UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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HAMAMATSU PHOTONICS K.K.,
Petitioner,

v.

SEMICAPS PTE LTD.,
Patent Owner.

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Case IPR2017-02112
Patent 7,623,982 B2

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Before KEN B. BARRETT, CHARLES J. BOUDREAU, and
MONICA S. ULLAGADDI, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

FINAL WRITTEN DECISION

Finding All Challenged Claims Not Shown to Be Unpatentable
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73
and
Dismissing Patent Owner's Contingent Motion to Amend
35 U.S.C. § 316(d) and 37 C.F.R. § 42.121

I.   INTRODUCTION

A. Background and Summary

Hamamatsu Photonics K.K. ("Petitioner")[1] filed a Petition requesting *inter partes* review of U.S. Patent No. 7,623,982 B2 ("the '982 patent," Ex. 1001). Paper 1 ("Pet."). The Petition challenges the patentability of claims 2, 3, and 8–20 of the '982 patent ("the challenged claims") on the grounds of anticipation under 35 U.S.C. § 102 and obviousness under 35 U.S.C. § 103. Petitioner asserted a total of seven grounds. *Id.* at 3. SEMICAPS Pte Ltd. ("Patent Owner")[2] filed a Preliminary Response to the Petition. Paper 7 ("Prelim. Resp.").

On March 19, 2018, an *inter partes* review was instituted on Petitioner's challenge of all the challenged claims 2, 3, and 8–20, but not as to all of the asserted grounds. Paper 8 ("Inst. Dec."), 31–32.

On April 24, 2018, the Supreme Court issued its decision in *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348 (2018). On May 3, 2018, we issued an order modifying our institution decision to institute on all of the challenged claims and all of the grounds presented in the Petition. Paper 12.

Subsequently, Patent Owner filed a Response (Paper 21, "PO Resp.") to the Petition, Petitioner filed a Reply to Patent Owner Response (Paper 23, "Pet. Reply"), and Patent Owner filed a Sur-Reply (Paper 28, "PO Sur-Reply"), with our authorization (Paper 25).

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[1] Petitioner identifies Hamamatsu Photonics K.K. as the real-party-in-interest. Pet. 1; Paper 14.

[2] Patent Owner identifies SEMICAPS Pte Ltd. as the real-party-in-interest. Paper 4, 1.

Patent Owner filed, concurrently with its Response to the Petition, a Motion to Amend. Paper 22 ("MTA"). The Motion to Amend is contingent upon the patentability determination of challenged claims 2, 3, and 8–20, and requests the issuance of the corresponding one of proposed substitute claims 36–50 for each claim determined to be unpatentable. *Id.* at 1. Petitioner filed an Opposition to Patent Owner's Motion to Amend (Paper 24, "MTA Opp."), and Patent Owner filed a Reply in Support of Its Motion to Amend (Paper 26, "MTA Reply").

An oral hearing was held on December 3, 2018, and a transcript of the hearing is included in the record. Paper 32 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). After consideration of the parties' arguments and evidence, and for the reasons discussed below, we determine that Petitioner has *not* shown by a preponderance of the evidence that claims 2, 3, and 8–20 of the '982 patent are unpatentable. Accordingly, we dismiss as moot Patent Owner's contingent Motion to Amend.

B. Related Proceedings

One or both parties identify, as matters involving or related to the '982 patent, *SEMICAPS Pte Ltd. v. Hamamatsu Photonics K.K., Hamamatsu Corp., and Photonics Management Corp.*, Case No. 3:17-cv-03340 (N.D. Cal. 2017), and Patent Trial and Appeal Board case IPR2017-02110, which was filed by Petitioner and involves a challenge to claims 1, 4–7, and 21–25 of the '982 patent. Pet. 1–2; Paper 4.

C. The '982 Patent

The '982 patent is titled "Method of Testing an Electronic Circuit and Apparatus Thereof." The testing of the circuit is performed by radiating a

laser beam onto the circuit, determining a plurality of samples of a response signal output by the circuit, accumulating those samples to generate a value, and generating a test result based on the value. Ex. 1001, Abstract. Based on the generated value, a fault in the circuit may be represented on a display as a bright spot at a pixel location corresponding to the location of the fault in the circuit. *Id.* at 4:16–24, 4:34–38. According to the '982 patent, the disclosed method and apparatus provide an improvement to conventional, laser-based fault detection systems by increasing the detection sensitivity, which has particular application with advanced integrated circuits ("IC"). *See id.* at 1:28–37.

A redacted version of Figure 1 of the '982 patent shown below.
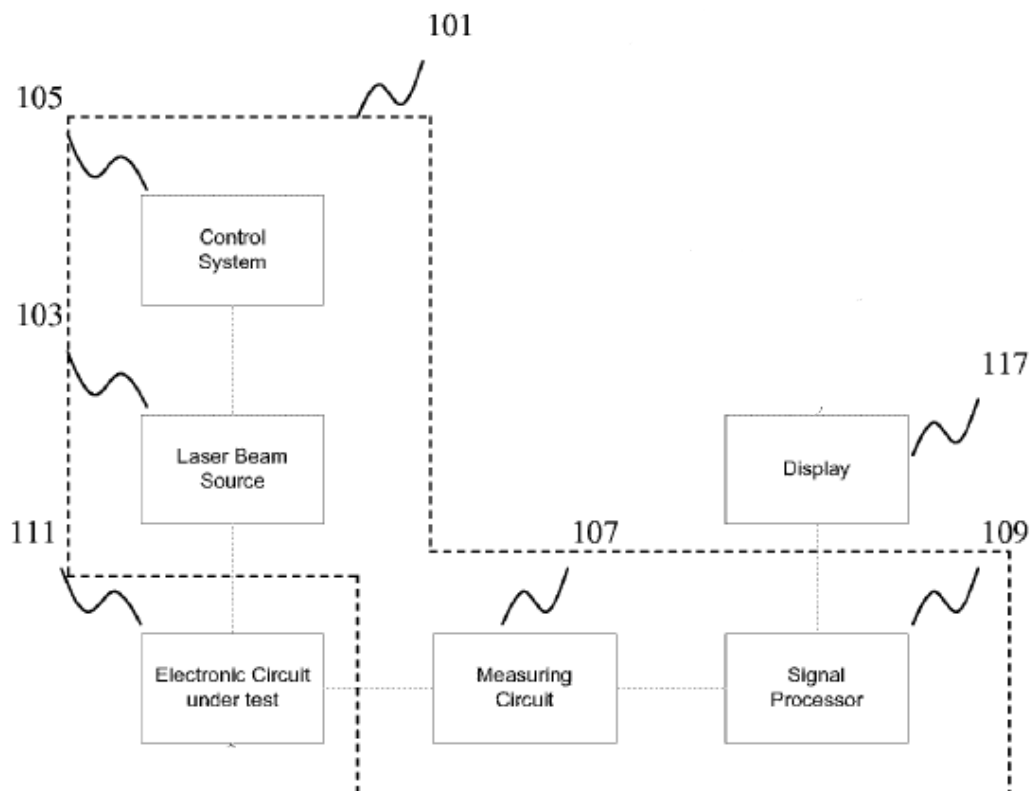
The redacted version of Figure 1 depicts an exemplary embodiment of the apparatus of the '982 patent with the omission of the digital image of the

electronic circuit under test and the digital image generated as the result of the processing. *See id.* at 2:29–30, 4:8–9, 4:16–18. As indicated by Figure 1, the depicted system includes laser beam source 103, control system 105, measuring circuit 107, signal processor 109, and display unit 117. *Id.* at 2:65–3:3, 4:16–19. "Any suitable laser beam source 103 may be used," and the specification identifies, as an exemplary laser beam source, that which is described in U.S. Patent No. 6,897,664 B1 to Bruce (Ex. 1010). *Id.* at 3:4–13. "The laser beam can be a continuous laser beam or a pulsed laser beam." *Id.* at 3:29–30. Signal processor 109 accumulates the plurality of samples to generate a value and generates a test result based on that value. *Id.* at 3:65–67.

D. The Independent Claim

The challenged claims of the '982 patent, claims 2, 3, and 8–20, all depend directly or indirectly from independent claim 1. Claim 1 is reproduced below:

1.   A method of testing an electronic circuit, comprising:

radiating a laser beam onto the electronic circuit,

determining a plurality of samples of a response signal output by the electronic circuit during the period when the laser beam is radiated,

accumulating the plurality of samples to generate a value, and

generating a test result based on the value.

Ex. 1001, 10:60–67.

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