

**United States Court of Appeals
for the Federal Circuit**

COREPHOTONICS, LTD.,
Appellant

v.

APPLE INC.,
Appellee

2022-1340, 2022-1341

Appeals from the United States Patent and Trademark
Office, Patent Trial and Appeal Board in Nos. IPR2020-
00487, IPR2020-00860.

COREPHOTONICS, LTD.,
Appellant

v.

APPLE INC.,
Appellee

2022-1455, 2022-1456

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2020-00861, IPR2020-00862.

Decided: October 16, 2023

BRIAN DAVID LEDAHL, Russ August & Kabat, Los Angeles, CA, argued for appellant. Also represented by MARC A. FENSTER, NEIL RUBIN, JAMES S. TSUEI.

DEBRA JANECE MCCOMAS, Haynes and Boone, LLP, Dallas, TX, argued for appellee in 2022-1340. Also represented by ANDREW S. EHMKE; DAVID W. O'BRIEN, HONG SHI, Austin, TX; ANGELA M. OLIVER, Washington, DC. Also argued by ERIN MARIE BOYD LEACH, Orrick, Herrington & Sutcliffe LLP, Irvine, CA, in 2022-1455. Also represented by MARK S. DAVIES, Washington, DC.

Before STOLL, LINN, and STARK, *Circuit Judges*.

STARK, *Circuit Judge*.

Corephotonics, Ltd. (“Corephotonics”) appeals final written decisions (“Decisions”) of the Patent Trial and Appeal Board (“Board”) concluding that claims of U.S. Patent Nos. 9,661,233 (“233 patent”), 10,230,898 (“898 patent”), 10,326,942 (“942 patent”), and 10,356,332 (“332 patent”) (collectively, the “Challenged Patents”) are unpatentable

as obvious. The Decisions were each issued in *inter partes* reviews (“IPR”) initiated by Apple Inc. (“Apple”).¹

Corephotonics principally challenges the Board’s analogous art findings, arguing that the Board made two procedural errors and one substantive error. In terms of procedure, Corephotonics contends that the Board erred (1) by permitting Apple to cure the legally flawed analogous art contention it made in its petition and (2) by making analogous art findings that deviated from the contentions Apple advocated for in its petition and reply. As for substance, Corephotonics asserts that prior art references U.S. Patent Application Publication No. 2012/0026366 (“Golan”) and U.S. Patent No. 8,081,206 (“Martin”) are not analogous art.

We identify no procedural error in the Board’s handling of whether Golan and Martin are analogous art. We

¹ Appeal Nos. 22-1340 and 22-1341 concern the ’233 and ’942 patents, respectively. Appeal Nos. 22-1455 and 22-1456 concern the ’898 and ’332 patents, respectively. We consolidated Appeal Nos. 22-1340 and 22-1341 and separately consolidated Appeal Nos. 22-1455 and 22-1456. Each of the consolidated appeals has its own Joint Appendix. For simplicity, when we cite to a reference included in both Joint Appendices, we include the citation only for No. 22-1340/1341. We make clear where we are citing solely to the appendix in No. 22-1455/1456 (which we refer to with the designation “No. 1455”).

There are no material differences between the written descriptions of the ’233 and ’942 patents or between the written descriptions of the ’898 and ’332 patents. We cite to the ’233 patent alone when describing both the ’233 and ’942 patents and to the ’898 patent alone when describing both the ’898 and ’332 patents.

further hold that the Board's determination that Golan is analogous art is supported by substantial evidence. However, we vacate and remand the Board's obviousness determination for the Board to explain why Martin is (or is not) analogous art and how this finding affects its overall conclusion as to obviousness.

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The Challenged Patents relate to dual-aperture camera systems and disclose techniques for using the images from both lenses when zooming while capturing video. '233 patent 3:28-30, 49-54; '898 patent 3:26-28, 36-41. Typically, a dual-aperture camera system includes a wide-lens camera and a tele-lens camera.² When zooming in, the disclosed dual-aperture camera systems can switch from the wide-lens camera to the tele-lens camera, and when zooming out the opposite can occur.

The wide-lens camera has a larger field of view than the tele-lens camera. "Field of view" refers to the extent of the observable world a camera system is capable of capturing; that is, whether the camera captures a relatively larger or smaller area. Generally, a wide-lens camera produces images with a larger field of view than a tele-lens camera can, as the tele-lens camera has greater magnification. Field of view is a mechanical property of the camera (including the lens) and does not change when the camera is moved to a different location.

² Each imaging device in the camera system contains both a lens assembly and a sensor array. The field of view is determined by the lens assembly's properties. For simplicity, we refer to the imaging devices in their entirety based on their lenses.

Within a dual-aperture camera system, the wide-lens camera and the tele-lens camera are placed in different locations (e.g., adjacent to one another) and, thus, capture images from slightly different perspectives. This results in the wide-lens and tele-lens cameras having different points of view. In this context, “point of view” refers to how the observable world appears (and thus how it can be captured) from a particular location; that is, the perspective a camera captures from a location. A lens’ point of view, therefore, changes when the camera’s location is changed.

Consequently, when the dual-aperture camera system switches from the wide-lens camera to the tele-lens camera (or vice versa) while zooming in (or out), a user may see a “jump” or a discontinuous image change, because the tele lens and wide lens are in different locations and, thus, have different points of view. ’233 patent 10:32-34; ’898 patent 7:42-44. The Challenged Patents teach minimizing this “jump” effect by partially “matching the position, scale, brightness and color of the output image before and after the transition” from one lens to the other. ’233 patent 10:36-40; *see also* ’898 patent 7:46-50. In this regard, the patents explain that matching an entire image from one camera with an entire image from another camera is often impossible because the distance between an observed object and the two cameras will differ at least slightly. The patents teach that engaging in position matching only in the region of interest (“ROI”) may generate a “smooth transition.” ’233 patent 10:43-46; *see also* ’898 patent 7:53-56.

Within the portions of the field of view that are common to both the tele-lens camera and the wide-lens camera, the tele-lens camera often, but not always, produces a clearer image. *See, e.g.*, ’898 patent 10:15-19. Where this is untrue – for example, if the subject of a video is out of focus in the tele-lens image – “there is no point in performing the transition [from wide-lens to tele-lens image] because no . . . resolution[] is gained.” ’898 Patent 10:16-17.

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