

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DISH NETWORK LLC,
Petitioner,

v.

ENTROPIC COMMUNICATIONS, LLC,
Patent Owner.

CASE: IPR2024-00393
U.S. PATENT NO. 7,295,518

PATENT OWNER SUR-REPLY

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TABLE OF PATENT OWNER’S EXHIBITS

Exhibit No.	Description
2001	U.S. Patent No. 6,438,174 to Isaksson et al. (“ <i>Isaksson IP</i> ”)
2002	Declaration of Mr. Albert Garrett
2003	Deposition Testimony of Dr. Tim Williams (Oct. 1, 2024)
2004	Deposition Transcript of June Ann Munford (IPR2024-00393) (September 19, 2024)
2005	Deposition Transcript of June Ann Munford (IPR2024-00373) (September 19, 2024)
2006	Excerpts from Samuel H. Russ, <i>Signal Integrity Applied Electromagnetics and Professional Practice</i> (“Signal-Integrity”)
2007	GNS Wireless, <i>Coaxial Cables</i> , https://www.gnswireless.com/product-category/products/coaxial-cables/ (last visited May 20, 2024) (“Coaxial-Products”)
2008	Order Granting In Part and Denying In Part DirecTV’s Motion to Dismiss Under 35 U.S.C. § 101; <i>Entropic Commc’ns, LLC v. DISH Network Corp.</i> , No. 2:23-cv-01043-JWH-KES, ECF No. 575 (C.D. Cal. Feb. 25, 2025)
2009	Deposition Testimony of Dr. Tim Williams (February 26, 2025)
2010	Deposition Transcript of June Ann Munford (February 20, 2025)

I. INTRODUCTION

Petitioner fails to establish a sufficient motivation to combine the references in either Ground based on alleged challenges or improvements.

A POSITA would have understood that the drawbacks of adding *Jacobsen's* multi-carrier modulation to *Amit's* network outweigh any of Petitioner's alleged improvements. Although the ID sought development of the drawbacks and benefits, only Mr. Garrett conducted such analysis. Dr. Williams concedes that his analysis was confined to the purported benefits gained, and he failed to analyze any downsides of his proposed combinations, confirming the results-oriented analysis of his opinions. Further, the Reply (Paper 21) ignores Patent Owner's ("PO") arguments that *Amit's* "challenges" are not challenges at all. Finally, Petitioner's sole "motivation" to add *Isaksson* is a "problem" *Jacobsen* already addressed.

PO previously detailed that a POSITA would have viewed *Kliger* and *Isaksson* as uncombinable. The Reply improperly introduces a new theory regarding the transmission of *Isaksson's* base sync frames, which is a critical feature in Petitioner's Grounds. This new theory, which should be disregarded as improper Reply evidence, underscores the position in the Patent Owner Response (Paper 16) ("POR") that *Isaksson* would not have motivated a POSITA to arrive at the claimed network of the '518 Patent. Second, Petitioner fails to address key arguments in the POR regarding motivation to combine in view of (1) the intermediary devices of

Kliger's network and (2) *Kliger's* use of fixed constellation sizes as opposed to *Isaksson's* variable constellation.

Lastly, the Reply repeats the same mistakes as the Petition (Paper 2) and fails to address PO's technical evidence. Petitioner over-generalizes "impairments" over "wired networking systems" to incorrectly conclude that *Isaksson* is analogous art, contrary to Federal Circuit precedent. *Isaksson* provides a system that communicates *over twisted pair*, and it does so *without any splitters* or tap ports—far removed from the '518 Patent's branched, in-home coaxial network where communication occurs "between the splitter tap ports." Ex. 1001, Cl. 1. Based on these fundamental differences, *Isaksson* is not "reasonably pertinent" to the problem solved by the '518 Patent nor is it from the "field of endeavor" of the '518 Patent.

II. GROUND 2 FAILS TO RENDER THE CLAIMS OBVIOUS

A POSITA would not have been motivated to combine *Amit*, *Jacobsen*, and *Isaksson*. Petitioner's arguments are unpersuasive and fail to explain why a POSITA would have made the alleged combination.

First, the alleged improvements do not provide a sufficient motivation to combine as *Jacobsen's* multi-carrier modulation contradicts *Amit's* clear goals. POR, 31-36; Ex. 2002, ¶¶95-102. Here, the Reply agrees that (1) *Amit's* goal is to provide a simple, low-cost home networking solution and (2) *Jacobsen's* multi-carrier modulation would add operational costs to *Amit's* network. Reply, 15-18.

Based on these admissions, a POSITA would not have been motivated to combine *Amit* and *Jacobsen* because *Jacobsen* undermines *Amit*'s stated goals without sufficient added benefits. POR, 35-36; Ex. 2002, ¶¶95-96; Ex. 2009, 28:24-32:11.

Second, the Reply fails to address PO's arguments as to why *Amit*'s alleged "challenges" do not provide a motivation to combine. Specifically, the Reply fails to address how (1) *Amit*'s transponder module already addresses "problems with reflections" and (2) *Amit* leverages "high reflection[s]" to communicate, rather than avoid those reflections. POR, 27-31; Ex. 2002, ¶¶82-94. Each challenge would not have motivated a POSITA to combine *Amit* and *Jacobsen*.

Finally, a POSITA would not have been motivated to combine *Amit* and *Jacobsen* with *Isaksson*. *Isaksson* already achieves synchronized bit-loading, which is Petitioner's sole motivation to add *Isaksson*. POR, 43-44; Ex. 2002, ¶¶119-123 (citing Ex. 1016, 10); Reply, 21-22. Ground 2 does not render the claims obvious.

A. *Jacobsen*'s Multi-Carrier Modulation Frustrates *Amit*'s Goals, Outweighing Any Proffered Improvements

Petitioner's attack on Mr. Garrett's example regarding *Jacobsen*'s negative impact on *Amit*'s goals should be ignored. Reply, 16. Additionally, Petitioner fails to establish that any alleged benefits of *Jacobsen* outweigh the negative impact to *Amit*'s expressed simplicity and costs concerns from multi-carrier modulation. Notably, Petitioner does not dispute *Amit*'s goal as providing a simple, low-cost

home networking solution. Reply, 15-18; POR, 32-33. Petitioner also does not dispute that *Jacobsen* negatively impacts *Amit*'s goals by adding costs. And finally, Petitioner's reliance on Dr. Williams' analysis—which failed to account for any disadvantages in the combination—should be given little to no weight.

1. Petitioner Mischaracterizes Mr. Garrett's Analysis

Contrary to the Reply arguments, Mr. Garrett's example is not limited to a “specialized form of multi-carrier modulation—OFDM” Reply, 16. Mr. Garrett's analysis provides an exemplary illustration regarding power consumption, which applies to the claims of the '518 Patent.

Mr. Garrett explained that the “purpose of the example is to demonstrate an implication of using multicarrier modulation on an analog system.” Ex. 1039, 90:6-10. Mr. Garrett chose variables, such as the maximum power output, as “arbitrary” points that did not “represent any particular system.” *Id.*, 90:15-91:1. In creating the specific variable of the peak-to-average power ratio, Mr. Garrett used his OFDM experience. *Id.*, 91:20-92:16. But this is far from Petitioner's mischaracterization that Mr. Garrett's example was limited to, or solely based on, OFDM. Reply, 16.

Second, Mr. Garrett's example was based on his industry experience, and Mr. Garrett provided a detailed explanation for the basis of this example. The 1dB compression point of -16dBm input was used to ensure that “there is no compression of the signal which causes nonlinear effects” at the output. Ex. 1039, 91:9-18.

Importantly, this example was based on (but not limited to) Mr. Garrett’s previous experience to represent “typical” operating conditions. *Id.*, 93:9-22. Petitioner mischaracterizes that Mr. Garrett “acknowledged” that he “did not consider cost saving techniques.” Reply, 16. Mr. Garrett simply testified that he did not run the example with a lower FFT. Ex. 1039, 92:21-93:1. Mr. Garrett’s example provides concrete support for his opinion that *Jacobsen* frustrates *Amit*’s goals by adding operational costs via increased power consumption. Ex. 2002, ¶¶99, 101.

2. Petitioner Does Not Dispute the Disadvantages of Adding Multi-Carrier Modulation to *Amit*

The Reply does not refute the accuracy of Mr. Garrett’s example and does not provide a counter-example of its own. Thus, the only credible evidence of record establishes that *Jacobsen*’s multi-carrier modulation would add operational costs to *Amit*’s network through increased power consumption. Ex. 2002, ¶101. Petitioner acknowledges this position when it alleges (without any support) that “improvements can *offset the power increases*.” Reply, 17.

Moreover, Petitioner fails to address further disadvantages to its proposed combination, including added hardware costs and added complexity, which both PO and Mr. Garrett previously detailed. POR, 33-35. A POSITA would recognize these issues and would understand them to be significant considerations when making changes, in addition to drawbacks with power consumption and design challenges.

Ex. 1039, 90:3-93:22 (describing Mr. Garrett’s comparison of peak-to-average power ratio and the complexities necessitated by Petitioner’s combination).

Petitioner does not dispute that *Amit*’s goal is to provide a simple, low-cost home networking solution or that *Jacobsen*’s multi-carrier modulation would cause an increase of power consumption. Petitioner only challenges the extent—not the result—of PO’s position. Reply, 16 (“PO raises *exaggerated* power consumption concerns.”), 17 (arguing that the “design challenges” are “overstated.”). As explained below, Petitioner’s attacks are mere attorney argument that are unsupported by any competent technical evidence and actually concedes these are problems. Only PO has provided evidence showing the extensive costs of adding *Jacobsen* to *Amit* and how such combination vitiates the entire purpose of *Amit*, *i.e.*, providing a cost-effective system.

3. Petitioner Relies on the Flawed Analysis of Dr. Williams

In constructing a motivation to combine for Ground 2, the ID relies on Petitioner’s argument that *Jacobsen*’s multi-carrier modulation would improve *Amit*’s network. ID, 17-19, 21. The ID cited these purported improvements in response to PO’s arguments regarding the issues and contradictory teachings of *Amit* and *Jacobsen*. ID, 18. Although Petitioner’s expert proposed combining *Jacobsen* with *Amit* based on a generic suggestion of “improving” *Amit*’s network, Dr. Williams confirmed that he failed to consider *any* of the disadvantages caused by

his proposed combinations or weigh them against his purported advantages. Ex. 2009, 31:18-32:11.

Dr. Williams admits he conducted no analysis on the “benefits, both lost and gained, [that] should be weighed against one another.” Ex. 1036, ¶6; Ex. 2009, 29:24-32:11. Dr. Williams also testified that he has no opinion on whether there are downsides to his proposed combination. Ex. 2009, 32:5-11. Dr. Williams’ opinions that a POSITA would add *Jacobsen* to *Amit* are thus fraught with hindsight bias—he constructed a narrative to justify his combination without considering the downsides of adding *Jacobsen* to *Amit* or how those downsides would compare to any advantages to his combination. *Id.*, 31:18-32:11.

Dr. Williams’ analysis is also flawed because he uses the disclosure of the ’518 Patent to arrive at the claims, a textbook example of hindsight reconstruction. *Id.*, 33:9-34:15. Dr. Williams’ analysis uses the ’518 Patent’s citations to non-coaxial references to conclude that the ’518 Patent can apply to different mediums (like twisted pair), despite the plain limitations in the claims themselves. *Id.*, 34:9-15. The ’518 Patent cites dozens of references in its specification, explains the shortcomings, and claims an inventive system to solve existing issues on on-premises coaxial networks. POR, 1-4. In the parallel district court litigation, the court confirmed PO’s position that “Claim 1 solves a specific problem *in the coaxial network* area because it facilitates device-to-device communication—something

that was not previously possible.” Ex. 2008, 23-25; *Entropic Commc’ns, LLC v. DISH Network Corp.*, No. 2:23-cv-01043-JWH-KES, ECF No. 575, 23-25 (C.D. Cal. Feb. 25, 2025).

At bottom, the technical evidence of record strongly favors PO. Mr. Garrett analyzed the specific costs and considerations that a POSITA would face in trying to add *Jacobsen* to *Amit*. By contrast, Dr. Williams did not consider any drawbacks or disadvantages at all or provide any cost-benefit analysis. Instead, he took Petitioner’s proposed combination and then searched only for reasons to support it—the epitome of improper and unreliable hindsight bias.

B. *Amit’s “RF Challenges” Do Not Provide a Sufficient Motivation to Combine Amit and Jacobsen*

Using the teachings of *Amit*, PO details how *Amit* already addresses each alleged “challenge” that the Petition uses as a motivation to add *Jacobsen*. POR, 27-31. Petitioner repeatedly points to alleged “improvements” in multi-carrier modulation, but these arguments fail to respond to PO’s arguments about how *Amit’s* “challenges” are key aspects of *Amit’s* design that a POSITA would not change.

1. *Amit’s* Transponder Module Address Reflections that Petitioner Identifies as a Motivation to Combine

Amit’s transponder module already solves the “problem with reflection,” and the Petitioner does not meaningfully dispute this. POR, 27-28; Ex. 1014, 20:26-31, 42-43. Petitioner argues instead that *Amit’s* transponder module does not preclude

a POSITA from using *Jacobsen's* multi-carrier modulation to address signal impairments. Reply, 14. This argument should be given no weight. *See, e.g., Virtek Vision Int'l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 886 (Fed. Cir. 2024) (explaining the disclosure of various options did not provide a motivation to combine because they failed to “provide any reason *why* a skilled artisan would use” such arrangements).

As explained in the POR, *Amit's* transponder module undermines Petitioner's reliance on “problem[s] with reflection” as a motivation to add *Jacobsen*. POR, 27-28. This position does not require PO to show that *Amit's* transponder module would replace multi-carrier modulation. For these reasons, *Amit* solves its “reflection” problem, and these “reflections” cannot be the basis to add *Jacobsen*.

2. Petitioner Conflates *Amit's* Problem with Reflections with *Amit's* High Reflections for Communication

Amit's high reflections, which the Petition identified as an “RF challenge” to be eliminated, are critical for network communication in *Amit*. POR, 30-31; Petition, 47-49. The Reply does not dispute that *Amit* uses high reflections for communication. Instead, Petitioner conflates two different types of reflections of *Amit's* network. Reply, 14-15.

On one hand, *Amit* identifies high reflections and explains that “[w]hen this reflection is higher than the signal[,] we can use this reflection as our main signal.”

Ex. 1014, 1-6. Put simply, *Amit* uses high reflections to communicate. POR, 30-31; Reply, 14. Thus, *Amit*'s high reflections are not an "RF challenge" that would motivate a POSITA to add *Jacobsen*. POR, 30-31.

On the other hand, Petitioner also relies on *Amit*'s alleged "problem with reflection[s]." Reply, 14. As an initial matter, *Amit* has already solved this alleged problem. *Amit* explains that its transponder "module can be inserted in houses where there is a problem with reflection." Ex. 1014, 42-43. As addressed in Section II.B.1, the transponder module addresses these reflections and thus, these "problem" reflections do not provide a sufficient motivation to add *Jacobsen*.

Finally, Petitioner mischaracterizes the POR; PO never argued that "Amit and Jacobsen are incompatible because they take opposing approaches to reflections." Reply, 14. Petitioner does not provide any citation to this supposed argument, because it does not exist in the POR. With a full understanding of *Amit*'s disclosure, neither *Amit*'s high reflections (key to communication) nor the "problems" with reflection (already addressed with the transponder module) would motivate a POSITA to add *Jacobsen*'s multi-carrier modulation.

C. Petitioner Does Not Provide a Sufficient Motivation to Combine *Amit* and *Jacobsen* with *Isaksson*

For Petitioner's three-reference combination of *Amit*, *Jacobsen*, and *Isaksson*, the Reply introduces a brand-new theory. Petitioner tries to spin a new story on how

to transmit the base sync frames from *Isaksson* in its proposed combination. Reply, 18-19. Petitioner's new theory should be rejected as too late and procedurally improper. But if considered, Petitioner's theory still fails because *Jacobsen* already discloses the sole proffered motivation to add *Isaksson* (*i.e.*, to achieve synchronized bit-loading). Thus, Petitioner's new theory fails to establish a motivation to combine.

1. Petitioner Improperly Introduces a New Theory

The Petition originally argued that each HCN “would transmit base sync frames having predetermined content to the other HCN devices over respective channels.” Petition, 52. Neither the Petition nor Dr. Williams provided *any* analysis as to *how* these base sync frames are transmitted or function. Petition, 52; Ex. 1004, ¶180. In response, PO showed that the Petition failed to identify how base sync frames would be transmitted. POR, 37. Further, PO demonstrated that the Petition ignored the “absolute requirement” in *Isaksson* to use a control channel to transmit base sync frames. POR, 37-39; Ex. 2002, ¶¶105-06; Ex. 1013, 73:12-15.

For the first time in Reply, Petitioner argues that a POSITA would disregard *Isaksson*'s control channel and transmit base sync frames using “Amit's IEEE 802.11 CSMA/CA protocol.” Reply, 19. Petitioner was required to present this theory, and the evidence supporting it, in the Petition. 37 C.F.R. § 42.23(b); *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed.

Cir. 2016) (“[T]he initial petition [must] identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge.’”). Having failed to do so, Petitioner cannot now try to explain in Reply a fundamental component of its combination—that is, how the base sync frames of *Isaksson* would be transmitted.

Despite this improper Reply, the new theory fails to address the problems identified in the POR because there is still no discussion on how the base sync frames are transmitted using *Amit*’s control signaling or why a POSITA would arrive at the challenged claims. Petitioner simply concludes that base sync frames would be transmitted “using Amit’s control signaling mechanism.” Reply, 19. Likewise, Dr. Williams concludes that the “Amit-Jacobsen system *could* employ the IEEE 802.11 CSMA/CA protocol to transmit the base sync frames.” Ex. 1036, ¶77. Neither the Reply nor Dr. Williams explain why a POSITA *would* turn to such protocol when *Isaksson*’s control channel “is an absolute requirement.” POR, 37-39; Ex. 2002, ¶¶105-06; Ex. 1013, 73:12-15. Thus, even if this new theory is considered, Petitioner still fails to provide sufficient evidence for its position.

2. *Jacobsen* Already Provides Synchronized Bit-loading

Petitioner does not dispute that its sole motivation to add *Isaksson* is already present in *Jacobsen*. Indeed, *Jacobsen* explains that “bit distribution is continuously updated during transmission as the receiver sends the required information to the transmitter *on secure overhead channels*.” Ex. 1016, 307. A POSITA would not

need any information beyond the disclosure of *Jacobsen* to implement synchronized bit-loading and certainly would not have looked to *Isaksson* for such a teaching. This is further evidence that the Petition’s proposal to modify *Amit* and *Jacobsen* with *Isaksson* is motivated solely by hindsight.

D. Petitioner Fails to Establish *Jacobsen* as Prior Art

The Reply improperly incorporates by reference seven pages of argument from Ms. Munford’s declaration. 37 CFR § 1.57. However, neither the Reply, nor Ms. Munford, have any evidence that *a POSITA* would have been able to identify and locate *Jacobsen*. *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir. 2016); POR, 45-48. Petitioner fails to rebut any argument in the POR, and the testimony of Ms. Munford confirms: (1) MARC records are editable and cannot be the basis of public availability in a library for a serial publication as a “MARC record does not tell us explicitly when a given issue of the periodical is made available” (Ex. 2010, 22:7-21, 25:23-26:7, 23:17-26:19); and (2) she did not, and cannot, offer an opinion from the perspective of a POSITA, as she is wholly unaware of what that means in this proceeding (*id.*, 10:5-8, 10:13-22). Petitioner has not carried its burden on establishing *Jacobsen* as prior art.

III. GROUND 1 FAILS TO RENDER THE CLAIMS OBVIOUS

Ground 1 fails to render the challenged claims obvious. First, Ground 1 improperly combines the uncombinable teachings of *Kliger* and *Isaksson*. POR, 51;

Reply, 22-23. Second, the Reply relies on the same improper and insufficient theory regarding the transmission of *Isaksson*'s base sync frames and fails to address key arguments in the POR regarding combinability. Reply, 25-27.

1. PO Applies the Proper Legal Framework

The Reply mischaracterizes PO's arguments and confuses a simple issue. The Petition argued that *Kliger*'s issues would motivate a POSITA to improve *Kliger*. Petition, 24. PO responded that a POSITA would not have been motivated because the "issues" in *Kliger* are not issues at all, and thus the POSITA would not seek to improve *Kliger* as Petitioner argued. POR, 51-55. The Reply mischaracterizes this argument into a demand to show a level of improvement. Reply, 23. To the contrary, PO has always argued that there is no motivation to combine *Kliger* and *Isaksson*, and it remains Petitioner's unmet burden to establish such motivation.

2. Petitioner's New Theory is Improper and Deficient

Like in Ground 2, neither the Petition nor Dr. Williams provided **any** analysis as to **how** base sync frames are transmitted in *Kliger*'s network. For the same reasons as outlined in Section II.C.1, Petitioner's new theory is improper new argument that should have been raised in the Petition, and insufficient to support its Grounds based on *Isaksson*. Petition, 26; Ex. 1004, ¶74.

3. The Reply Fails to Address PO's Arguments on Combinability

As PO has shown, *Kliger* and *Isaksson* are fundamentally different systems. POR, 56-60. These differences, including *Kliger's* intermediary devices, were ignored by the Petition. POR, 56-60; Reply, 26. The Reply misstates the burden.

First, PO is not required to prove that a POSITA “would be unable to implement base sync frames” in *Kliger*. Reply, 26. It is Petitioner who needs to establish both that there would be a reason to make the proposed modification (a reason rooted in a rational basis in the prior art time, not the '518 Patent itself) and that a POSITA would have been able to make the modification to arrive at the claimed configuration. *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (Obviousness concerns whether a POSITA would have been motivated to make the modifications “*to arrive at the claimed invention.*”). Again, Petitioner's arguments fail to address how the base sync frames work over *Kliger's* HRU.

Second, Petitioner does not respond to the issue of combining *Kliger's* transmission of fixed constellation sizes with *Isaksson's* variable constellation. Reply, 26-27. Petitioner's boilerplate reproduction of a motivation to combine coupled with its reliance on the hindsight-tainted lens of Dr. Williams is not sufficient. The technical evidence from PO establishes both an illustrative example and the negative implications, which demonstrate why a POSITA would not have been motivated to pursue the combination of *Kliger* and *Isaksson*. POR, 60-63.

IV. LEVEL OF ORDINARY SKILL IN THE ART

A POSITA would have at least two years of experience with coaxial cables. Petitioner’s argument that this requirement is “superfluous” is unpersuasive. Reply, 27. Petitioner ignores the fact that the title, claims, abstract, background, and detailed description all refer to coaxial cable as central to the field of work. POR, 11; Ex. 2002, ¶¶37-43; Ex. 1001, 1:26-29. The claims themselves are not only limited to coaxial cable, but further limited to communication between network devices across tap ports of a coaxial splitter. *Id.*; Ex. 1001, Cl. 1. These requirements show the need for coaxial experience.

Dr. Williams provides unsupported analysis. He concludes, based simply on “[p]ersonal experience,” that the “concepts described in the ’518 Patent, like channel characterization using known sequences, multi-carrier modulation, and bit loading” do not require coaxial experience. Ex. 1036, ¶9; Ex. 2009, 32:25-33:8. But he and the Reply fail to address PO’s arguments. As argued in the POR, this approach flouts Federal Circuit law. For these reasons, the Board should adopt PO’s level of skill.

V. ISAKSSON IS NOT ANALOGOUS ART

The Reply fails to save *Isaksson*; it is neither “reasonably pertinent” to the problem of the ’518 Patent nor of the same “field of endeavor.” *In re Clay*, 966 F.2d 656, 658-59 (Fed. Cir. 1992). Both Grounds fail because both rely on *Isaksson*, and *Isaksson* is not analogous art.

A. Isaksson is Not Reasonably Pertinent to the Problems that the '518 Patent Addresses

The '518 Patent solves impairments specific to on-premises communications between network devices *over existing coaxial cable wiring*. POR, 15-17. The Reply continues to ignore the coaxial context and cites to the '518 Patent only for its references to ISI and other distortions. Reply, 5, 10, 11 (all citing the same passage of the '518 Patent). This proves too much: ISI and distortions also arise in networks that are clearly not analogous, such as wireless cellular networks. *See* Ex. 1024, 1:31-41, 2:20-33. References to “distortions” generally do nothing to address the claim limitations directed towards a coaxial network, the problem/solution unique to coaxial networks, the title directed towards coaxial networks, or the myriad of other passages outlined in the POR. POR, 15-17; Ex. 1001, 4:19-33.

Furthermore, Petitioner incorrectly equates *Isaksson's* POTS splitters with the coaxial signal splitters of the '518 Patent. Reply, 10-11. These splitters have nothing in common but the word “splitter.” *Isaksson's* POTS splitters separate voice signals from data signals, whereas the coaxial splitters of the '518 Patent distribute mirrored signals into each tap port. Ex. 2009, 46:9-47:8. These differences also lead to fundamental differences in the architecture of *Isaksson's* network as compared to the branching topology of the coaxial network claimed in the '518 Patent. Because the purpose and function of those splitters are completely different, there is no

communication over “tap ports” or “common ports” in *Isaksson*’s POTS splitters. *Isaksson* is not reasonably pertinent to addressing on-premises impairments between tap ports because *Isaksson*’s network does not address the problems with coaxial splitters that are fundamental to the problems addressed by ’518 Patent.

1. The Problems of the ’518 Patent are Specific to On-Premises Coaxial Cabling

PO does not “impermissibly narrow[]” the problems of ’518 Patent. Reply, 10. The ’518 Patent itself explains that it addresses “impairments present *in the home wiring* that restricts high bandwidth communication.” Ex. 1001, 4:28-33; *Google LLC, et al. v. CyWee Group Ltd.*, IPR2018-01257, Paper 87, 56 (PTAB Jan. 9, 2020) (relying on the specification under the “reasonably pertinent” prong). Moreover, the claims of the ’518 Patent are specifically directed towards communication between network devices through tap ports of a splitter. Ex. 1001, Cl. 1; Ex. 2002, ¶47 (showing the communication between network devices via two tap ports of a coaxial signal splitter). The ’518 Patent requires communication across two tap ports of the same coaxial splitter; the ’518 Patent is directed towards on-premise networking. *Id.*

Petitioner’s alleged problem of “wired-network signal impairment issues” is improperly broad and ignores the ’518 Patent’s consistent disclosure. Reply, 10; Ex. 1001, 1:27-29. Further, the signal impairments described in the ’518 Patent result

from using existing on-premises coaxial networks, and the '518 Patent provides a solution to these issues. POR, 16-17. Petitioner's conclusory argument that the '518 Patent's impairments are not unique to its network ignore the claim language itself.

2. *Isaksson's Synchronization Issues are Not Reasonably Pertinent to the Problems of the '518 Patent*

Because *Isaksson* does not include a branched topology or communication across tap ports of a coaxial splitter, *Isaksson's* system does not suffer from the problems that are reasonably pertinent to '518 Patent. POR, 17; Ex. 2002, ¶74. *Isaksson* does not communicate over splitters suffering from the tap-port isolation problem of the '518 Patent; a "POTS splitter" is an entirely different component than the signal splitter of the '518 Patent. Reply, 10-11; Ex. 2009, 46:20-47:8. Neither the Reply nor Dr. Williams address this critical difference.

The '518 Patent's signal splitters receive signals at an input port and transmit identical signals via tap ports. Ex. 1001, 1:40-45, 1:53-65, Figure 1. This functionality allows an "N-way splitter" to distribute, for example, an incoming CATV signal to each room of the building. *Id.*, 2:11-16; Ex. 2002, ¶¶45, 68. Mr. Garrett's definition of a splitter matches the disclosure of the '518 Patent. Ex. 1039, 85:18-20 (defining a splitter as a "device used to split a communication medium into multiple mediums inside of a communication network"), 86:14:21.

In contrast to the splitters disclosed and claimed by the '518 Patent, a POTS splitter “separates the voice channel from that of DSL through highpass and lowpass filters to provide co-existing services.” Ex. 1031, 6. Dr. Williams agrees that data and voice services are provided on different frequencies. Ex. 2009, 13:25-14:4, 14:7-16. The POTS splitter uses “frequency division” to determine what signal (corresponding to what service) exits each port. *Id.*, 46:20-47:8. In other words, one portion of the spectrum of the incoming signal comes out one port while a different portion of the spectrum of the incoming signal comes out a different port. *Id.*

Dr. Williams and Petitioner conflate these two components, which have different functions, to incorrectly conclude that *Isaksson* communicates over splitters like the network of the '518 Patent. Reply, 11; Ex. 1036, ¶¶40-41; Ex. 2009, 18:22-19:5 (incorrectly arguing that the tap ports of claimed splitters of the '518 Patent presents “**a portion** of the spectrum of the incoming signal” to a given tap port). But Dr. Williams’ position contradicts the disclosure of the '518 Patent. Ex. 1001, 1:40-45, 1:53-65. Unlike the '518 Patent’s splitters, signals do not communicate **across** the “tap” ports of a POTS splitter because each “tap” port corresponds to a different portion of the spectrum. Ex. 2009, 46:20-47:8. A POSITA would not have looked to *Isaksson*’s splitters and *Isaksson* does not address the problems of communicating across coaxial splitter tap ports like the '518 Patent.

Conversely, *Isaksson*'s entire disclosure is related to an "algorithm, [that] ensures the synchronism of the system during configuration changes." Ex. 1013 at 4:17-20. *Isaksson*'s statement that multi-carrier modulation handles frequency loss and noise does not negate its clear problem and solution. This problem (or *Isaksson*'s solution) has no bearing on the coaxial splitter tap-port based problem of the '518 Patent. POR, 16-17; Ex. 2002, ¶¶71-78.

In the Reply's cited case, *Apple Inc. v. Evolved Wireless LLC*, No. IPR2016-01229, 2017 WL 6209180, at *12 (PTAB Nov. 30, 2017), the Board explained that the patent owner's "artificial distinction" between wired and wireless systems was "tenuously related" to the art's teachings. The Board further found that the art addressed the same problem as the challenged patent. *Id.* Neither are true here. The '518 Patent and *Isaksson* address entirely different problems, and these problems are rooted in the teachings of each reference. The '518 Patent addresses on-premises signal impairments in a coaxial network over the tap ports of a coaxial splitter, while *Isaksson* ensures that a transceiver and receiver maintain a connection when configuring the number of bits on its point-to-point network. Ex. 1013 at 5:14-6:20.

B. The '518 Patent Does Not Share a Field of Endeavor with *Isaksson*

1. Petitioner Ignores the Disclosure of the '518 Patent

The field of endeavor of the '518 Patent is not so broad as to encompass all wired networking systems, but rather specific to wired networking systems *using*

coaxial cables and even more specifically to communication between network devices over the tap-ports of a coaxial splitter. Every aspect of the '518 Patent's disclosure supports this conclusion. POR, 20-22 (detailing how the title, abstract, technical field, background, and claims support the coaxial cables as the '518 Patent's field of endeavor). Petitioner does not acknowledge, let alone respond to, any of this evidence based on the disclosure of the '518 Patent.

Contrary to the Reply's argument, PO does not mischaracterize Dr. Williams' testimony. Reply, 7. PO quoted both Dr. Williams' declaration and his deposition testimony, which speak for themselves. Ex. 1004, ¶184; POR, 20; Ex. 2003, 76:25-77:2 ("What is the field of endeavor of the '518 Patent? Wired network systems *using coaxial cables*."). The Reply downplays this testimony by differentiating Dr. Williams' opinions between Ground 1 and Ground 2. Reply, 7. But this also fails. Dr. Williams' inconsistent positions show that his testimony is not credible. More importantly, Petitioner misses the crux of the issue: the entirety of the '518 Patent supports PO's position that the field of endeavor of the '518 Patent is wired networking systems using coaxial cables and the splitters and their tap ports. Petitioner's single, unsupported conclusion that the '518 Patent is not specific to coaxial cables does not outweigh the disclosure of the '518 Patent. Reply, 7.

2. *Isaksson*'s Field of Endeavor is Not Wired Networking Systems Using Coaxial Cables

Petitioner argues that *Isaksson* “encompasses coaxial cables” and “highlights” coaxial cable system. Reply, 8. This assertion is not supported by *Isaksson*'s disclosure.

Isaksson makes only a single passing reference to coaxial cables, and it does so in a background section. Ex. 1013, 3:4-15; Ex. 2009, 42:19-43:5 (confirming no other disclosures of coaxial in *Isaksson*). This single reference is in stark contrast to *Isaksson*'s focus on twisted pair: *Isaksson* has **twenty-four** references to twisted pair, installed copper networks, and similar terms. See generally Ex. 1013. *Isaksson* further references the MUSIC system, a system Dr. Williams agrees was a twisted pair network, an additional thirty-five times. Ex. 2009, 47:22-48:8; see generally Ex. 1013 (referencing MUSIC throughout the disclosure).

Further, *Isaksson*'s sole reference to coaxial cables as background is used to **distinguish** its invention from that environment. Ex. 1013, 3:4-15. Coaxial cable systems are not provided as an embodiment or a teaching of how *Isaksson*'s invention would be implemented. Reply, 8. But even if *Isaksson*'s teachings could extend to coaxial cables—which they do not—Petitioner fails to establish, based on the single reference to “coaxial,” that *Isaksson*'s **field of endeavor** is wired networking systems using coaxial systems. Because *Isaksson* does not share the

field of endeavor as the '518 Patent, *Isaksson* is not analogous under this prong. POR, 22-26.

C. Petitioner Mischaracterize PO's Arguments on Network Architectures and Motivations to Combine

The Reply accuses PO of importing an “in-home” requirement into the claims. Reply, 1-2. Not true: PO relies on the specification and the claim language to explain the environment in which the claimed coaxial network operates and how that network is distinguishable from wide-area networks like those in *Isaksson*. The distinction between local coaxial networks and external wide-area networks is a main theme that perpetuates throughout the disclosure of the '518 Patent. Ex. 1001, 1:27-29, 4:27-40, Figure 2. Claim 1 requires network devices to “communicate with each other through the cable wiring,” which includes “a plurality of segments of coaxial cable connecting between the splitter tap ports and the network devices.” Ex. 1001, Cl. 1; Ex. 2002, ¶47 (showing the communication between network devices via two tap ports of a splitter). Wide-area networks, like *Isaksson*, do not communicate through tap ports (and no reference identified by Petitioner proposes such a system). And Petitioner does not identify such disclosure in the prior art. Dr. Williams' citation to an HFC network is similarly irrelevant because the HFC network does not includes splitters, and thus the devices do not communicate across splitter tap ports. Ex. 1036, ¶12; Ex. 2009, 24:2-24.

Second, Petitioner contends that PO requires bodily incorporation of *Isaksson* into *Amit's* and *Kliger's* network. Reply, 2-3. To the contrary, PO analyzed the prior art references ***as a whole*** to explain why a POSITA would not have been motivated to add *Isaksson* in either combination based on fundamental differences in the networks. See *In re Applied Materials, Inc.*, 692 F.3d 1289, 1298 (Fed. Cir. 2012). These differences include the physical medium and network topology, which covers *Isaksson's* control channel required for transmitted base sync frames—a key aspect of Petitioner's combination. Ex. 2002, ¶¶62-65, 68-69. These differences are not a matter of bodily incorporation, but of a lack of motivation to combine.

VI. CONCLUSION

A POSITA would not have been motivated to make the proposed combinations. Further, *Isaksson* is not analogous art to the '518 Patent and therefore cannot serve as the basis for obviousness. Petitioner fails to establish any claim is unpatentable.

Dated: March 13, 2025

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Certification of Word Count Under 37 C.F.R. § 42.24(d)

The undersigned hereby certifies that the foregoing contains 5,561 words according to the word count of the word-processing software used to prepare the foregoing and accounting for the words in the figures as required by the Trial Practice Guide.

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CERTIFICATE OF SERVICE

I hereby certify that on March 13, 2025, a true and correct copy of the foregoing was caused to be served on the following counsel of record for Petitioner by electronic mail at the following address:

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