

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC,
Patent Owner.

Case IPR2024-00452
Patent 7,889,759

PATENT OWNER'S PRELIMINARY RESPONSE

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2001-2002	Reserved
2003	Declaration of Samuel H. Russ, Ph.D.
2004	Excerpts from Samuel H. Russ, <i>Signal Integrity Applied Electromagnetics and Professional Practice</i> [Signal-Integrity]
2005	OneRingNetworks, <i>What is a T1 line and How Fast is T1 Internet?</i> , September 28, 2018, https://oneringnetworks.com/what-is-a-t1-line-and-how-fast-is-t1-internet [One-Ring-Networks]
2006	Excerpts from Andrew Afflerbach, <i>Existing and Emerging Broadband Technologies</i> [CTC]
2007	Excerpts from Cable Television Laboratories, Inc., <i>Radio Frequency Interface Specification</i> , November 19, 2001 [Cable-Television-Laboratories]
2008	The Cable Center, <i>The Cable History Timeline</i> , 2014, https://syndeoinstitute.org/wp-content/uploads/2022/10/CableTimelineFall2015.pdf [Cable-History-Timeline]
2009	Sparklight Business, <i>Coaxial Cable vs. Twisted Pair</i> , https://business.sparklight.com/the-wire/tech-talk/business-internet/coaxial-cable-vs-twisted-pair (last visited May 24, 2024) [Coaxial-vs-Twisted-Pair]
2010	GNS Wireless, <i>Coaxial Cables</i> , https://www.gnswireless.com/product-category/products/coaxial-cables/ (last visited May 20, 2024) [Coaxial-Products]

I. INTRODUCTION

The Petition should be denied as it fails to demonstrate a reasonable likelihood of prevailing as to at least one challenged claim. Each of Petitioner's grounds rely upon the combination of Gurantz and Grube. Grube, however, is a fundamentally different system from the '759 patent. Whereas the '759 patent concerns a broadband cable network ("BCN") wherein existing cables are utilized to enable peer-to-peer communications within the BCN, Grube, by contrast, concerns a citywide telephonic system employing twisted-pair wiring that is directed towards facilitating one-to-many and many-to-one communications within that framework. *See* Section II.A.

As a consequence of these profound differences, Petitioner fails to even prove that Grube is analogous art that is eligible for use as prior art in an obviousness combination. The '759 patent is in the field of broadband cable networks, particularly those utilizing coaxial cable, and directed toward solving the problems inherent to preexisting coaxial cable networks within a building. Grube, by contrast, is in the field of twisted-pair telephone lines and directed toward solving the problems inherent to twisted-pair telephone lines in a citywide network. *See* Section II.B. The significant differences between Grube's twisted-pair teachings and coaxial cable are pervasive, and, unsurprisingly, the Petition does not prove that numerous claim elements, including the "bit-loading

modulation schemes” and “common bit-loading modulation schemes” (Section II.C) and “probe signals” (Section II.E) are present in the Gurantz-Grube combinations or that any alleged “common bit-loading modulation scheme” is “for communicating between a plurality of nodes in a broadband cable network” (Section II.D). Petitioner, moreover, fails to prove that a POSITA would be motivated to add Grube’s twisted-pair teachings to Gurantz’s coaxial cable system or could do so with a reasonable likelihood of success. *See* Section II.F. Finally, Petitioner fails to meet its burden under 37 C.F.R. § 42.104(b)(3). *See* Section II.G.

II. PETITIONER’S GROUNDS FAIL (ALL CLAIMS, ALL GROUNDS).

A. Grube And The ’759 Patent Are Fundamentally Different Systems.

The ’759 patent is directed towards a broadband cable network (“BCN”) utilizing coaxial cable. More specifically, the ’759 patent’s inventive system facilitates peer-to-peer communications between various types of customer premises equipment within a BCN within a building (*e.g.*, a home). Ex. 2003 [Russ-Decl.] ¶ 32; Ex. 1001 [’759] 3:63-4:3. These BCNs utilize coaxial cable, which are shielded and thus have high bandwidths of, *e.g.*, 50 MHz. Ex. 1001 [’759] 7:23-26; *see also* Ex. 2003 [Russ-Decl.] ¶¶ 33-34 (discussing Ex. 2004 [Signal-Integrity] 82).

The '759 patent addresses a problem with preexisting BCNs within a building wherein signal is distributed throughout the network with “splitters,” resulting “in significant isolation between the various CPEs.” Ex. 1001 ['759] 3:63-4:3; Ex. 2003 [Russ-Decl.] ¶¶ 35-37.

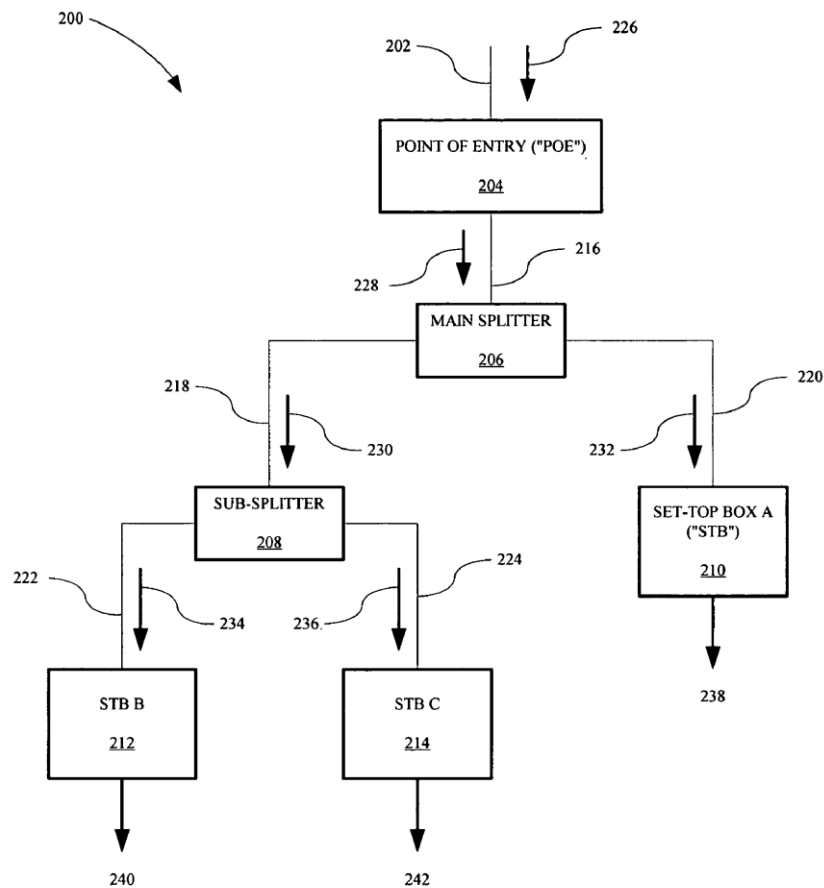


FIG. 2 (Prior Art)

Ex. 1001 ['759] Fig. 2; Ex. 2003 [Russ-Decl.] ¶¶ 35-37. This “isolation results in

difficulty for transmitting two-way communication data between the different CPEs,” thus frustrating direct peer-to-peer communications. Ex. 1001 [’759] 3:44-62; Ex. 2003 [Russ-Decl.] ¶¶ 35-37. To address this issue, the ’759 patent “determin[es] a common bit-loading modulation scheme for communicating between” the CPEs. Ex. 2003 [Russ-Decl.] ¶ 37 (discussing Ex. 1001 [’759] 4:7-9, 7:5-12).

Grube, relied upon by Petitioner in every ground, concerns a fundamentally different system. In stark contrast to the ’759 patent, Grube has nothing to do with broadband, cable, coaxial cable, or the local networks that lie at the heart of the ’759 patent. Ex. 2003 [Russ-Decl.] ¶ 38; *see generally* Ex. 1009 [Grube]. Rather, Grube addresses a citywide telephonic infrastructure utilizing twisted-pair telephone lines. Ex. 2003 [Russ-Decl.] ¶ 38 (discussing Ex. 1009 [Grube] 7:9-12, 7:20-22, 9:61-66, 12:56-57, 13:61-63); *id.*, ¶ 99 (discussing Ex. 1009 [Grube] Fig. 8, 8:22-8:37, 10:47-50, 8:46-49).

Twisted-pair telephone lines are unshielded, resulting in only low frequencies being successfully transmitted, and thus, low bandwidth. Ex. 2003 [Russ-Decl.] ¶ 39 (discussing Ex. 1009 [Grube] Fig. 4, 7:14-16; Ex. 2004 [Signal-Integrity] 107, 112-115, 121). Because of this low bandwidth, communications over twisted-pair telephone lines have traditionally been only one-to-one. *Id.*, ¶ 39; *see* Ex. 1009 [Grube] 2:65-67, 3:10-12, 4:44-46. Grube teaches that “[t]o enhance

the transmit capabilities of a twisted pair copper telephone line, several techniques have been developed.” Ex. 1009 [Grube] 2:58-60; Ex. 2003 [Russ-Decl.] ¶ 40. One such technique is “Asymmetrical Digital Subscriber Loop, or Link, (ADSL)” which “increases the bandwidth of the twisted pair telephone line”—albeit to a still much lower bandwidth than coaxial cable—“up to 1.1 MHz.” Ex. 1009 [Grube] 3:5-10; Ex. 2003 [Russ-Decl.] ¶ 40. Despite the increased bandwidth, ADSL is still only “used for one-to-one communications.” Ex. 1009 [Grube] 3:10-12; Ex. 2003 [Russ-Decl.] ¶ 40.

Grube’s intention thus is to take advantage of the increased bandwidth from ADSL and add capability for one-to-many/many-to-many communications in its twisted-pair telephone line system. Ex. 1009 [Grube] 4:44-46. Grube accomplishes this by utilizing a “primary site” at the headend that communicates with Grube’s “secondary sites” spread across, *e.g.*, an entire city. Grube’s “secondary sites” are the entry points for particular buildings (*e.g.*, an apartment building with multiple units) which in turn communicate with multiple “subscribers” such as pagers, telephones, or televisions. Ex. 2003 [Russ-Decl.] ¶ 43 (discussing Ex. 1009 [Grube] Fig. 8, 7:20-22, 8:50-58, 8:66-9:6, Figs. 1, 2). This primary site transmits calls to the secondary sites, allocating channels to each call such that it occupies the minimum number of channels possible. Ex. 2003 [Russ-Decl.] ¶ 44 (discussing Ex. 1009 [Grube] Fig. 29, 33:7-19, 33:50-34:28). In

this way, Grube reserves as much open bandwidth as possible to service potential future calls. *Id.*

Thus, Grube and the '759 patent concern fundamentally different technologies with fundamentally different problems and goals. These differences are consequential—especially as Petitioner relies heavily upon Grube's teachings for all grounds—and Petitioner fails to demonstrate a reasonable likelihood of prevailing as to at least one challenged claim.

B. Petitioner Fails To Demonstrate That Grube Is Analogous Art (All Claims, All Grounds).

Every ground of the Petition (Pet., 11-12) relies upon combinations with Grube, but the Petition fails to prove Grube is analogous art. “A reference qualifies as prior art for an obviousness determination . . . only when it is analogous to the claimed invention.” *In re Klein*, 647 F.3d 1343, 1348 (Fed. Cir. 2011) . An obviousness ground that relies upon non-analogous art fails. *Id.*, 1352. “Petitioner bears the burden of showing by a preponderance of evidence that the asserted prior art references are analogous art.” *SCHOTT Gemtron Corp. v. SSW Holding Co., Inc.*, IPR2013-00358, Paper 106, 26 (Aug. 20, 2014); *In re Nat. Alts., LLC*, 659 Fed. App'x. 608, 613-14 (Fed. Cir. 2016) (nonprecedential).

To be analogous, a reference must be either (1) from the same field of endeavor as the patent-at-issue, or (2) reasonably pertinent to the particular

problem with which the inventor of the challenged patent is involved. *In re Clay*, 966 F.2d 656, 658-59 (Fed. Cir. 1992). Petitioner, however, fails to prove that Grube is analogous under either prong. Whereas the '759 patent's field is broadband cable networks, particularly those involving coaxial cable, Grube's twisted-pair telephonic system is far afield and has nothing to do with either broadband or cable. See Section II.B.1. And whereas the '759 patent is directed towards using preexisting coaxial cables within a building to enable communication between nodes within a broadband cable network, Grube is directed towards the very different problem of facilitating one-to-many or many-to-one communications within a citywide twisted-wire telephonic network. See Section II.B.2. Because Petitioner's grounds necessarily rely upon non-analogous art (Grube), they must be rejected.

1. Grube And The '759 Patent Do Not Share The Same Field Of Endeavor.

The '759 patent and Grube do not share the same field. The '759 patent's field of endeavor—as confirmed by its title, abstract, field of endeavor, figures, written description, and claims—is “broadband cable networks,” particularly those using coaxial cable. Grube, by contrast, has nothing to do with either broadband or cable. Rather, Grube's field is twisted-pair telephonic systems and are far removed from the coaxial BCNs that are the subject of the '759 patent.

To discern the field of endeavor, the Federal Circuit has often looked to a patent’s “background of invention” and “field of the invention” sections.¹ Additionally, a patent’s title, claim preamble, and function and structure of the claimed inventions may also bear upon the field of endeavor. *Airbus*, 941 F.3d at 1380-81 (affirming Board’s finding of field of endeavor based on “the title of the [] patent and the preamble of a ... claim”); *In re Bigio*, 381 F.3d 1320, 1326 (Fed. Cir. 2004) (“The Board thus correctly set the field of the invention by consulting the structure and function of the claimed invention as perceived by one of ordinary skill in the art.”).

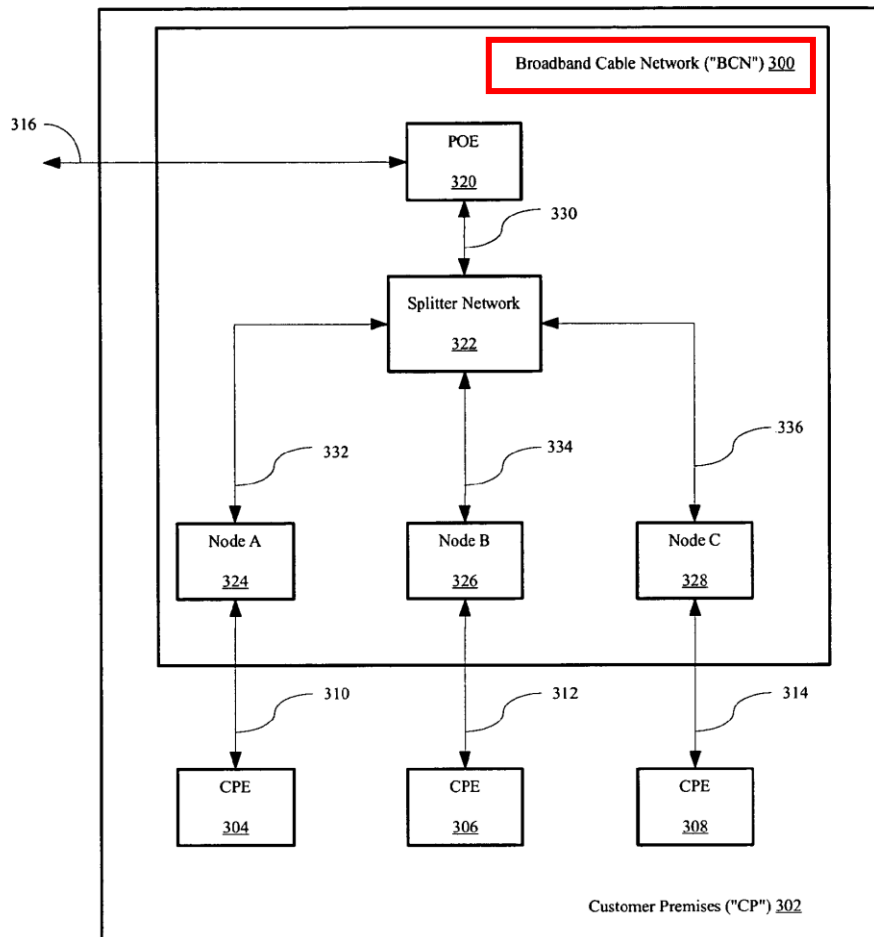
Here, each of these traditional sources for identifying a field of endeavor unanimously confirms that the ’759 patent’s field is broadband cable networks, and particularly those utilizing coaxial cable. Ex. 2003 [Russ-Decl.] ¶ 48. The ’759 patent’s title and abstract both concern a “broadband cable network” and the ’759

¹ See, e.g., *In re Wood*, 599 F.2d 1032, 1036 (CCPA 1979) (determining field of endeavor based on “Background of Invention”); *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1237-38 (Fed. Cir. 2010) (similar); *Airbus S.A.S. v. Firepass Corp.*, 941 F.3d 1374, 1381 n. 8 (Fed. Cir. 2019) (“[T]he specification of each reference includes a ‘Field of the Invention’ section that distinctly describes each applicable field of endeavor.”).

patent's "field of invention" similarly identifies "broadband communication networks," particularly those "utilizing coaxial cable." Ex. 1001 ['759] 1:39-42.

The Background of the Invention also focuses upon broadband cable networks utilizing coaxial cable. Ex. 1001 ['759] 1:45-63; 2:23-31. The '759 patent further addresses "a need" for a system that uses an "existing coaxial cable network" to connect consumer premises equipment within a local network. *Id.*, 3:66-4:3.

Similarly, each of the claims is directed towards "determining a common bit-loading modulation scheme for communicating between a plurality of nodes in a **broadband cable network** ..." *Id.*, cls. 1-23. Each of the '759 patent's embodiments, like the claims, is directed towards a "Broadband Cable Network," as reflected in Figure 3 below:



Ex. 1001 [’759] Fig. 3. Similarly, the other figures either refer to prior art “broadcast cable system[s]” or refer back (directly or indirectly) to Figure 3’s “broadcast cable network.” *Id.*, 4:58-5:28. Looking beyond the claims, “broadband” and “broadband cable networks” (abbreviated as BCNs) are discussed pervasively throughout the disclosure and appear over 100 times in the ’759 patent. Similarly, “coaxial cable” appears dozens of times. Ex. 2003 [Russ-Decl.] ¶¶ 50-51.

And there can be little doubt concerning the '759 patent's field. Petitioner's expert, Mr. Bertonis, concedes that "[t]he '759 patent is directed to a broadband cable network ('BCN')." Ex. 1002 [Bertonis-Decl.] ¶ 59. Petitioner similarly recognizes that "[t]he '759 patent describes a BCN with nodes ..." Pet., 2.

Grube's field is not "broadband cable networks." Grube never discusses or mentions a broadband cable network. Indeed, Grube does not mention "broadband" at all, and the only mention of "cable" is a solitary reference to a "cable box"—a device, not a network. See Ex. 1009, 13:23-25; Ex. 2003 [Russ-Decl.] ¶ 53. As Dr. Russ explains, Grube instead concerns twisted-pair telephone networks:

There is no reason to believe that Grube's field has anything to do with "broadband cable networks." Rather, Grube is directed to networks that use twisted pair telephone wires, not cable, much less coaxial cable. Ex. 1009 [Grube] 7:9-12 ("Generally, the present invention provides a method and apparatus for establishing a communication system infrastructure **utilizing low pass transmission path, i.e. twisted pair telephone line.**"); see also 7:20-22; 9:61-66; 12:56-57; 13:61-63; see also 1:44-47; Ex. 2005 [One-Ring-Networks] 1. Petitioner and Mr. Bertonis similarly acknowledge Grube's focus upon "twisted pair telephone" wires. See Pet., 32 ("Grube similar seeks to extend the usefulness of **twisted pair telephone line.**"); 27 ("A POSITA would have recognized that Grube's teachings for improving bit-loaded data transmission over a network utilizing two-wire (**e.g.,**

twisted pair) telephone line ...”); Ex. 1002 [Bertonis-Decl.] ¶¶ 121, 134.

Ex. 2003 [Russ-Decl.] ¶ 54.²

The difference matters. There are substantial physical differences between twisted-pair wires and coaxial cable which mean they have significantly different capabilities, network configurations, and shortcomings. Ex. 2003 [Russ-Decl.] ¶ 55 (discussing Exs. 2004, 2009). The frequencies and corresponding wavelengths differ dramatically due to coaxial cable’s superior shielding and precisely controlled geometries at manufacturing. *Id.* One consequence of these physical differences is that Grube’s network using twisted pair wires would not be considered broadband, at least at the time of the ’759 patent’s invention. Ex. 2003 [Russ-Decl.] ¶ 56. And indeed, whereas Grube contemplates a bandwidth of only 1.1 MHz (Ex. 1009 [Grube] 1:44-47, 16:3-10, 16:54-57, 52:28-30), the ’759 patent refers to a bandwidth of, *e.g.*, 50 MHz—over 33 times broader than Grube (Ex. 1001 [’759] 7:23-26). Ex. 2003 [Russ-Decl.] ¶ 56. Petitioner’s other reference, Gurantz, refers to broadband systems with frequencies that extend from 550–750 MHz (*i.e.*, 366-500x broader). *See, e.g.*, Ex. 2006 [CTC] 7. Twisted-pair phone wires and Grube’s use of them are very different as compared to the broadband

² Some parenthetical quotations omitted.

coaxial cable network of the '759 patent.

Consequently, Grube is not directed toward “broadband cable networks,” much less “broadband cable networks” using coaxial cable. Conversely, the '759 patent never mentions “twisted pair cabling” or the like. Each of Grube and the '759 patent belong to their own distinct fields of endeavor.

Petitioner, for its part, asserts that, “Grube is analogous art to the '759 patent ... in that each pertains to data communications between network nodes employing multi-carrier modulation (e.g., OFDM or DMT) and bit-loading.” Pet., 32. To the extent that Petitioner’s statement is meant to identify the field of endeavor, it is entirely unsubstantiated and is unsupported by any citation to either the '759 patent and Grube. This lies in stark contrast to the foregoing analysis which identifies the '759 patent’s and Grube’s field of endeavors based upon a thorough analysis of the intrinsic record and the traditional sources utilized to discern the field of endeavor. Instead, Petitioner’s contention that Grube is analogous is supported only by a conclusory statement from its expert. But, it is well-settled that an expert’s conclusory statements are entitled to little if any weight. See 37 C.F.R. § 42.65(a); *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15 (Aug. 24, 2022) (precedential).

Notably, in making its assertion, Petitioner does not mention broadband cable networks or coaxial cable which is plainly the '759 patent’s technological

field and the overwhelming focus of the '759 patent's disclosure. Nor does Petitioner mention Grube's focus upon twisted-pair telephone systems. Quite simply, Petitioner has provided only a conclusory identification of potential areas of technological overlap between the '759 patent and Grube without any convincing account of why these overlapping areas define the field for either the '759 patent or Grube. Ex. 2003 [Russ-Decl.] ¶¶ 53-54.

Instead, Petitioner's approach of identifying cherry-picked, incidental technological overlap has long been rejected. Under Federal Circuit precedent, even art with substantial similarities and in the same technological area as the patent-at-issue may not be in the same field. *Clay*, the leading analogous art decision, is instructive. There, a finding of analogous art was "clearly erroneous" where the patent-at-issue and the allegedly analogous art (Sydansk) were two patents owned by the same company (Marathon Oil) and the patent-at-issue concerned a gel for use in the petroleum industry while Sydansk concerned a "similar" gel for use in the petroleum industry. *Clay*, 966 F.2d at 657-60. As to the field-of-endeavor test, the Court found that the Board clearly erred in finding Sydansk was analogous because the patent-in-question's "field of endeavor is the *storage* of refined liquid hydrocarbons" whereas "[t]he field of endeavor of Sydansk's invention ... is the *extraction* of crude petroleum." *Id.*, 659 (italicization in original). Thus, the "storage" and "extraction" of oil are two

separate fields.

Similarly, semiconductor “memory” is likewise too broad a field. As the Federal Circuit found:

The Allen-Bradley art is not in the same field of endeavor as the claimed subject matter merely because it relates to memories. It involves memory circuits in which modules of varying sizes may be added or replaced; in contrast, the subject patents teach compact modular memories.

Wang Labs., Inc. v. Toshiba Corp., 993 F.2d 858, 864-65 (Fed. Cir. 1993).

Thus, in *Clay* despite a similar gel used, in both cases, in the petroleum industry the references were not the same field because they did not deploy to the same endeavor—storage vs. extraction. Likewise, the generic categorization of references as “memory” was insufficient in *Wang Labs*.

Here too, that the ’759 patent and Grube both discuss bit-loading, that does not indicate the field of endeavor for either because they deploy to very different physical media (coaxial cable vs. twisted-pair telephone lines), with different characteristics, issues and bandwidths.

2. Petitioner Does Not Demonstrate Grube Is Reasonably Pertinent To The Problem The Inventors Of The ’759 Patent Were Addressing.

Neither Petitioner nor Mr. Bertonis establishes or even suggests that Grube is reasonably pertinent to the problem the inventors of the ’759 patent were

addressing. Indeed, Petitioner never identifies the problem with which the inventors of the '759 patent were involved let alone any explanation of why Grube is reasonably pertinent to it. Instead, Petitioner only discusses Grube and Gurantz's problems rather than the '759 patent's:

Additionally, **Grube shares the goal of Gurantz** to allow communication infrastructure to be placed in areas where it was not achievable before. Gurantz seeks to extend the usefulness of existing home cable wiring for use in broadband local area networking. Ex. 1007, ¶ [0020]. Grube similarly seeks to extend the usefulness of twisted pair telephone line. Ex. 1009, 58:4-14; Ex. 1002, ¶134.

Pet., 32. Even assuming, *arguendo*, that Grube has some relevance to the problem **Gurantz** is trying to solve, that would not establish that Grube is reasonably pertinent to the problem the '**759 patent** seeks to solve. *Sanofi-Aventis Deutschland GmbH v. Mylan Pharms. Inc.*, 66 F.4th 1373, 1380 (Fed. Cir. 2023) ("Because Mylan argued that de Gennes is analogous to another prior art reference and not the challenged patent, Mylan did not meet its burden to establish obviousness premised on de Gennes.").

Petitioner's failure to even identify the problem the inventors of the '759 patent were addressing is a critical failing as "the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve," and if the reference "is

directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it.” *Clay*, 966 F.2d at 659. Further, “when addressing whether a reference is analogous art with respect to a claimed invention under a reasonable-pertinence theory, the problems to which both relate **must** be identified and compared.” *Donner Tech., LLC v. Pro Stage Gear, LLC*, 979 F.3d 1353, 1359 (Fed. Cir. 2020). Here, Petitioner does not attempt to identify the problem the inventors of the ’759 patent were trying to solve and compare that problem to the problem Grube is trying to solve. Thus, Petitioner has not carried its burden.

Furthermore, Grube is not reasonably pertinent to the problem the ’759 patent’s inventors were trying to solve. The ’759 patent is directed towards a problem with broadband cable networks within a building. Ex. 2003 [Russ-Decl.] ¶¶ 61-63. Under existing BCNs, broadcast signals are received at a point-of-entry (Ex. 1001 [’759] 1:47-51) and then distributed from that POE to various nodes connected to various types of customer premise equipment (*id.*, 1:51-61). Ex. 2003 [Russ-Decl.] ¶ 63. Such prior art systems are illustrated, *e.g.*, in annotated Figure 2 below.

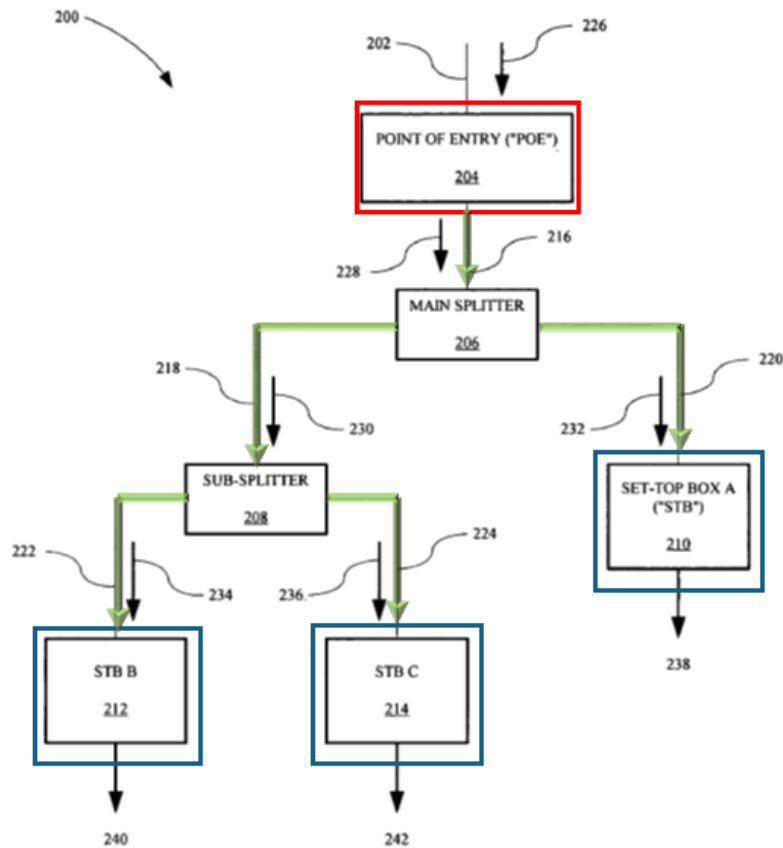


FIG. 2 (Prior Art)

Ex. 1001 [’759] Fig. 2 (annotated).

A major difficulty in peer-to-peer communications in such systems results from the use of splitters as shown, *e.g.*, in Figure 2. Ex. 2003 [Russ-Decl.] ¶ 64. As a result of this configuration, “most broadband cable networks ... presently utilized within most existing buildings are not configured to allow for easy networking *between CPEs because most broadband cable networks utilize*

broadband cable splitters ...” Ex. 1001 [’759] 3:22-30. As the ’759 patent further explains, “the splitters typically have a high level of isolation between the different connected terminals resulting in significant isolation between the various CPEs” and this “isolation creates a difficult environment to network between the different CPEs because the isolation results in difficulty for transmitting two-way communication data between the different CPEs.” *Id.*, 3:50-62.

The ’759 patent thus addresses a need to “connect a variety of CPEs into a local network ... while allowing the utilization of an existing coaxial cable network within the building.” *Id.*, 3:63-4:3; *see also id.*, 3:8-14 (“... there is a growing need for different CPEs to communicate between themselves in a network type of environment within the building.”); Ex. 2003 [Russ-Decl.] ¶ 64.

Grube, by contrast, is directed towards an entirely different problem in an entirely different portion of a signal path. Grube seeks to improve upon prior communication systems by adding a primary site at the remote headend to allow “one-to-many or many-to-one communications” between the headend and receivers. Grube has nothing to do with allowing devices within a building to directly communicate with one another. As Dr. Russ explains:

Grube addresses a need “for a one-to-many and/or many-to-one communication system infrastructure that utilizes existing telephone

lines while providing the highly reliable service subscribers of wireless communication systems expect.” *Id.*, 4:47-51.

To address this need, Grube teaches the use of a “primary site” which routes calls to various secondary sites (receivers) which are in turn affiliated with various subscribers (e.g., pagers, phones, faxes). Ex. 1009 [Grube] Abstract, Fig. 8, 7:9-8:37. Importantly, the secondary sites receive all communication from the primary site and not from each other. *Id.*, Fig. 8, 8:38-43.

Ex. 2003 [Russ-Decl.] ¶¶ 66-67.

Grube’s problem has nothing to do with connecting devices within a building’s network. As Dr. Russ explains:

The problems the ’759 patent and Grube address are simply entirely different from each other, dealing with different parts of signal transmission and the different issues that arise due to the different wires the ’759 patent uses (coaxial cable) and Grube uses (twisted pair). Again, the ’759 patent addresses issues with devices within a building communicating with each other, in a peer-to-peer manner, at high frequencies (*e.g.*, 800 MHz). Grube addresses issues with a single citywide-scale headend transmitting signals to multiple receivers or receiving signals from those receivers at much lower frequencies (*e.g.*, 1 MHz). See Ex. 1007 [Grube] 8:46-49 (“if the secondary sites are separated by more than a given geographic distance (**12 Kft to 18Kft**) from the primary site, repeaters 144, 146 may be required.”). Grube’s receivers or secondary sites are more akin to the points of entry to

buildings described in the '759 patent rather than the terminal devices within those buildings the '759 patent allows to communicate with each other.

Ex. 2003 [Russ-Decl.] ¶ 68.

Grube and the '759 patent are not only directed towards different problems, Grube's solutions have no relevance to the problems the '759 patent's inventors were trying to solve in view of the dramatic differences between twisted pair telephonic systems and coaxial cable. Per Dr. Russ:

Petitioner and Mr. Bertonis overlook that the physical media involved (coaxial cable versus twisted-pair phone lines) are substantially different and so a POSITA would know that a solution for one (*e.g.*, twisted-pair phone lines) would not be relevant to the other (*e.g.*, coaxial cable). To illustrate this point, consider the language of Grube. It consistently (over 27 times) refers to the phone line as a “low pass transmission path.” *E.g.*, Ex. 1009 [Grube] 7:14-16 (“The primary site is coupled to a plurality of secondary sites via **low pass transmission paths**.”). This is correct—a twisted pair phone line acts like a low pass filter over distance. The twisted-pair structure is unshielded (for cost reasons), which leads to a loss of signal energy over distance. Electrically, therefore, the medium appears as a low-pass filter. In other words, the twisted-pair wiring causes higher frequencies to be filtered out, leaving only low frequencies successfully transmitted. This is why the diagrams in Grube (*e.g.*, Fig. 4) show a 1.1 MHz bandlimit. This is also the technical reason why nearly all

phone lines are point-to-point connections—they cannot carry enough information to distribute information to multiple users. Grube attempts to address the lack of point-to-multipoint connections but cannot address the more fundamental issue that twisted-pair is unsuitable for it.

Conversely, coaxial cable, because of its shielding and tightly controlled impedance, can carry signals at a much higher frequency. *Contrast, e.g.,* Ex. 1007 [Gurantz] Fig. 4 (showing signal-carrying capacity above 750 MHz) *with* Ex. 1009 [Grube] Fig. 4 (showing a 1.1 MHz bandlimit). The differences between the physical properties of coaxial and telephone cabling are particularly noticeable at high frequency. Transmitting signals at a higher frequency over telephone lines actually results in higher losses and drops in signal strength. *See* Ex. 1007 [Grube] Fig. 2 (drops in bit-loading as frequency goes up). Meanwhile, at high frequencies, the behavior of coaxial cable is well-known to be chaotic, with sharp increases in attenuation at very specific frequencies. ... This is seen, *e.g.,* in Fig. 9 of the '759 patent. Thus, the fact that Grube “seeks to extend the usefulness of twisted pair telephone line” (Ex. 1002 [Bertonis-Decl.] ¶ 134) would actually be evidence to a POSITA that Grube would offer nothing of value to one working with coaxial cables.

... Significantly, the problems that Grube seeks to address in the context of citywide telephonic infrastructure had already long been solved at a macro level in cable infrastructure, *i.e.,* at the operator-to-premises level. Indeed, the industry standard for one-to-many/many-to-one

communications in cable between a headend and buildings had already been established in 1997, well before the time of the invention. Ex. 2007 [Cable-Television-Laboratories] 150 (discussing such broadcasting). To be sure, however, Grube (and DOCSIS for that matter), are one further step removed from—and share no relevant characteristics with—a local BCN much less any communications between devices within that BCN.

Ex. 2003 [Russ-Decl.] ¶¶ 69-71.

Thus, Grube and the '759 patent are directed to different problems and the issues Grube addresses have no bearing upon coaxial cable much less in the context of a BCN. And, the fact that the '759 patent and Grube may have some technological overlap is immaterial as even technologically similar references may not be reasonably pertinent. *Clay* found it was “clearly erroneous” to consider Sydanski as reasonably pertinent because a POSITA “would not reasonably have expected to solve the problem of dead volume in tanks for storing refined petroleum by considering a reference dealing with plugging underground formation anomalies.” *Clay*, 966 F.2d at 660; *see also Wang*, 993 F.2d at 864 (prior art memory modules not reasonably pertinent to patented memory modules); *Polygroup Ltd. v. Willis Elec. Co., Ltd.*, IPR2016-01610, Paper 187, 31, 35-40 (Feb. 26, 2018) (rejecting argument that “structurally and functionally similar” electrical connectors in reference and patent made reference reasonably pertinent).

Thus, Petitioner fails to demonstrate that Grube is analogous art to the '759 patent, and consequently, all of Petitioner's grounds fail.

C. Petitioner Fails To Demonstrate That Grube Discloses Or Renders Obvious The Claimed “Bit-Loading Modulation Scheme[s]” (All Claims, All Grounds).

Each of the claims are directed towards “determining a common bit-loading modulation scheme.” Each claim requires a “receiving node” that determines a “bit-loading modulation scheme” and a transmitting node determine[es] the common bit-loading modulation scheme” based upon the schemes from the receiving nodes. Specifically, claims 1-4 require “wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node” and “determining the common bit-loading modulation scheme from the received plurality of response signals.” Ex. 1001 ['759] cls. 1-4. Independent claims 5-7, 14, 20, and 22 similarly require that the “response signals include[] a plurality of bit-loading modulation schemes,” “determined by a receiving node[,]” and “determining the common bit-loading modulation scheme in response to comparing all bit-loading modulation schemes.”

Petitioner contends that Gurantz teaches use of a “bit-loading modulation scheme,” but concedes that Gurantz “does not specifically describe that scheme being determined by a corresponding receiving node and included in a plurality of received response signals (responsive to the transmitted probe signal).” Pet, 27-28.

Recognizing that Gurantz does not satisfy the claimed “bit-loading modulation scheme” limitations, Petitioner turns to Grube and contends that “Grube teaches such an arrangement and would have suggested to a POSITA its use in Gurantz.” Pet., 28. Specifically, Petitioner relies on Grube’s “bit loading table” as the claimed “bit-loading modulation scheme” and Grube’s lowest common denominator (LCD) bit loading table as the claimed “common bit-loading modulation scheme.” Pet., 28. Petitioner, however, fails to show that Grube’s bit loading tables are “bit-loading modulation schemes” or that Grube’s LCD bit loading table is a “common bit-loading modulation scheme.”

Critically, while Grube mentions a “bit loading table,” Grube never refers to the “bit loading table” as a “bit-loading ***modulation scheme***,” which is what the claims recite. Petitioner never recognizes this difference, nor explains why the two are one and the same. Petitioner contends:

Grube teaches in detail a *common* bit-loading methodology for use in a multicast scenario where the same data (e.g., control data) is to be transmitted simultaneously to multiple receiving nodes. Therein, multiple receiving nodes (“secondary sites”) of a communication network determine and inform a transmitting node (“primary site”) of ***a bit-loading scheme (table)*** for the respective receiving node, responsive to receiving the probe (“training”) signal sent by the transmitting node. Ex. 1009, 14:3-19, 17:10-45, Figs. 12, 15; Ex. 1002, ¶128.

The tables are compared by the primary site (transmitting node) in order to determine a *common* bit-loading scheme for outgoing multi-carrier data transmissions, which Grube terms lowest common denominator (LCD) bit-loading. Ex. 1009, 14:64-15:5, 18:44-19:26, Fig. 17; Ex. 1002, ¶129.

Pet., 28-29.

Thus, Petitioner points to Grube’s “bit-loading tables” and contends they are “bit-loading modulation schemes.” No explanation is given, however, for why Grube’s bit-loading “table” is a “modulation scheme.” Petitioner’s failure to explain why Grube teaches a “bit-loading **modulation scheme**” should prove fatal.

Petitioner fails to substantiate its conclusory statement that Grube’s “bit-loading **table**” is a “bit-loading **modulation scheme**.” Pet., 27-28. Petitioner purports to describe what a bit-loading modulation scheme is in the context of **Gurantz** (Pet., 24) and the ’759 patent (*id.*, 34). Petitioner, however, never applies this discussion to Grube nor does it explain why **Grube’s** tables are (common) bit-loading modulation schemes under either Gurantz’s discussion or the ’759 patent’s. *Id.*, 28-32.

Nor is such a thing self-evident. Grube’s tables are never described as “bit-loading modulation schemes.” Petitioner argues that “Grube describes the process of determining a common bit-loading table” because in Grube, the lowest common denominator bit loading between the channels is chosen on a carrier channel by

carrier channel basis. Pet., 31-32. Petitioner then cites the Bertonis declaration to conclude that “[o]utbound control channel bit loading table 338 constitutes a determined common bit-loading modulation scheme, as recited.” Pet., 31-32 (citing Ex. 1002 [Bertonis-Decl.] ¶ 133). But Mr. Bertonis’s declaration at paragraph 133 is one sentence long and says exactly the same thing. Neither gives any explanation for why Grube’s bit-loading table is a “bit-loading modulation scheme.”

At best, Petitioner’s argument is vague and conclusory. But anticipation/obviousness may not be shown through conclusory statements. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”); *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016) (“To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.”).

Moreover, it is equally well-settled that an expert’s conclusory statements are insufficient to establish invalidity. See 37 C.F.R. § 42.65(a) (unsupported

expert testimony entitled to “little or no weight”); *Schumer*, 308 F.3d at 1315-16 (“testimony [concerning anticipation] is insufficient if it is merely conclusory.”); *Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 887 (Fed. Cir. 2024). Indeed, Mr. Bertonis’s *ipse dixit* assertion that Grube’s “bit loading tables” are “bit-loading modulation scheme[s]” is precisely the sort of conclusory testimony rejected in *Xerox*:

Petitioner’s only evidence in support of its assertion that blocking the purchaser would require recording the blocking in a record in the user’s account is the opinion of its Declarant, Dr. Jones. ... Dr. Jones does not cite to any additional supporting evidence or provide any technical reasoning to support his statement. Thus, the cited declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight.

Xerox Corp. v. Bytemark, Inc., IPR2022-00624, Paper 9, 15 (Aug. 24, 2022) (precedential) (emphasis in original, citations omitted).

Consequently, Petitioner fails to demonstrate that Grube discloses or renders obvious “bit-loading modulation schemes” or “common bit-loading modulation schemes.”

D. Petitioner Fails To Demonstrate That Its Combination Discloses Or Renders Obvious “Determining A Common Bit-Loading Modulation Scheme For Communicating Between A Plurality Of Nodes In” “A Broadband Cable Network (‘BCN’)” (All Claims, All Grounds).

Each of the claims require “determining a common bit-loading modulation scheme for communicating between a plurality of nodes in” a “broadband cable network (‘BCN’).” Ex. 1001 [’759] cls. 1-7, 14, 20, 22. Although this language appears in the preambles, it is limiting because it provides the antecedent basis for the subsequent elements reciting “*the* common bit-loading modulation scheme” of each claim.

Petitioner contends that this limitation is satisfied by the combination of Gurantz and Grube (Pet., 22) but neither Gurantz nor Grube discloses using a “common bit-loading modulation scheme *for* communicating between a *plurality of nodes*.” Rather, as Petitioner concedes, Gurantz does not disclose a “common bit-loading modulation scheme.” See *id.*, 24. And Grube’s lowest-common-denominator bit-loading table (which is not the claimed “bit-loading modulation scheme” as already discussed), is not used *for* communicating. Rather, it is an interim step to achieve Grube’s actual goal—minimizing the number of carrier channels employed in order to keep as much bandwidth available as possible for potential future calls.

Returning to the claims, the preamble is limiting because “**a** common bit-loading modulation scheme” provides the prior antecedent basis for “**the** common bit-loading modulation scheme” in the body of the claim. Ex. 1001 [’759] cls. 1-7, 14, 20, 22. It is well-settled that “the preamble constitutes a limitation when the claim(s) depend on it for antecedent basis, or when it is essential to understand limitations or terms in the claim body.” *C.W. Zumbiel Co. v. Kappos*, 702 F.3d 1371, 1385 (Fed. Cir. 2012); *Eli Lilly & Co. v. Teva Pharms. Int’l GmbH*, 8 F.4th 1331, 1341 (Fed. Cir. 2021) (“we held that a statement of intended use—‘[a] repetitive motion pacing system for pacing a user’—was limiting because the term ‘user’ in the preamble provided antecedent basis for that term later in the body of the claim.”). This conclusion is further reinforced by the fact that four of the independent claims (claims 1-4) are method claims and “statements of intended purpose in methods of using apparatuses ... has tended to result in a conclusion that such preamble language is limiting.” *Eli Lilly*, 8 F.4th at 1341.

Moreover, “determining a common bit-loading modulation scheme for communicating between a plurality of nodes in a broadband cable network” also lies at the heart of the claimed inventions. As Dr. Russ explains:

As previously explained, the ’759 patent’s field is “broadband cable networks” and the ’759 patent is directed towards enabling peer-to-peer communication among terminal devices (“nodes”) within a

BCN. ... The '759 patent addresses a need to “**connect a variety of CPEs** into a local network, such as a LAN, within a building such as a home or office while allowing the utilization of an existing coaxial cable network within the building.” *Id.*, 3:63-4:3; *see also id.*, 3:8-14 (“there is a growing need **for different CPEs to communicate between themselves in a network type of environment within the building.**”); 7:5-12 (“Physically the channels typically vary in length between nodes and electrically vary because of the paths through and reflections from the various cables, switches, terminals, connections, and other electrical components in the cable network.”).

To solve this problem, the '759 patent teaches an inventive “common bit-loading modulation scheme” which is used “for communicating between a plurality of nodes in the BCN.” Ex. 1001 ['759] Abstract; 4:5-40 (describing determination of “common bit-loading modulation scheme for communicating between a plurality of nodes in the BCN” in summary of invention); 6:63-67 (“in order to [e]nsure that both **node B 504 and node C 506 receive the transmissions broadcast signal from node A 502, node A 502 utilizes a** bit-loading modulation scheme that is known as a **common bit-loaded modulation scheme.**”); 10:6-14 (similar).

Thus, “determining a common bit-loading modulation scheme for communicating between a plurality of nodes in” a “broadband cable network” goes to the heart of the '759 patent’s inventions.

Ex. 2003 [Russ-Decl.] ¶¶ 80-82.

In summary, the phrase “determining a common bit-loading modulation scheme for communicating between a plurality of nodes in” a “broadband cable network (‘BCN’)” is a claim element that the Petition must demonstrate is rendered obvious by the proposed combinations. Notably, Petitioner never argues that the preambles are not limiting. *E.g.*, Pet., 22.

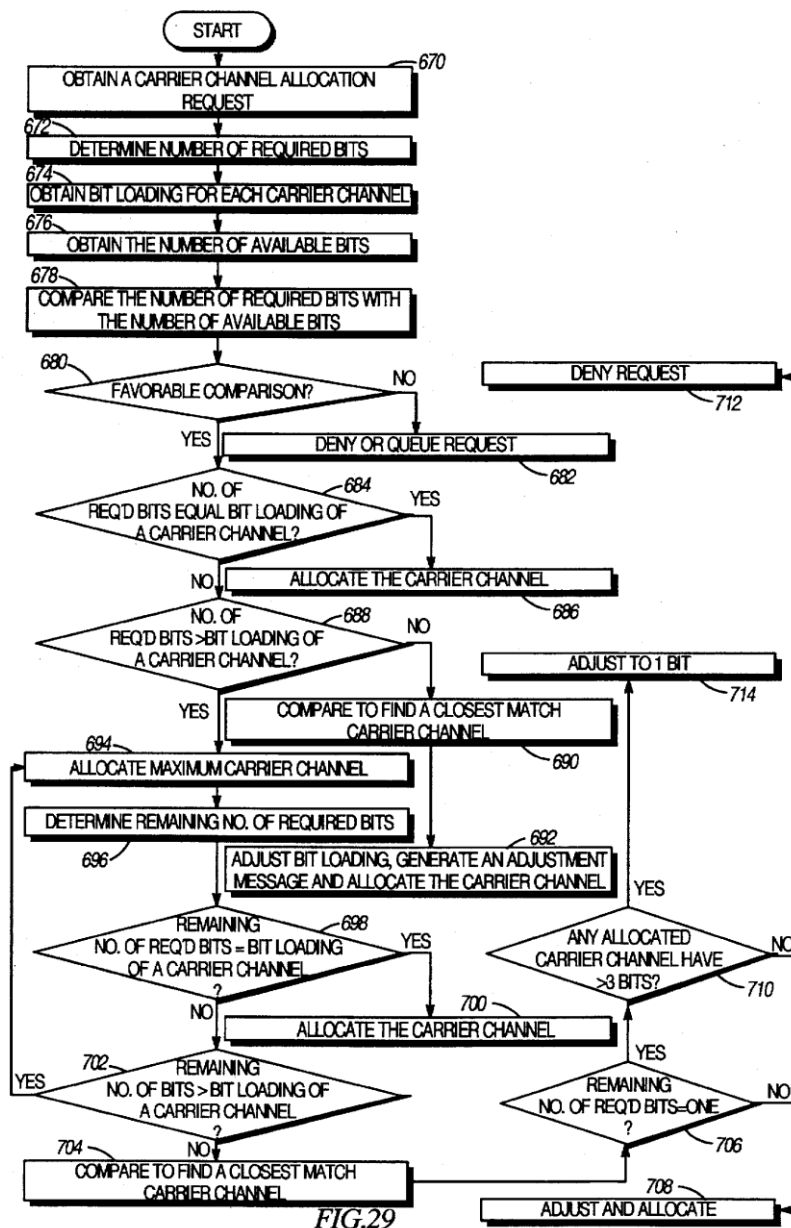
Petitioner, however, fails to prove the element is met. Neither Gurantz nor Grube teach these limitations. The Petition concedes that “Gurantz does **not** disclose that its determined bit-loading modulation scheme is a ‘common’ scheme.” Pet., 22-24.

Consequently, Petitioner grasps at Grube for the claimed “common bit-loading modulation scheme.” Pet., 24. But, even if, *arguendo*, Grube disclosed a “common bit-loading modulation scheme,” it is (1) not used “for communicating between a plurality of nodes,” (2) nor used in a BCN. Grube does not use its alleged common bit-loading scheme for communication between its secondary sites, and Grube has nothing to do with a BCN (*see* Section II.B.1, *supra*).

Rather, Grube has a “primary site” that uses its bit-loading tables to estimate and intelligently minimize overall resource use. Grube’s primary site attempts to minimize the number of channels deployed to support a given call routed to/from particular secondary site(s), so that the overall pool of ADSL channels in the backhaul infrastructure (between primary and secondary sites) is kept as available

as possible for potential future usage by other calls. The primary site uses the bit-loading tables to inform it as to the number of channels likely needed to establish a link with a given connected site. As Dr. Russ explains:

Grube teaches that its “LCD bit-loading tables” (or “ordered bit-loading tables”) are used to minimize the number of carrier channels used to support each call. *See id.*, 22:9-32 (“From these bit loading tables 434, 436, a carrier channel or carrier channels is selected to support the inbound control channel for each set.”). This is because of twisted-pair’s shortcoming of having a limited frequency bandwidth with which to deliver transmissions. Grube’s process can be seen illustrated in Figure 29:



Id., Fig. 29. As can be seen above, the primary site receives a “carrier channel allocation request” (also called a “call request” in Grube) (step 670) and “determines a number of required bits” based on the call type. *Id.*, 33:7-17. The primary site then “accesses an ordered bit loading table” (*id.*, 33:18-19) and then, using the table, either

“queues or denies the request,” “allocates the carrier channel having the bit loading which matches the number of required bits to the carrier channel request” if there is one, or “allocates the carrier channel[s] having the maximum bit loading, i.e., the maximum carrier channel, to the carrier channel request” until “the particular carrier channel allocation request has been allocated a sufficient number of carrier channels to fulfill the bandwidth requirements of the service being requested.” *Id.*, 33:50-34:28. Thus, Grube’s alleged common bit-loading scheme is not used to enable peer-to-peer communication between secondary sites, but rather simply to minimize the number of channels allocated to a particular call with the ultimate goal of servicing more than one call at a time. These calls are routed between a primary site and a secondary site, not between two secondary sites. Significantly, this is the opposite of what the ’759 patent teaches its bit-loading is for. Ex. 1001 [’759] 7:12-14 (“Bit-loading is the process of optimizing the bit distribution to each of the channels to ***increase throughput.***”).

Ex. 2003 [Russ-Decl.] ¶ 84.

Thus, Grube’s bit-loading tables are not used “for communicating” the way a “modulation scheme” is used. Rather, Grube’s table is merely a reference to which a primary site looks for information when assigning the minimum number of carrier channels needed for any given call.

Consequently, neither Gurantz nor Grube teaches the required “common bit-loading modulation scheme ***for*** communicating between a plurality of nodes” “in a

broadband cable network.” The Federal Circuit has stressed the stringent requirements necessary to supply a missing limitation, particularly a “key limitation” like the one in question:

In cases in which “common sense” is used to supply a missing limitation, as distinct from a motivation to combine, moreover, our search for a reasoned basis for resort to common sense must be searching. And, this is particularly true where the missing limitation goes to the heart of an invention.

Arendi S.A.R.L. v. Apple, Inc., 832 F.3d 1355, 1362-63 (Fed. Cir. 2016); *see also DSS Tech. Mgm’t v. Apple Inc.*, 885 F.3d 1367, 1374-75 (Fed. Cir. 2018) (rejecting “ordinary creativity” as a basis for overcoming a missing limitation).

Here, Petitioner fails to cite any evidence or provide any explanation of why Grube’s “common bit-loading modulation scheme” would be used “***for*** communicating between a plurality of nodes” (see Pet., 24), much less in a BCN. Indeed, Petitioner never even argues that Grube’s “common bit-loading modulation scheme” would be used “for communicating”—either in Grube or in the proposed combination. *See id.*, 22-42. Petitioner’s argument thus does not even amount to a “common sense” one and thus also fails to demonstrate that its argument as to a limitation lying at the heart of the invention satisfies the “searching” inquiry demanded by *Arendi* and its progeny.

In essence, neither Gurantz nor Grube teach the required “determining a common bit-loading modulation scheme *for communicating* between a plurality of nodes in” a “**broadband cable network**.” And Petitioner fails to explain why a POSITA would be motivated to use Grube’s LCD bit-loading tables—which are not used “*for* communicating between a plurality of nodes in” a “broadband cable network”—in Gurantz’s system. Thus, Petitioner fails to demonstrate that the combination of Gurantz-Grube discloses or renders obvious “determining a common bit-loading modulation scheme for communicating between a plurality of nodes in” a “broadband cable network.”

E. Petitioner Fails To Demonstrate That Its Combinations Disclose Or Render Obvious “A Probe Signal” (All Claims, All Grounds).

The claims require “transmitting a probe signal from a transmitting node.” Ex. 1001 [’759] cls. 1-7, 14, 20, 22. Petitioner concedes that “Gurantz does not disclose the detail of transmitting a probe signal from the transmitting node” but argues that “Grube teaches transmission of a ‘probe signal[.]’” Pet., 25. Grube, in fact, never mentions a “probe signal.” Petitioner, nonetheless, contends the limitation is satisfied by Grube’s “training signal 280” and Petitioner treats Grube’s “*training* signal” as synonymous with the ’759 patent’s “*probe* signal.” Pet., 26 (“It would have been obvious to a POSITA to employ in Gurantz *a training (i.e., probe) signal* transmitted from a transmitting node ... as taught by

Grube.”); *id.* (“Grube’s technique for determining the bit-loadings using a transmitted ***training (i.e., probe) signal***”); 28 (“receiving the ***probe (‘training’) signal*** sent by the transmitting node”); 34 (“in response to the training (i.e., probe) signals sent to the secondary sites by the primary site 102).

While Petitioner repeats, again and again, that Grube’s “training signal” is the same as a “probe signal,” it never, in fact, substantiates its position and never once explains ***why*** a POSITA would consider Grube’s “training signal” to be a “probe signal.” Petitioner’s expert, Mr. Bertonis, is of no help as he merely parrots the Petition. *E.g.*, Ex. 1002 [Bertonis-Decl.] ¶¶ 119-120. His conclusory testimony should be afforded little or no weight. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15-16 (Aug. 24, 2022) (precedential). Ultimately, Petitioner’s position rests upon its (and Mr. Bertonis’s) *ipse dixit* assurance that Grube’s “training signal” is a “probe signal.” This conclusory position is simply insufficient to establish the limitation is met.

F. Petitioner Fails To Demonstrate A POSITA Would Be Motivated To Combine Gurantz And Grube Or Could Do So With A Reasonable Likelihood Of Success.

Even if Grube disclosed the missing claim limitations, Petitioner’s grounds would still fail as Petitioner fails to demonstrate a POSITA would be motivated to combine Gurantz and Grube as proposed or could do so with a reasonable likelihood of success.

Petitioner argues that a POSITA would have imported Grube’s techniques and system into Gurantz’s broadband cable network. Petitioner’s combination specifically involves configuring one of “Gurantz’s terminal devices as a primary site as taught by Grube, while configuring other LAN modem/device pairs ... as secondary sites on the LAN.” Pet., 35-36. Petitioner further asserts it would be obvious to “employ in Gurantz a training (i.e., probe) signal transmitted from a transmitting node to a sub-plurality of receiving nodes as taught by Grube, for purposes of making the SNR-based bit-loading determinations already taught by Gurantz.” Pet., 26. Petitioner contends that, “[a]pplying Grube to Gurantz in this manner would have been nothing more than combining prior art elements—Gurantz’s bit-loading BCN network, with Grube’s technique for determining the bit-loadings using a transmitted training (i.e., probe) signal ...” Pet., 26.

Petitioner, however, fails to prove a POSITA would be motivated to modify Gurantz in view of Grube as proposed, or could do so with a reasonable likelihood of success. Gurantz is concerned with issues relating to a BCN employing coaxial cable. Grube is fundamentally different and concerns a twisted pair telephonic system on a citywide scale. Petitioner fails to prove that a POSITA would be motivated to combine such disparate references. *See* Section II.F.1. And these significant differences are consequential. Petitioner’s combination posits that one of Gurantz’s nodes could be employed as Grube’s primary site. But, Grube’s

primary site is the headend for a citywide telephonic system; no explanation is given for why or how a POSITA could reconfigure one of Gurantz's nodes to function as Grube's headend. See Section II.F.2. Even if that could be overlooked, Petitioner fails to identify any fashion in which Gurantz would benefit from the proposed combination. Indeed, the problems Grube addresses were addressed in coaxial cable years before Gurantz. See Section II.F.3. Worse still, the combination would be inoperable because Grube's low-frequency transmissions would be filtered out by Gurantz's frequency-selective reflector. See Section II.F.4. Fundamentally, Petitioner's combination is driven only by hindsight. See Section II.F.5.

1. A POSITA Would Not Be Motivated To Modify Gurantz In View Of Grube In The Ordinary Course Of Research And Development.

Gurantz and Grube are directed toward fundamentally different systems with different solutions for different problems specific to the type of connections that are employed in Gurantz (coaxial cable in a BCN) and Grube (twisted pair telephonic system), respectively. Petitioner, however, fails to demonstrate that a POSITA would have combined such ill-fitting elements of such disparate references "in the normal course of research and development." *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011).

As Dr. Russ explains:

As “Gurantz is in the same family as the ’759 patent” (Pet., 8; Ex. 1001 [’759] Cover), it too is directed toward allowing communication between devices in a building’s broadband network using coaxial cable. *See, e.g.*, Ex. 1007 [Gurantz] Title (“NETWORK INTERFACE DEVICE AND **BROADBAND LOCAL AREA NETWORK USING COAXIAL CABLE**”); Abstract; [0002]; [0003]; [0012].

By contrast, as explained, Grube is directed to twisted pair telephone networks covering a citywide area; it is not directed to cable, much less coaxial cable, within a building. Ex. 1009 [Grube] 7:9-12; 7:20-22; 8:46-49 (“Note that, if ***the secondary sites are separated by more than a given geographic distance (12 Kft to 18Kft) from the primary site***, repeaters 144, 146 may be required.”); 9:61-66; 12:56-57; 13:61-63; *see also* 1:44-47; Ex. 2005 [One-Ring-Networks] 1.

As explained, systems using coaxial cable and systems using phone lines/twisted pair wires are fundamentally different. The difference between cable and a phone line, even at the time of the ’759 patent, was profound. A single phone line carried signal energy up to about 1 MHz and, according to Grube, this led to about 10 Mbit/s of data capacity. Ex. 1009 [Grube] 3:7-10. By contrast, a single cable line on an 860 MHz cable plant carried about 125 6-MHz channels. A single 6-MHz channel can carry 38 Mbit/s using the DOCSIS standard (and 256-QAM modulation). Thus, this single cable could carry 4,750 Mbit/s or about 475 times the data capacity of Grube’s twisted pair

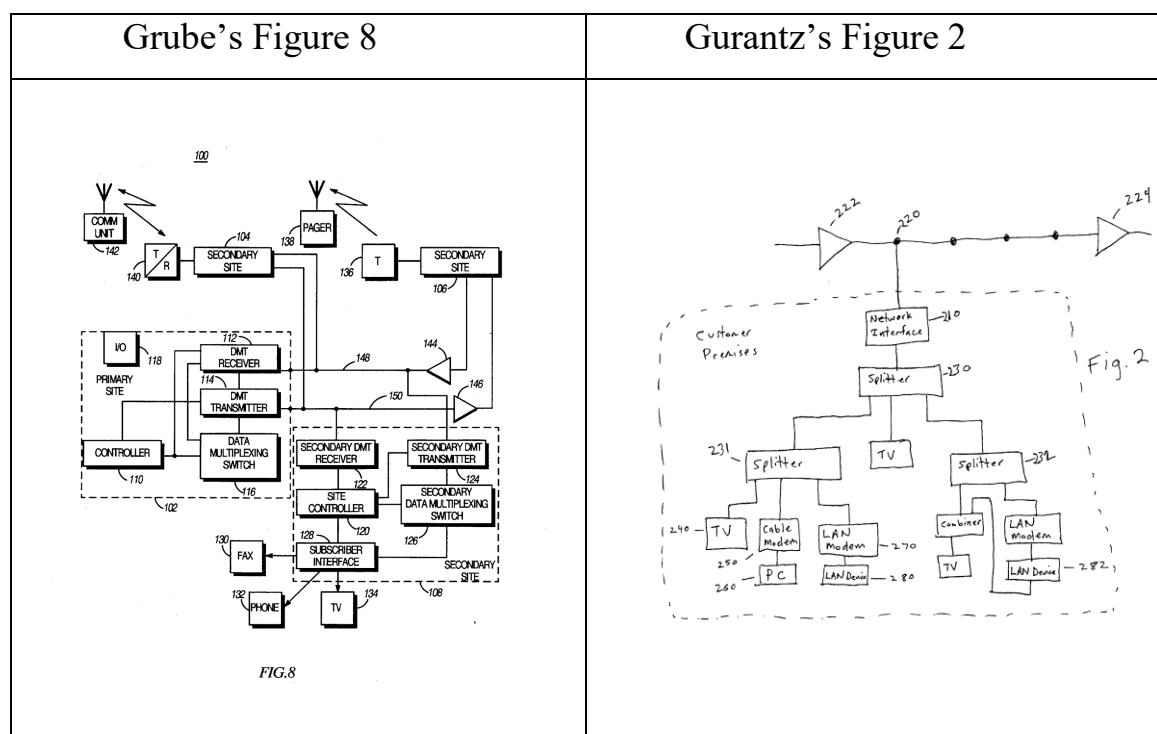
wire. A POSITA would not be motivated to improve signaling on coaxial cable via Grube's far more primitive twisted pair system.

Ex. 2003 [Russ-Decl.] ¶¶ 88-90.³

Another crucial difference between Gurantz and Grube's systems is that Gurantz concerns local area networks while Grube concerns a citywide network.

As Dr. Russ explains:

Gurantz and Grube also have fundamentally different topology (local area vs citywide). This difference can be seen when comparing Grube's Figure 8 with Gurantz's Figure 2:



³ Some parenthetical quotations omitted.

As can be seen above, Grube's invention concerns the hierarchy between the primary site at the headend and secondary sites. *See* Ex. 1009 [Grube] 7:20-22. The secondary sites in turn communicate with multiple "subscribers," such as faxes, phones, and televisions. *See id.*, 8:50-58, 8:66-9:6. By contrast, Gurantz's invention concerns the network within, *e.g.*, a given home and between the consumer premises equipment, such as the TV, cable modem, and PC within that home. Ex. 1007 [Gurantz] [0020]. In other words, whereas Grube has a citywide focus and concerns the interface between a citywide primary site at the headend and an entry point with particular buildings, Gurantz concerns local networks, *e.g.*, within a home, and communications within that network amongst consumer premises equipment within that home, which Grube is entirely unconcerned with. Grube's secondary sites are, moreover, one step removed from the nodes that are the subject of the '759 patent.

Ex. 2003 [Russ-Decl.] ¶ 94.

Petitioner's attempts to minimize the differences between Grube's twisted-pair wires and Gurantz's coaxial cable fall flat. Petitioner assures us that "[a] POSITA would have recognized that Grube's teachings for improving bit-loaded data transmission over a network utilizing two-wire (*e.g.*, twisted pair) telephone line would have similar application, with similar benefits, as applied to Gurantz's BCN employing coaxial cable," as "both types of networks are subject to similar interference and signal reflections." Pet., 27 (citing Ex. 1002, ¶121-124).

Petitioner, thus, cites four paragraphs from Mr. Bertonis’s testimony in support of its position but the substance of Mr. Bertonis’s testimony and the exhibits discussed therein is not presented in the Petition, and thus should not be considered. 37 C.F.R. § 42.6(a)(3). And even if the Board were to consider this improperly incorporated testimony, it is of no help. Mr. Bertonis cites no evidence for his assertion that Grube’s twisted pair teachings “would have similar application, with similar benefits, as applied to Gurantz’s BCN employing coaxial cable.” See Ex. 1002 [Bertonis-Decl.] ¶¶ 121-124. It is well-settled that an expert’s conclusory statements are insufficient to establish invalidity. See 37 C.F.R. § 42.65(a); *Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 886 (Fed. Cir. 2024); *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15 (Aug. 24, 2022) (precedential). And that twisted pair telephone lines and coaxial cable both generally used multi-carrier techniques (Ex. 1002 [Bertonis-Decl.] ¶¶ 123-124) has no bearing on whether Grube’s specific teachings are applicable to Gurantz’s system.

Moreover, Petitioner’s arguments that telephone wiring teachings are applicable to a coaxial cable environment are wrong. As Dr. Russ explains, the “transmission impairments,” “interference and signal reflections” that Mr. Bertonis argues are similar between Grube and Gurantz are, in fact, not similar at all:

The physical differences between coaxial cable and twisted pair systems manifest themselves in the different problems each system faces. As seen in Gurantz (and the '759 patent), the higher frequency transmission results in shorter wavelengths, which in turn cause negative transmission-line effects, even inside buildings. Ex. 2004 [Signal-Integrity] 94-96, 99-101. Consequently, devices on a local coaxial cable network have a difficult time communicating with each other. Ex. 1007 [Gurantz] [0012] (Gurantz “addresses the problem of tap port-to-port isolation and providing a suitable signal path for terminal-to-terminal communication in a coaxial cable wired building.”).

Grube’s twisted-pair system, by contrast, does not face this problem. The twisted pair wire’s transmission frequency is lower, and thus, its wavelength is longer. The negative transmission-line effects seen in coaxial cable networks are simply not seen in twisted-pair wiring. This lower transmission frequency, however, means that twisted pair wiring cannot carry enough information to distribute information to multiple users. In accord, Grube addresses a need “for a one-to-many and/or many-to-one communication system infrastructure that utilizes existing telephone lines.” Ex. 1009 [Grube] 4:47-51. Coaxial cable’s higher frequency has no such problem. A POSITA simply would not consider solutions meant for twisted pair wiring’s lack of bandwidth to be relevant to the problem of coaxial cable’s transmission-line effects within buildings.

Ex. 2003 [Russ-Decl.] ¶¶ 92-93.

In view of these significant differences between Gurantz and Grube, Petitioner fails to demonstrate that a POSITA would have looked to Grube to modify Gurantz.

2. Petitioner Fails To Demonstrate That A POSITA Would Have Been Motivated Or Able To Implement Gurantz's Nodes As Grube's Primary Sites With A Reasonable Likelihood Of Success.

The manifest differences between Gurantz and Grube are even more apparent in Petitioner's argument regarding the claimed "transmitting node." Each of the claims require "transmitting a probe signal from a transmitting node," which also "receiv[es] a plurality of response signals" and "determin[es] the common bit-loading modulation scheme from the received plurality of response signals." Ex. 1001 ['759] cls. 1-7, 14, 20, 22. Petitioner argues that Gurantz-Grube teaches the required "transmitting node" arguing that "[i]t would have been obvious to a POSITA to have configured Gurantz's LAN modem/device pair 270/280 as a primary site as taught by Grube, while configuring other LAN modem/device pairs, such as LAN modem/device pair (unlabeled)/282, as secondary sites on the LAN." Pet., 36-37.

Petitioner, however, utterly fails to provide **any** explanation of why or how Gurantz's nodes could be configured as Grube's primary site. Petitioner merely asserts that it would be an "obvious configuration," citing only its expert's

parroting declaration. This will not suffice as “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). And Mr. Bertoni’s *ipse dixit* cannot fill the gap. *See, e.g.*, 37 C.F.R. § 42.65(a) ; *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9, 15 (Aug. 24, 2022) (precedential).

If more is needed, there is no reason to believe that a POSITA would have been motivated or able to configure one of Gurantz’s LAN modem/device pairs as Grube’s primary site with a reasonable likelihood of success. As Dr. Russ explains, Grube’s primary site is the headend of a telephone system meant to service an entire city:

Grube’s primary site is at the headend of the telephone system, providing citywide coverage. As can be seen in Grube’s Figure 8 below, Grube’s primary site communicates with numerous secondary sites, including secondary site 108 which services a fax machine, a phone, and a TV:

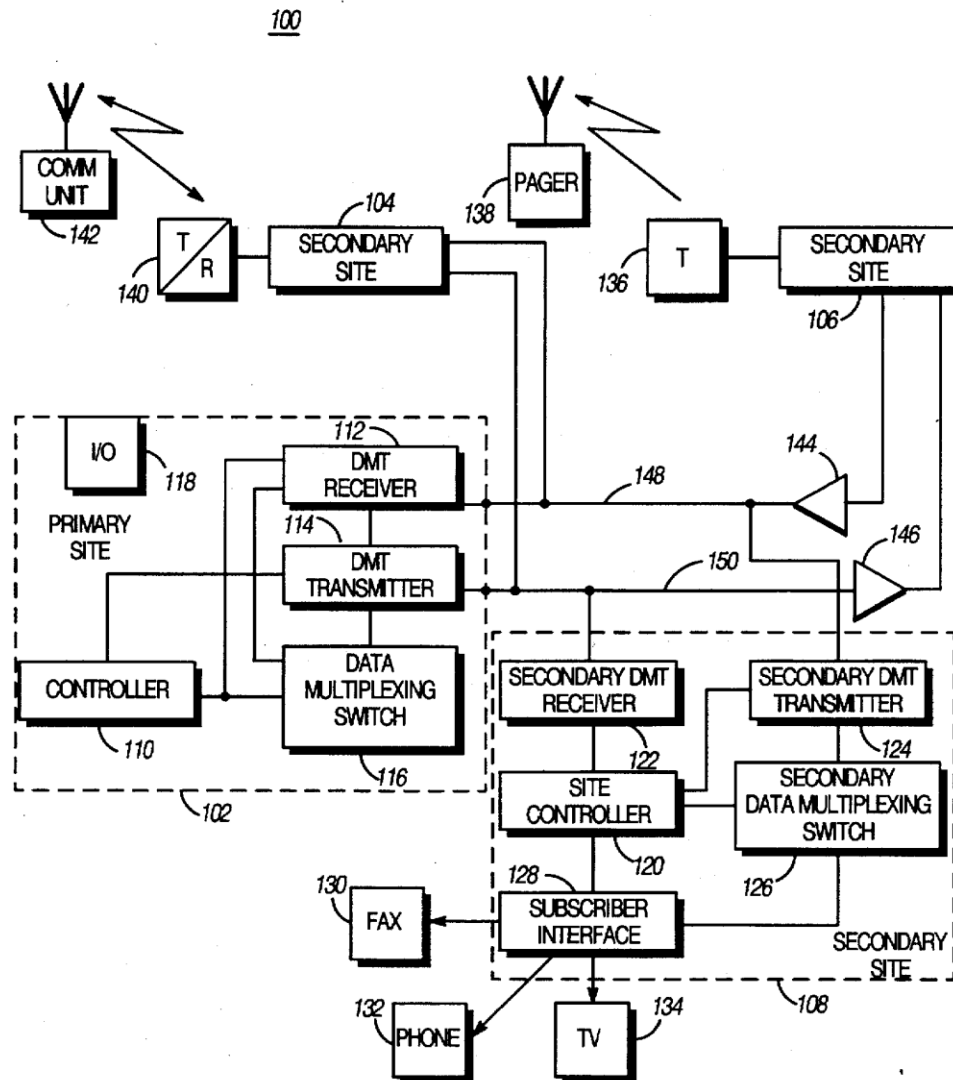


FIG.8

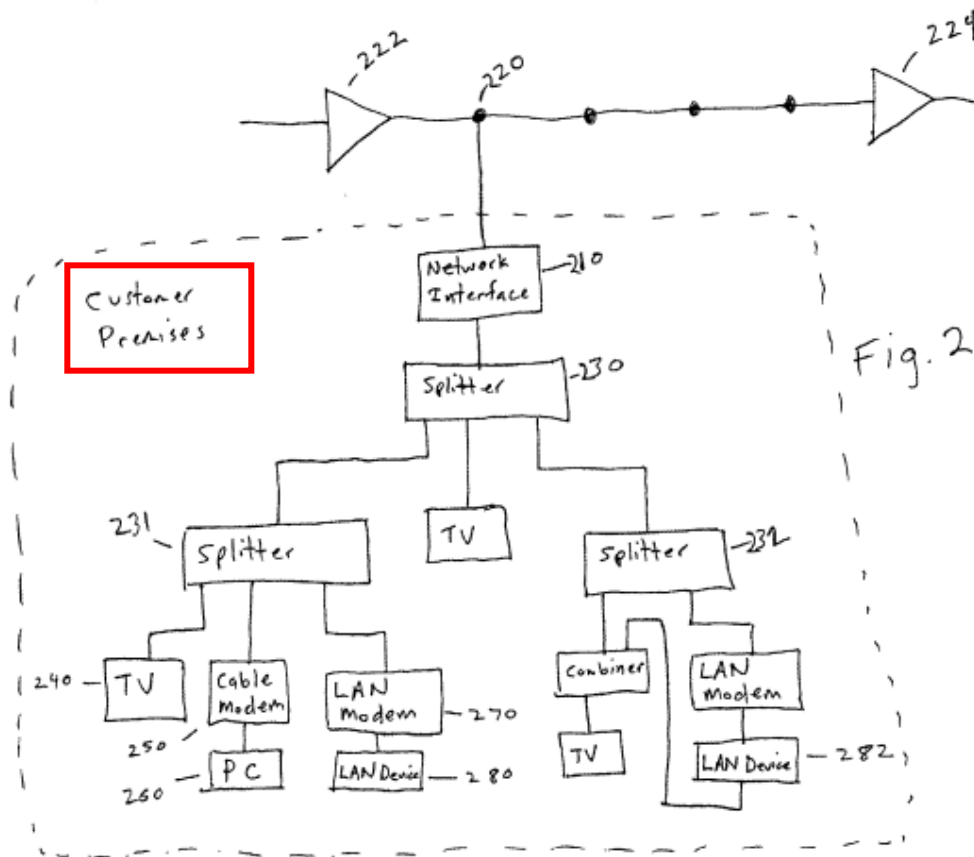
Ex. 1009 [Grube] Fig. 8. Grube thus teaches that its primary site communicates with receivers meant to service entire buildings. Indeed, Grube teaches that its primary site is responsible for receiving call requests, determining which secondary site should receive a particular call, and then allocating available channel resources to the call. See Ex. 1009 [Grube] 8:22-8:37 (describing how Grube's primary site handles

call requests). In accord, Grube teaches that its primary site “would ***include a public switched telephone network (PSTN) interconnection*** to support telephone interconnect operations and to transceive facsimiles.” *Id.*, 10:47-50; *see also id.*, 8:43-46 (“The primary site 102 includes a controller 110, a DMT (Discrete Multi Tone) receiver 112, a DMT transmitter 114, a data multiplexing switch 116, and an input/output port 118.”). Grube also teaches that its primary site may be miles away from the secondary sites. *Id.*, 8:46-49 (“Note that, if ***the secondary sites are separated by more than a given geographic distance (12 Kft to 18Kft) from the primary site***, repeaters 144, 146 may be required.”).

Ex. 2003 [Russ-Decl.] ¶ 99.

Whereas Grube’s primary site is directed towards an enormous geographic area, Gurantz is precisely the opposite, focused upon customer equipment within a building, such as a home. As Dr. Russ explains:

By contrast, Gurantz’s LAN modem/devices are simply devices within a building, meant only to support the limited number of users in the building. As seen in Gurantz’s Figure 2 below, the LAN modem/device pairings are within a “customer premises”:



Ex. 1007 [Gurantz] Fig. 2 (annotated); *see also id.*, [0020]. In accord, Gurantz teaches that the “LAN device” can be a “personal computer” or “a modulator to produce a signal for driving a TV through a signal combiner.” *Id.*, [0020].

Ex. 2003 [Russ-Decl.] ¶ 100. Grube (focused upon a citywide method) and Gurantz (focused upon communications within, *e.g.*, a home) are, quite literally, miles apart and the former has nothing to do with the latter, to say nothing of the physical differences between the communication media themselves (*see* Sections II.A, II.B.1). As Dr. Russ explains, it is pure fancy to imagine that one of

Gurantz's nodes could be "configured" as Grube's primary site or that a POSITA would be motivated to do such a thing:

There is no reason to believe that a "LAN modem," "personal computer," or a "modulator to produce a signal for driving a TV" could be configured as one of Grube's much more powerful and capable expansive primary sites. A device meant for an individual's use is simply not as capable as a site meant to provide communications to buildings in a citywide area. One reason is the cost and complexity of developing a system that can generate the training signal described in Grube and measure (or collect) responses. A POSITA would not be motivated to implement Gurantz's in-home devices, such as set-top boxes and cable modems, to have the necessary additional circuits that Grube's primary site has. Keeping in mind that service providers buy these devices in multi-million-unit quantities and based on my experiences designing such products, there is no way that service providers would pay extra for pieces of customer premises equipment to be able to operate as Grube's primary site.

Ex. 2003 [Russ-Decl.] ¶ 101.

Thus, Petitioner fails to demonstrate that a POSITA would have been motivated or able to implement Gurantz's nodes as Grube's primary sites with a reasonable likelihood of success.

3. Gurantz's Broadband Cable Network Has No Need For Grube's Telephone System Solutions.

Petitioner additionally fails to prove a POSITA would be motivated to make its combination when its proposed modification of Gurantz would provide no discernible benefit to Gurantz's system.

Petitioner argues that Grube's alleged technique "would have furthered Gurantz's objective of overcoming 'frequency selective channel impairments.'" Pet., 26 (citing Ex. 1007 [Gurantz] [0048]). But, Gurantz teaches that "**OFDM provides a mechanism to overcome** the frequency selective channel impairments present in coaxial building wiring when employing a network interface device according to the present invention." Ex. 1007 [Gurantz] [0048]. Consequently, Gurantz has no need for Grube's alleged technique to "overcom[e]" an issue Gurantz already addresses.

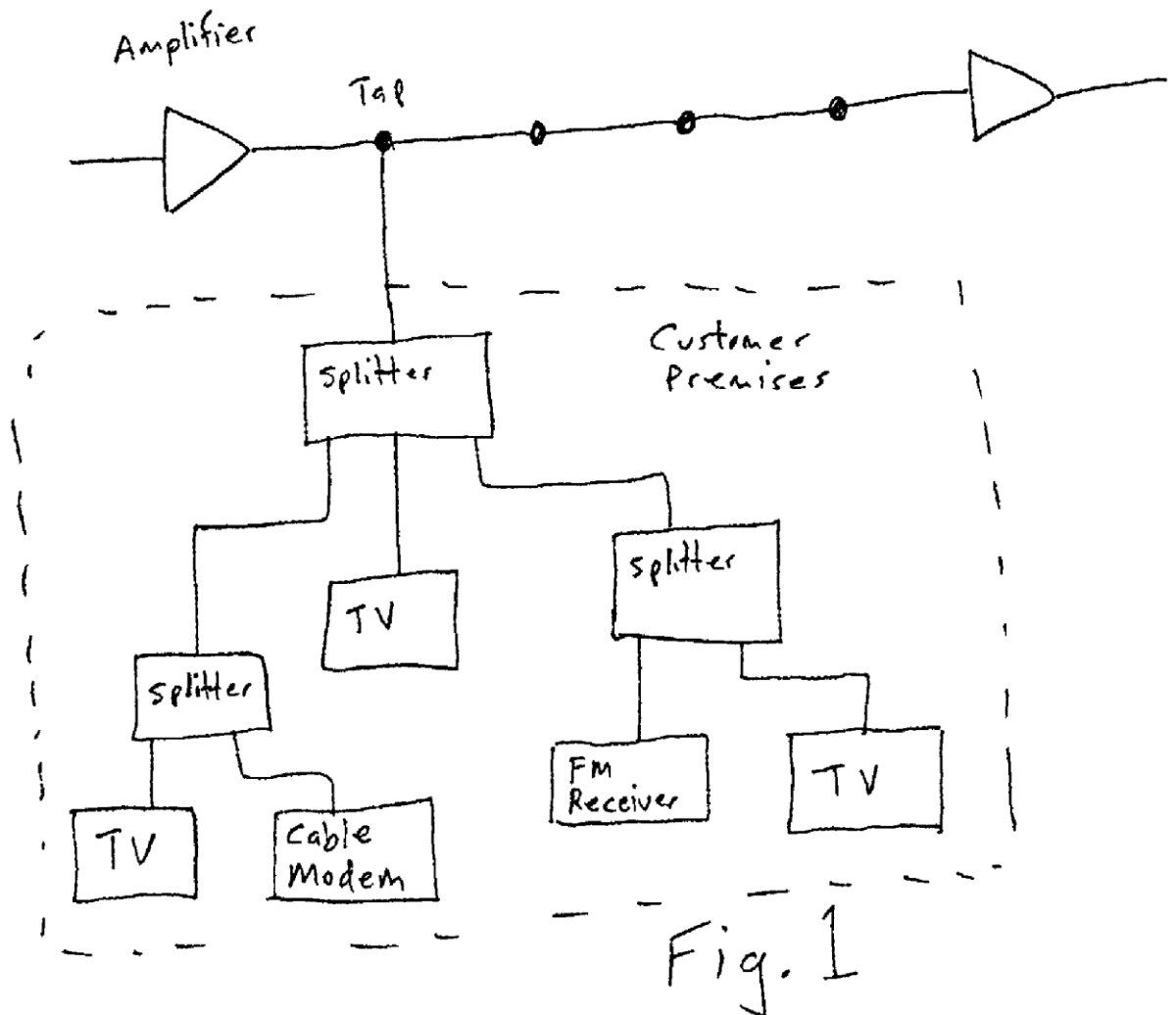
It is not obvious to modify a reference that already achieves the benefit supposedly served by the proposed modification. *See, e.g., In re NTP, Inc.*, 654 F.3d 1279, 1289 (Fed. Cir. 2011); *Apple Inc. v. Cellular Comm'ns Equipment, LLC*, IPR2015-00576, Paper 7, 12 (June 12, 2015); *F5 Networks, Inc. v. Radware, Ltd.*, IPR2017-00124, Paper 48, 64-65 (Apr. 23, 2018) (no motivation for modification that "serve[s] no purpose").

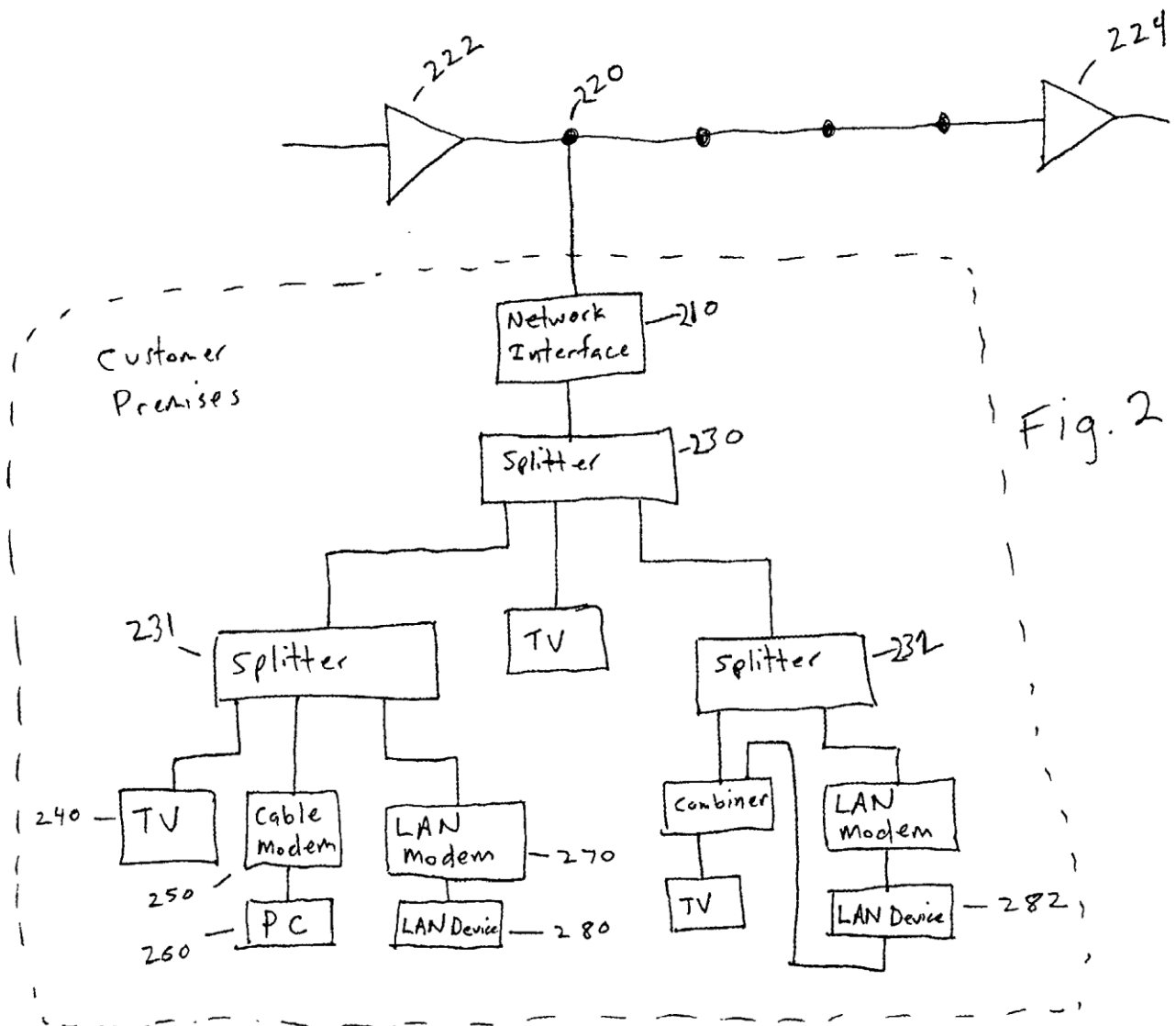
Similarly, Petitioner also argues that a POSITA would have been motivated to combine Gurantz and Grube because Grube would have allowed for “one-to-many and/or many-to-one’ communications”:

Further, Grube presents an improvement over the known use of bit-loading, extending it to provide an architecture that allows for “one-to-many and/or many-to-one” communications, i.e., a multi-cast scenario. Ex. 1009, 4:43-50. Combination with Gurantz would have been motivated in order to achieve a similar improvement in data networking over coaxial cable. Ex. 1002, ¶135.

Pet., 32-33. Gurantz, however, is already capable of the one-to-many and many-to-one communications described in Grube. As Dr. Russ explains:

Not only does Gurantz already teach a multi-cast scenario, Gurantz teaches that one-to-many communication from the POE to the nodes was taught in prior art BCN systems. As can be seen illustrated in the figures below, Gurantz teaches that the signal propagates throughout the customer premises to various devices from a point of entry:





Ex. 1007 [Gurantz] Figs. 1, 2; [0004] (“Signal splitters, shown in FIG. 2, are commonly used in home and other building type coaxial cable wiring. **They have an input port and multiple output ports.**”). Moreover, Gurantz teaches that these pathways are bi-directional, allowing for many-to-one communications. *Id.*, [0005] (“Splitters are generally bi-directional.”); [0013] (“A bidirectional signal distribution

network is create[d] from existing building wiring”). Gurantz thus has no further need for the one-to-many or many-to-one communications described in Grube.

Ex. 2003 [Russ-Decl.] ¶ 106.

Petitioner further fails to substantiate its assertion that “Grube’s teachings [improved] bit-loaded data transmission” and that a POSITA would have been motivated to add these alleged improvements to Gurantz’s system.

As Dr. Russ explains:

Although Petitioner argues that Grube’s invention improved bit-loaded data transmission, Grube did not actually present an improvement in the use of bit-loading. Rather, Grube re-architects an ADSL over twisted-pair telephonic system to include “one-to-many and/or many-to-one” communications. Ex. 1009 [Grube] 4:44-51. Grube says nothing about improving bit-loading. *See generally id.* Rather, Grube’s system is designed to efficiently allocate bandwidth for given calls in view of the limited bandwidth (1.1 MHz) available in Grube’s twisted-pair telephone lines while also minimizing channels for any given call so that Grube’s system can accommodate the ever-shifting needs of its dense citywide system. But neither of these is a concern in the context of Gurantz. As previously explained, Gurantz’s BCN accommodates far higher bandwidths. Additionally, Gurantz’s local BCN has no need to balance the competing and ever-shifting needs of the very large number of sites serviced by a citywide network like that disclosed in Grube.

Moreover, Petitioner’s conclusory assertion that “[c]ombination with Gurantz would have been motivated in order to achieve a similar improvement in data networking over coaxial cable” is unsubstantiated. Grube’s improvements are to add “one-to-many and/or many-to-one” broadcast from a headend (the primary site) to secondary sites (*e.g.*, buildings) to its ADSL system. Ex. 1009 [Grube] 4:44-51. But cable networks have been broadcasting between the headend and buildings since the 1960’s. Ex. 2008 [Cable-History-Timeline] 7. In other words, these are problems that were solved literally decades earlier.

In essence, Petitioner appears to argue that a POSITA would be motivated to add broadcasting functionality to Gurantz (which applies to coaxial in-home network with no need for broadcasting). Even if this were correct, which it is not for the reasons I explained above, a POSITA would not turn to Grube which provides broadcasting functionality (1) ***outside the home***, (2) ***over twisted pair***, (3) ***for an ADSL system***. There is no other reason to make this combination other than to reconstruct the claims of the ’759 patent with the benefit of hindsight.

Ex. 2003 [Russ-Decl.] ¶¶ 107-109.

Thus, Petitioner fails to demonstrate that a POSITA would have combined Gurantz and Grube as proposed when the proffered benefits of the combination are either already present in or irrelevant to Gurantz’s system.

4. Gurantz and Grube's Systems Are Incompatible.

Moreover, the physical differences between Gurantz's coaxial cable and Grube's twisted-pair wiring causes the two systems to be incompatible. A POSITA would not be motivated to combine references where the combination would render one of the references "inoperable for its intended purpose." *Plas-Pak Indus. v. Sulzer Mixpac AG*, 600 Fed. App'x 755, 760 (Fed. Cir. 2015) ("modifying Jacobsen to accommodate the spray nozzle of Hunter would render Jacobsen 'inoperable for its intended purpose,' and a person of ordinary skill would thus not have been motivated to pursue the combination.") (citing *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984), *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374 (Fed. Cir. 2007). Similarly, a POSITA would not be motivated to make a combination that would change the basic principle of operation of one of the references. *See also In re Ratti*, 270 F.2d 810, 813 (CCPA 1959) (proffered combination is not proper where it would change the basic principles of operation of one of the references); *Plas-Pak*, 600 F. App'x. at 759 ("a change in a reference's 'principle of operation' is unlikely to motivate a person of ordinary skill to pursue a combination with that reference").

As Dr. Russ explains, Petitioner's combination would render Gurantz inoperable for its intended purpose and would, moreover, alter Gurantz's principle

of operation. Applying Grube's teachings to Gurantz's system would fundamentally alter Gurantz and, indeed, render it inoperable:

Grube and Gurantz's systems are simply incompatible, and Petitioner fails to explain why a POSITA would believe Grube's teachings to be applicable to Gurantz's system. As explained, coaxial cable and twisted-pair wire systems operate on different frequencies. Gurantz teaches that "[t]he frequencies used by [its] LAN can be located above the standard cable use frequencies, which extend to **550 MHz or 750 MHz**. ... The filter cut-off frequencies are selected according to the frequencies bands used." Ex. 1007 [Gurantz] [0031]. By contrast, Grube teaches that its "ADSL system incorporates 256 carrier channels beginning at **25 kilohertz up to 1.1 MHz at so increments of 4 kilohertz**." Ex. 1009 [Grube] 52:25-30.

This difference in frequencies is significant because Gurantz's invention relies heavily on reflecting signals. Ex. 1007 [Gurantz] [0013]. The reflecting device is "frequency selective," utilizing a "low pass filter." *Id.*, [0022]. This frequency selection allows low frequency signals to pass to the head-end (*i.e.*, out of the building) while high frequency signals originating from the terminal devices are reflected back among the terminal devices (*i.e.*, in the building). Grube's method uses low frequencies, which would only pass to the head-end instead of back among the terminal devices. But, Grube's low-frequency signals, if applied in Gurantz's system, would pass through Gurantz's system without being reflected and, thus, render Gurantz's system for communication among the terminal devices completely inoperable.

Ex. 2003 [Russ-Decl.] ¶¶ 110-111.

Further, even if, *arguendo*, Gurantz and Grube's systems were physically compatible, implementing Grube's teachings in Gurantz would interfere with Gurantz's goal of enabling peer-to-peer communication within a network. Grube's primary site acts as a hub with which the secondary sites communicate instead of communicating with each other. As Dr. Russ explains:

Again, Gurantz makes clear that its intended purpose is to allow "terminal devices" on a "local area network using coaxial cable" "to transmit to and receive from other devices." *E.g.*, Ex. 1007 [Gurantz] Abstract. Indeed, Gurantz addresses the issue in prior art "LAN system[s]," where "terminal devices communicate directly with each other, [and] therefore attenuation between tap ports in the signal splitters results in an undesirable signal loss." *Id.*, [0008]; *see also* [0010], [0012]. Consequently, Gurantz teaches a "network interface device [which] provides a path for terminal devices to transmit to and receive from other terminal devices." *Id.*, [0013]. This results in a "bidirectional signal distribution network" among the terminal devices and created "from existing building wiring." *Id.*

Thus, Gurantz's principle of operation is to allow terminal devices on a coaxial LAN within a building to communicate with each other.

Ex. 2003 [Russ-Decl.] ¶¶ 113-114.⁴

Grube, by contrast, is an entirely different system wherein secondary sites do not communicate directly with each other. As Dr. Russ explains:

Grube operates by utilizing a “primary site” which “communicates with [a] plurality of secondary sites.” Ex. 1009 [Grube] 7:20-21. The primary site is responsible for “receiv[ing a] call request,” “determin[ing] the target sites involved in the requested call,” “retriev[ing] the site bit loading table for each target site and generat[ing] a lowest common denominator (LCD) call bit loading table for this particular call,” and “allocat[ing] carrier channels to provide the infrastructure for this particular call.” *Id.*, 8:22-36. Thus, in other words, Grube’s primary site functions as a hub which transmits calls to secondary sites along allocated spokes (carrier channels). This hub-and-spoke model can be seen illustrated in Grube’s Figure 8, which demonstrates that each secondary site communicates directly with the primary site, not with other secondary sites:

⁴ Some parenthetical quotations omitted.

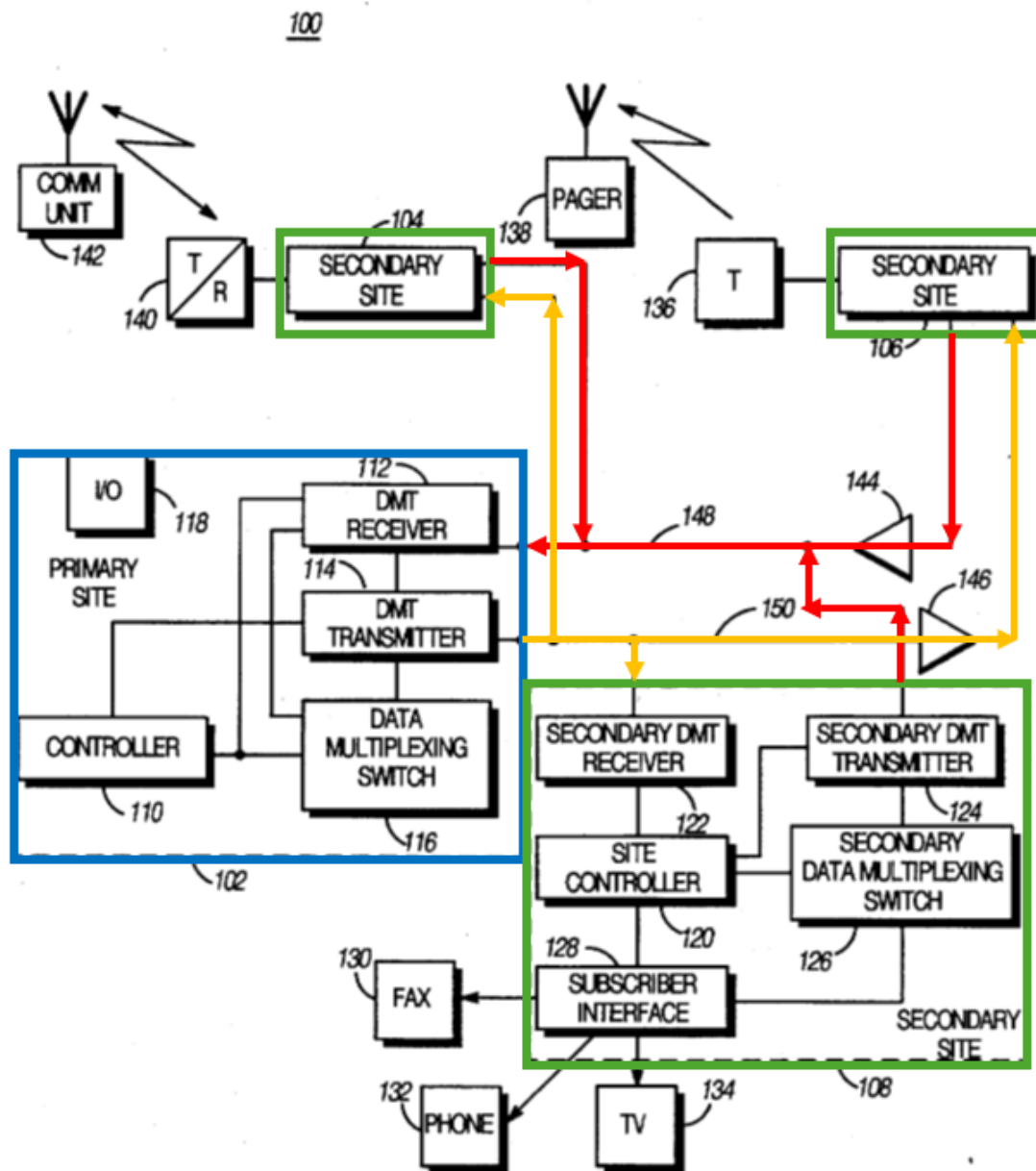


FIG.8

Id., Fig. 8 (annotated). As can be seen above, the **primary site** communicates with the **secondary sites**, but the secondary sites do not communicate with each other. See also *id.*, 8:39-43 (“The

communication system 100 includes a primary site 102, a plurality of secondary sites 104-108 interoperably coupled to the primary site ...”).

Ex. 2003 [Russ-Decl.] ¶ 115.

Grube’s teachings, however, are not compatible with Gurantz’s stated purpose. As Dr. Russ explains:

Grube’s hub-and-spoke system does not allow for secondary sites to communicate with each other. Rather, communication is solely with the primary site, rather than secondary site-to-secondary site. This directly contradicts Gurantz’s stated benefit of “[a] bidirectional signal distribution network [created] from existing building wiring intended only for headend to terminal device communication.” Ex. 1007 [Gurantz] [0013]. Configuring one of Gurantz’s nodes to operate in the manner that Grube’s primary site does, as Petitioner proposes (Pet., 33-34), would force Gurantz’s system to change from devices communicating with each other to devices only being able to communicate with the primary site.

Ex. 2003 [Russ-Decl.] ¶ 116.

Obviousness may not be found on the basis of “disregard[ing]” or “ignoring teachings” in Gurantz or switching from Gurantz’s highly desired goals to different ones, while “identify[ing] no reason at all” to do so. *E.g.*, *Institut Pasteur v. Focarino*, 738 F.3d 1337, 1345-46 (Fed. Cir. 2013). Gurantz’s highly desired goal of allowing terminal devices to communicate with each other “would bear heavily

on” whether the POSITA would be motivated and able to combine the references. *Id.* (reversing PTAB obviousness determination); *see, e.g., Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1069-70 (Fed. Cir. 2018) (rejecting obviousness determination, where combination “would run contrary to one of [the primary reference]’s stated purposes”).

Consequently, Petitioner fails to prove that a POSITA would be motivated to modify Gurantz to utilize Grube’s hub-and-spoke teachings, as such a modification would prevent Gurantz’s terminals from communicating with each other.

5. Petitioner’s Proposed Combination Is Based Upon Impermissible Hindsight.

In the end, Petitioner has proposed combining two fundamentally different systems for no reason other than to try and match the claims. It is well-settled that obviousness is not established merely because the “elements of the claimed invention were independently known in the prior art.” *Metalcraft of Mayville, Inc. v. Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017); *see also Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 886 (Fed. Cir. 2024) (“It does not suffice to meet the motivation to combine requirement to recognize that two alternative arrangements ... were both known in the art.”). Rather, an *ex post facto* obviousness assessment that “break[s] an invention into its component parts, then find[s] a prior art reference corresponding to each component” “would import

hindsight into the obviousness determination by using the invention as a roadmap to find its prior art components” and “would discount the value of combining various existing features or principles in a new way to achieve a new result—often the essence of the invention.” *Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*, 411 F.3d 1332, 1337 (Fed. Cir. 2005); *see also Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 1275 (Fed. Cir. 2004) (“This form of hindsight reasoning, using the invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result - often the very definition of invention”).

Critically, what is required, and what Petitioner fails to provide, is proof that “one of skill in the art would have combined these particular references to produce the claimed invention.” *Metalcraft*, 848 F.3d at 1367. Where, as here, Petitioner fails to provide that proof, “we are left with only hindsight bias that *KSR* warns against.” *Id.* Petitioner’s combination of two disparate, incompatible systems is precisely the sort of conclusory, hindsight-driven analysis that the law forbids.

Unsurprisingly, Petitioner’s hindsight-driven proffered motivations fail. Petitioner argues that a POSITA would have been motivated to combine Gurantz and Grube because Grube’s techniques were “known”:

The obvious combination is equally characterizable as ***use of a known technique*** (Grube’s training signals) to improve a similar device

(Gurantz’s bit-loading BCN) in the same way, and ***applying a known technique (Grube’s training signals) to a known device*** ready for improvement (Gurantz’s BCN) to yield predictable results. *KSR*, 550 U.S. at 401.

Pet., 26-27; *id.*, 36-37 (arguing it “would have been obvious to a POSITA to have configured Gurantz’s LAN modem/device pair 270/280 as a primary site as taught by Grube” without providing a reason to combine).

But, as the Federal Circuit has recently held, “it does not suffice to simply be known. A reason for combining must exist.” *Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 888 (Fed. Cir. 2024).

Thus, Petitioner fails to demonstrate that a POSITA would have been motivated or able to combine Gurantz and Grube as proposed with a reasonable likelihood of success.

G. Petitioner Fails To Meet Its Burden Under 37 C.F.R. § 42.104(b)(3) (Claims 14-23, All Grounds).

The Petition should also be rejected because it fails to comply with 37 C.F.R. § 42.104(b)(3). As Petitioner notes, “[a] large number of the terms in claims 14 and 18-23 use the words ‘means for’ followed by a statement of function, and thus presumptively invoke 35 U.S.C. §112 ¶6.” Pet., 18. Indeed, the phrase “means for” appears 57 times in these claims.

Under the Office’s rules, a petition must identify “[h]ow [each] challenged

claim is to be construed” and, “[w]here the claim to be construed contains a means-plus function ... limitation ... the construction of the claim **must** identify the **specific portions of the specification** that describe the structure, material, or acts corresponding to **each** claimed function.” 37 C.F.R. § 42.104(b)(3). In accord, the Consolidated Trial Practice Guide specifies that “[w]here claim language may be construed according to 35 U.S.C. § 112(f), a petitioner **must** provide a construction that includes both the claimed function and the specific portions of the specification that describe the structure, material, or acts corresponding **to each claimed function.**” CTPG, 45; *id.* (“A petitioner who chooses not to address construction under § 112(f) risks failing to satisfy the requirement of 37 C.F.R. § 42.104(b)(3).”).

Here, however, Petitioner wholly fails to comply with the requirements of 37 C.F.R. § 42.104(b)(3). While Petitioner notes that there are “a large number” of presumptive means-plus-function terms, Petitioner does not even specifically identify those terms. It certainly does not identify “specific portions of the specification that describe the structure, material, or acts corresponding to **each** claimed function. Again, Petitioner does not even identify the claimed functions, much less identify a specific portion of the specification describing the structure, material, or acts corresponding to each claimed function.

Instead, Petitioner provides the following, general statement:

For purposes of this proceeding, the means-plus-function terms in the claims should be construed to cover BCN hardware and/or software systems operable to carry out the particular function recited, at any particular location within the BCN that may be specified in the claims, e.g., at a “transmitting node” or “receiving node” of the network.

Pet., 20. This statement, however, does not satisfy 37 C.F.R. § 42.104(b)(3) which, again, required Petitioner to “identify the *specific portions of the specification* that describe the structure, material, or acts corresponding to *each* claimed function.” Here, Petitioner does not even identify each claimed function, much less identify a “specific portion of the specification” that describes the structure, material, or acts corresponding to each claimed function.

III. CONCLUSION

Thus, Petitioner fails to demonstrate a reasonable likelihood of success as to any of the challenged claims, and the Petition should be denied.

Respectfully submitted,

/ Kenneth J. Weatherwax /
Kenneth J. Weatherwax (Reg. No. 54,528)
Nathan Lowenstein, *pro hac vice* to be filed
Colette Woo, *pro hac vice* to be filed
LOWENSTEIN & WEATHERWAX LLP

Date: May 22, 2024

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Patent Owner Preliminary Response (the “POPR”) consists of 12,819 words, excluding table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The POPR complies with the type-volume limitation of 14,000 words as mandated in 37 C.F.R. § 42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare the paper (Microsoft Word).

Respectfully submitted,

/ Colette Woo /

Date: May 22, 2024

CERTIFICATE OF SERVICE

The undersigned hereby certifies that the following documents were served
by electronic service, by agreement between the parties, on the date below:

PATENT OWNER PRELIMINARY RESPONSE

EXHIBITS 2003-2010

The names and addresses of the parties being served are as follows:

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Respectfully submitted,

/ Colette Woo /

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