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**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION**

COREPHOTONICS, LTD.

Plaintiff,

vs.

APPLE INC.

Defendant.

Case No. 5:17-cv-06457-LHK (lead case)
Case No. 5:18-cv-02555-LHK

[Assigned to The Honorable Lucy H. Koh,
Courtroom 8 - 4th Floor]

**PLAINTIFF COREPHOTONICS LTD.'S
OPENING CLAIM CONSTRUCTION
BRIEF**

Hearing

Date: January 17, 2019

Time: 1:30 p.m.

Place: Courtroom 8, 4th Floor

Judge: Hon. Lucy H. Koh

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A. “total track length (TTL)” / “total length (TTL)” (*'032 patent, claim 1; '712 patent, claim 1, 15, 19; '568 patent, claim 1; '291 patent, claim 6*) 9

B. “standard color filter array (CFA)” (*'152 patent, claims 1, 3*) 11

C. “to register the overlap area of the second image as non-primary image to the first image as primary image to obtain the output image” (proposed by Corephotonics) / “register the overlap area of the second image as non-primary image to the first image as primary image” (proposed by Apple) (*'152 patent, claims 1, 3*) 13

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I. INTRODUCTION

The parties dispute five terms across the five patents-in-suit. For each of these five terms the patentee clearly acted as its own lexicographer and defined the terms in the patent specifications. Corephotonics' proposed constructions correctly track the actual language defining the terms in the specification, and they are faithful to the patentee's description of the invention. By contrast, Apple's proposed constructions diverge from the actual language in the specification and modify it, by either importing limitations from merely exemplary embodiments or selectively ignoring the patents' disclosure. As shown below, Apple's proposed deviations from the patentee's lexicography are not supported by intrinsic evidence and do not fit within the context of the claimed invention. Accordingly, Corephotonics' proposed constructions should be adopted.

II. BACKGROUND OF THE ASSERTED PATENTS

A. Technology Overview

The Asserted Patents¹ all relate to Corephotonics' innovative miniature *zoom* camera technology for mobile devices, such as smartphones. By way of background, a camera lens has an associated focal length, which corresponds to the power of the lens to resolve objects at a distance from the camera. A camera lens with a larger focal length resolves images at a greater distance with a narrower field of view, the angular width of what can be seen through the camera. In the prior art, zoom was performed optically, by physically moving lens elements in a camera relative to each other to increase or decrease the focal length. Optically "zooming in" to resolve images at closer distances to the camera entails increasing the focal length of the camera lens, and "zooming out" requires decreasing the focal length. While a mechanical zoom solution worked for portable digital cameras, it requires a camera assembly that is too large, as well as more expensive and less reliable than the fixed focal lengths that are generally used in mobile phones. *See* '291 pat. 1:39-42; '152 pat., 1:35-43. Alternatively, digital zoom solutions process the image to crop and scale it to create the appearance of zoom. However, digital zoom reduces resolution and deteriorates the

¹ The patents-in-suit in the consolidated action are U.S. Patent Nos. 9,185,291 (the "'291 patent'"), 9,402,032 (the "'032 patent'"), 9,538,152 (the "'152 patent'"), 9,568,712 (the "'712 patent'"), and 9,857,568 (the "'568 patent'") (collectively, the "Asserted Patents"). *Apple v. Corephotonics*

image quality, unless the camera also includes thick optics or large, expensive sensors. '291 pat., 1:43-48; '152 pat., 1:46-51.

Corephotonics developed an innovative dual-aperture fixed-focal length lens camera technology for optical zoom that can fit in a mobile device and provide superior performance to the prior art. Corephotonics' dual-camera technology combines the wide-angle camera that smartphones typically use, along with a second miniature *telephoto* lens. The telephoto lens offers a larger focal length that provides higher resolution in a narrower field of view. The dual-camera system thereby enables optical zoom. At the heart of Corephotonics' innovation and the Asserted Patents are solutions to the practical obstacles to making the zoom dual camera approach work. Corephotonics developed innovative fixed-focal length telephoto lens assembly technology with a small thickness and good quality imaging characteristics. *See* '032 pat., 1:27-38; '291 pat., 12:14-20. Corephotonics also developed innovative image processing technologies for implementing digital zoom with the dual wide-angle / telephoto camera system. The subject matter of the Asserted Patent claims is further described below.

B. The '032, '712, and '568 Patents (“Lens Patents”)

The Lens Patents all stem from a common application. They are directed to providing a miniature telephoto lens assembly usable in mobile devices, such as smartphones. *See, e.g.*, '712 pat., 1:18-22. In particular, the Lens Patents are directed to providing a compact lens assembly with a small total track length (TTL) and small ratio of TTL to the effective focal length (EFL) of the lens assembly. *Id.*, 1:25-41, 1:62-2:2. The total track length (TTL) determines the physical length of the camera, so a small TTL results in a smaller, more compact camera. The effective focal length (EFL) determines how well the camera performs at capturing images of small or distant objects. A lens with a greater EFL is able to capture images of such objects with greater detail. All claims of the Asserted Patents require that the TTL be smaller than the EFL, *i.e.*, that the TTL to EFL ratio be smaller than 1.0. This provides a telephoto lens assembly that can be utilized in a thin dual camera optical zoom system suitable for smartphones. The asserted Lens Patent claims relate to different lens parameters that yield a system with a TTL smaller than the

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