

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

XU PEICHENG (HONG KONG) OPTOELECTRIC
TECHNOLOGY CO., LIMITED,
Petitioner,
v.

SEMISILICON TECHNOLOGY CORP.,
Patent Owner.

Case IPR2024-00156
Patent No. 8,884,546

**PATENT OWNER'S OPENING
POST-HEARING SUPPLEMENTAL BRIEF**

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The Board's Order (Paper 27) requests supplemental briefing about (1) the construction of "synchronous signals" and (2) whether a single LED is a "curtain lamp." In response, Patent Owner submits that "synchronous signals" should be properly construed as "signals related to activities governed by synchronized timing" consistent with both intrinsic and extrinsic evidence, as discussed during the Hearing, in Patent Owner's Papers 14 and 20, and in Dr. Lebby's declaration (Ex. 2001). Patent Owner also submits that Petitioner's late argument that a single LED constitutes a "curtain lamp" should be rejected as untimely and for lack of any support from the '546 patent.

I. "SYNCHRONOUS SIGNALS" AS CLAIMED

A proper construction of "synchronous signals" should reflect the full scope of the definition of "synchronous," including the elaboration in the Microsoft Computer Dictionary specific to "computer transmissions." Ex. 3001. Petitioner agreed at the hearing that computer transmissions "may be of relevance to understanding" the construction of "synchronous signals." Paper 28 at 19:2-17. The evidence thus supports construing "synchronous signals" as "signals related to activities governed by synchronized timing." *See* Paper 14 at 9-11; Paper 20 at 2-4.

Patent Owner's construction is consistent with the '546 patent's disclosure of driving light strings "in rhythm" as previously discussed in both the Patent Owner Response and Dr. Lebby's declaration (emphases added):

Patent Owner’s Response (Paper 14 at 11, <i>see also</i> Paper 20 at 7) (citing Dr. Lebby’s Declaration, Ex. 2001, at ¶ 57)	’546 Patent (Ex. 1001) at 3:30-32
“A POSITA would have understood that . . . [the] curtain lamp is designed for controlling LED lights individually and <i>in a timing coordinated manner</i> , which allows for patterns of lights and colors, as well moving / animated lights, and other decorative types of illumination.”	“Therefore, the light emitting diode light strings 30 could be driven <i>in regular turn, or in rhythm, or together.</i> ”

Patent Owner agrees with the Board that col. 3 lines 30-32 of the ’546 patent is intrinsic evidence supporting Patent Owner’s construction of “synchronous signals.” *See* Paper 27 at 2. The use of synchronous signals in claim 1 enables activities governed by synchronized timing, such as controlling LEDs in patterns, and providing moving / animated lights, consistent with the ’546 patent’s disclosure of driving light strings “in turn, or in rhythm, or together.” Without the claimed “synchronous signal” to govern or coordinate timing of lighting activities, the disclosed embodiments would be unable to provide the disclosed functionality.

The nature of the claimed synchronous signals as well as the proposed construction demonstrate that synchronous signals are not found in the cited prior

art. Dr. Lebby explained that *Kuang*'s master shut off command would be delayed as it propagates to each slave node, resulting in lighting units turning off at different times that are not governed by synchronized timing. *See* Ex. 2001, ¶¶75-80; Paper 14 at 20-25. Dr. Schubert conceded this point, yet asserted that the '546 patent would involve similar delays due to having similar master-slave connections as *Kuang*. Ex. 1010, ¶ 27. Petitioner repeated this argument at the Hearing (Paper 28, 15:8-21), but this highlights the significance of synchronous signals recited in claim 1 and why the feature is absent from *Kuang*. Specifically, *Kuang* is **incapable** of controlling lights to shut off at the **same time** or in any timed **pattern or rhythm**, and Petitioner's alleged similarity in circuitry in *Kuang* does not cure the lack of any disclosure or mechanism in *Kuang* for providing, coordinating, or governing synchronized timing. Indeed, *Kuang* does not purport to operate light strings in any coordinated manner or with any pattern or rhythm and instead teaches utilitarian lighting panels in a bus or building free of rhythm or any coordinated timing. *See* Paper 14 at 21-23.

Petitioner cannot meet its burden of establishing invalidity under the proposed and adopted constructions. Petitioner has identified only control signals and failed to establish any disclosure of synchronous signals in any reference under any proposed construction. Petitioner also has not attempted to explain how *Kuang* or *Lys* disclose activities governed by synchronized timing under Patent Owner's

construction, because according to Petitioner, “Dr. Schubert does not understand what ‘synchronized timing’ means” in Ex. 3001. *See* Paper 17, at 2.

Patent Owner maintains that formal construction of “synchronous signals” in claim 1 is unnecessary, because the Petitioner has failed to establish that any reference discloses both the “control signals” and the “synchronous signals” recited in claim 1 – two different types of signals. *See* Paper 17 (Petitioner’s Reply) at 13 (dismissing the requirement to map separate claim elements as “irrelevant.”). *See also* Paper 14 at 8-11. Petitioner openly defied this claim construction principle and admitted it did not identify different signals for the claimed control signals and synchronous signals. Paper 17 at 13; Paper 20 at 9-11.

If the Board finds construction necessary, Patent Owner’s construction of “synchronous signals” should be adopted as supported by both intrinsic and extrinsic evidence. For the reasons discussed above, independent claim 1 is patentable because none of the cited references teaches the claimed “synchronous signals.”

II. “CURTAIN LAMP” AS CLAIMED

A. Petitioner’s theory of single-LED as “curtain lamp” is nowhere in the petitioned grounds

Patent Owner agrees with the Board’s finding that “Petitioner’s argument that a single LED may be a ‘curtain lamp’ does not, however, appear to be as directly related to issues presented in Patent Owner’s Response.” Paper 27, at 3. The Board

also noted that the “single-LED” interpretation may be “a corollary to Petitioner’s arguments on light strings,” Paper 27, at 3, but Patent Owner submits that this interpretation is procedurally untimely and unsupported by the Petition.

Petitioner and its expert never alluded to the single-LED theory until the Petitioners Reply--nearly one year after the Petition, and after the window to submit expert testimony had closed with the filing of the Patent Owner’s Response. Dr. Schubert’s original declaration, and the Petition which parroted the declaration, never alleged that a single LED of any cited reference constitutes a “light string” or a “curtain lamp.” The Petition and Dr. Schubert’s original declaration never suggested that a curtain lamp can be a single light string of a single LED, even though Dr. Schubert testified that he extensively reviewed the ’546 patent and referenced it for the meaning of claim terms. Paper 20 at 12-14; Ex. 2005, 22:18-27:7. In fact, Petitioner’s original papers argued just the opposite, mapping a “plurality of LEDs” to both a “curtain lamp” and to a “light string” multiple times:



Portion of Kuang Fig. 1 as annotated in Petition page 7

See Paper 1 at 7, 11 (mapping “Plurality of LEDs” to the claimed “light-emitting diode string”), 23 (mapping “plurality of light sources” to “light string” and “curtain lamp”), 49 (mapping “groups of LEDs” to “light string” and “curtain lamp”).

The Petition and original Declaration also never referenced or discussed the “including single LED” language, which was used to describe a special rather than a typical embodiment of the ’546 patent. Petitioner’s original papers never conveyed that a “curtain lamp” or “light string” in independent claim 1 encompassed the single-LED embodiment named in Ex. 1001 col. 6 lines 15-20. Therefore, Petitioner gave no prior notice of its late claim interpretation.

The PTAB and Federal Circuit have rejected new unpatentability theories raised in the Petitioner’s Reply that “unfairly change[] the thrust of the challenge” or are a “marked departure from the grounds identified with particularity in the petition [which] would impose unfair surprise on the patent owner.” *See Gce Gas Control Equip. Inc. v. Vbox, Inc.*, No. IPR2023-00326, 2024 WL 3048454, at *11 (P.T.A.B. June 18, 2024); *Micron Tech., Inc. v. Besang Inc.*, No. IPR2023-00900, 2024 WL 4765857, at *12 (P.T.A.B. Nov. 13, 2024) (internal quotations omitted); *see also Google LLC v. Nobots LLC*, No. IPR2022-00940, 2023 WL 8269284, at *12 (P.T.A.B. Nov. 29, 2023)(“[I]t is not appropriate in a reply to introduce entirely new argument and evidence that is necessary to address evidentiary gaps successfully identified by a patent owner, and which could have been previously presented by a petitioner.”).

Petitioner’s untimely single-LED claim interpretation is a marked departure from the grounds articulated in the Petition, and the Petitioner’s Reply relies heavily

on this interpretation without attempting to defend the original Petition grounds. The Federal Circuit has made clear that Petitioner’s Reply arguments “must not be part of a *new* theory of unpatentability,” even if responsive to the Patent Owner or the Board. *Corephotonics, Ltd. v. Apple Inc.*, 84 F.4th 990, 1008 (Fed. Cir. 2023). Petitioner’s single-LED theory should be rejected as procedurally improper.

B. Petitioner’s theory of single-LED as “curtain lamp” is not supported by the ’546 patent

Even if Petitioner’s new and untimely theory could be considered, the single-LED theory is illogical because the ’546 patent defines it with a special name, rather than a curtain lamp as understood by a person of ordinary skill in the art. Patent Owner has explained, and Dr. Schubert does not dispute, that every circuit diagram of a curtain lamp in the ’546 shows multiple LEDs arranged in strings. *See* Paper 20 at 14. There is no example or discussion in the ’546 patent of a single-LED curtain lamp. *See* Paper 20 at 12-14. One sentence in the ’546 patent mentions that a light string 30 may “include single light-emitting diode” in a specially-named embodiment. *See* Ex. 1001, 6:15-20 (“The light-emitting diode light string 30 mentioned above includes a plurality of light-emitting diodes. However, the light-emitting diode light string 30 could include single light-emitting diode. It is called the driving apparatus for light-emitting diode curtain lamp with single light-emitting diode in one light-emitting diode string of the present invention.”). At the hearing,

Patent Owner explained that this sentence refers to “a string that has one light, but the entire curtain lamp is not just that one light. There are other strings with lights on them as well.” Paper 28, 45:19-46:13. This explanation aligns with Patent Owner’s Sur Reply. *See* Paper 20 at 14.

No intrinsic or extrinsic evidence provides any basis for finding that a single LED could meet the claimed “curtain lamp.” Petitioner’s own Petition as well as its Reply suggests that there is none. Therefore, the Board should reject Petitioner’s theory as untimely, unsupported, and erroneous.

Respectfully submitted,

Dated: March 24, 2025

By: /Ming-Tao Yang/
Ming-Tao Yang, Reg. No. 62,019
Lead Counsel for Patent Owner
SEMISILICON TECHNOLOGY CORP.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that copies of the foregoing **PATENT OWNER'S OPENING POST-HEARING SUPPLEMENTAL BRIEF** was served on March 24, 2025, via e-mail directed to counsel of record for the Petitioner at the following:

John Handy
john.handy@rimonlaw.com

Jason Xu
jason.xu@rimonlaw.com

Dated: March 24, 2025

By: /Daniel E. Doku/
Daniel E. Doku
Senior Litigation Legal Assistant

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, LLP