

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROCHIP TECHNOLOGY INC.,
Petitioner,

v.

APTIV TECHNOLOGIES AG,
Patent Owner.

Patent No. 11,176,072

Inter Partes Review No. IPR2024-00230

PATENT OWNER'S REQUEST FOR DIRECTOR REVIEW

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Patent Owner Aptiv Technologies AG (“Patent Owner” or “Aptiv”) respectfully requests director review of the Final Written Decision (Paper 55, “FWD”).

I. INTRODUCTION

U.S. Patent No. 11,176,072 (“the ’072 patent”), issued in November 2021, claims an innovative connectivity solution permitting vehicles to support Apple CarPlay. The patented invention is the basis of Aptiv’s Dual Role Hub product, and is responsible for the product’s widespread acclaim and Aptiv’s domination over competitors in the automotive hub market using chips made by the Petitioner, Microchip.

On July 14, 2025, the Board issued its Final Written Decision finding the sole challenged claim (claim 1) of the ’072 patent to be unpatentable, based on a combination of (1) prior art reference Chang, (2) prior art reference Chang II, and (3) custom electronic circuitry not found in either reference, but instead drawn from the POSITA’s purported knowledge. (FWD.) The Final Written Decision is legally untenable, and inconsistent with recent Director determinations, for the following reasons.

First, the Final Written Decision improperly excused the Petitioner from a baseline statutory requirement. 35 U.S.C. § 312(a)(3) requires that in order to be considered, a petition must identify *with particularity* the grounds for challenging

each claim. Here, claim 1 recites a method in which multiplexing switches are used to route USB signals based on whether a USB device is in a “host mode” or a “device mode.” In challenging claim 1, the Petition relied on a detection unit circuit found in Chang II, arguing that this detection unit would control a custom switching circuit to implement the claimed routing. (Petition, 46-47, 62.) As the Patent Owner’s Response (Paper 25, “POR”) demonstrated, the Petition failed to identify with particularity any prior art combination in which the detection unit would be operable to meet the claim limitations. (*See* POR, 19-23.) In particular, the Petition did not identify any plausible location for the detection unit other than within a bridge circuit that fatally becomes bypassed by the operation of the switching circuit. Nor did the Petition explain how the detection unit of Chang II would be utilized to route the USB signals in the specific manner recited by claim 1, or how any such modification to Chang and Chang II would be within the scope of the POSITA’s general knowledge. This amounts to a failure to identify, with particularity, how the proposed combination satisfied the claimed routing limitations.

In the Final Written Decision, the Board dismisses Patent Owner’s concerns regarding particularity, excusing Petitioner’s failure to “focus on the location of the detection unit” because “[c]laim 1 does not recite detecting the mode, nor does it recite a detection unit.” (FWD, 46.) But the claim *does* recite a particular method

of routing USB signals based on the mode; and the Petition relied on the detection unit from one of the prior art references to meet those claim limitations. (Petition, 46-47, 62.) Under § 312(a)(3), the Petitioner thus had a statutory burden to articulate “the evidence that supports the grounds”—including, here, how its detection unit is used to meet the claimed routing. Requiring the Patent Owner to instead decipher how the detection unit can meet these limitations in the Petition’s combination improperly shifted the burden of proof.

Second, the Board erred by disregarding Patent Owner’s unrebutted evidence of secondary considerations of non-obviousness and failing to adequately explain its decision to deny a presumption of nexus—analogous to *Verizon Connect Inc. v. Omega Patents, LLC*, in which the Director terminated the proceeding for similar error. IPR2023-01162, Paper 37 at 2-3 (PTAB May 2, 2025). Here, as in *Verizon*, the Board improperly disregarded, without sufficient explanation, Patent Owner’s unrebutted expert testimony as to nexus—how the patented invention was directly responsible for the commercial success and praise for Aptiv’s Dual Role Hub product in the automotive industry and how competitors, including Petitioner, tried for years without success to replicate the patented technology. And as in *Verizon*, the Board failed to address secondary considerations factors supported by substantial evidence—referring, instead, to its erroneous nexus decision.

For these reasons, the Director should reverse the Final Written Decision or, in the alternative, vacate and terminate the proceeding as in *Verizon*.

II. ARGUMENT

A. The Board Improperly Excused the Petition From the “With Particularity” Requirement of 35 U.S.C. § 312(a)(3)

Under 35 U.S.C. § 312(a)(3), an IPR petition “may be considered only if ... the petition identifies, 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.” The Board has recently denied institution of petitions that lack such particularity, noting that the requirement exists “in the interests of efficient administration of the Office and integrity of the patent system and as a matter of procedural fairness to Patent Owner.” *Ikea Supply AG v. Everlight Elecs. Co., Ltd*, IPR2024-00988, Paper 6 at 28-29 (Dec. 12, 2024), quoting *Adaptics Ltd. v. Perfect Co.*, IPR2018-01596, Paper 20 at 24 (Mar. 6, 2019); *see also Netflix, Inc. v. DivX, LLC*, 84 F.4th 1371, 1377 (Fed. Cir. 2023) (“Ultimately, it is the petitioner’s burden to present a clear argument.”). And a recent USPTO memorandum emphasized the importance for petitioners to “identify in the petition where each claim element is found in the prior art patents or printed publications,” to provide “certainty to the parties, the Board, and the public, and to allow for the efficient administration of the Office.” (July 31, 2025 USPTO Memorandum, available at <https://www.uspto.gov/sites/>

default/files/documents/aapa_memo_final__signed.pdf (last visited Aug. 7, 2025).)

The Petition should never have been instituted. As explained in the POR, the Petition failed the threshold particularity requirement with respect to the routing limitations of the challenged claim. (POR, 19-23.) The limitations are not met by any mere signal routing—the claim recites that the USB multiplexing switch must “route[] the first USB signal . . . from the USB device to the embedded USB host through the USB bridge and the USB hub” while in a USB host mode, and “route[] the second USB signal . . . from the USB device to the embedded USB host through the USB hub” and “bypass[ing] the USB bridge” while in a USB device mode. That is, different routing operations are required depending on the mode (host/device) of the USB device.

While the Petition identified a crossbar switch (not disclosed in any prior art reference) as a physical example of a USB multiplexing switch, (Paper 1, “Petition”, 11), it relied on a separate detection unit circuit from Chang II to detect the USB host/device mode and control the USB multiplexing switch to meet the two mode-dependent signal routing limitations. (Petition, 46-47, 62-63.) The Petition was at best ambiguous about the location of the detection unit, and how it would control the switching functionality, describing the operation only as “routine and obvious” in a footnote. (Petition, 47 n.17; POR, 13-15.)

Even on reply, Petitioner failed to identify the location of the detection unit.

Instead, Petitioner conceded there were multiple possible locations for the detection unit, highlighting no fewer than three such possibilities in the Reply. (Paper 30, “Reply”, 8-9.) Because Petitioner relied on the detection unit to challenge claim 1, the particularity requirement cannot be met in view of this ambiguity. (35 U.S.C. § 312(a)(3).) Moreover, Petitioner’s support for the possible detection unit locations was found in the expert declaration—not in the Petition itself, as required by the statute.¹ (35 U.S.C. § 312(a)(3); Reply, 8-10.)

In the Final Written Decision, the Board summarily dismissed the Petition’s statutory failure to describe with particularity how the detection unit is used to satisfy the limitations of claim 1, excusing Petitioner’s lack of “focus on the location of the detection unit” because it found that “[c]laim 1 does not recite detecting the mode, nor does it recite a detection unit.” (FWD, 46.) The Board’s reasoning is erroneous.

First, the claim recites USB multiplexing switches that take specific signal routing actions based on whether a consumer device is in a host mode or a device mode. That is, while the claim does not expressly “recite detecting the mode,” it

¹ The FWD disregarded Patent Owner’s argument on the basis that Patent Owner allegedly incorporated by reference the argument via an expert declaration. (FWD, 16). It cannot excuse Petitioner from meeting the same standard.

recites mode-dependent behaviors. Accordingly, the Petition relied upon its prior art detection unit to “detect[] whether the consumer product is host or device” in the proffered combination. (Petition, 47.) Under § 312(a)(3), it was necessary for the Petition to be particular as to the detection unit, because the detection unit forms and supports the grounds on which the challenge to the claim (*i.e.*, the USB multiplexing switches and routing claim limitations) is based. It was legal error, in violation of the statute, for the Board to conclude otherwise.

Second, the detection unit is a component of the Petitioner’s cited prior art (Chang II), not the claimed invention; it would be nonsensical to expect or require a patent’s claim to recite features of the prior art. That the prior art’s detection unit is not found in claim 1 supports patentability, not obviousness. (As Patent Owner explained, the ’072 patent describes performing mode detection by the USB hub’s head unit, not by a detection unit. (*See* EX1009, 6:23-32; Paper 40, “Sur-Reply”, 15.))

Third, the statute does not contain or permit any such exception to the particularity requirement. The Petition must “identif[y] ... with particularity” the grounds and evidentiary support for “each claim challenged,” even if the claim itself lacks particularity. 35 U.S.C. § 312(a)(3). The Board lacked the authority to insert such an exception to the statute. And to the extent the Board relied on a determination of claim definiteness under § 112(b), such reliance was improper

because definiteness under § 112(b) is beyond the scope of an IPR proceeding under § 311(b). *See Samsung Elecs. Am., Inc. v. Prisia Eng'g Corp.*, 948 F.3d 1342, 1350 (Fed. Cir. 2020) (“[W]e hold that the Board may not cancel claims for indefiniteness in an IPR proceeding.”)

In finding that the Petition met the particularity requirement, the Board also committed legal error by shifting the burden of proof to the Patent Owner to determine how the detection unit could be used to meet the claimed signal routing scheme in the proffered combination. The error is particularly egregious here, where the Petitioner relies on combining the detection unit with circuitry that is not even found in the cited references, and is instead supplied by its expert’s own say-so. (POR, 2, 41-43.) Petitioner’s reliance on expert testimony to supply missing claim limitations promotes uncertainty and is unfair to the Patent Owner,² as the

² For example, the Petitioner’s only identification of a concrete location for the detection unit is as part of the prior art’s “control chip 13” in “Bridge Device 1.” (Petition, 47 n.17; *see* Sur-Reply, 3-8.) With no other location description to rely upon, Patent Owner focused its analysis of the prior art assuming that the detection unit is within the bridge. The Board ultimately invalidated claim 1, finding it was erroneous for Patent Owner to assume the Petition’s detection unit was located in the bridge. (FWD, 45-46.) Had there been the required particularity in the

Office recently recognized by prohibiting this practice in future petitions. (July 31, 2025 USPTO Memorandum.) The Final Written Decision should be vacated with respect to the challenged claim.

B. The Board Erred by Disregarding Unrebutted Evidence of Secondary Considerations Without Adequate Explanation

Patent Owner presented extensive evidence of secondary considerations of non-obviousness, supported by unrebutted expert testimony and trial exhibits and testimony. The Board characterized some of Patent Owner's evidence as "weak" and accorded it "little weight," (FWD, 18-25), but failed to adequately support or explain these findings or to justify discrediting record evidence that was unrebutted by Petitioner. And while the Board acknowledged that at least some of Patent Owner's secondary considerations arguments were meritorious and conceded "some weight" to those arguments, it nevertheless disregarded the supporting evidence with little justification. (FWD, 21-22.) This was error by the Board, and in *Verizon*, the Director recently intervened to vacate a Final Written Decision under analogous circumstances. The Final Written Decision here should be similarly vacated.

Petition, Patent Owner would have had a fairer opportunity to address the prior art combination.

1. The Board Failed to Explain Its Determination of No Nexus

A patentee is entitled to a rebuttable presumption of nexus between the asserted evidence of secondary considerations and a patent claim if the patentee shows that the asserted evidence is tied to a specific product and that the product is the invention disclosed and claimed. *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019). Patent Owner’s showing of nexus was backed by substantial evidence: declaration testimony from Patent Owner’s expert, Dr. Houh, which cited multiple trial exhibits; and a transcript of live trial testimony from an employee, Michael Dreon. (POR, 81-82.) This evidence was un rebutted by Petitioner.

In *Verizon*, the Final Written Decision was vacated not for an erroneous finding of no nexus, but because the Board “failed to adequately explain its decision to deny Patent Owner a presumption of nexus.” *Verizon*, Paper 37 at 2. Here, as in *Verizon*, the Board erred by failing to provide an adequate explanation for its decision to deny a presumption of nexus, in view of the evidence. For example, in the Final Written Decision, the Board claimed that Patent Owner did not “provid[e] any specific arguments...that its product practices claim 1” and instead incorporated by reference Dr. Houh’s declaration testimony to describe how Aptiv’s Dual Role Hub product met the limitations of claim 1. (FWD, 16.) But Patent Owner did no such thing. Instead, Patent Owner explained in its

response that the Aptiv Dual Role Hub Product included “the USB bridge and USB multiplexing switches [that] enable[e] the persistent downstream USB connectivity on all ports via a single upstream head unit connection”—the “specific arrangement claimed in the patent”—and cited to Dr. Houh’s declaration to support this proposition. (POR, 72-73.) Patent Owner’s citation to its expert’s declaration to demonstrate that the presumption of nexus is supported by Dr. Houh’s reasoning is not an incorporation by reference. *See, e.g., Expedia, Inc. v. Int’l Bus. Machines Corp.*, No. IPR2018-01136, Paper No. 24 at 4 (June 17, 2019) (finding no incorporation of reference where a petition “appears to rely on the [expert] Declaration to support its contention with expert testimony.”)

In rejecting a finding of nexus, the Board faults Patent Owner for not explaining how the Aptiv Dual Role Hub Product “does not also contain significant features that are unclaimed.” (FWD, 17.) But the Board ignores that Patent Owner had explained that “Aptiv’s dual role hub ‘is the invention disclosed and claimed’ in the patent” and that its praised “enabl[ing of] (1) a single upstream connection, (2) CarPlay on every port, and (3) persistent downstream connectivity on non-CarPlay ports” is a direct result of implementing the claimed invention. (Sur-Reply, 25, quoting *Fox Factory*, 944 F.3d at 1373.) For example, Patent Owner discussed how the acclaimed “persistent downstream connectivity on non-CarPlay ports derives from the claimed structure, which was specifically designed

to provide this feature.” (Sur-Reply, 26.) And even if the Board does not find a presumptive nexus, the Board fails to consider that nexus can nevertheless be established by “showing that the evidence of secondary considerations is the direct result of the unique characteristics of the claimed invention.” *Volvo Penta of the Americas, LLC v. Brunswick Corp.*, 81 F.4th 1202, 1210 (Fed. Cir. 2023) (internal quotation marks and citations omitted). This is legal error.

2. The Board Failed to Sufficiently Address Substantial Evidence of Secondary Considerations

The Board’s conclusory dismissal of Aptiv’s evidence of secondary considerations—in many cases, *unrebutted* evidence—is likewise erroneous. For example, the Board conceded that “Patent Owner succeeded where Petitioner for at least some time failed,” and that “there was some skepticism about Patent Owner’s solution.” (FWD, 21-22.) But the Board wholly fails to address how these factors were considered, if at all, in the Board’s determination of obviousness; or to explain the basis for apparently weighing other secondary considerations factors more heavily in its analysis. Further, the Board did not dispute that Patent Owner had demonstrated commercial success, but chose to “give [it] little weight” because the nexus between the evidence of success and the claimed invention was “weak.” (FWD, 23.) The Board also agreed that Aptiv’s dual role hub had received industry praise for “solv[ing] the CarPlay integration problem ‘at a lower cost, in a smaller package and *with all functionality*,’” but again accorded this

evidence “little weight” anyway. (FWD, 24 (emphasis added), quoting Ex. 2038, 1–2; Pet. Reply 27.)

These deficiencies are analogous to *Verizon*, in which the Board erred by failing to consider an argument based on licensing evidence, even after the Board had determined that nexus had not been shown. Here, there are at least three secondary considerations factors inadequately addressed by the Board—far more than the single factor the Director identified in *Verizon*. The Final Written Decision should be vacated for at least the same reasons as in *Verizon*.

Dated: August 13, 2025

Respectfully submitted,

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Certificate of Service (37 C.F.R. § 42.6(e)(4))

I hereby certify that the attached PATENT OWNER'S REQUEST FOR DIRECTOR REVIEW was served as of the below date via email (by agreement) on the following counsel of record for Petitioner:

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