

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

SEMISILICON TECHNOLOGY CORP.,
Patent Owner

Case IPR2024-00156
Patent 8,884,546 B2

PETITIONER'S OPENING POST-HEARING SUPPLEMENTAL BRIEF

Pursuant to the Board’s March 13, 2025, Order permitting post-hearing briefing on (i) the construction of “synchronous signals,” and (ii) whether a “curtain lamp” may consist of just one LED (*see* Paper 27), Petitioner submits the following opening post-hearing arguments.

I. “SYNCHRONOUS SIGNALS”

A. Patent Owner’s Explanation of “In Rhythm” Demonstrates that Its Proposed Construction Is Broader in Scope than Petitioner’s or the Board’s

The Board’s Order requests post-hearing briefing on the relevance of the following ’546 patent disclosure and whether it supports Patent Owner’s construction of “synchronous signals” to mean “signals related to activities governed by synchronized timing”:

Therefore, the light-emitting diode light strings 30 could be driven in regular turn, *or in rhythm*, or together.

(EX1001 at 3:30-32 (emphasis added).)

The above disclosure of “in rhythm” has no further elaboration anywhere in the intrinsic record, and it remains unclear what Patent Owner’s proposed construction means by “synchronized timing.” *See* EX1010, ¶ 10 (“Indeed, it is unclear what Dr. Lebby means by the wording ‘synchronized timing,’ and defining ‘*synchronous* signals’ with a phrase like ‘*synchronized* timing’ merely parrots the claim language with a different form of the same word.”).

Patent Owner only offered attorney arguments. During oral argument, Patent Owner's attorney tried to explain the relevance of the "in rhythm" disclosure as follows:

So with the Computer Dictionary in mind, and the context of the claim language, we propose governed by synchronized timing, which does also involve an aspect of keeping a track of timing, which could be by a clock, but it could be with other mechanisms, as well. But one of the differences here is that ... governed by synchronized timing *could* involve activities that don't occur at the same time. They occur at different times. But they are *occurring relative to one another on some kind of time scale*. And an example of that in the '546 patent is that the '546 patent discusses driving the lights in a rhythmic way.

Oral Hr'g Tr. (Paper 28) at 34:3-11 (emphasis added).

First, the '546 patent does not "discuss" anything about driving lights in a "rhythmic way" aside from stating the phrase "in rhythm." Second, there is nothing in the '546 patent specification or the phrase "synchronous signals" to justify limiting it exclusively to activities that do not occur at the same time. Patent Owner acknowledges as much by explaining "synchronized timing *could* involve activities that don't occur at the same time." In fact, Patent Owner characterized the Board's proposed construction as "very narrow" in comparison:

JUDGE MCSHANE: ... What are the differences [between the Board and Patent Owner's construction]?

MR. RAJAN: Okay. And that's a very good question. So the Board's construction of occurring at the same time implies that there's something like a clock, or some other kind of timing mechanism, at both ends of both devices that are in communication, such that there's going to be activities that happen at both devices at the same time. So they both know what the time is, and that they can act at the same time. And we submit that *that's a very narrow construction of synchronous signals*, especially when we saw the context of the computer transmissions that's discussed in the Microsoft Computer Dictionary.

Oral Hr'g Tr. (Paper 28) at 33:18 to 34:2 (emphasis added).

Therefore, Patent Owner's explanation of the scope of its proposed construction for "synchronous signals" confirms that it is broader than either the Board's or Petitioner's because it can encompass timing that may or may not occur at the same time.

To the extent Patent Owner tries to argue that its construction and the phrase "in rhythm" must exclude activities that occur at the same time, this would depart from the plain and ordinary meaning of "synchronous signals" without support in the intrinsic record. Patent Owner would be limited to an extraneous dictionary definition and attorney argument to redefine "synchronous signals" in this way, which cannot be correct. *See, e.g., Mosaic Brands, Inc. v. Ridge Wallet LLC*, 55 F.4th 1354, 1362 (Fed. Cir. 2022) (criticizing party for not citing to any intrinsic evidence to support its arguments as to what was the plain meaning of a claim term,

the court noting that the party “offers no intrinsic evidence for this position, only extrinsic dictionary definitions and attorney argument”).

B. The Prior Art Discloses LEDs Driven “In Rhythm”

First, if the Board adopts Patent Owner’s broader construction of “synchronous signals” as explained above, Petitioner maintains that its original arguments in favor of Kuang and Lys meeting the “synchronous signals” limitation still apply.

Second, regardless of whether the “in rhythm” phrase is relevant to, or supports, Patent Owner’s broader construction of the term “synchronous signals,” the prior art also discloses LEDs driven “in rhythm,” rendering this claim construction dispute largely inconsequential to the Board’s analysis.

Kuang discloses that “[t]he master node 203 may, for example, command certain LED units 224 to turn on, turn off, dim by a specified amount, intensify by a specified amount, flash (e.g., in emergency situations), *or activate according to a predetermined pattern.*” EX1004, ¶ [0035] (emphasis added); *see also* EX1010, ¶ 34 (citing the same). Because a “predetermined pattern” can be repeated, it follows that Kuang discloses signals that are “in rhythm” because they “are occurring relative to one another on some kind of time scale” as characterized by Patent Owner.

Lys also discloses “in rhythm” driving of LEDs. For example, Lys provides extensive discussion of “multiple illumination programs” to control LEDs:

For example, a particular illumination program may be designed such that, when executed, *the radiation output from one or more light sources is gradually varied at some predetermined rate to transition between a number of different colors in succession throughout the visible spectrum*. An example of such an illumination program is a “color wash” program, as discussed above, which more generally may be referred to as a “dynamic color variation program” having a color variation speed. The color variation speed of such a dynamic color variation program may be either a predetermined or variable parameter of the program. For example, in one case, *the color variation speed of the “color wash” illumination program may be predetermined such that the radiation generated by one or more light sources slowly varies in color upon execution of the program to create a soothing varying color illumination effect*.

EX1008 at 26:23-38 (emphasis added).

In the foregoing embodiment, it should be appreciated that a method of indicating to a user the selection of a particular illumination program, via variable color radiation output by one or more light sources, may be used in connection with *any of a variety of a dynamic color variation programs* including, but not limited, the color wash program described above. Additionally, it should be appreciated that according to other embodiments, *the color variation speed of a dynamic color variation program need not be changed, but rather any pattern of radiation may be used* (e.g., fast flickering of one or more particular colors) to signify the selection of a particular program.

EX1008 at 27:1-12 (emphasis added).

Therefore, to the extent the Board concludes that the phrase “in rhythm” in the ’546 patent supports Patent Owner’s construction of the term “synchronous signals,” it should be of no consequence because Kuang and Lys disclose a variety of possible lighting activity programs or patterns that are “in rhythm,” such as Kuang’s “predetermined patterns” and Lys’s “illumination programs” that can “gradually vary” LEDs “at some predetermined rate to transition between a number of different colors in succession throughout the visible spectrum” or drive LEDs using “any pattern of radiation.” These prior art disclosures are far more comprehensive than the ’546 patent’s passing reference to “in rhythm,” and satisfy Patent Owner’s attorney argument that “in rhythm” means “occurring relative to one another on some kind of time scale.”

II. “CURTAIN LAMP”

A. Petitioner’s Argument that “Curtain Lamp” May Consist of a Single LED was Timely

Petitioner’s argument that “curtain lamp” may consist of a single LED was in direct response to Dr. Lebby’s critique that “Kuang discloses ceiling light panels, not a curtain lamp.” EX2001, ¶ 68. Dr. Lebby further argued, “Nowhere in these disclosures does *Kuang* mention a ‘light string,’ illustrate light strings, or suggest ‘light strings’ in any form.” *Id.* And with respect to Lys, Dr. Lebby similarly opined that “[t]he light sources of *Lys* are not a ‘curtain lamp’ ... at least because they are

not ‘one or more light strings’ under Petitioner’s own definition of ‘curtain lamp.’” EX2001, ¶ 71; *see also id.*, ¶ 72 (“In my opinion, a POSITA would not have understood the pool lighting fixtures of *Lys* ... to be a light string, and *Lys* does not illustrate or describe any form of a ‘light string.’”). Therefore, Petitioner’s argument that the scope of “curtain lamp” includes a single LED was timely and directly responsive to Patent Owner’s arguments for this claim term. Because the scope of “curtain lamp” includes a single LED, Dr. Lebby’s arguments necessarily fail by pointing out that a “curtain lamp” may consist of a single LED. With a single LED embodiment, the physical distinctions Dr. Lebby tried to raise become moot.

B. “Curtain Lamp” May Consist of a Single LED

Patent Owner never contested Dr. Schubert’s opinion that a “curtain lamp” “is commonly understood to be one or more light strings.” *See* EX1003, ¶ 37. Thus, there is no dispute that a “curtain lamp” can be a single light string. Further, the ’546 patent specification makes clear that a “light string” may consist of only one LED:

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.*

Paper 17 at 3 (citing EX1001 at 6:15-20).

Other disclosures in the ’546 patent further emphasize that a “light string” may be a single LED, including with reference to Figure 9:

FIG. 9 shows a circuit diagram of the slave control unit of the light-emitting diode curtain lamp with single light-emitting diode in one light-emitting diode string. *The principles are same as before.* Therefore, it would be omitted here. The driving apparatus for light-emitting diode curtain lamp with single light-emitting diode in one light-emitting diode string 50 *is applied to at least a light-emitting diode 52.* The driving apparatus for light-emitting diode curtain lamp with single light-emitting diode in one light-emitting diode string 50 includes a master control unit 102 and at least a slave control unit 104. The slave control unit 104 is electrically connected to the master control unit 104 *and the light-emitting diode 52.*

EX1001 at 6:27-40 (emphasis added).

First, “the principles are the same as before” with respect to the “slave control unit of the light-emitting diode curtain lamp with single light-emitting diode in one light-emitting diode string” embodiment because the operations of the slave control unit are independent from the number of LEDs it controls. This is consistent with the ’546 patent’s description of “two kinds of conventional driving apparatuses for light-emitting curtain lamp” that were admittedly known in the prior art. *See* EX1001 at 1:10-21. Because “curtain lamps” were already known in the art, and nothing in the ’546 patent purports to improve upon LEDs generally, the driving apparatus should operate the same whether or not it controls a single LED or a plurality. As such, it is no accident that the ’546 patent makes explicitly clear that a “curtain lamp” can consist of a single LED.

DATE: March 24, 2025

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing
PETITIONER'S POST-HEARING SUPPLEMENTAL BRIEF was served on
March 24, 2025, via email to counsel of record for the Patent Owner at the
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