

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE, INC.,  
Petitioner,

v.

COREPHOTONICS LTD.,  
Patent Owner.

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IPR2020-00905  
Patent 10,225,479 B2

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Before BRYAN F. MOORE, JOHN F. HORVATH, and  
MONICA S. ULLAGADDI, *Administrative Patent Judges*.

HORVATH, *Administrative Patent Judge*.

JUDGMENT  
Final Written Decision  
Determining No Challenged Claims Unpatentable  
*35 U.S.C. § 318(a)*

## I. INTRODUCTION

### A. Background and Summary

Apple, Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–16, 18, 23–38, and 40 (“the challenged claims”) of U.S. Patent No. 10,225,479 B2 (Ex. 1001, “the ’479 patent”). Paper 3 (“Pet.”), 9. Corephotonics Ltd. (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). Upon consideration of the Petition and Preliminary Response, we instituted *inter partes* review of all challenged claims on all grounds raised. Paper 10 (“Dec. Inst.”).

Patent Owner filed confidential (Paper 15) and public (Paper 39) versions of its Response to the Petition. *See* Paper 39 (“PO Resp.”).<sup>1</sup> Petitioner filed confidential (Paper 24) and public (Paper 40) versions of a Reply. *See* Paper 40 (“Pet. Reply”). Patent Owner filed a Sur-Reply. *See* Paper 32 (“PO Sur-Reply”). An oral hearing was held on August 12, 2021, and the hearing transcript is included in the record. *See* Paper 49 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(b). This is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, we find Petitioner has failed to show by a preponderance of evidence that claims 1–16, 18, 23–38, and 40 of the ’479 patent are unpatentable on the grounds raised in the Petition.

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<sup>1</sup> Unless otherwise noted, we cite to the public versions of the papers in this proceeding. Earlier public versions of Patent Owner’s Response (Paper 16) and Petitioner’s Reply (Paper 23) were rejected for redacting more information than needed to protect Patent Owner’s confidentiality interest. *See* Paper 30, 7–8; Paper 31, 3–4.

*B. Real Parties-in-Interest*

Petitioner and Patent Owner identify themselves, respectively, as the real parties-in-interest. Pet. 1; Paper 5, 1.

*C. Related Matters*

Petitioner and Patent Owner identify *Corephotonics Ltd. v. Apple Inc.*, 5:19-cv-04809 (N.D. Cal.), as a district court proceeding that can affect or be affected by this proceeding, and Petitioner also identifies IPR2020-00906 as an *inter partes* review that can affect or be affected by this proceeding. Pet. 1; Paper 5, 1. In addition, we note that the '479 patent is part of a family of patents and patent applications that include at least U.S. Patent Nos. 10,326,942; 10,015,408; 9,661,233; and 9,185,291. Ex. 1001, code (63). Many of these patents were or currently are involved in *inter partes* review proceedings that could affect or be affected by a decision in this proceeding.

*D. Evidence Relied Upon<sup>2</sup>*

Reference	Effective Date	Exhibit	
Parulski	US 7,859,588 B2	Dec. 28, 2010	1005
Richard Szeliski, <i>Computer Vision Algorithms and Applications</i> , 468–503 (2011) (“Szeliski”)	2011		1013
Konno <sup>3</sup>	JP 2013/106289 A	May 30, 2013	1015
Stein	US 8,908,041 B2	Feb. 7, 2013 <sup>4</sup>	1023

<sup>2</sup> Petitioner also relies upon the Declarations of Fredo Durand, Ph.D. (Exs. 1003, 1038) and José Sasián, Ph.D. (Ex. 1021).

<sup>3</sup> Konno is a certified translation of a Japanese Patent Application originally published in Japanese. See Ex. 1015, 34–59.

<sup>4</sup> Petitioner identifies Stein as prior art under 35 U.S.C. § 102(a)(2) based on the February 7, 2013 filing date of a provisional application to which Stein claims priority. See Pet. 9. Patent Owner does not dispute this. See PO Resp. 1–47.

Reference		Effective Date	Exhibit
Segall	US 8,406,569 B2	Mar. 26, 2013	1024

*E. Instituted Grounds of Unpatentability*

We instituted review on the following grounds:

Ground	Claims	35 U.S.C. §	References
1	1, 10–14, 16, 18, 23, 32–36, 38, 40	103(a)	Parulski, Konno
2	2–4, 24–26	103(a)	Parulski, Konno, Szeliski
3	5–9, 27–31	103(a)	Parulski, Konno, Szeliski, Segall
4	15, 37	103(a)	Parulski, Konno, Stein

II. ANALYSIS

*A. The '479 Patent*

The '479 patent is directed to “a thin (e.g., fitting in a cell-phone) dual-aperture zoom digital camera with fixed focal length lenses” that is configured to use “partial or full fusion to provide a fused image in still mode.” Ex. 1001, 3:18–23. Figure 1A, reproduced below, illustrates a dual-aperture zoom digital camera 100.

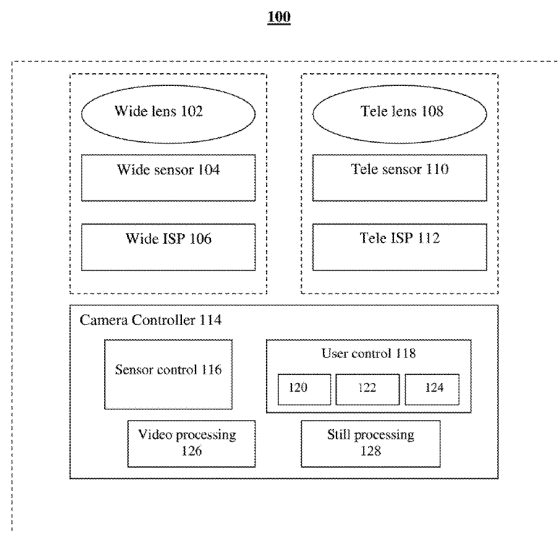


FIG. 1A

Figure 1A is a “block diagram illustrating a dual-aperture zoom” digital camera 100. *Id.* at 5:64–65. Camera 100 includes a wide imaging

subsystem consisting of wide lens 102, wide sensor 104, and wide image signal processor (“ISP”) 106, and a tele imaging subsystem consisting of tele lens 108, tele sensor 110, and tele ISP 112. *Id.* at 6:24–29.

Camera 100 also includes controller 114, which includes sensor control 116, user control 118, video processing module 126 and still processing module 128. *Id.* at 6:33–37. User control 118 controls various camera functions, including, operational mode 120, region of interest (“ROI”) 122, and zoom factor (“ZF”) 124. *Id.* at 6:38–40. Zoom factor 124 allows a user “to choose a zoom factor.” *Id.* at 6:50–51. Sensor control 116 chooses “which of the sensors is operational” based on the selected zoom factor. *Id.* at 6:41–45. ROI function 122 allows a user to “choose a region of interest,” i.e., a sub-region “on which both sub-cameras are focused.” *Id.* at 6:46–50.

The dual lenses allow camera 100 to take an image having a shallow depth-of-field (“DOF”) “by taking advantage of the longer focal length of the Tele lens.” *Id.* at 4:23–27. The image taken with the Tele lens can be enhanced “by fusing data from an image captured simultaneously with the Wide lens.” *Id.* at 4:27–30. For example, the Tele lens can focus “on a subject of the photo” and the Wide lens can focus on “a closer distance than the subject so that objects behind the subject appear very blurry.” *Id.* at 4:30–34. Then, a shallow depth-of-field image can be formed when “information from the out-of-focus blurred background in the Wide image is fused with the original Tele image background information, providing a blurrier background and even shallower DOF.” *Id.* at 4:34–38.

The process for fusing images taken with the Wide and Tele lenses is shown in Figure 5 of the ’479 patent, which is reproduced below.

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