

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CAMBRIDGE INDUSTRIES USA, INC.,
Petitioner,

v.

APPLIED OPTOELECTRONICS, INC.,
Patent Owner.

IPR2025-00436
Patent 10,313,024 B1

Before MITCHELL G. WEATHERLY, MONICA S. ULLAGADDI, and
IFTIKHAR AHMED, *Administrative Patent Judges*.

WEATHERLY, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background

Cambridge Industries USA, Inc. (“Petitioner”) filed a petition (Paper 2, “Pet.”) to institute an *inter partes* review of claims 1–17 (the “challenged claims”) of U.S. Patent No. 10,313,024 B1 (Ex. 1001, “the

'024 patent"). 35 U.S.C. § 311. Applied Optoelectronics, Inc. ("Patent Owner") timely filed a Preliminary Response. Paper 10 ("Prelim. Resp.").

Institution of an *inter partes* review is authorized by statute when "the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). Based on our review of the record, we conclude that Petitioner is reasonably likely to prevail with respect to at least one challenged claim.

Petitioner challenges the patentability of claims as follows:

Claim(s) challenged	35 U.S.C. § ¹	Reference(s)
1–17	102	Mizobuchi ²
1–17	102	Akashi ³

B. Related Proceedings

The parties identified as related proceedings the co-pending district court proceedings of *Applied Optoelectronics, Inc. v. Cambridge Industries USA, Inc.*, No. 3:24-cv-01010-JD (N.D. Cal.) (filed Feb. 20, 2024) and *Applied Optoelectronics, Inc. v. v. Accelight Technologies, Inc.*, 4:24-cv-09041 (N.D. Cal. filed Nov. 19, 2024). Pet. 47–48; Paper 6, 2.

¹ The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. §§ 102 and 103 that became effective March 16, 2013. The application for the '024 patent was filed on April 26, 2018. Therefore, we apply the post-AIA versions of 35 U.S.C. §§ 102 and 103.

² U.S. Patent No. 9,568,694 B2 (Ex. 1006, "Mizobuchi").

³ U.S. Patent App. Pub. 2014/0140665 A1 (Ex. 1007, "Akashi").

C. The '024 Patent

The '024 patent relates to “a transmitter optical subassembly (TOSA) with a hermetically-sealed light engine housing that electrically isolates DC and RF traces to ensure nominal performance.” Ex. 1001, 1:9–12.

Claims 1, 12, and 15 are the independent claims among the challenged claims. Claim 1 recites:

1[a]. A transmitter optical subassembly (TOSA) module comprising:

[b] a hermetically-sealed light engine with a housing that defines a hermetic-sealed cavity and at least one laser package for emitting an associated channel wavelength disposed within the hermetic-sealed cavity;

[c] a substrate defined by first and second surfaces disposed opposite each other, the substrate including an electrical coupling region for electrically coupling with a transmit connecting circuit and a light engine interface region for electrically coupling with the hermetically-sealed light engine;

[d] a light engine driving circuit disposed on the substrate to provide a radio frequency (RF) signal and a power signal to drive the hermetically-sealed light engine to output one or more channel wavelengths;

[e] wherein the substrate includes at least a first trace disposed on the first surface to provide the power signal and at least a second trace disposed on the second surface to provide the RF signal, the first and second traces being disposed in an opposing arrangement to provide electrical isolation to reduce electrical interference between the power signal and the RF signal

[f] a feedthrough device to electrically couple the at least one laser package to the light engine driving circuit; and

[g] wherein the feedthrough device is defined by at least a first surface disposed opposite a second surface, and wherein the

first and second surfaces extend substantially parallel with the first and second surfaces of the substrate.

Ex. 1001, 9:47–10:9 (with bracketed labels added to ease discussion).

D. Real Parties-in-Interest

Petitioner identifies itself and its parent corporation, CIG Shanghai, Co. Ltd., as real parties-in-interest. Pet. 47. Patent Owner identifies itself as a real party-in-interest. Paper 6, 2.

II. ANALYSIS

A. Claim Interpretation

We interpret claims in the same manner used “in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). When applying that standard, we interpret the claim language as it would have been understood by one of ordinary skill in the art in light of the specification. *Wasica Fin. GmbH v. Cont’l Auto. Sys., Inc.*, 853 F.3d 1272, 1279–80 (Fed. Cir. 2017). Thus, we give claim terms their ordinary and customary meaning as understood by an ordinarily skilled artisan. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

Petitioner contends that the Board may find it necessary to interpret “feedthrough device,” “interconnect device,” and “opposing arrangement.” Pet. 8–11. Patent Owner responds to Petitioner’s proposed interpretations of these terms, but contends that the Board need not interpret them to determine

whether to institute review. Prelim. Resp. 17–18. For reasons that become apparent below, we agree with Patent Owner and do not expressly construe these terms.

B. Legal Standards

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). With this standard in mind, we address each challenge below.

C. Claims 1–17: Anticipation by Mizobuchi

All independent claims recite “a light engine driving circuit disposed on the substrate.” Ex. 1001, 9:59 (claim 1), 10:64 (claim 12), 12:7 (claim 15). Petitioner contends that “Mizobuchi discloses a light engine driving circuit disposed on the substrate that includes a clock data recovery (“CDR”) circuit and a power supply circuit.” *See* Pet. 19 (citing Ex. 1006, 3:57–4:18, 12:27–41, Figs. 2, 3A; Ex. 1003 ¶ 76 while addressing limitation 1d); *see also id.* at 26–28 (addressing claims 12 and 15 by cross-referencing showing for claim 1). Petitioner identifies the driving circuit on Mizobuchi’s “first circuit board” 2 in the annotated version of Mizobuchi’s Figure 2, reproduced below. *See* Pet. 19.

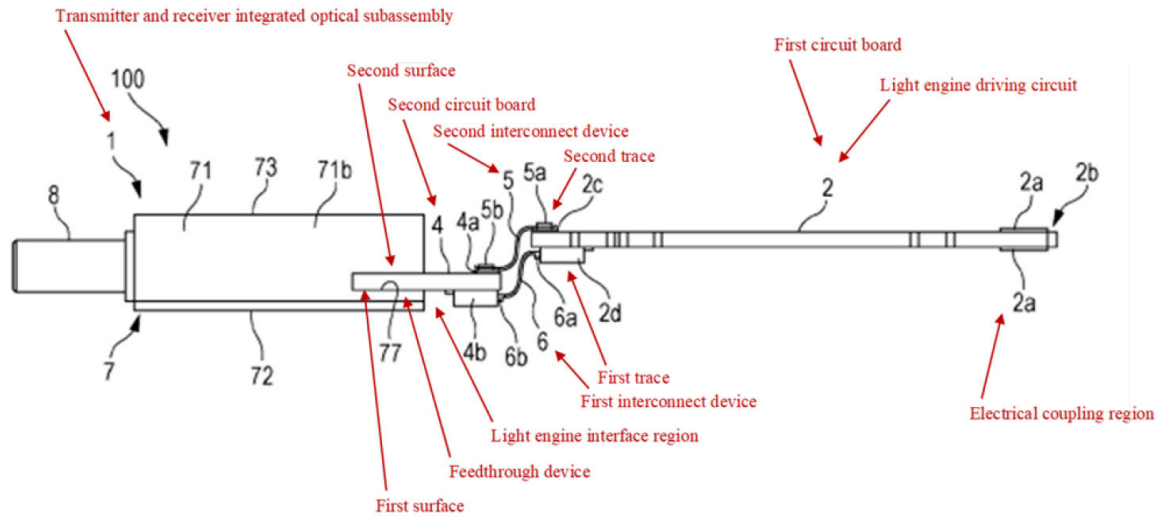


FIG. 2 (Mizobuchi)

Figure 2 is a side view of Mizobuchi’s optical module 100 that includes circuit board 2, which “includes a clock data recovery (CDR) circuit, a power supply circuit, a microcontroller, and so forth.” Ex. 1006, 3:56–59, Figs. 1B, 2.

Patent Owner persuasively argues that Petitioner has failed to demonstrate a reasonably likelihood of proving that Mizobuchi describes such a light engine driving circuit for two reasons. Prelim. Resp. 20–23. First, Mizobuchi’s CDR circuit and power supply circuits, which are disposed on circuit board 2 are not part of a “light engine driving circuit” as claimed. *Id.* at 22 (citing Ex. 1006, 3:57–59; Ex. 2004 ¶ 75). Second, Mizobuchi’s “driver integrated circuit (IC) 14” is Mizobuchi’s driver circuit, which is disposed on a different substrate, Mizobuchi’s circuit board 4. *Id.* at 22–23 (citing Ex. 1006, 5:43–53, Figs. 2, 3A; Ex. 2004 ¶ 75). We agree. Mizobuchi’s circuit board 4 includes, among other items, the “driver integrated circuit (IC) 14.” Ex. 1006, 5:46–49.

Petitioner contends that Mizobuchi’s CDR circuit and power supply as part of a “light engine driving circuit” but fails to provide any persuasive

evidence to support its contention. *See* Pet. 19 (citing Ex. 1006, 3:57–64, 12:27–41). The first portion on which Petitioner relies explains:

The CDR shapes waveforms of the electrical signals output from the transmitter and receiver integrated optical Sub-assembly 1, and the microcontroller controls the entirety of the optical module 100 including the transmitter and receiver integrated optical Sub-assembly 1.

Ex. 1006, 3:57–64. The second portion on which Petitioner relies describes how Mizobuchi’s flexible printed circuit (FPC 5) connects circuit boards 2 and 4 without discussing the CDR or power supply at all. Ex. 1006, 12:27–41.

By contrast, Patent Owner persuasively contends that Mizobuchi’s driver integrated circuit 14 is more properly identified as the claimed “light engine driving circuit.” Prelim. Resp. 22–23 (citing Ex. 1006, 5:43–53, Figs. 2, 3A; Ex. 2004 ¶ 76). Mizobuchi’s “driver IC 14 . . . drives the LDs [laser diodes] 10,” Ex. 1006, 7:20, and is disposed on circuit board 4, *id.* at 5:43–50, Fig. 3A, not on circuit board 2 as Petitioner contends.

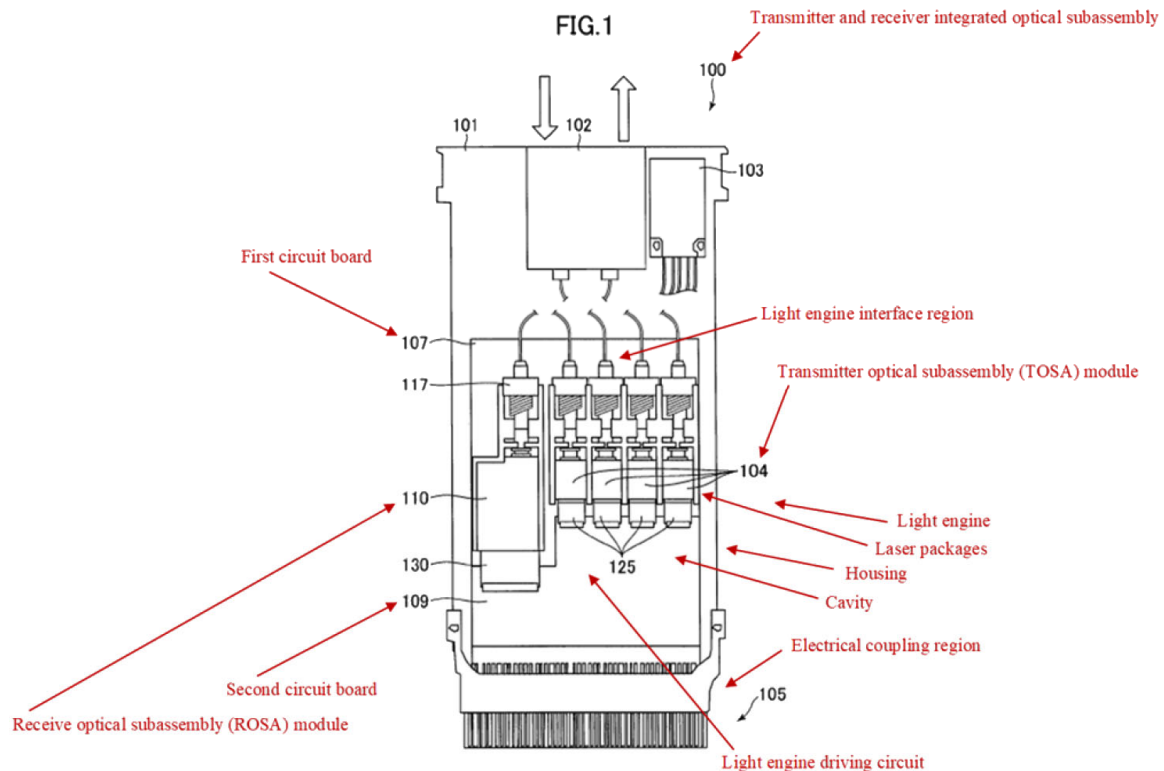
Because the circuitry that Petitioner identifies as being disposed on the “substrate” that Petitioner identifies is not the required “light engine driving circuit,” Petitioner’s challenge that Mizobuchi anticipates claim 1 fails. Petitioner’s challenges to the remaining independent claims 12 and 15 rely on the argument presented for claim 1 and suffer the same deficiency. Accordingly, Petitioner’s argument that Mizobuchi anticipates all claims fails.

D. Claims 1–17: Anticipation by Akashi

1. Light Engine on Substrate

Petitioner’s showing that Akashi describes the “light engine driving circuit disposed on the substrate” also fails. Petitioner wholly fails to

identify any express teaching by Akashi of a light engine driving circuit on the substrate that Petitioner identifies in Akashi. Rather, Petitioner asserts that an ordinarily skilled artisan “would have understood that Akashi discloses a light engine driving circuit disposed on the substrate 107.” Pet. 30 (citing Ex. 1007 ¶¶ 26, 27, Fig. 1; Ex. 1003 ¶ 124). Petitioner provides the annotated version of Akashi’s Figure 1.



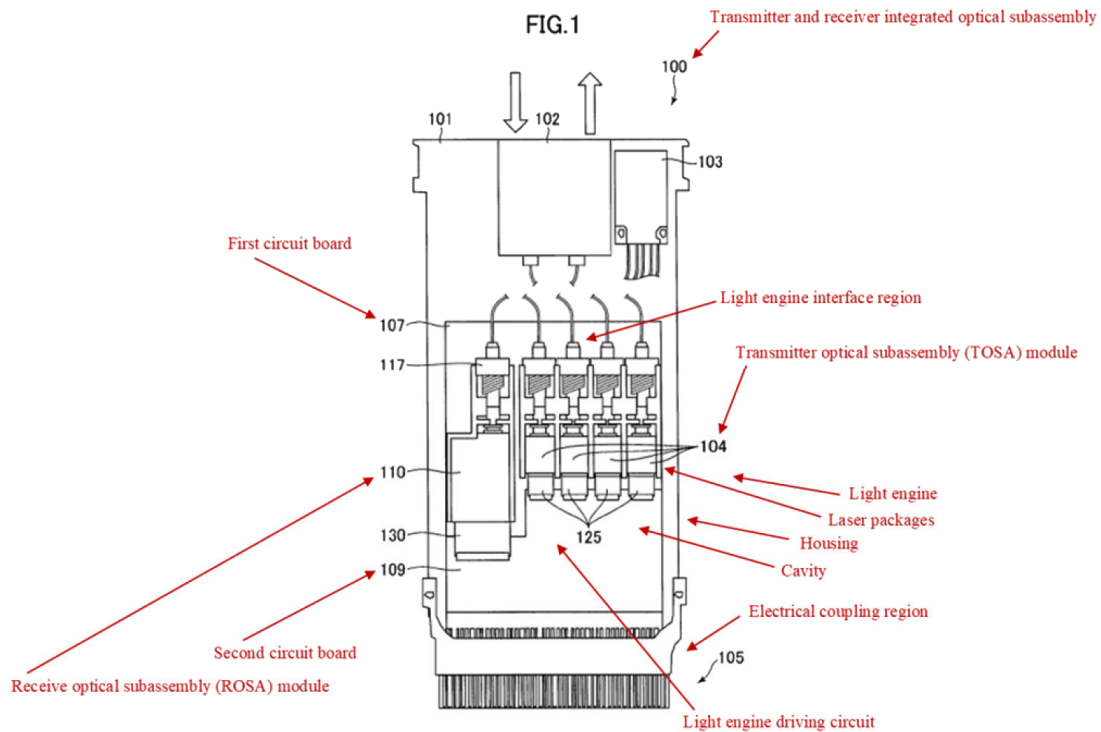
The figure above illustrates Akashi’s transmitter and receiver integrated optical subassembly 100 with circuit board 109. Pet. 29. Petitioner includes an annotation that reads “Light engine driving circuit” along with an arrow pointing to a blank area of circuit board 109. *Id.*

Patent Owner contends, and we agree, that Petitioner wholly fails to identify any structure in Akashi that constitutes the claimed “light engine driving circuit.” Prelim. Resp. 25–26 (citing Ex. 2004 ¶¶ 83–86). Additionally, we have reviewed the portions of Akashi cited by Petitioner

along with the cited testimony by Dr. Andrew Kirk (Ex. 1003) in support of Petitioner's argument and find that the cited evidence also fails to expressly describe any "light engine driving circuit" or where any such circuit is mounted in Akashi. For this reason, Petitioner's challenge that Akashi anticipates claim 1 fails. Petitioner's challenges to the remaining independent claims 12 and 15 rely on the argument presented for claim 1 and suffer the same malady. Accordingly, Petitioner's argument that Akashi anticipates all claims fails.

2. Light Engine Interface Region

Limitation 1c recites, in part, "a light engine interface region for electrically coupling with the hermetically-sealed light engine." Ex. 1001, 9:55–58. The other independent claims contain the same limitation. *Id.* at 10:61–63 (claim 12), 12:4–6 (claim 15). Petitioner contends that Akashi includes "a light engine interface region (adjacent to optical connector 117)." Pet. 30 (citing Ex. 1007 ¶ 26, Fig. 1). Petitioner indicates this region in the annotated version of Akashi's Figure 1 below.



Petitioner contends that “the light engine interface region is configured to electrically couple with the hermetically sealed light engine via the second circuit board.” *Id.* (citing Ex. 1007 ¶¶ 26–27; Ex. 1003 ¶ 123). Petitioner does not explain, however, how Akashi’s ¶¶ 26–27 support this proposition, and neither does Dr. Kirk’s testimony at ¶ 123, which substantially mirrors the Petition and cites the same portions of Akashi.

Patent Owner argues that the region of Akashi’s substrate that Petitioner identifies next to optical connector 117 cannot constitute the claimed “light engine interface region” because the identified region is not used “for electrically coupling with the hermetically sealed light engine” as required in all independent claims. Prelim. Resp. 28 (citing Ex. 2004 ¶ 89). Rather, Patent Owner contends that the signals in the region next to optical connector 117 “are optical signals.” *Id.* (citing Ex. 2004 ¶ 83).

Based on our review of Akashi and the testimony from Dr. Alan Willner (Ex. 2004), we find Patent Owner’s argument about the nature of the

region identified by Petitioner to be more persuasive. This flaw in Petitioner's challenge is present in every independent claim, and thus every claim. Accordingly, for these regions, we find that Petitioner has failed to demonstrate that Akashi anticipates any claim.

III. CONCLUSION

For the reasons expressed above, we determine that Petitioner has not demonstrated a reasonable likelihood of showing that any claim of the '024 patent is unpatentable.

IV. ORDER

For the reasons given, it is:

ORDERED that *inter partes* review of claims 1–17 of U.S. Patent No. 10,313,024 B1 is *not instituted* with respect to all grounds of unpatentability set forth in the Petition.

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