

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT TRIAL AND APPEAL BOARD

ADVANCED MICRO DEVICES, INC.,
Petitioner,

v.

REALTEK SEMICONDUCTOR CORPORATION,
Patent Owner.

Case IPR2023-00920
U.S. Patent No. 8,006,218

PRELIMINARY PATENT OWNER'S RESPONSE

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I. INTRODUCTION

Patent Owner, Realtek Semiconductor Corporation (“Patent Owner”), submits this Preliminary Patent Owner Response (“PPOR”) pursuant to 37 C.F.R. § 42.107(a) to the *Inter Partes* Review (“IPR”) Petition filed by Petitioner Advanced Micro Devices, Inc., (“Petitioner”) challenging claims 1–20 (“Challenged Claim”) of U.S. Patent 8,006,218 (“’218 patent,” EX1001). The Petition fails to carry Petitioner’s burden and the Board should deny institution.

The ’218 patent claims a solution to the problem of complicated power routing present in then-existing integrated circuits that include multiple power domains receiving different powers. The power routing was so complicated that it had to be done manually. EX1001, 1:39–41. Claims 12–18 recite a structure to overcome these problems. The claimed structure includes a two-layer “global power mesh” “to provide the power needed by the first power domain and the second power domain separately.” For example, the claimed “global power mesh” may have separate wiring from separate power supplies or pads so that the power needed by any single power domain is supplied “separately” from that of other domains. EX1001, 5:10–20. The structure further includes a first and second partial local power mesh coupled to the first and second power domains and the global power mesh. These partial local power meshes further distribute the powers needed to the desired portions of the integrated circuit. EX1001, 3:56–64, 5:25–29. Claims 1–11 and 19–20 claim

methods allowing the use of automated tools to route power to multiple power domains receiving power from separate power supplies or pads.

As to Grounds 1–3, Petitioner has not demonstrated a reasonable likelihood of prevailing. Jiang, the primary reference, is fundamentally different from the claimed invention because it uses a “sleep transistor” to turn power off to a portion of the circuitry. Jiang’s sleep transistors are not a “global power mesh” and Jiang fails to suggest its sleep transistors could be somehow modified to be used as a “global power mesh.” Jiang only provides for one power, VDD, distributed using the same wiring of the global power mesh and, thus, fails to teach supplying two different powers to the first and second power domains separately. Jiang also does not contemplate the use of APR tools to form any portion of the structure, as required by claims 1–11 or 19–20. In addition, although the Petition cites numerous secondary references, the Petition fails to establish that all of them are prior art. The Petition further fails to provide a legally sufficient motivation to combine Jiang with any other reference to arrive at the invention in any independent (or dependent) claim.

As to Grounds 4–5, Petitioner has also not demonstrated a reasonable likelihood of prevailing. Li, the primary reference, relates to a layout versus schematic methodology. The few sentences it includes concerning power distribution do not disclose the claimed power mesh structure or the use of APR

tools to perform the claimed methods. For example, Li does not disclose a “first partial local power mesh” and a “second partial local power mesh” that have a “position corresponding to the position” of a first or second power domain and coupling to the first power domain. To the contrary, Li discloses a “local power grids” in “local sections” but is silent as to the location of the “local sections” relative to any power domain. Thus, Petitioner cannot show that there is a first partial local power mesh “having its position corresponding to the position of a first power domain and coupling to the first power domain” or a second partial local power mesh “having its position corresponding to the position of a second power domain and coupling to the second power domain.” In addition, although the Petition cites numerous secondary references, the Petition fails to establish a legally sufficient motivation to combine Li with any other reference to arrive at the inventions claimed in any independent (or dependent) claim.

In addition, the Board should deny the Petition under discretionary institution 35 U.S.C. § 314(a). The Petition fails to identify, “with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim.” 35 U.S.C. § 312(a)(3). For example, Ground 3 is a “catch-all” ground that includes “any” combination of an indeterminate number of potential references, resulting in undefined and unbounded scope of the challenge. Furthermore, Petitioner fails to show

that Chiu is prior art, and, as a result, fails to identify with particularity what evidence supports the grounds for the challenge in Grounds 1–3. Petitioner further fails to properly analyze the *Graham* factors, including identification of the differences between the prior art and the claimed invention for any of its proposed grounds. The totality of these deficiencies results in impermissible shifting of the burden to Patent Owner and the Board to scour the record to piece together Petitioner’s case.

The Board should not treat these fatal deficiencies as curable. *Adaptics Ltd. v. Perfect Co.*, IPR2018-01596, Paper 20 at 15–16 (P.T.A.B. Mar. 6, 2019) (informative) (“In an IPR, the Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify with particularity the evidence that supports the grounds for the challenge to each claim.”) (internal quotations and citations omitted).

In view of these deficiencies, the Petition fails to demonstrate a reasonable likelihood that any challenged claim of the ’218 patent is unpatentable, and institution should be denied. 35 U.S.C. §314(a).

II. INNOVATIONS OF THE ’218 PATENT

The Petition challenges a patent covering technology that has been adopted by leading companies in the field. At the time of the invention, as circuitry was becoming more and more complicated, different portions of a circuit would

concurrently need different powers at the same time. EX1001, 1:13–16 (“As the circuitry of the integrated circuit becomes more and more complicate[d], there are possibilities that different portions of the circuitry of a chip need different voltages (powers) at the same time.”). For example, chip circuitry may have “two operating modes: the normal operating mode and the sleeping mode.” EX1001, 1:16–18. “During normal operating mode, the chip circuitry uses the operating voltage for its normal operation” and “during the sleeping mode, only part of the chip needs to be maintained in the normal operating mode” and a lower voltage may be supplied to the rest of the chip “for maintaining the sleeping mode operation.” EX1001, 1:16–22.

The inventor of the '218 patent recognized a need for a power routing structure allowing “circuits in different power domains [to be] coupled to different powers respectively.” EX1001, 1:26–33. This arrangement permits some circuits to receive one power (*e.g.*, a normal operating voltage) while other circuits may receive a separate power (*e.g.*, a lower voltage for maintaining the sleeping mode of operation). EX1001, 1:22–28. Thus, Claims 12–18 recite a structure that includes a “global power mesh” “to provide the power needed by the first and second power domain separately.” This specific structure enables the distribution of one power while other circuits may receive a separate power.

In addition to the structure claimed in claim 12, the inventor of the '218 patent also recognized a need to automate the power routing required for portions of the integrated circuit to be coupled to different powers. As the '218 patent explains, “the well-known automatic placement and routing (APR) tool can only support circuits having [a] single power domain” and “[t]herefore, a circuit designer can only rely on the most primitive method to design the power routing of multiple power domains, such as the manual routing.” EX1001, 1:37–42. Thus, Claims 1–11 and 19–20 disclose an algorithm that can be used in connection with the existing APR tools “so that the user can use the APR tool to automatically complete the circuit layout so as to increase the circuit design efficiency.” EX1001, 2:33–42.

A. Claim Construction

The Petition was filed after November 13, 2018, and, as such, the proper claim construction standard to be applied is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*), in accordance with its regulation, 37 C.F.R. § 42.100(b). *Apple Inc. v. Firstface Co.*, No. 2021-1001, 2021 WL 4156323, at *1 (Fed. Cir. Sept. 13, 2021). Petitioner “proposes that the claim terms should be given their plain and ordinary meaning.” Petition at 15–16. Patent Owner agrees.¹

¹ Patent Owner does not agree that the arguments in the Petition reflect the plain and ordinary meaning of the terms of the '218 Patent.

Petitioner proposes that “local power mesh” recited in the claims refers to “partial local power mesh.” Petition at 15. Patent Owner agrees.

B. Level of Ordinary Skill in the Art

Patent Owner does not dispute the proposal provided by Petitioner on who would qualify as a POSITA for the purposes of the preliminary response. Petition at 16.

C. Challenged Claims

The '218 patent includes three independent claims, claims 1, 12, and 19. Claims 1 and 19 are method claims reciting the use of APR tools to form a power routing arrangement method. The Petition challenges 20 claims—the Challenged Claims—under five total grounds, Grounds 1, 2, 3, 4, and 5, as detailed below:

Ground	Basis for Challenge
1	Claims 12-18 are <u>obvious</u> over Jiang in view of Jiang2 and Jiang3
2	Claims 12-18 are <u>obvious</u> over Jiang in view of Jiang2 and Jiang3, and further in view of Li or Chiu
3	Claims 1–11 and 19–20 are <u>obvious</u> over Jiang in view of Jiang2, Jiang3, and Li or Chiu, and further in view of Bertolet or Low Power Methodology Manual (LPMM)
4	Claims 12-18 are <u>obvious</u> over Li in view of Jiang
5	Claims 1-11 and 19-20 are <u>obvious</u> over Li in view of Jiang and further in view of Bertolet or Low Power Methodology Manual (LPMM)

Petitioner relies of the references set forth in the table below.

Name	Exhibit No.
Jiang	1004
Jiang2	1007

Name	Exhibit No.
Jiang3	1008
Li	1005
Chiu	1006
Bertolet	1013
LPMM	1012

III. THE PETITION FAILS TO ESTABLISH A REASONABLE LIKELIHOOD OF SUCCESS THAT ANY CHALLENGED CLAIM WOULD HAVE BEEN UNPATENTABLE

A. The Legal Framework for Assessing Unpatentability

“In an [*inter partes* review], the Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing § 312(a)(3)) (requiring *inter partes* review Petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”). The burden of persuasion in an IPR “never shifts to the patentee.” *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Moreover, a Petitioner should not “place the burden on [the Board] to sift through information presented by

the Petitioners, determine where each element [of the challenged claims] is found in [the cited references], and identify any differences between the claimed subject matter and the teachings of [the cited references.]” *Google Inc. v. EveryMD.com LLC*, IPR2014-00347, Paper 9 at 25 (P.T.A.B. May 22, 2014).

B. The Board Should Deny Review of All Grounds

“In an IPR, the Petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic v. Avid Tech.*, 815 F.3d at 1363. Here, the Petition fails to analyze, on a limitation by limitation basis, the relevance of the prior art to claims 1–11 and 19–20 (Grounds 3 and 5), proposes an unbounded catch-all ground (Ground 3), and fails to properly analyze obviousness with particularity as required under the *Graham* factors (all Grounds). The Board should discretionarily deny institution. *See Chevron Oronite Co. v. Infineum USA L.P.*, IPR2018-00923, Paper 9 at 10 (P.T.A.B. Nov. 7, 2018) (even when a Petitioner demonstrates a reasonable likelihood of prevailing with respect to one or more claims, “institution of review remains discretionary”).

Notably, Petitioner also attaches, and relies on, the declaration of its expert Dr. Vivek Subramanian. However, while the declaration provides some additional factual context in some instances, Dr. Subramanian’s actual opinions suffer from the same substantive deficiencies as the Petition. *See generally* EX1003. Accordingly, the same arguments set forth herein apply equally to Dr. Subramanian’s declaration,

and Dr. Subramanian’s opinions cannot rescue the otherwise deficient Petition. *See, e.g., InfoBionic, Inc. v. Braemar Manufacturing, LLC*, IPR2015-01704, Paper 11 at 13 (P.T.A.B. Feb. 16, 2016) (denying institution over expert testimony that did not add to “Petitioner’s conclusory argument”).

1. Petitioner Fails to Establish that Chiu is Prior Art and the Petition Does Not Provide Enough Particularity to Untangle Chiu from the Other References It Relies Upon

The Petition asserts that Chiu is prior art under §102(e) based on its provisional application date of September 28, 2007.² Petition at 5. Petitioner bore the burden to demonstrate, within the Petition itself³ that the relied upon disclosure in Chiu qualified as prior art under §102(e) and has failed to do so.

In *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375 (Fed. Cir. 2015), the Federal Circuit held that in order for a patent to be entitled to the effective filing date of its provisional application, it must satisfy the requirements of 35 U.S.C. § 119(e)(1) (2006). 800 F.3d at 1378. In other words, the specification of the provisional must “contain a written description of the invention and the manner

² Chiu issued on May 24, 2011, years after the priority date of the ’218 patent. EX1006.

³ *See, e.g.,* 35 U.S.C. § 312(a)(3) (requiring petitions to identify “with particularity . . . the grounds on which the challenge to each claim is based”).

and process of making and using it, in such full, clear, concise, and exact terms,” 35 U.S.C. § 112 ¶ 1, to enable an ordinarily skilled artisan to practice the invention claimed in the non-provisional application. *Id.* (quoting *New Railhead Mfg., L.L.C. v. Vermeer Mfg. Co.*, 298 F.3d 1290, 1294 (Fed. Cir. 2002)). The Federal Circuit also held that “[a] reference patent is only entitled to claim the benefit of the filing date of its provisional application if the disclosure of the provisional application provides support for the claims in the reference patent in compliance with § 112, ¶ 1.” *Dynamic Drinkware*, 800 F.3d at 1381 (citing *In re Wertheim*, 646 F.2d 527, 537 (CCPA 1981)).

Petitioner’s only attempt to show that Chiu is entitled to the provisional date of Chiu is the following: “Chiu’s provisional contains a largely identical disclosure to the utility application that issued as Chiu and is entitled to its earliest priority date. *Compare* EX1006 *with* EX1011” Petition at 5. Petitioner does **not** show written description support for **any claim** or compare the disclosure of the provisional application to the disclosure of the Chiu patent. Petitioner’s expert does not address this either, instead assuming that each reference is “prior art.” EX1003 ¶ 51. As a result, Petitioner’s conclusory argument and invitation for the Board to “compare EX1006 and EX1011” rather than performing the analysis itself fails to meet its burden of proof that Chiu qualifies as prior art. *See Masterimage 3D, Inc. v RealD Inc.*, IPR2015-00040, Paper 34 at 2 (P.T.A.B. June 8, 2015) (“It is axiomatic that

evidence must be explained, and it must be explained sufficiently if argument relying on that evidence is to be persuasive.”). Thus, the Board should find that Chiu is not prior art.

Petitioner’s failure to show that Chiu is prior art is fatal to its Petition. Petitioner relies on Chiu throughout the Petition, intertwining it with other references in Grounds 2–5. *See* Petition at 24, 30, 32, 35, 37, 38, 43, 55 (all citing Chiu). In Grounds 2–3, for example, based on a summary of selected disclosures from Li and Chiu, Petitioner states, as part of its obviousness analysis, that “[a] POSITA would thus know to use multiple independent supply voltages in a global power mesh to supply separate partial local power meshes separately.” Petition at 26. Similarly, with respect to Grounds 4–5, as part of its obviousness analysis, the Petition relies on Chiu, in part, for a proposition that “it was known to a POSITA that local grids covering the same surface area as the domains to which they supply power were preferable.” Petition at 55. The Petition does not identify, with particularity, whether any reference, without the knowledge a POSITA would have gained from Chiu, is sufficient on its own to meet the claim limitations. Thus, because the purported disclosure of Chiu is interweaved with other references, it taints the entire obviousness analysis in which it appears.

2. Ground 3 Lacks Particularity Resulting in Voluminous and Excessive Grounds

The Petition must “identif[y], in writing *and with particularity*, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim.” 35 U.S.C. 312(a)(3) (emphasis added). Where a Petition includes a “catch-all” ground resulting in a multiplicity of combinations, the Petition lacks particularity because it attempts to require Patent Owner and the Board to analyze whether each and every claim limitation is disclosed by each and every reference or combination of references. *Adaptics Ltd.*, No. IPR2018-01596, Paper 20 at 18, 20–21 (denying institution on the Petition’s because of “catchall” ground lacking in “sufficient particularity”).

Here, Ground 3 involves “any” combination of an indeterminate number of references. Ground 3 is styled as “any of the combinations in Grounds 1–2 in further view of Bertolet or the Low Power Methodology Manual (LPMM).” Grounds 1 and 2 include Jiang, Jiang2, Jiang3, Li, or Chiu. Petitioner also includes discussion of various other references throughout Grounds 1–2, in addition to the “knowledge of a person of ordinary skill in the art” and purported admissions in the patent in the analysis of the claimed invention. *See* Petition at 23 (citing Kim (EX1009) and Lee (EX1010)); Petition at 27 (citing Benini (EX1014), LPMM (EX1012); Lee (EX1010)); Petition at 30 (citing Ran (EX1015)); Petition at 32 (citing Blisson

(EX1016) and Longway (EX1018); Petition at 37 (citing Longway (EX1018)). It is high impossible to ascertain what the Petition actually posits as its theory of unpatentability.

Taking the Petition at face value would result in hundreds, if not thousands, of potential combinations. For this reason, the Board has previously found that Petitions presenting any combination of seven or more references is “not reasonably bounded in scope” and denied institution. *Edwards LifeSciences Corp. v. Boston Scientific Scimed, Inc.*, IPR2017-01304, Paper 8 at 6 n.2 (P.T.A.B. Oct. 25, 2017) (denying institution where the Petitioner asserted any combination of seven different references in various combinations). The same conclusion is warranted here.

The “any of the combinations” language in the Petition is analogous to the use of “and/or,” which the Board has repeatedly rejected as lacking particularity and resulting in voluminous and excessive grounds. *Hunting Titan, Inc. v. DynaEnergetics Europe GmbH*, PGR2020-00080, Paper 7 at 10 (P.T.A.B. Feb. 12, 2021) (finding that and/or style “lack[s] particularity as voluminous, excessive, and burdensome”). Both styles permit Petitioner to use any and all combinations of the references identified creating hundreds of potential combinations of one or more references, layered upon one another without explanation. Further compounding this deficiency, the Petition fails to identify the differences between the prior art and claims at issue, muddling anticipation and obviousness without any articulation of

the Petition’s actual theory of unpatentability. In light of these deficiencies, the Board is well within its discretion to deny institution here. *Adaptics Ltd. Perfect Co.*, IPR2018-01596, Paper 20 at 18–19 (denying institution where the Petitioner’s third ground included a “catch-all” that included up to ten references); *Edwards*, IPR2017-01304, Paper 8 at 6 n.2 (denying institution where the Petitioner asserted any combination of seven different references in various combinations).

3. The Petition Fail to Identify with Particularity Which Claim Limitations Are Absent from Any Prior Art References

A Petition must articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). This includes performing the appropriate analysis under the *Graham* factors. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Specifically, under the *Graham* factors, a showing of obviousness requires, among other things, analysis of “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103 (pre-AIA); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007); *Graham*, 383 U.S. at 17–18. Failure to adequately identify the differences between the prior art and the claimed invention fails to provide the requisite particularity to show obviousness. *HTC Corp., et al. v.*

Cellular Commc'n. Equip. LLC, IPR2016-01504, Paper 7 at 11–12 (P.T.A.B. Feb. 1, 2017) (denying institution where “[t]he analysis [did] not explain with requisite particularity which claim limitations are absent from [the prior art] and why those claim limitations would have been obvious.”); *DirecTV, LLC v. Qurio Holdings, Inc.*, IPR2015-02006, Paper 6 at 9 (P.T.A.B. Apr. 4, 2016) (denying institution where *Graham* analysis was inadequate and Petition did “not explain with any particularity which claim limitations are absent from [the prior art]”).

Here too, Petitioner fails to perform a proper analysis under the *Graham* factors. Petitioner undertakes the exact opposite analysis and asserts that Jiang (Grounds 1–3) and Li (Grounds 4–5) meet all limitations in addition to alternative combinations. Petition at 17, 18, 20, 21, 28, 29, 33, 34, 36, 39, 41, 42 (arguing Jiang alone discloses each limitation); Petition at 54, 58, 59, 60, 62, 63, 66, 68, 69, 70 (arguing Li alone discloses each limitation). Without articulating any theory of claim construction that would warrant adding any other references, or explaining why an additional reference would be needed, the Petition, for example, asserts with respect to Grounds 1–2 that certain claim limitations would be obvious based on some combination of Jiang, Jiang2, Jiang3, Li, and/or Chiu. *See, e.g.*, Petition at 23–27. Similarly, with respect to Ground 3, without articulating any theory of claim construction that would warrant adding any other references, or explaining why an additional reference would be needed, the Petition, for example asserts that some

claim limitations would be obvious over Jiang, and/or the knowledge of a POSITA or other references cited, such as Chiu (EX1006), Blisson (EX1016), and Yan (EX1019). Petition at 55–58.

Petitioner’s analysis fails to explain with any particularity which claim limitations are absent from the prior art and which elements from other references are alleged to meet the claim limitation. Thus, the Petition requires the Board or Patent Owner to attempt to divine the missing limitation and how Petitioner contends it is met by the combination the Petition proposes. This fails to specify with particularity where each element of the claim is found in the prior art. *Apple Inc. v. Agis*, IPR2018-00821, Paper 9 at 20–21 (P.T.A.B Oct. 23, 2018). As a result, the Board is well within its discretion to deny institution on this ground alone. *DirecTV, LLC v. Qurio Holdings, Inc.*, IPR2015-02006, Paper 6 at 9 (P.T.A.B. Apr. 4, 2016) (denying institution because Petition failed to perform an adequate *Graham* analysis where Petition did “not explain with any particularity which claim limitations are absent from [the prior art]”).

4. Petitioner Fails to Provide a Limitation-By-Limitation Analysis With Respect to Grounds 3 and 5

A Petition must specify with particularity where each element of a claim is found in the prior art and include a detailed explanation of the relevance of the prior art to the claim. 37 C.F.R. § § 42.22(a)(2) (“[e]ach Petition . . . must include . . . a

detailed explanation of the significance of the evidence including material facts”); *id.* § 42.104(b)(5) (“[t]he Petition must set forth . . . the relevance of the evidence to the challenge raised, including identifying specific portions of the evidence that support the challenge”); *Apple*, IPR2018-00821, Paper 9 at 20–21 (“Our rules require that a Petition specify with particularity where each element of a claim is found in the prior art, and include a detailed explanation of the relevance of the prior art to the claim”). The Petition fails to meet this standard.

Here, Grounds 3 and 5 each challenge claims 1–11 and 19–20; however, the Petition relies on analysis of claims 12–18, which have a different claim scope, to meet its burden. Petition at 43–52. In particular, claims 1–11 and 19–20 all relate to the use of APR tools to perform the method claims. In contrast, claims 12–18 claim a structure and do not recite the use of APR tools to perform any method steps. A claim comparison is below emphasizing certain specific differences in the claims.

Claim 1	Claim 12	Claim 19
[1PRE] <i>A power routing arrangement method</i> applied in an integrated circuit having multiple power domains, the	[12PRE] A power routing structure applied in an integrated circuit having multiple power domains, comprising:	[19PRE] <i>A power routing arrangement method</i> applied in an integrated circuit having multiple power domains, the

Claim 1	Claim 12	Claim 19
arrangement method comprising:		arrangement method comprising:
[1A] forming a first partial local power mesh according to the position of a first power domain of the integrated circuit by an automatic placement and routing (APR) tool;	[12A] a first partial local power mesh having its position corresponding to the position of a first power domain and coupling to the first power domain;	
[1B] forming a second partial local power mesh according to the position of a second power domain of the integrated circuit by the APR tool;	[12B] a second partial local power mesh having its position corresponding to the position of a second power domain and coupling to the second power domain; and	
[1C] forming a global power mesh that is	[12C] a global power mesh, coupling to the first	[19A] providing a global power mesh, positioned

Claim 1	Claim 12	Claim 19
utilized to provide the power needed by the first and the second power domains <i>by the APR tool</i> ;	local power mesh and the second local power mesh, to provide the power needed by the first power domain and the second domain separately;	above a first power domain and a second power domain, comprising at least one first power wire that provides the voltage needed by the first power domain, at least one second power wire that provides the voltage needed by the second power domain, and at least one ground wire that provides the ground potential needed by the first power domain and the second power domain <i>by an automatic</i>

Claim 1	Claim 12	Claim 19
		<i>placement and routing (APR) tool;</i>
[1D] <i>coupling</i> the first partial local power mesh to the global power mesh and the first power domain <i>by the APR tool;</i> and	[12D] wherein the first partial local power mesh and the second partial local power mesh are positioned on the same metal layer while the global power mesh and the first local power mesh are positioned on different metal layers;	[19B] <i>coupling</i> the first power wire and the ground wire of the global power mesh to the first power domain <i>by the APR tool;</i> and
[1E] <i>coupling</i> the second partial local power mesh to the global power mesh and the second power domain <i>by the APR tool;</i>		[19C] <i>coupling</i> the second power wire and the ground wire of the global power mesh to the second power domain <i>by the APR tool;</i>

Claim 1	Claim 12	Claim 19
[1F] wherein the global power mesh includes a plurality of horizontal power supply wires placed on a first metal layer and a plurality of vertical power supply wires placed on a second metal layer; and	[12E] wherein the global power mesh comprises a plurality of horizontal power supply wires placed on a first metal layer and a plurality of vertical power supply wires placed on a second metal layer; and	[19D] wherein the global power mesh includes a plurality of horizontal power supply wires placed on a first metal layer and a plurality of vertical power supply wires placed on a second metal layer; and
[1G] wherein the first metal layer and the second metal layer are different layers	[12F] wherein the first metal layer and the second metal layer are different layers.	[19E] wherein the first metal layer and the second metal layer are different layers.

Petitioner’s consolidated approach here cannot meet its burden because there is no limitation by limitation analysis of the use of APR tools to perform each limitation in claims 1–11 and 19–20, and the Petition fails to explain why the differences in claim scope make its half-hearted analysis proper. In other words, Petitioner has not explained where each element of the method claim is found in the

prior art. *Apple*, IPR2018-00821, Paper 9 at 20–21 (denying institution where reference to prior limitations that are not commensurate in scope “fails to provide sufficiently detailed explanation”). Rather, the prior art does not disclose use of APR tools in the manner claimed and Petitioner’s approach appears designed to obscure the deficiencies in its Petition by avoiding a limitation by limitation analysis of claims 1–11 and 19–20.

While the Petition does include a generalized discussion of the use of APR tools in some nonspecific contexts, this fails to provide a sufficiently detailed explanation as to how the purported prior art references teach or suggest the limitations from claims 1–11 or 19–20 under 35 U.S.C. § 312(a)(3) and 37 C.F.R. § 42.104(b)(4). *See, e.g.*, Petition at 44 (citing Bertolet for general description of “using a program to ‘algorithmically generate[]’ ‘a power distribution network’” with “power grids” on “metal levels”); *id.* at 44–45 (citing LPMM for general “recommend[ation] [to] implement[] a ‘multi-voltage design’ using an ‘automated power network’ ‘wherever possible’”); *id.* at 71 (citing Li for general description of “using an ‘in-house automated procedure’ to couple . . . power grids and ‘implement a complete full-chip power distribution network.’”); *id.* at 71–72 (same general references to Bertolet and LPMM). It is not proper for Petitioner to require the Board and the Patent Owner to fill in the gaps and “scour the record in search of evidence relevant” to the particular claim limitation at issue. *Corning Incorporated v. DSM*

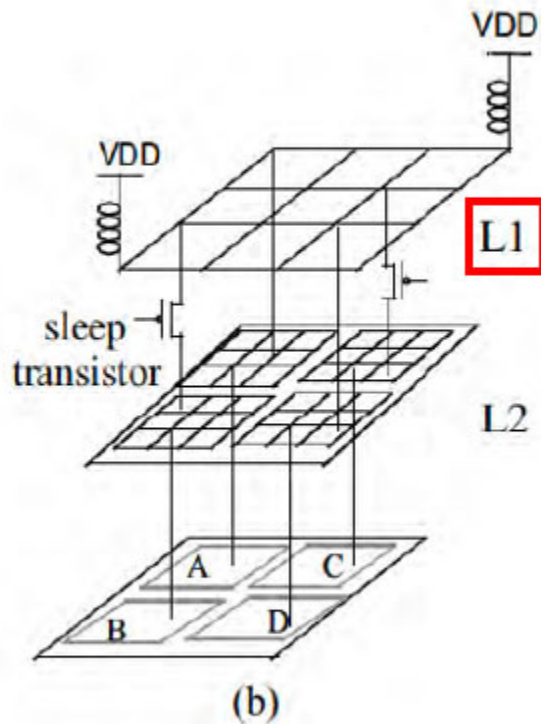
IP ASSETS B.V., IPR2013-00049, Paper 88 at 14 (P.T.A.B. May 9, 2014) (“The Board will not scour the record in search of evidence relevant to a particular issue”). The Board is well within its discretion to deny the Petition in its entirety for this reason alone.

C. Ground 1: The Petition does not establish that Claims 12-18 would have been obvious over Jiang in view of Jiang2 and Jiang3

As discussed in detail below, Petitioner fails to show that Jiang alone or in combination with Jiang2 and Jiang3, discloses all the elements of independent claim 12 (or any of its dependent claims). The Petition therefore fails to demonstrate that the Challenged Claims are unpatentable and Institution should therefore be denied under 35 U.S.C. § 314(a).

1. Jiang fails to disclose [12e] “wherein the global power mesh includes a plurality of horizontal power supply wires placed on a first metal layer and a plurality of vertical power supply wires placed on a second metal layer”

Ground 1 also fails because Petitioner fails to show that Jiang Figure 1(b) expressly or inherently discloses “wherein the global power mesh includes a plurality of horizontal power supply wires placed on a first metal layer and a plurality of vertical power supply wires placed on a second metal layer.” Jiang discloses only a single layer purported “global power mesh” on “L1” of Figure 1(b). Figure 1 is below.



EX1003 at ¶ 52 (annotations added). L1 is shown as a single layer of interconnected wiring in Jiang. *Id.* Figure 1b decidedly lacks, and the Petition fails to address, “a plurality of vertical power supply wires placed on a second metal layer” as is required by claim 12.

Petitioner attempts to contradict the express disclosure of one layer, “L1,” in Jiang and argues that a “POSITA” would understand that the horizontal and vertical wires on L1 “would be on different layers.” Petition at 29; EX1003 at ¶¶ 94–96. The Petition and expert declaration provide no rationale based on the disclosure of Figure

1(b) that would lead a POSITA to such an understanding. Such conclusory statements should be given no weight. 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”).

Petitioner bases its entire argument on a different figure, Figure 10, which describes a completely different embodiment of Jiang. Petition at 29; *see also* EX1003 at ¶ 96. Figure 1(b) is discussed only in Section 2 of Jiang, entitled “Comparison of two power supply systems.” Figure 1(b) is used in Section 2 to illustrate a qualitative comparison between power-gating and non-power-gating. EX1004 at 1–2. There is no disclosure that Figure 1(b) was involved in any experimentation reported in Jiang. To the contrary, the power-gating model shown in Figure 2—not any system shown in Figure 1(b)—was used to perform the experiments reported in Jiang. EX1004 at 2 (“The power-gating model is shown as Fig. 2.”). Figure 10 relates to an experiment in which the authors “studied the impact of the power mesh granularity on power-gating result” by keeping “the area of power mesh constant and changing with width of horizontal and vertical segments.” *Id.* at 7. Figure 10 and the related discussion do not mention Figure 1(b) at all.

Petitioner’s expert attempts to argue that Figure 10 depicts “a more detailed version of the power meshes in Jiang;” however, this argument lacks any support in Jiang itself. Nothing in Jiang indicates that Figure 10 is a more detailed version of

L1 of Figure 1(b) and Petitioner, and its expert, do not provide any basis for such an understanding. Furthermore, this argument is not included in the Petition and should, therefore, not be considered. *Fidelity National v. Data Treasury*, IPR2014-00491, Paper 9 at 8 (P.T.A.B. Aug. 13, 2014) (“We, therefore, decline to consider information presented in a supporting declaration, but not discussed sufficiently in a Petition.”).

If Petitioner intended to argue single reference obviousness, Petitioner fails to identify a motivation to combine Figure 1(b) with Figure 10 (two distinct embodiments) or identify any basis for why a POSITA would have reasonable expectation of success with this unarticulated combination. When “combining multiple embodiments from a single reference, . . . there must be a motivation to make the combination and a reasonable expectation that such a combination would be successful, otherwise a skilled artisan would not arrive at the claimed combination.” *In re Stepan Co.*, 868 F.3d 1342, 1346 n.1 (Fed. Cir. 2017). Thus, any single reference obviousness assertion fails. *See Abiomed, Inc. v. Maquet Cardiovascular, LLC*, IPR2017-01204, -01205, Paper 9 (IPR2017-01204), Paper 8 (IPR2017-01205) at 9–11 (P.T.A.B. Oct. 23, 2017) (finding that “Petitioner has failed to establish sufficiently that the features of [] different embodiments [of the asserted reference] are interchangeable or provide sufficient rationale to combine the

teachings of those different embodiments”). Petitioner fails to show that Jiang discloses element 12[e].

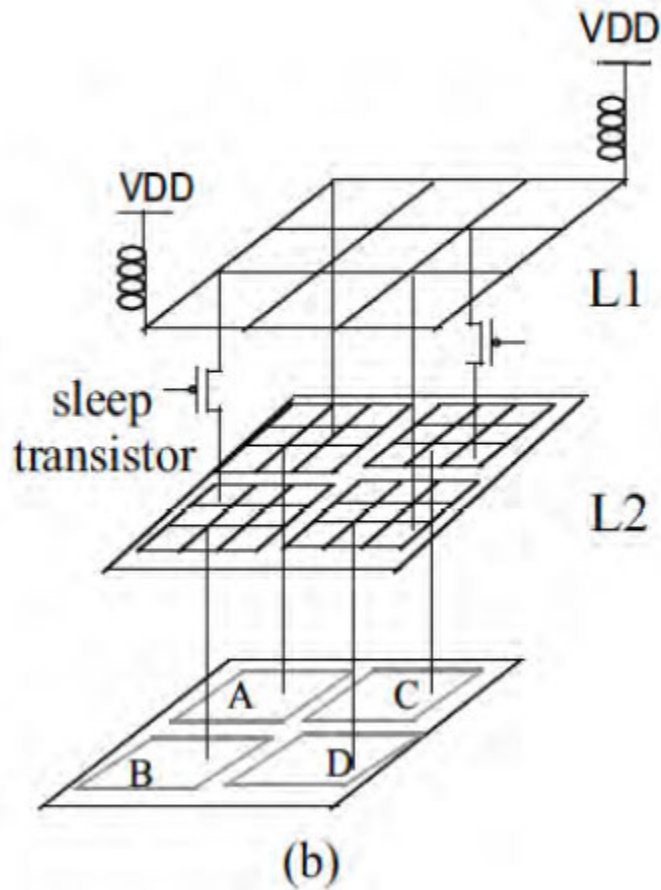
Petitioner does not attempt to remedy these deficiencies with Jiang2 or Jiang3 in 12[e] (Petition at 29–33) and, therefore, fails to establish a reasonable likelihood of success on Ground 1. Institution should therefore be denied under 35 U.S.C. § 314(a).

Petitioner does attempt to remedy the deficiencies of Jiang with regard to element 12[e] in Ground 2, which is discussed further below.

2. Jiang fails to disclose [12c]: “a global power mesh, coupling to the first local power mesh and the second local power mesh, to provide the power needed by the first power domain and the second domain separately”

Petitioner’s primary reference, Jiang, illustrates a technique called “power-gating,” which turns power on and off to circuitry through the use of a “sleep transistor.” Petition at 22–23. In contrast, the claimed invention supplies powers from different power supplies to different portions of the circuitry by providing “power needed” from the global power mesh to the first and second power domains “separately.” EX1001, claim 12.

Jiang, Figure 1(b) is the embodiment of Jiang that Petitioner relies on. Petition at 34–43. Figure 1(b) is reproduced below:



EX1004 at Fig. 1(b). Petitioner maps the top L1 layer of Figure 1(b) to the “global power mesh” of claim 12. Petition at 21–22; EX1003 at ¶ 79. The VDD wiring in L1 is disclosed in Jiang Figure 1(b) as interconnected and as distributing a single power supply, VDD. EX1004 (Jiang) at Figure 1(b). The power, VDD, connects to the macros (labeled A, B, C, and D) through sleep transistors. *Id.*; EX1003 at ¶¶ 79–80. The sleep transistors turn off the power supply when power is not needed. *Id.* at ¶ 81. In contrast, the claimed invention comprises a “global power mesh” (not sleep

transistors) “to provide the power needed by the first power domain and the second power domain separately,” which necessarily requires power be applied, not the removal of power.

Because Jiang discloses a global mesh on L1 that is interconnected and with only one power supply, VDD, it does not disclose “a global power mesh, coupling to the first local power mesh and the second local power mesh, to provide the power needed by the first power domain and the second power domain separately.” Rather, the purported “global power mesh” in Jiang delivers either the same power (VDD) through the same wiring of the global power mesh to the chip circuitry or no power (which cannot satisfy providing the power needed by the second power domain).⁴ EX1004 at Fig. 1(b). Thus, Jiang does not disclose the claimed global power mesh because it lacks the claimed global power mesh structure allowing it to provide the power needed by the first power domain and the second power domain separately.

Petitioner argues that Jiang discloses sleep transistors that turn off the power to a macro. EX1003 at ¶ 81 (“A POSITA would understand that the point of adding sleep transistors to individual power meshes and their underlying power domains is to be able to turn off their power supply when the underlying macro is not needed.”).

⁴ Realtek does not concede that Jiang or discloses the other elements of this claim, including, for example, a first and second power domain.

But switching a sleep transistor on or off does not disclose “a global power mesh, coupling to the first local power mesh and the second local power mesh to provide the power needed by the first power domain and the second power domain separately.” EX1001, claim 12. The sleep transistor is not part of any global power mesh in Jiang. EX1003 at ¶ 79 (annotating purported global power mesh in green, which does not include the sleep transistors); *id.* (stating that “[S]leep transistors are used to connect the local mesh to the global mesh”); *id.* at ¶ 52 (“Jiang further discloses sleep transistors between some “local power meshes” and the “global mesh” as shown in Figure 1(b), allowing the “local power meshes” and their underlying power domains to be switched off.”). Thus, even if the power is ultimately delivered “separately” it is not because the global power mesh has a structure allowing it to provide the power separately as recited in the claims.

Petitioner does not attempt to remedy these deficiencies with Jiang2 or Jiang3 and, therefore, fails to establish a reasonable likelihood of success on Ground 1. Petitioner does attempt to remedy the deficiencies of Jiang in Ground 2, which is discussed further below.

D. Ground 2: Claims 12–18 Are Not Obvious Over Jiang in View of Jiang2 and Jiang3, and in Further View of Li or Chiu

Ground 2, like Ground 1, relies on Jiang for the disclosure of 12[c] and 12[e]. Ground 2 further adds Li and/or Chiu. Li and/or Chiu do not solve the above-identified deficiencies of Ground 1.

1. The Petition Fails to Establish a Motivation to Modify Jiang’s Power-Gating System to Supply Multiple Voltages

Jiang does not disclose a global power mesh “to provide the power needed by the first power domain and the second domain separately.” *See supra* Sec. III.C.1. The power structures of Jiang do not meet this limitation because its purported global power mesh wiring is completely interconnected, making it impossible for it to deliver the power needed by the first and second power domain “separately.” *Id.* To remedy this deficiency, Petitioner asserts the following combinations as to element 12[c]:

Alleged Combination	Alleged Motivation	Alleged Predictable, Operable Result (vis-à-vis Claims)
Jiang combined with Li and/or Chiu (Petition at 24–27)	“A POSITA would be motivated to supply independent voltages to Jiang’s power meshes to supply its different power	“Applying independent supply voltages to Jiang’s global power mesh would have been a routine application of a known

Alleged Combination	Alleged Motivation	Alleged Predictable, Operable Result (vis-à-vis Claims)
	domains with different voltages to increase Jiang’s power savings.” (Petition at 26 (citing EX1003 ¶¶ 90–93)) “Jiang uses the multiple power domains to reduce leakage current and save power.” (Petition at 26–27 (citing EX1004, 1)) “Also, Li’s power domains using separate voltages were optimized to save power.” (Petition at 27 (citing EX1005, 493))	feature to Jiang’s device with a reasonable expectation of success, given that it was ‘common practice[]’ as the ’218 Patent admits.” (Petition at 27 (citing EX1003 ¶ 93))

Alleged Combination	Alleged Motivation	Alleged Predictable, Operable Result (vis-à-vis Claims)
	“the ’218 Patent admits that supplying ‘different powers... to the different circuits inside the chip’ was conventional” (Petition at 27 (citing EX1001, 1:26–28; 1:30–33)) “A POSITA would have known that using separate power supplies to supply higher voltages to portions of a chip, such as timing-critical blocks or input-output circuits, while supplying	

Alleged Combination	Alleged Motivation	Alleged Predictable, Operable Result (vis-à-vis Claims)
	lower voltage to the rest would further save power.” (Petition at 27 (citing EX1003 ¶¶ 91– 92)) “Applying independent supply voltages to Jiang’s global power mesh would have been a routine application of a known feature to Jiang’s device with a reasonable expectation of success, given that it was ‘common practice[]’ as the ’218 Patent admits.”	

Alleged Combination	Alleged Motivation	Alleged Predictable, Operable Result (vis-à-vis Claims)
	(Petition at 27 (citing EX1003 ¶ 93))	

Petitioner offers mere conclusions and generic statements that are insufficient to satisfy its burden to show, with particularity, that any asserted combinations with Jiang render claims 12–18 obvious.

In asserting that the Asserted Claims are obvious in light of a given combination, Petitioner must explain “why one of skill in the art would modify the prior art to obtain the claimed invention.” *Nike, Inc. v. Adidas AG*, 812 F.3d 1326, 1335 (Fed. Cir. 2016) (overruled on other grounds); *see also In re Nuvasive, Inc.*, 842 F.3d 1376, 1381 (Fed. Cir. 2016). Further, Petitioner must provide evidence identifying “which combination(s) of elements in specific references would yield a predictable result” and “how any specific combination would operate or read on” the claims. *ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1327–28 (Fed. Cir. 2012) *see also TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1360 (Fed. Cir. 2019) (same); *Qiagen N. Amer. Holdings, Inc. v. Handylab, Inc.*, IPR2019-00490, Paper 51 at 36 (P.T.A.B. July 14, 2020) (same). A Petition that includes mere cursory analysis should be denied because it fails to identify “any differences between the prior art and the claims at issue, or provide a substantive

analysis of why or how a person of ordinary skill in the art would have modified the prior art to render the claims obvious.” *See Shopkick Inc. v. Novitaz, Inc.*, IPR2015-00279, Paper 7 at 27 (P.T.A.B. May 29, 2015) (internal citations omitted). For instance, merely stating that the references cited are concerned with reaching the same goal “fails to explain why a person of ordinary skill in the art *would have* combined the elements from specific references in the way that the claimed invention does.” *Cisco Sys., Inc. v. Constellation Techs. LLC*, IPR2014-01179, Paper 7 at 16 (P.T.A.B. Feb. 4, 2015) (quoting *ActiveVideo*, 694 F.3d 1312) (emphasis in original)).

The generic motivations to combine suggested by Petitioner all fall short of meeting this burden. First, the fact that supplying independent voltages may have been “common practice,” at best, only shows that a POSITA *could* have modified Jiang in the suggested manner, not that a POSITA *would* have done so. Second, Petitioner’s observation that Jiang and Li and/or Chiu are all concerned with the goal of “power savings” is insufficient as a matter of law. Third, even assuming there might be some general motivation to modify Jiang to further increase power savings, Petitioner has identified no specific motivation to combine the specific purported power-savings mechanisms of Li and/or Chiu with Jiang. To the contrary, the device described in each reference independently operates effectively, and Petitioner does not offer any motivation that would not be redundant to what Jiang itself already

achieved. Finally, Petitioner fails to identify how any specific combination would operate or read on the claim, let alone establish a reasonable likelihood of success for any such combination. Indeed, Petitioner identifies no evidence whatsoever that the circuitry of Jiang’s single-voltage design would or could even be operable at different voltages. Accordingly, Petitioner cannot meet its burden to show obviousness with particularity.

a. Petitioner fails to identify any reason why a POSITA would combine the art in the specific manner necessary to arrive at the limitations of the challenged claim

With respect to element 12[c], Petitioner’s obviousness analysis is legally insufficient because it fails to explain “why one of skill in the art would modify the prior art to obtain the claimed invention.” *Nike*, 812 F.3d at 1335 (overruled on other grounds); *see also Nuvasive*, 842 F.3d at 1381.

Petitioner’s analysis begins with a failure to properly analyze the *Graham* factors, including a failure to identify any missing limitation in the prior art. Petitioner asserts that there is nothing missing and “Although not required by the claim, it also would have been obvious for Jiang’s global power mesh to supply independent voltages to the first and second power domains.” Petition at 23. Petitioner next summarizes selected details of the Li and Chiu references followed by a statement that “[a] POSITA would thus know to use independent supply voltages in a global power mesh to supply separate partial local power meshes

separately.” Petition at 23–26. This analysis is divorced from the language of the claims and unsurprisingly the remainder of the analysis is as well.

Petitioner next turns to its purported motivations to combine Jiang with Li and/or Chiu. Petitioner argues that “[a]pplying independent supply voltages to Jiang’s global power mesh would have been a routine application of a known feature to Jiang’s device with a reasonable expectation of success, given that it was “common practice[.]” EX1003 at ¶ 93 (citing EX1001, 1:26–33); Petition at 27. On its face, this motivation is legally insufficient. “[S]tatements of general principles from the case law that a proposed combination ‘involves no more than a combination of known elements,’ or . . . yields ‘predictable results’ . . . are conclusions.” *Kinetic Techs., Inc. v. Skyworks Solutions, Inc.*, IPR2014-00529, Paper 8 at 15 (P.T.A.B. Sept. 23, 2014). “[T]hey are not a substitute for a fact-based analysis of the proposed combination of references necessary to support those conclusions.” *Id.* Moreover, Petitioner’s “common practice” purported motivation is also legally insufficient because it does not address *why* a POSITA would use multiple power domains and multiple voltage supplies in Jiang’s power-gated system in the first place. Even if an element were common in the prior art, that is legally insufficient to provide a motivation to combine. *Pers. Web Techns., LLC v. Apple Inc.*, 848 F. 3d 987, 991 (Fed. Cir. 2017) (whether claimed elements were present in prior art is, on its own, insufficient to prove obviousness); *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*,

688 F.3d 1342, 1369 (Fed. Cir. 2012) (“[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.”). Petitioner must show that a POSITA *would* modify Jiang’s Figure 1(b), not that a POSITA *could*. *Samsung Elecs. Co. v. Dynamics Inc.*, No. 2021-2352, 2022 WL 3041158, at *4 (Fed. Cir. Aug. 2, 2022) (“Board found that Samsung’s proposed modification of Gutman amounted to the combination of ‘disparate parts of the prior art’ without a sufficient explanation as to why a skilled artisan ‘would have chosen the specific features relied upon by [Samsung] to read on the claim.’ . . . That reasoning was not legal error.”).

Petitioner further argues a motivation exists to combine Jiang and Li and/or Chiu because both were directed to “power savings.” Petition at 26–27. Such purported motivations are nothing more than statements that the references are directed to solving the same problem. *Free-Flow Packaging Int’l v Automated Packaging Sys.*, IPR2016-00350, Paper 7 at 11-13 (June 27, 2016) (motivation is not shown by arguing that the references “directed to the same problem,” and arguing that one of skill would “look to both references to obtain advantages of the other”). The Federal Circuit has repeatedly rejected the argument that references directed to the same problem, or same general field, provide a motivation to combine. *Securus Techs., Inc. v. Glob. Tel*Link Corp.*, 701 F. App’x 971, 977 (Fed. Cir. 2017) (holding that “a broad characterization” of two prior references “as both falling within the

same alleged field of ‘telecommunications monitoring and control,’ without more, is not enough for Securus to meet its burden of presenting a sufficient rationale to support an obviousness conclusion.” (citing *Microsoft Corp. v. Enfish, LLC*, 662 F. App’x 981, 990 (Fed. Cir. 2016))).

Petitioner also argues that a POSITA would have known to use separate power supplies “to increase Jiang’s power savings” or to “further save power.” Petition at 26–27. But Petitioner provides no evidence that any proposed modification would enable power savings over what was already available in Jiang. To the contrary, the excerpts of Jiang and Li relied on by Petitioner actually show that the device described by each reference *independently operates effectively* with respect to power savings. *See* Petition at 26–27 (“[Jiang] achieve[d] 47% leakage power saving while maintaining the same performance.” (citing EX1004, 1)); *id.* at 27 (“[Li’s] design style enables power-saving capability with a selectable configuration, allowing the chip to be an optimal fit into a broad variety of applications.”). Accordingly, a POSITA “would have no reason to combine the features of both devices into a single device.” *Kinetic Concepts*, 688 F.3d at 1369 (“Because each device independently operates effectively, a person having ordinary skill in the art, who was merely seeking to create a better device to drain fluids from a wound, would have no reason to combine the features of both devices into a single device”).

b. Petitioner fails to identify how any specific combination would operate or read on the claim

Petitioner further fails to identify “which combination(s) of elements in specific references would yield a predictable result” and “how any specific combination would operate or read on” the claims. *ActiveVideo*, 694 F.3d at 1327–28. It is well established that “a clear, evidence-supported account of the contemplated workings of the combination is a prerequisite to adequately explaining and supporting a conclusion that a relevant skilled artisan would have been motivated to make the combination and reasonably expect success in doing so.” *Pers. Web Techns.*, 848 F. 3d at 991.

Fatally, Petitioner does not even attempt to describe any purported combination of Jiang and Li and/or Chiu, let alone show that a POSITA would “obtain the claimed invention.” *Nike*, 812 F.3d at 1335 (overruled on other grounds); *see also Nuvasive, Inc.*, 842 F.3d at 1381. “A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *Kinetic Concepts*, 688 F.3d at 1369. “Without any explanation as to how or why the references would be combined to arrive at the claimed invention, the Court is left with only hindsight bias that KSR warns against.” *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017) (internal quotations omitted).

Similarly, Petitioner does not—and, without even describing a purported combination, cannot—demonstrate a reasonable expectation of success in combining Jiang with Li and/or Chiu to achieve the claimed invention. Proper consideration of a POSITA’s expectation of success constitutes a necessary component of an obviousness case, especially in a case like this involving complex semiconductor technology. *See Samsung Elecs.*, 925 F.3d 1373 (affirming Board’s determination of nonobviousness where Petitioner failed to demonstrate a reasonable expectation of success in a matter involving “complex” semiconductor/integrated circuit technology).

Petitioner provides only one conclusory statement with respect to 12[c] that “[a]pplying independent supply voltages to Jiang’s global power mesh would have been a routine application of a known feature to Jiang’s device with a reasonable expectation of success. Indeed, as the ’218 Patent acknowledges, such features were “common practice[.]” EX1003 at ¶ 93 (citing EX1001, 1:26–33). First, the statement lacks factual support. The ’218 patent never admits that it was common practice to apply independent supply voltages to Jiang, or device that was designed to be power-gated. The portion of the patent Petitioner cites explains that it is common practice to arrange multiple power domains in a chip. Specifically, the passage Petitioner quotes is below:

“Therefore, different powers need to be supplied to different circuits inside the chip so that the circuits can perform different operations during the sleeping mode. Hence, it is common practice[] to arrange multiple power domains in the chip circuitry. In other words, circuits in different power domains are coupled to different powers respectively so that the circuits of different power domains use different powers to support the different operations that are just mentioned.”

EX1001 at 1:26–33.

Moreover, Petitioner’s conclusions regarding a reasonable expectation of success are also legally insufficient. Petitioner’s contention that there is a reasonable expectation of success because a modification was common practice, even if true (it is not), is akin to concluding that there is a reasonable expectation of success because a general approach was known. This type of rationale has also been rejected by the Federal Circuit. *See In re Kubin*, 561 F.3d 1351, 1359 (Fed. Cir. 2009) (another circumstance in which the prior art fails to provide a reasonable expectation of success is where the art suggests exploring a “general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it.”). Such logic is “not a substitute for a fact-based analysis of the proposed combination of references necessary to support those conclusions.” *Id.* Further, the PTAB has specifically held that “[s]imply stating that [a modification] would have been

‘routine’ is insufficient” to establish a reasonable expectation of success.” *10X Genomics, Inc. v. Univ. of Chicago*, IPR2015-01158, Paper 14 at 18–20 (P.T.A.B. Nov. 16, 2015); *Oxford Nanopore Techs. Ltd. v. Univ. of Washington and UAB Research Found.*, IPR2014-00513, Paper 51 at 45–46 (P.T.A.B. Feb. 26, 2016).

Further, Petitioner’s purported reasonable expectation of success is also deficient because Petitioner fails to provide any facts based on the prior art and instead relies exclusively on the patent disclosure. The patent disclosure is not a substitute for well-reasoned analysis based on the prior art. *Velandar v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003) (“Both the suggestion and the reasonable expectation of success “must be founded in the prior art, not in the applicant’s disclosure.”).

Indeed, Petitioner provides no evidence that the circuitry of Jiang would even function at different voltages. For instance, while Petitioner’s expert qualifies his analysis with the phrase “[t]o the extent that Jiang’s macros required different voltages . . . ,” neither Petitioner nor its expert provides evidence that Jiang’s macros could even operate at different voltages. EX1003 at ¶ 91. To the contrary, as shown above, the basic principle of operation for Jiang is the use of power gating to provide and restrict the flow of a single power (VDD) from a single power supply to separate macros. *See supra* at Sec. III.C.1. Supplying multiple voltages—an entirely different mechanism from power gating—would, at best, change the basic principle of

operation behind Jiang or, at worst, render Jiang’s single-voltage power gating circuitry entirely inoperable. *See Adidas AG v. Nike, Inc.*, IPR2016-00921, Paper 21 at 42 (P.T.A.B. Oct. 19, 2017) (finding no motivation to combine when reference was rendered “either inoperable or unsuitable for its intended purpose”); *Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 F. App’x 755, 758 (Fed. Cir. 2015) (combinations that change the basic principle of operation, or that render the prior art inoperable for its intended purpose, fail to support a conclusion of obviousness).

Thus, Petitioner’s obviousness arguments are legally insufficient and the Petition should be denied. *Instrumentation Laboratory Company et al v. HemoSonics LLC*, IPR2017-00855, Paper 20 at 6 (P.T.A.B. Nov. 3, 2017) (“Furthermore, Petitioner’s predictability argument in the Request for Rehearing is conclusory and lacks factual support sufficient to weigh in favor of a finding of obviousness.”).

2. The Petition Fails to Establish a Motivation to Modify Jiang’s L1 Mesh To Disclose a Two-Layer Global Power Mesh As Claimed

As discussed above in Sec. III.C.2, Jiang fails to disclose a single layer global mesh on L1 as required by element 12[e]. Because Jiang’s Figure 1(b) fails to disclose the claimed two layer global power mesh, Petitioner asserts that “it would have been obvious to design Jiang’s global power mesh with horizontal and vertical

power supply layers on separate metal layers.” Petitioner’s argument is summarized as follows:

Alleged Combination	Alleged Motivation	Alleged Predictable, Operable Result (vis-à-vis Claims)
Jiang combined with Li and/or Chiu (Petition at 31–33)	“this concept ‘was a well-known basic feature of integrated circuit design’” (Petition at 32 (quoting EX1003 ¶ 100)) “a POSITA would be motivated to apply the global power mesh teachings of Li or Chiu to Jiang to provide independent voltage supplies to Jiang’s different power domains” (Petition at 32)	“routine application of a known—indeed the ‘normal’—routing structure with a reasonable expectation of success especially given its ubiquitous usage.” (Petition at 33 (citing EX1003 ¶ 102))

Alleged Combination	Alleged Motivation	Alleged Predictable, Operable Result (vis-à-vis Claims)
	“routine application of a known—indeed the ‘normal’—routing structure with a reasonable expectation of success especially given its ubiquitous usage.” (Petition at 33 (citing EX1003 ¶ 102))	

For similar reasons that Petitioner’s other combinations fail, Petitioner’s mere conclusions are insufficient to satisfy its burden to show, with particularity, that there is any motivation to modify Jiang’s L1 to reach the claimed invention with a reasonable expectation of success. As discussed further below, Petitioner’s analysis is generic and conclusory, and is akin to other arguments that the Federal Circuit has previously rejected.

a. Petitioner fails to identify any reason why a POSITA would combine the art in the specific manner necessary to arrive at the limitations of the challenged claim.

Petitioner has not shown “why one of skill in the art would modify the prior art to obtain the claimed invention.” *Nike*, 812 F.3d at 1335 (overruled on other grounds). Again, Petitioner’s motivations to modify are facially insufficient.

Petitioner begins its analysis, again, by failing to identify any elements missing from the prior art as required by *Graham*. Petition at 31. Petitioner only argues in the “[a]lternative[]” that “it would have been obvious to design Jiang’s global power mesh with horizontal and vertical power supply wires on separate metal layers.” Petition at 31. Petitioner summarizes selected disclosures from Li and Chiu and provides further statements from its expert, based on other references (EX1016 and EX1018), that use of two layers with vertical and horizontal wiring is well-known. Petition at 31–32.

Petitioner then moves to its motivations to modify Jiang. First, Petitioner and its expert argues it was “well known” to route horizontal and vertical wires of a mesh on different layers. Petition at 31–32; EX1003 at ¶¶ 97–100. If this is a purported motivation, it is nothing more than a statement of what was in the prior art and is legally insufficient to establish a motivation to modify. *Pers. Web*, 848 F. 3d at 991 (whether claimed elements were present in prior art is, on its own, insufficient to prove obviousness).

Second, Petitioner and its expert argue that a POSITA would be motivated to apply the global power mesh teaching of Li or Chiu to Jiang to provide independent voltage supplies based on its argument as to 12[c]. This argument fails for the same reasons discussed above with respect to element 12[c]. *See supra* Sec. III.D.1. Petitioner has not established that a POSITA would be motivated to combine Li or Chiu with Jiang or that such combination would read on the claimed invention.

Finally, Petitioner and its expert argue that the use of horizontal and vertical wires on separate metal layers would be a “routine application of a known—indeed normal—routing structure.” Petition at 33. This too is legally insufficient because it is too generic to explain why a person of ordinary skill in the art would have arrived at the claimed invention and is akin to arguing that an element was known in the art. *See Stepan*, 868 F.3d at 1346. Furthermore, Petitioner’s argument is conclusory and means little because “statements of general principles from the case law that a proposed combination ‘involves no more than a combination of known elements,’ or . . . yields ‘predictable results’ . . . are conclusions.” *Kinetic Techs*, IPR2014-00529, Paper 8 at 15. “[T]hey are not a substitute for a fact-based analysis of the proposed combination of references necessary to support those conclusions.” *Id.*

b. Petitioner fails to identify how any specific combination would operate or read on the claim

Yet again, Petitioner fails to explain “which combination(s) of elements in specific references would yield a predictable result” and “how any specific combination would operate or read on” the claims. *ActiveVideo*, 694 F.3d at 1327–28; *Qiagen*, IPR2019-00490, Paper 51 at 36.

For example, there is no discussion or explanation in the Petition as to how the combination would operate. Petitioner purports to describe high-level information a POSITA would have known based on the prior art, but a description of how a POSITA would apply those teachings to arrive at the claimed invention is facially insufficient. *See Pers. Web Techs.*, 848 F.3d at 994.

Furthermore, Petitioner fails to demonstrate a reasonable expectation of success in combining Jiang with Li and Chiu to achieve the claimed invention. Petitioner’s only statement of reasonable expectation of success is that “use of horizontal and vertical wires on separate metal layers would be [a] ‘routine application of a known—indeed normal—routing structure with a reasonable expectation of success especially given its ubiquitous usage.’” *Id.* at 33. As explained above, mere knowledge of a general approach does not establish a reasonable expectation of success. *See Kubin*, 561 F.3d at 1359.

Further, Petitioner’s premise, that use of two layers in a “global power mesh” is “ubiquitous,” where only one power is present, such as Jiang discloses has not been established. Petitioner’s references do not address using multiple layers with a single power and Petitioner provides no reason to use additional space on a chip when a single layer is sufficient. Even if it were ubiquitous, however, it does not follow that merely because other chips had two layers, that devoting another layer of a chip or adding another layer to power routing on a specific design would be successful. Again, the PTAB has previously held that “[s]imply stating that [a modification] would have been ‘routine’ is insufficient” to establish a reasonable expectation of success.” *10X Genomics*, IPR2015-01158, Paper 14 at 18–20; *Oxford Nanopore Techs.*, IPR2014-00513, Paper 51 at 45–46. For this additional reason, Petitioner cannot satisfy its burden of proving obviousness. *In re Magnum Oil Tools*, 829 F.3d at 1380.

E. Ground 3: Claims 1–11 and 19–20 are not obvious over Jiang in view of Jiang2, Jiang3, and Li or Chiu, and further in view of Bertolet or Low Power Methodology Manual (LPMM)

As discussed in detail below, Petitioner fails to show that “any” combination of Jiang alone or in combination with Jiang2, Jiang3, Li, Chiu, Bertolet, and/or LPMM discloses all the elements of independent claims 1–11 and 19–20. The Petition therefore fails to demonstrate that the Challenged Claims are unpatentable and Institution should therefore be denied under 35 U.S.C. § 314(a).

1. The Analysis with respect to Claim 12 Fails to Show that the Elements of Claims 1–11 and 19–20 Were Disclosed In the Prior Art

Petitioner fails to show a reasonable likelihood of success on Ground 3. As discussed above, Ground 3 is an ill-defined “catch-all” in which Petitioner fails to provide a limitation-by-limitation analysis of claims 1 and 19.

If the Board, however, excuses Petitioner (it should not), the Petition should still be denied because of the deficiencies identified with respect to claims 12[c] and 12[e] above. In particular, Petitioner relies on the same arguments it made for Claims 12[c] and 12[e] in Grounds 1–2 for its arguments with respect to the two independent claims challenged in this ground, claim 1 (Petition at 43–46) and claim 19 (Petition at 50–51). Thus, for the reasons Grounds 1–2 are deficient, Ground 3 is likewise deficient.

2. The Petition Fails to Show that Any Prior Art APR tool Was Able to Perform the Claimed Steps

The Petition relies on APR tools without identifying any APR tool that was capable of performing the processes of Claims 1–11 and 19–20. Petitioner has not and cannot show that there was an APR tool *that performed the method of claims 1–11 or 19–20*. While APR tools were available for use in designs with a single power domain, the available APR tools could not be used to design the power routing of a circuit having multiple power domains. ’218 patent at 1:34–36 (“[T]he traditional

circuit design approach does not provide a simple rule or step for the circuit designer to plan and design the power routing of a circuit having multiple power domains.”). The inventor of the ’218 patent addressed this problem by providing the set of rules or steps to use to instruct available APR tools so that they could perform power routing of a circuit having multiple power domains. EX1001, 2:33–41. These steps are claimed in claims 1 and 19 and their dependent claims, and Petitioner has not even purported to identify an APR tool capable of implementing these steps in the prior art. *Id.*

3. The References Confirm that a POSITA Would Not Have Had Any Expectation of Success Using an APR Tool

Petitioner points to various statements in Li, LPMM, and Bertolet for such a combination; however, these references and statements underscore the complexity of chip design at the time and the lack of any actual APR tool to perform the steps recited in the claims. For example, the statement in Li that “an in-house automated procedure” is used to “connect[] local logic to the top-level power grid[] to implement a complete full-chip power distribution network” illustrates the limitations of the APR tools at the time. EX1005 at 493 (Petition at 71). The APR tools were not able to do more than connect local logic to the top level power grid and could not “provide a simple rule or step for the circuit designer to plan and design the power routing if a circuit having multiple power domains.” EX1001,

1:34–39. Similarly, LPMM recognized the need for APR tools (Petition at 45), but did not identify any APR tools that were actually available for designs with more than one power. Instead, it recommends using one “wherever possible” because manual designs “may result in suboptimal results.” Petition at 45 (quoting EX1012 at 177–178).

Petitioner further provides examples of statements related to APR tools that Petitioner has not shown to involve design of a power routing structure of a circuit having multiple power domains. Petition at 44–45. There is no dispute that APR tools were available and capable of performing power routing with respect to single power domain chips at the time of the invention. Thus, a showing that APR tools could perform some indeterminate functions is irrelevant. Petitioner has not and cannot show that any APR tool performed the steps in claims 1–11 or 19–20.

F. Ground 4: Claims 12-18 are not obvious over Li in view of Jiang

As discussed in detail below, Petitioner fails to show that Li in view of Jiang discloses all the elements of independent claims 12–18. The Petition therefore fails to demonstrate that the Challenged Claims are unpatentable and Institution should therefore be denied under 35 U.S.C. § 314(a).

1. Li fails to disclose a “first partial local power mesh” and a “second partial local power mesh”

Li is an article entitled “LVS Verification across Multiple Power Domains for a Quad-Core Microprocessor.” EX1005 at 490. As part of the discussion of the LVS process, Li provides high level information about power distribution in a chip called BCM1280. *Id.* at 491–492. Li fails to disclose, among other things, a first and second partial local power mesh (elements 12[a] and 12[b].).

Petitioner treats elements 12[a] and [12b] together. Petition at 58–59 (referring to analysis of 12[a] with respect to [12b]). Petitioner attempts to map the “local power grids” in Li to the first and second partial local power meshes recited in claim 12. Petition at 54, 59. According to Li, “The power and ground lines in the local sections are grided on Metal-2 through Metal-5, on which the local power grids are formed at the block level.” EX1005 at 493. Li is silent on the location of the “local sections” and, in particular, silent on where the “local sections” are located in relation to the power domains Petitioner identifies. *Id.* As a result, Li does not disclose a first partial local power mesh “having its position corresponding to the position of a first power domain and coupling to the first power domain” and a second partial local power mesh “having its position corresponding to the position of a second power domain and coupling to the second power domain.” EX1001, claim 12.

Petitioner’s entire analysis assumes that these “local sections” are located throughout the chip, including where it identifies a first and second power domain are located. Petition at 54 (“A POSITA would understand that Li’s local power grids sit above their respective domains”); EX1003 at ¶¶ 152–153. But Li is silent on the location of the “local sections” and silence is not a disclosure. *See Novartis Pharms Corp. v. Accord Healthcare, Inc.*, 38 F.4th 1013, 1017 (Fed. Cir. 2022) (“Silence is generally not disclosure.”).

Petitioner provides no argument or analysis for its assertion that the local power grids sit above their respective domains. Petition at 55. Petitioner’s expert largely repeats statements in the Petition, and includes a discussion of Li’s statement that the local power grids are formed “at block level.” EX1003 at ¶ 153. In particular, Petitioner’s expert states that the local power grids will “correspond to the underlying circuitry that they will supply, such that they cover only a portion of the area of the BCM1280 chip.” *Id.* Petitioner’s expert does not opine that the local power grids are located in relation to the alleged first and second power domains, but only to the underlying circuitry they will supply. Thus, this statement fails to explain how or where Li discloses local power grids in or around the location of the power domains identified by Petitioner. Rather, it confirms that the local power grids are in the “local sections,” wherever those are. EX1005 at 493.

Petitioner also argues that the local power grids would “necessarily” correspond to the position of their power domains because otherwise they could not supply power to the power domains. Petition at 55 (“Moreover, the local power grids would also necessarily correspond to the position of their respective power domains because otherwise they could not supply power to the power domains”). But Petitioner’s inherency argument is circular and fails. If there is no local power grid in the area where the power domain exists then it would not need to supply power to the power domains. The power can be supplied from the purported global power mesh without any local power grid. As Li itself explains, “At the final stage of the layout design, an in-house automated procedure is applied, connecting local logic to the top-level power grid, to implement a complete full-chip power distribution network.” EX1005 at 493. Thus, there can be a connection directly between local logic to the top level power grid without any local grid present.

Inherency must be clearly argued and fails unless Petitioner presents persuasive technical reasoning to explain that a limitation must necessarily be present. *See, e.g., Endo Pharms. Sols., Inc. v. Custopharm Inc.*, 894 F.3d 1374, 1381 (Fed. Cir. 2018) (“To establish that a prior art reference inherently—rather than expressly—discloses a claim limitation, ‘the limitation at issue necessarily must be present, or [is] the natural result of the combination of elements explicitly disclosed by the prior art.’”). Inherency may not be proven by “probabilities or possibilities.”

See, e.g., Crown Operations Int’l, Ltd. v. Solutia Inc., 289 F.3d 1367, 1377 (Fed. Cir. 2002). And “[t]he mere fact that a certain thing may result . . . is not sufficient.” *Id.* Petitioner’s expert fails to provide any persuasive technical reasoning to explain this inherency argument. In fact, Petitioner’s expert provides no reasoning at all on this point. EX1003 at ¶¶ 152–153. Thus, Petitioner has not shown that Li discloses a local grid coupling to a first or second power domain. Li, therefore, does not anticipate claim 12 or any of its dependent claims.

2. The Petition Fails to Establish a Motivation to Modify the Placement of Li’s Power Grids in Light of Jiang

As discussed above in Sec. III.F.1, Li fails to disclose a “first partial local power mesh” and a “second partial local power mesh.” In an attempt to remedy this deficiency, Petitioner asserts that “it would have been obvious for Li’s local power grids to be partial local power meshes having their position correspond to the positions of their respective power domains.” Petition at 5; EX1003 at ¶ 54. But Petitioner’s obviousness argument is flawed because it provides no motivation to add or move a local power grid to an area where it never existed to begin with. In particular, Petitioner’s obviousness arguments focus on a specific argument that Li’s power grids should be placed in a manner that they “cover[] the same surface area as the domains to which they supply power.” Petition at 55. But Petitioner never addresses the threshold issue as to whether there is a local power grid supplying

power to any specific power domain identified by Petitioner at all. A summary of Petitioner’s arguments as to elements 12[a] and [b] is below:

Alleged Combination	Alleged Motivation	Alleged Predictable, Operable Result (vis-à-vis Claims)
Li combined with Jiang (Petition at 55-58)	“local grids covering the same surface area as the domains to which they supply power were preferable” (Petition at 55 (quoting EX1003 ¶ 155) “simple, straightforward, and efficient way to route power from the supply inputs to power domains in Li’s circuit” (Petition at 56 (citing EX1003 ¶ 156))	“Having Li’s local power grids be partial local power meshes with positions corresponding to the position of their respective power domains would have simply been combining prior art elements according to known methods to yield predictable results.” Petition at 55–56 (citing EX1003 ¶ 155)

	“to save power” (Petition at 58 (citing EX1003 ¶ 158))	
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Even if Petitioner’s arguments did address moving or adding a local power grid to a location relative to a power domain, Petitioner provides only a conclusory obviousness analysis that is insufficient to satisfy its burden to show, with particularity, that combining Li with Jiang such that its power grids correspond to their respective power domains renders claims 12–18 obvious.

a. Petitioner fails to identify any sufficient motivation to modify or how any specific combination would operate or read on the claim.

Petitioner’s obviousness analysis is flawed. Petitioner begins by asserting that “it would have been obvious for Li’s local power grids to be partial local power meshes having their positions correspond to their respective power domains.” Petition at 55; EX1003 at ¶ 55. Petitioner fails to identify any differences between the prior art Li reference and the claims. Petitioner then summarizes selected elements of the purported prior art, including Jiang and references to the expert declaration discussing additional references (EX1006 and EX1016) and concludes that “it would have been obvious for each of Li’s local grids to similarly have its position correspond to the position of its respective power domain.” Petition at 55–56.

With respect to the motivation to modify, Petitioner also fails to identify a sufficient motivation to modify Li or combine Li with Jiang. Petitioner and its expert argue that implementing Li’s local grids so that they “correspond to the position of its respective power domains” would have been “preferable” or “a simple, straightforward, and efficient way to route power.” Petition at 55–56; *see also id.* at 58 (“ . . . to save power”). But motivations, such as this one, are repeatedly rejected as too generic and failing to articulate a reason why a reference would be modified to reach the claimed invention. *See Palo Alto Networks, Inc. v. Finjan, Inc.*, IPR2015-01979, Paper 62 at 62 (P.T.A.B. Mar. 15, 2017) (rejecting motivation to combine based on statements that it is “straight-forward, “small,” “natural” and “unsurprising” application” because such statements “are generic, and fail to provide necessary factual support—they are akin to stating in a conclusory fashion that the combination “would have been obvious.”); *ActiveVideo*, 694 F.3d. at 1328 (finding a motivation to “build something better” or to make it “more efficient, cheaper, or . . . more attractive to your customers” is insufficient as too generic). Petitioner should have articulated a plausible rationale as to why those prior art references would have worked together. *Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1335 (Fed. Cir. 2013). But nowhere does Petitioner say that the POSITA would have modified Li using Jiang’s local grids or provide any explanation of how Li would have been implemented or how the combination would have worked to read on the claimed

invention. Thus, Petitioner cannot establish a reasonable likelihood of success on this ground.

b. Petitioner fails to identify any reasonable expectation of success

Also fatal to its obviousness arguments, the Petition does not even purport to identify a reasonable expectation of success. The Petition just concludes, without any support, that combining Li and Jiang would “simply” involve “combining prior art elements according to known methods to yield predictable results.” Petition at 56. This omission is fatal to the asserted combination. *See Instrumentation Laboratory*, IPR2017-00855, Paper 20 at 6; *Samsung Elecs.*, 925 F.3d 1373 (affirming Board’s determination of nonobviousness where Petitioner failed to demonstrate a reasonable expectation of success). For this additional reason, there is no reasonable likelihood of success on Ground 4 and the Board should deny institution.

G. Ground 5: Claims 1–11 and 19–20 are not obvious over Li in view of Jiang and further in view of Bertolet or Low Power Methodology Manual (LPMM)

Petitioner fails to show a reasonable likelihood of success on Ground 5. Petitioner relies on the same arguments presented in Ground 4 for Ground 5 and adds Bertolet and LPMM. Petitioner’s analysis also lacks particularity because

Petitioner fails to perform a limitation by limitation analysis of each claim limitation as discussed above. Sec. III.B.4.

In particular, with respect to claim 1 and its dependent claims, Ground 5 repeats the same arguments for Ground 4. Petition at 70 (“Claim 1’s first and second power domains, first and second partial local power meshes, and global power mesh are disclosed and/or rendered obvious for the reasons discussed above regarding limitations 12[preamble], 12[a]-[c], 12[e]-f]. See §§V.C.1-4, V.C.6-7; EX1003 ¶183.”). Similarly, for claims 19–20, Petitioner does not perform any independent analysis and references prior sections in the Petition. Petition at 76–77 (concluding a combination discloses or renders the limitation obvious and cites to other sections of the Petition). Thus, for the reasons Ground 4 is deficient, Ground 5 is likewise deficient.

With respect to the use of APR tools, Petitioner largely relies on Ground 3. Petition at 71 (citing to V.B.1 for argument that based on general references to automated tools in LPMM and Bertolet, a POSITA would find it obvious to use an APR tool to form and couple Li’s global and partial local power meshes); Petition at 76 (citing to section V.D.1). Thus, for the same reasons Ground 3 is deficient, Ground 5 is also deficient.

For example, Petitioner has not shown any APR tools were capable of forming global and partial local power meshes in designs with multiple powers and multiple

power domains. In addition, it is not a sufficient motivation that use of APR tools was known in the art for other applications, because that does not lead a POSITA to the specific combination that is claimed. *See, e.g., ActiveVideo*, 694 F.3d at 1328 (finding insufficient testimony that “[bore] no relation to any specific combination of prior art elements” and “fail[ed] to explain why a person of ordinary skill in the art would have combined elements from specific references in the way the claimed invention does”). *See supra* at Sec. III.E.2.

Petitioner adds the argument in Ground 5 that a POSITA would know that APR tools were needed and would apply the in house automated procedure disclosed in Li to connect the local logic to the top level power grid to also form the global and local power meshes. Petition at 70–71. But there is no evidence of record that Li’s in house automated procedure could form global and local power meshes or that creating an automated procedure to do so was within the skill in the art. Moreover, this statement is little more than identification of the problem that APR tools would be helpful. “[K]nowledge of a problem and motivation to solve it are entirely different from motivation to combine particular references.” *Metalcraft of Mayville*, 848 F.3d at 1366. Thus, these additional arguments do not remedy any deficiencies in Petitioner’s analysis identified in Ground 3.

IV. CONCLUSION

Petitioner has failed to demonstrate that there is a reasonable likelihood that it would prevail with respect to the claims challenged in the Petition.

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Respectfully submitted,

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

The undersigned hereby certifies that the foregoing contains 13,915 words according to the word count of the word-processing software used to prepare the foregoing.

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