

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TEXAS INSTRUMENTS INCORPORATED
Petitioner,

v.

GREENTHREAD, LLC,
Patent Owner.

IPR2024-00773
Patent 9,190,502 B2

Before JEFFREY W. ABRAHAM, JON B. TORNQUIST, and
MONICA S. ULLAGADDI, *Administrative Patent Judges*.

ABRAHAM, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314
Granting Motion for Joinder
35 U.S.C. § 315(c); 37 C.F.R. § 42.122

I. INTRODUCTION

Texas Instruments Incorporated (“Petitioner”) filed a Petition requesting *inter partes* review of claims 7–12 of U.S. Patent No. 9,190,502 B2 (Ex. 1001, “the ’502 patent”). Paper 3 (“Pet.”). Petitioner also filed a motion for joinder to be joined as a petitioner to *Cirrus Logic, Inc. v. Greenthread LLC*, IPR2024-00018, filed October 27, 2023, and instituted May 1, 2024 (“the Cirrus IPR”). Paper 2 (“Mot.”). Greenthread, LLC (“Patent Owner”) filed an Opposition to Petitioner’s Motion for Joinder (Paper 7, “Opp.”) and a Preliminary Response to the Petition (Paper 13 (“Prelim. Resp.”)). With authorization, Petitioner subsequently filed a Preliminary Reply to the Petition (Paper 18). Patent Owner did not file a sur-reply.

For the reasons explained below, we institute *inter partes* review and grant the Motion for Joinder.

II. BACKGROUND

A. Related Matters

The parties indicate that the ’502 patent is at issue in the following proceedings:

Greenthread, LLC v. Cirrus Logic, Inc., No. 1:23-cv-00369 (W.D. Tex. filed March 31, 2023);

Greenthread, LLC v. Texas Instruments Inc., No. 2:23-cv-00157 (E.D. Tex. filed April 6, 2023);

Greenthread, LLC v. OSRAM GmbH, No. 2:23-cv-00179 (E.D. Tex. filed April 19, 2023);

Greenthread, LLC v. OmniVision Technologies, Inc., No. 2:23-cv-00212 (E.D. Tex. filed May 10, 2023);

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Greenthread, LLC v. Monolithic Power Systems, Inc.,
No. 1:23-cv-00579 (D. Del. filed May 26, 2023);
Cirrus Logic, Inc., v. Greenthread, LLC, IPR2024-00018, before the
Patent Trial and Appeal Board, instituted May 1, 2024;
Semiconductor Components Industries, LLC v. Greenthread, LLC,
IPR2024-00265, before the Patent Trial and Appeal Board, instituted August
14, 2024; and
Monolithic Power Systems, Inc. v. Greenthread, LLC, IPR2024-
00469, before the Patent Trial and Appeal Board, instituted August 20, 2024.
Pet. 1–2; Paper 5, 1–2 (Patent Owner’s mandatory notices).

B. Real Parties-in-Interest

Petitioner identifies itself as the real party-in-interest. Pet. 1. Patent
Owner identifies itself as the real party-in-interest. Paper 5, 1.

C. The ’502 patent

The ’502 patent, titled “Semiconductor Devices with Graded Dopant
Regions,” issued on November 17, 2015. Ex. 1001, codes (45), (54). The
’502 patent “relates to all semiconductor devices and systems,” including
Bipolar Junction Transistors (BJT). Ex. 1001, 1:17–30.

The ’502 patent explains that in bipolar junction transistors, minority
carriers are the principal device conduction mechanism, but majority carriers
also play a small but finite role in modulating the conductivity in such
devices. Ex. 1001, 1:27–30. The ’502 patent further explains that “[e]fforts
have been made in graded base transistors to create an ‘aiding drift field’, to
enhance the diffusing minority carrier’s speed from emitter to collector”
versus the standard “uniformly doped base” bipolar junction transistors.
Ex. 1001, 1:38–40. The ’502 patent explains that this improvement has not

been implemented in most semiconductor devices, including various power MOSFETs and IGBTs, which “still use a uniformly doped drift epitaxial region in the base.” Ex. 1001, 1:40–44. The invention of the ’502 patent implements a graded dopant concentration in these devices, which results in two important performance enhancements: “electrons can be swept from source to drain rapidly, while at the same time holes can be recombined closer to the n+ buffer layer,” thereby improving “t(on) and t(off) in the same device.” Ex. 1001, 3:13–18.

Figure 1 of the ’502 Patent is reproduced below.

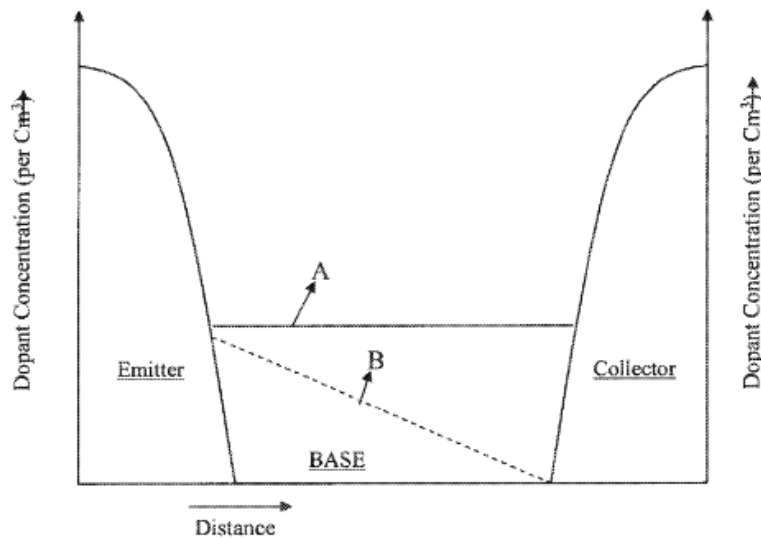


Figure 1 is labeled “Prior Art” and “illustrates the relative doping profiles of emitter, base and collector for the two most popular bipolar junction transistors: namely, A—uniform base, and B—graded base.” Ex. 1001, 2:17–19.

Figure 3A of the ’502 patent is reproduced below.

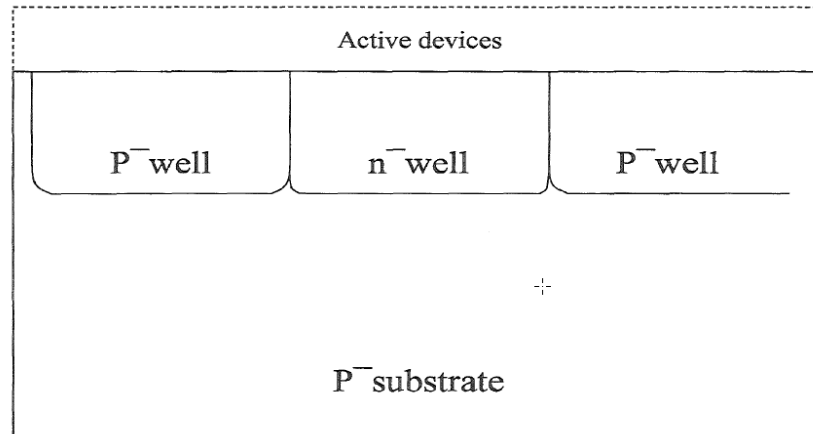


Figure 3A is labeled “Prior art” and shows a cross-sectional view of a “commonly used [complementary metal-oxide semiconductor(CMOS)] silicon substrate with two wells (one n- well in which p-channel transistors are subsequently fabricated and one p- well in which n-channel transistors are subsequently fabricated).” Ex. 1001, 2:22–27, Fig. 3A.

Figure 5A of the ’014 patent is reproduced below.

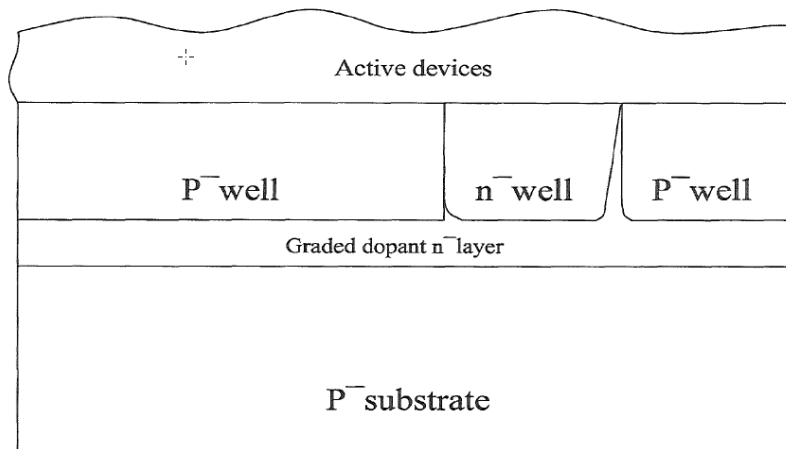


Figure 5A illustrates a cross section of a CMOS silicon substrate with two wells and an underlying layer using embodiments of the invention. Ex. 1001, 2:31–35. According to the ’502 patent, “[s]purious minority carriers can be generated by clock switching in digital VSLI logic and memory ICs,” and these “unwanted carriers can discharge dynamically-held

‘actively held high’ nodes,” and serve to degrade performance of various types of devices, including digital imaging ICs. Ex. 1001, 3:25–34. The ’502 patent further explains that “a novel technique has been described here by creating a drift field to sweep these unwanted minority carriers into the substrate as quickly as possible, from the active circuitry at the surface.” Ex. 1001, 3:39–42. In particular, “[i]n a preferred embodiment, the subterranean n–layer has a graded donor concentration to sweep the minority carriers deep into the substrate.” Ex. 1001, 3:42–44.

D. Illustrative Claim

Claim 7 is the only independent claim challenged, and is reproduced below.

7. A semiconductor device comprising:
- a surface layer;
 - a substrate;
 - an active region including a source and a drain, disposed on one surface of said surface layer;
 - a single drift layer disposed between the other surface of said surface layer and said substrate, said drift layer having a graded concentration of dopants generating a first static unidirectional electric drift field to aid the movement of minority carriers from said surface layer to said substrate;
 - and
 - at least one well region disposed in said single drift layer, said well region having a graded concentration of dopants generating a second static unidirectional electric drift field to aid the movement of minority carriers from said surface layer to said substrate.

Ex. 1001, 4:52–67.

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Pet. 6):¹

Claim(s) Challenged	35 U.S.C. §	Reference(s)
7	103	Payne ²
7, 8, 11	102	Onoda ³ ,
7, 8, 11	103	Onoda
8	103	Payne, Parrillo ⁴
9–11	103	Payne, Wolf ⁵
9, 10	103	Onoda, Wolf
12	103	Payne, Silverbrook ⁶
12	103	Onoda, Silverbrook

Petitioner also relies upon the declaration testimony of Sanjay Banerjee, Ph.D. Ex. 1003.

III. TIMELINESS OF THE PETITION UNDER 35 U.S.C. § 315(B)

Pursuant to 35 U.S.C. § 315(b), “[a]n inter partes review may not be instituted if the petition requesting the proceeding is filed more than 1 year after the date on which the petitioner, real party in interest, or privy of the petitioner is served with a complaint alleging infringement of the patent.”

Patent Owner argues that the Petition is untimely under 35 U.S.C. § 315(b)

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, took effect on March 16, 2013. The ’502 patent claims priority to an application filed September 3, 2004. Ex. 1001, code (45). Thus, we apply the pre-AIA versions of §§ 102 and 103. *See* Pet. 5 n.1.

² US 4,684,971, issued Aug. 4, 1987 (Ex. 1005).

³ Japanese Unexamined Patent Application Pub. No. H8-279598, published Oct. 22, 1996 (Ex. 1042 (certified English translation); Ex. 1043 (original document)).

⁴ US 4,435,896, issued Mar. 13, 1984 (Ex. 1025).

⁵ Stanley Wolf & Richard N. Tauber, *Silicon Processing for the VLSI Era*, Vols. 1–4 (Lattice Press 2000) (Ex. 1008).

⁶ US 6,614,560 B1, issued Sept. 2, 2003 (Ex. 1047).

because Petitioner is in privity with time-barred entities. Prelim. Resp. 10–31. However, 35 U.S.C. § 315(b) also provides that the one-year time bar “shall not apply to a request for joinder under subsection (c).” 35 U.S.C. § 315(b); *see also* 37 C.F.R. § 42.122(b). Because the Petition is accompanied by a timely request for joinder (Paper 2) to the instituted proceeding (IPR2024-00018), which we grant as further discussed below, Patent Owner’s argument that the Petition is time-barred under 35 U.S.C. § 315(b) is moot, irrespective of whether Petitioner is in privity with time-barred entities.

IV. MOTION FOR JOINDER

A party in an *inter partes* review may be joined as a party in another *inter partes* review, subject to certain statutory provisions:

(c) JOINDER.—If the Director institutes an inter partes review, the Director, in his or her discretion, may join as a party to that inter partes review any person who properly files a petition under section 311 that the Director, after receiving a preliminary response under section 313 or the expiration of the time for filing such a response, determines warrants the institution of an inter parties review under section 314.

35 U.S.C. § 315(c); *see also* 37 C.F.R. § 42.122 (“Any request for joinder must be filed, as a motion under § 42.22, no later than one month after the institution date of any *inter partes* review for which joinder is requested.”). “To join a party to an instituted [*inter partes* review (IPR)], the plain language of § 315(c) requires two different decisions.” *Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d 1321, 1332 (Fed. Cir. 2020). “First, the statute requires that the Director (or the Board acting through a delegation of authority) . . . determine whether the joinder applicant’s petition for IPR ‘warrants’ institution under § 314.” *Id.* “Second, to effect

joinder, § 315(c) requires the Director to exercise [] discretion to decide whether to ‘join as a party’ the joinder applicant.” *Id.*

A. Whether the Petition Warrants Institution

Petitioner argues that its Petition challenges the same claims of the same patent on the same grounds as those before us in the Cirrus IPR.

Mot. 1. In particular, according to Petitioner, the “supporting materials” cited in the Petition—including the “supporting expert declaration, exhibits, and exhibit numbering—are identical to those presented in the Cirrus IPR.”

Mot. 6.

Because the Preliminary Response in the instant case includes arguments pertaining to the sufficiency of the asserted prior art references, which were not raised in the preliminary response in the Cirrus IPR, we briefly address below the patentability of the challenged claims.

1. Overview of the Challenges

The Petition challenges the patentability of claims 7–12 of the ’502 patent. Pet. 5–6. Each challenge identified in the Petition relies on Payne or Oneda, alone or in combination with other references. Pet. 5–6.

2. Payne (Ex. 1005)

Payne “relates to complementary field effect transistors formed by ion implantation, and in particular to a structure and method of fabrication which permit high packing density.” Ex. 1005, 1:5–8. According to Payne, CMOS devices “comprise n-channel and p-channel devices formed in the same substrate,” and are traditionally “formed by diffusion or implantation of a p-type ‘tub’ in an n-type silicon substrate so that the n-channel device is fabricated in the tub and the p-channel device is fabricated in the adjacent portion of the substrate.” Ex. 1005, 1:9–18. This method “led to the

constraint that the concentration at the surface in the tub was much greater than the surface concentration of the substrate.” Ex. 1005, 1:18–21. Payne states that one proposed method to avoid this constraint was “to form the p-channel device in a second tub of n-conductivity type and higher impurity concentration than a more lightly doped substrate.” Ex. 1005, 1:24–27.

“Using either the single tub or twin tub approach, a considerable amount of semiconductor area is needed due to the fact that the tub impurities will diffuse laterally as well as vertically during the drive-in to establish the desired tub depth.” Ex. 1005, 1:34–38. Payne states that “[t]his is particularly troublesome in the twin-tub process since any significant overlap of the two tubs results in decreased doping concentration of each tub at the boundaries which can cause punch through or field inversion channeling during device operation.” Ex. 1005, 1:39–43. This problem required large spacing of the source and drain regions of the transistors, and Payne seeks to avoid this need by “provid[ing] a CMOS structure and method of manufacture which requires little semiconductor space.”

Ex. 1005, 1:43–54.

In particular, Payne’s “device is fabricated in a silicon semiconductor substrate, 10, of ‘N–’ conductivity type which . . . is typically approximately 20 mils thick.” Ex. 1005, 2:56–60. On this substrate, tub regions 15 and 17 are formed, one “having the same conductivity type as the substrate but higher impurity concentration” and the other having the opposite conductivity type. Ex. 1005, 3:35–39, 4:12–14, Figs. 2–5. Surface regions 18 and 20 are formed “covering essentially the same area as” tubs 15 and 17, with each region having the same conductivity type as the tub over which it lies but with higher impurity concentration. Ex. 1005, 4:31–5:17, Figs. 7–9, 11. Payne’s CMOS device includes a “p-channel device [that] includes

source and drain regions, 21 and 22, respectively, of P+ conductivity type formed with[in] the N surface region, 18” and an “n-channel device [that] includes source and drain regions, 23 and 24, of N+ conductivity type formed within the P surface region 20.” Ex. 1005, 5:21–27, Fig. 10. Payne states that this approach can reduce the spacing between “source and drain regions of adjacent devices” from 12 microns to 5 microns. Ex. 1005, 5:54–6:19, Figs. 12, 13.

3. Undisputed Claim Limitations

Patent Owner does not contest the sufficiency of the evidence to support institution of review, except to argue that Petitioner does not show sufficiently that the asserted prior art teaches or suggests the claim 7 limitation that is directed to “aid[ing] the movement of minority carriers.” Prelim. Resp. 1–10. Accordingly, for the same reasons stated in our decision instituting review in the Cirrus IPR, we find Petitioner shows sufficiently, for purposes of institution, that Payne teaches or suggests each other limitation of claim 7. *See* IPR2024-00018, Paper 35 at 27–31.

4. “Aid the Movement of Minority Carriers”

Claim 7 recites a “drift layer having a graded concentration of dopants generating a first static unidirectional electric drift field to aid the movement of minority carriers from said surface layer to said substrate.” Ex. 1001, 4:58–62. Petitioner first argues the ’502 patent admits that graded-dopant concentrations were known, and that it was known to grade the dopant concentration in CMOS devices to affect the movement of minority carriers. Pet. 20 (citing Ex. 1001, 1:34–2:5, 2:17–19, Figs. 1, 3(a)–3(d)). Petitioner also argues that Payne teaches or suggests a graded-dopant concentration because Payne’s Figure 11 shows a dopant concentration in tubs 15, 17 that

decreases with increasing depth. Pet. 20–22 (citing Ex. 1005, 2:38–41, 2:56–59, 5:14–17, 5:48–57, Figs. 10, 11; Ex. 1003 ¶¶ 90–92).

Regarding the “first static unidirectional electric drift field to aid the movement of minority carriers” limitation, Petitioner relies on the parent file history and cited references, arguing that “Payne’s downward-sloping graded-dopant concentration aids the movement of minority carriers from the surface layer to the substrate to the same extent to which Applicant relied on the prior art and admitted to the Patent Office that such carrier movement would occur under the same scenario.” Pet. 23. Petitioner also asserts that the direction in which carriers are forced with the concentration profile disclosed in Payne is downward, toward the substrate and away from the surface. Pet. 23–28 (quoting and citing Ex. 1046, 237–238, 253–254, 289–290; citing Ex. 1003 ¶¶ 95–106; Ex. 1005, 5:7–17, 5:44–55; Ex. 1009, 2:11–16, 2:67–3:18, Fig. 2; Ex. 1010, 2:27–32, 5:14–22; Ex. 1013, 431; Ex. 1030, 24).

We find that Petitioner’s challenge to claim 7 based on Payne is sufficiently supported for purposes of institution.

Patent Owner argues “the Petition fails to show that any of the primary references disclose any of the claim elements requiring ‘aid the movement of minority carriers,’” as twice recited in claim 7. Prelim. Resp. 1–10. Patent Owner summarizes this dispute as follows:

The challenged patent discloses and claims a semiconductor device with (among other things) a “drift layer having a graded concentration of dopants generating a first static unidirectional electric drift field to ***aid the movement of minority carriers.***”[] The Petition should not be instituted, because (among other deficiencies) it fails to show that the prior art discloses the “aid the movement of minority carriers” claim limitation.

Rather than pointing to anything in the prior art that would teach this claim limitation, the Petition assumes that *any* “graded concentration of dopants” would *necessarily* “aid the movement of minority carriers.” The Petition contains no analysis explaining why the “graded concentration of dopants” in the prior art meet the “aid the movement of minority carriers” limitation, apart from the fact that they *are* “graded concentration of dopants.” In other words, Petitioner reads the “aid the movement of minority carriers” limitation out of the claims completely.

Prelim. Resp. 1–2. Patent Owner includes additional details in support of its view that the asserted prior art fails to establish obviousness of the “aid carrier movement” limitation of claim 7. *See* Prelim. Resp. 1–10. Notably, Patent Owner raises similar, if not identical, arguments in its patent owner response in the Cirrus IPR. *Compare* Prelim. Resp. 1–10, *with* IPR2024-00018, Paper 47 at 1–2, 7–14 (Patent Owner’s response in the Cirrus IPR) (public version).

At this stage of the proceeding, we determine that the arguments and evidence of record favor Petitioner. Patent Owner does not meaningfully dispute that Payne has a graded dopant concentration in an active region. *See generally* Prelim. Resp. Further, Patent Owner stated during prosecution of U.S. Patent No. 8,421,195 (parent of the ’502 patent) that a graded dopant concentration itself creates “a built-in electrical field that forces the movement of carriers in a particular direction” (Ex. 1046, 289–290) and is “the additional parameter for ensuring that all minority carriers are being moved in one direction” (Ex. 1046, 290). In light of this evidentiary record, we determine Petitioner establishes a reasonable likelihood of prevailing in its challenge of claim 7.

We decline to further discuss the parties’ arguments or resolve any disputed issues as to challenges based on Payne on this preliminary record,

because the trial in the Cirrus IPR is the better proceeding in which to do so. Specifically, as compared to the preliminary phase of this case, the instituted trial in the Cirrus IPR affords the parties a better opportunity to fully and fairly brief, argue, and develop evidence in support of their positions. We observe only, on this record, the dispute is inadequate to undermine the sufficiency of Petitioner’s evidence to support institution of review.

Additionally, in view of our determination as to claim 7, and because Petitioner’s additional arguments and evidence for claims 8–12 are unopposed at this stage by Patent Owner, we determine that it is unnecessary to provide an explicit analysis of Petitioner’s challenges to the remaining claims in order to provide guidance to the parties for the upcoming trial. Consolidated Trial Practice Guide November 2019 (“CTPG”)⁷ at 64; *see* 37 C.F.R. § 42.108(a) (“When instituting inter partes review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”); *see also SAS Institute Inc. v. Iancu*, 138 S. Ct. at 1359–60 (holding that 35 U.S.C. § 314 forbids the Board’s prior “partial institution” practice); *see also* IPR2024-00018, Paper 35 at 31–36 (addressing claims 9–12 of the ’502 patent).

B. Whether to Join Petitioner as a Party to the Cirrus IPR

Joinder may be authorized when warranted, but the decision to grant joinder is discretionary. *See* 35 U.S.C. § 315(c); 37 C.F.R. § 42.122. A motion for joinder should (1) set forth reasons why joinder is appropriate; (2) identify any new grounds of unpatentability asserted in the petition; (3) explain what impact (if any) joinder would have on the trial schedule for

⁷ Available at <https://www.uspto.gov/TralPracticeGuideConsolidated>.

the existing review; and (4) address specifically how briefing and discovery may be simplified. *See, e.g., Kyocera Corp. v. Softview LLC*, IPR2013-00004, Paper 15 (PTAB April 24, 2013). As the moving party, Petitioner bears the burden of proving that it is entitled to the requested relief.
37 C.F.R. § 42.20(c).

As an initial matter, we find the Motion for Joinder meets the timing requirements of 37 C.F.R. § 42.122(b) because Petitioner filed it on April 10, 2024, no later than one month after the Cirrus IPR was instituted on May 21, 2024.

Petitioner asserts that the four *Kyocera* factors favor joinder here because Petitioner seeks to join the Cirrus IPR in an understudy role.
Mot. 2. Petitioner explains that the joinder will have no impact on the pending schedule because Petitioner “will not seek additional depositions or deposition time” and “agrees to be bound by the scheduling order in the Cirrus IPR proceeding.” Mot. 2. Further, Petitioner “agrees to rely entirely on, and be bound by, the expert declarations and depositions in the Cirrus IPR” unless the current petitioner in that proceeding “ceases to participate.”
Mot. 8. Petitioner (referring to itself as “TI”) also agrees that:

(a) TI shall not make any substantive filing and shall be bound by the filings of the Cirrus IPR Petitioner, unless a filing concerns termination and settlement, or issues solely involving TI;

(b) TI shall not present any argument or make any presentation at oral hearing unless an issue solely involves TI, or when addressing Board-approved motions that do not affect the Cirrus IPR Petitioner, or its respective position;

(c) TI shall not seek to cross-examine or defend the cross-examination of any witness, unless the topic of cross-examination concerns issues solely involving TI;

(d) TI shall not seek discovery from Patent Owner on issues not solely involving TI;

(e) TI will not rely on expert testimony beyond that submitted by the Cirrus IPR Petitioner unless the Cirrus IPR Petitioner is terminated from the case.

Mot. 7. Petitioner also indicates that it will “abide by any additional conditions the Board deems appropriate for an ‘understudy’ role.” Mot. 8.

Patent Owner opposes and argues that we should deny the Motion for Joinder should because joinder would be prejudicial to Patent Owner and contrary to public policy favoring settlement. Opp. 3–4. Patent Owner also argues that joinder would be unavailable if Patent Owner prevails on its request for Director Review of the Decision on Institution in the Cirrus IPR. Opp. 5–7.

Patent Owner’s first argument is not persuasive because it is based on speculation that Petitioner “is trying to block settlement with [other] defendants unless [Patent Owner] also settles with” Petitioner. Opp. 5. Moreover, even in a situation where the petitioner and patent owner in the proceeding to be joined had settled (*Code200 v. Bright Data Ltd.*, IPR2022-00861, Paper 17 at 5 (PTAB July 25, 2022) (vacated)), the Director nevertheless vacated a decision to deny a motion for joinder. *Code200 v. Bright Data Ltd.*, IPR2022-00861, Paper 18 at 7 (Vidal Aug. 23, 2022) (precedential); see *eBay, Inc. v. Lexos Media IP, LLC*, IPR2024-00336, Paper 11 at 13–15 (PTAB Feb. 23, 2024).

Patent Owner’s second argument is moot because Patent Owner’s Request for Director Review in the Cirrus IPR has been denied. See IPR2024-00018, Paper 35 (May 30, 2024).

Based on the facts and circumstances discussed above, we determine Petitioner has established good cause for joining the Cirrus IPR.

Specifically, we find that joining Petitioner to the Cirrus IPR is unlikely to require any delay or modification to the scheduling order already in place for that proceeding. We also determine that Patent Owner will not be prejudiced unduly by the joinder of this proceeding. Thus, we determine that granting the Motion for Joinder would help “secure the just, speedy, and inexpensive resolution” of these proceedings. *See* 37 C.F.R. § 42.1(b). Accordingly, we grant Petitioner’s Motion for Joinder and join Petitioner as a party to the Cirrus IPR.

V. CONCLUSION

For the above reasons, we determine that there is a reasonable likelihood that Petitioner would prevail with respect to at least one of the claims challenged in the Petition. Accordingly, we institute an *inter partes* review of all challenged claims based on the grounds asserted in the Petition. In addition, we grant Petitioner’s Motion for Joinder. Patent Owner’s argument that the Petition is time-barred under 35 U.S.C. § 315(b) is moot because it is accompanied by a request for joinder to an instituted proceeding, which we grant.

VI. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of the ’502 patent is hereby instituted as to claims 7–12 on the grounds set forth in the Petition;

FURTHER ORDERED that Petitioner’s Motion for Joinder with IPR2024-00018 is *granted*, and Petitioner is joined as a petitioner in IPR2024-00018;

FURTHER ORDERED that Petitioner shall have an “understudy” role

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in IPR2024-00018 under the conditions reproduced above (*see* Mot. 7–8);

FURTHER ORDERED that all further filings in the joined proceeding shall be made in IPR2024-00018, and that no further filings shall be made in IPR2024-00773;

FURTHER ORDERED that the Scheduling Order in IPR2024-00018 remains unchanged, and shall govern the joined proceeding;

FURTHER ORDERED that a copy of this Decision shall be entered in IPR2024-00018; and

FURTHER ORDERED that the case caption in IPR2024-00018 shall be modified to reflect Petitioner’s joinder in accordance with the attached example.

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Example Caption for Joined Proceeding

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CIRRUS LOGIC, INC.,
OMNIVISION TECHNOLOGIES, INC. and
TEXAS INSTRUMENTS INCORPORATED
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v.

GREENTHREAD, LLC,
Patent Owner.

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⁸ Texas Instruments Incorporated, which filed a petition in IPR2024-00773, has been joined as a Petitioner in this proceeding.