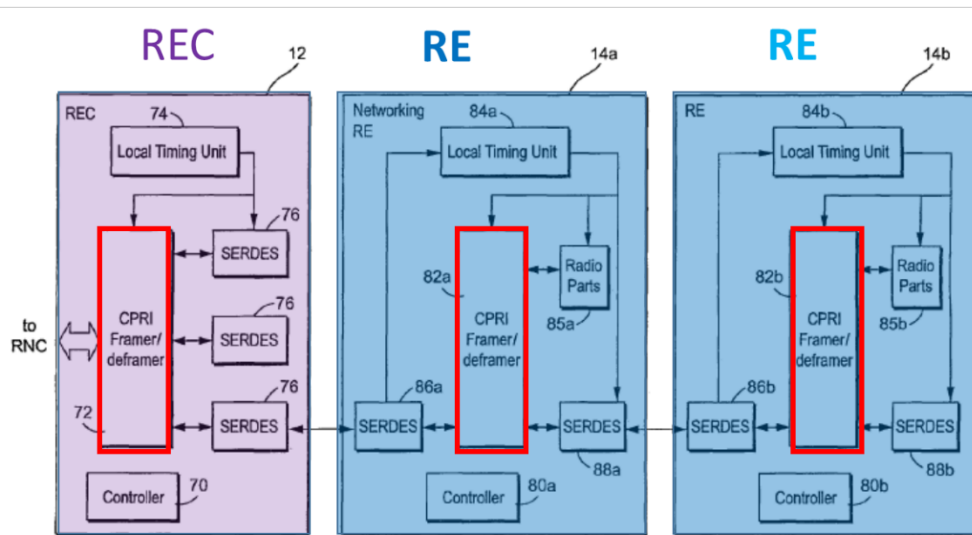


Fig. 8A

EX-1004, FIG. 8A; EX-1003 ¶81.

Furthermore, The sole Ground in the Petition, is Aarflot alone, or in view of Laroia and Wiedeman.

The Petition further presents that to the extent the PO argues the framer/deframers are not network layer routers, inclusion of routers in each remote antenna unit would have been obvious in view of Wiederman. Wiedeman, which is analogous art, discloses the use of network layer routers to route digital RF signals [*transport signals*] via Internet Protocol over a network. EX-1009, 14:60-15:17; EX-1003 ¶82.

The Petition describes, a POSA would have been motivated to use IP protocols in the framer/deframer of Aarflot for routing the RF signals in IP packets as described in Wiedeman because that was the common router transport mechanism as described in the State of the Art section. Further, that a POSA would be motivated to implement the network layer routers of Wiedeman in the system of Aarflot given 1) the ubiquitous, well-known and accepted use of IP routers and IP packets, and 2) the ability to interface with external IP based networks and devices utilizing the same protocol. EX-1003 ¶83.

2. Aarflot discloses one or more remote antenna units can be co-located with its own base station

Aarflot discloses that functionality within the networking RE 14a, and within the REC, [*coupled to and co-located*] is that of a distributed radio base station [*remote base station*]. EX-1004, 13:29-3423:58-62; 24:13-16 EX-1003 ¶¶79, 80.

Aarflot discloses that base station functionality is distributed to both the REC and the networking RE 14a. Aarflot also discloses that the REC and the networking RE 14a may be co-located, meaning the remote base station is within the networking RE 14a, within the co-located REC, or formed by the networking RE 14a and the co-located REC [*coupled to and co-located*]. EX-1004, 1:58-67

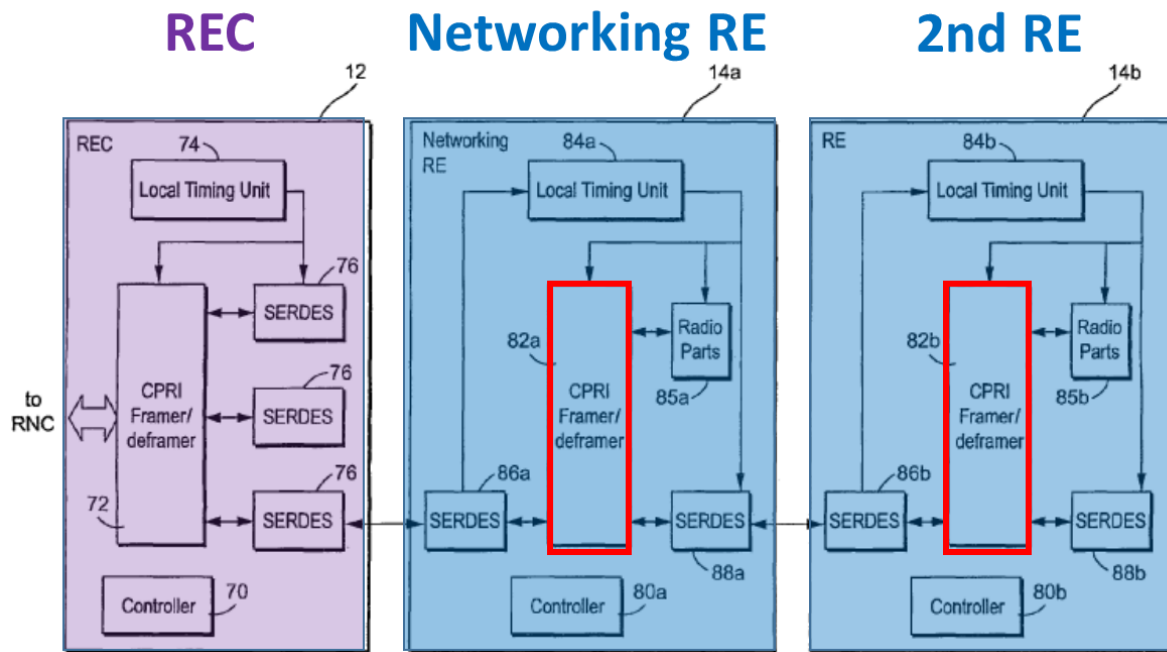


Fig. 8A

EX-1004, Fig. 8A; EX-1003 ¶86.

Thus the two “solutions” used by PO to distinguish the ’100 Patent from Aarflot are explicitly disclosed by Aarflot, or by Aarflot in view of Wiedeman. See Pet. 34- 39.

The “[o]ne clear example” provided by PO, relies upon an unsupported assertion that “remote” is remote base station means “remote from the host”. Request p. 15. However, there is no disclosure in the ’100 Patent that “remote” means from the “host”, nor is there such a requirement in the claims. Thus PO’s assertion regarding the merits as weak, more appropriately applies to their mischaracterization of Aarflot.

IV. OTHER CONSIDERATIONS

A. The Settled Expectations of the Parties

Procomm argues that the '100 Patent has been in force for almost twelve years such that it has an expectation that the patent should not be challenged. However, Procomm ignores the fact that the products it accuses of infringing the '100 Patent in the Related Litigation had been on sale for at least six years free from any claim of infringement of the '100 Patent, or any other patent. Thus, Petitioners had no reason to challenge the '100 Patent prior to the Related Litigation. The Board should institute review to allow Petitioners to challenge a patent that was asserted six years after it began selling the accused products because Petitioners' settled expectation has been that it was not infringing the '100 Patent.

B. The Petition is Properly Supported by Expert Testimony That Cites the Underlying Factual Support

The Request asserts that “while Dr. Houh testifies that his qualifications are in ‘network communications,’ the experience he lists appears to be wired networks, not radio or wireless communications” and “[i]t does not appear that the qualifications provided by Dr. Houh are sufficient to meet his own definition of a POSA.” Req. 17. However, Dr. Houh’s testimony expressly states that he served as an “expert witness in over 150 patent-related cases where I wrote expert reports

*Petitioners' Opposition to Patent Owner's
Request for Discretionary Denial of Institution*

and testified in over 100 depositions on topics such as mobile wireless technologies.” Because mobile wireless technologies encompass radio communications, PO’s assertion is without factual support.

The Request also asserts that “Dr. Houh’s Declaration shows that the Declaration is merely a word-for-word copy of many sections of the Petition.” Req. 16. However, Dr. Houh’s declaration contains factual support for all of his opinions, and it is necessary that such opinions and factual citations be included in the Petition pursuant to 37 § 42.6(a)(3) which states that “arguments must not be incorporated by reference from one document into another document.”

Thus, the Petition is properly supported by expert testimony that cites the underlying factual support.

V. CONCLUSION

For the foregoing reasons, the Director should deny Procomm’s request for discretionary denial of institution.

Respectfully submitted,

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Dated: May 28, 2025

CERTIFICATION OF SERVICE

I hereby certify that on May 28, 2025, a copy of Petitioners' Opposition to Patent Owner's Request for Discretionary Denial of Institution was filed by filing this document through the PTACT's System as well as delivering a copy via electronic mail upon the following:

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