

1 RUSS, AUGUST & KABAT
 Marc A. Fenster, State Bar No. 181067
 2 mfenster@raklaw.com
 Benjamin T. Wang, State Bar No. 228712
 3 bwang@raklaw.com
 Neil A. Rubin, State Bar No. 250761
 4 nrubin@raklaw.com
 Bahrad A. Sokhansanj, State Bar No. 285185
 5 bsokhansanj@raklaw.com
 12424 Wilshire Boulevard, 12th Floor
 6 Los Angeles, California 90025
 Telephone: (310) 826-7474
 7 Facsimile: (310) 826-6991

8 Attorneys for Plaintiff
 COREPHOTONICS, LTD.
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 11 **UNITED STATES DISTRICT COURT**
 12 **NORTHERN DISTRICT OF CALIFORNIA**
 13 **SAN JOSE DIVISION**

14
 15 COREPHOTONICS, LTD.
 16 Plaintiff,
 17 vs.
 18
 19 APPLE INC.
 20 Defendant.

Case No. 5:17-cv-06457-LHK (NCx)
 [Assigned to The Honorable Lucy H. Koh,
 Courtroom 8 - 4th Floor]

FIRST AMENDED COMPLAINT

DEMAND FOR JURY TRIAL

Original Complaint Filed:
 November 6, 2017

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COMPLAINT

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2 1. Plaintiff Corephotonics, Ltd. (“Corephotonics”) hereby submits its First Amended
3 Complaint against Defendant Apple Inc. (“Apple”) and alleges as follows:

4 **NATURE OF THE ACTION**

5 2. This is a civil action for infringement under the patent laws of the United States, 35
6 U.S.C. § 1, *et seq.*

7 3. The United States Patent and Trademark Office duly and legally issued U.S. Patent
8 No. 9,402,032 (the “’032 patent”), entitled “Miniature Telephoto Lens Assembly,” on July 26,
9 2016. Corephotonics is the legal owner of the ’032 patent by assignment. A true and correct copy
10 of the ’032 patent is attached hereto as Exhibit A.

11 4. The United States Patent and Trademark Office duly and legally issued U.S. Patent
12 9,568,712 (the “’712 patent”), entitled “Miniature Telephoto Lens Assembly,” on February 14,
13 2017. Corephotonics is the legal owner of the ’712 patent by assignment. A true and correct copy
14 of the ’712 patent is attached hereto as Exhibit B.

15 5. The United States Patent and Trademark Office duly and legally issued U.S. Patent
16 No. 9,185,291 (the “’291 patent”), entitled “Dual Aperture Zoom Digital Camera,” on November
17 10, 2015. Corephotonics is the legal owner of the ’291 patent by assignment. A true and correct
18 copy of the ’291 patent is attached hereto as Exhibit C.

19 6. The United States Patent and Trademark Office duly and legally issued U.S. Patent
20 No. 9,538,152 (the “’152 patent”), entitled “High Resolution Thin Multi-Aperture Imaging
21 Systems” on January 3, 2017. Corephotonics is the legal owner of the ’152 patent by assignment.
22 A true and correct copy of the ’152 patent is attached hereto as Exhibit D.

23 7. Apple has infringed and continues to infringe one or more claims of each of the
24 ’032 patent, the ’712 patent, the ’291 patent, and the ’152 patent (collectively the “Asserted
25 Patents”) at least by importing, using, selling, and/or offering to sell the iPhone 7 Plus and iPhone
26 8 Plus (the “Accused Products”). Corephotonics seeks, among other things, monetary damages
27 and injunctive relief.
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THE PARTIES

8. Plaintiff Corephotonics is a company organized and existing under the laws of the State of Israel with its principal place of business at 25 HaBarzel St., Tel Aviv 6971035, Israel.

9. Defendant Apple is a corporation organized and existing under the laws of the State of California with its principal place of business at 1 Infinite Loop, Cupertino, California.

JURISDICTION AND VENUE

10. This Court has subject matter jurisdiction over Corephotonics’ claims for patent infringement pursuant to the 28 U.S.C. §§ 1331 and 1338(a).

11. Apple is subject to this Court’s personal jurisdiction because Apple resides and has its primary place of business within this District. This Court also has personal jurisdiction over Apple because Apple has committed and induced acts of patent infringement and has regularly and systematically conducted and solicited business in this District by and through at least its sales and offers for sale of Apple products and services, and other contractual arrangements with Apple customers and third parties using such Apple products and services located in and/or doing business in this District.

12. Venue is proper in this District under 28 U.S.C. §§ 1391(b) and 1400(b) because Apple resides in this District, has a regular and established place of business in this District, and has committed acts of infringement in this District.

INTRADISTRICT ASSIGNMENT

13. This action for patent infringement is assigned on a district-wide basis under Civil L.R. 3-2(c).

FACTUAL ALLEGATIONS

A. Corephotonics’ Dual Camera Technology Innovations

14. Corephotonics is a pioneer in the development of dual camera technologies for mobile devices. Corephotonics was founded in 2012 to develop the next generation of mobile phone cameras. Its founders brought with them decades of experience in the fields of optics and miniature digital cameras and were led by Dr. David Mendlovic, a Professor at Tel Aviv University and former Chief Scientist of the Israeli Ministry of Science.

1 15. Corephotonics' dual-aperture camera technology changes the way smartphones
2 take pictures by using advanced lens design and sophisticated computational optics. The advanced
3 lens design is used to create a miniature telephoto lens that can fit within the confines of a modern,
4 thin smartphone but still provide the superior image quality and light sensitivity demanded by
5 smartphone consumers.

6 16. Corephotonics' innovative dual-aperture camera technology uses two fixed-focal
7 length lenses, a wide-angle lens as typically found in smartphones with single-aperture cameras,
8 and a miniature telephoto lens. Traditional optical zoom is accomplished by using a variable focal
9 length lens array. At the small formats required for smartphones, however, it is difficult to reliably
10 include movable components, so smartphones were stuck with small, fixed lenses. This means that
11 in a typical single-aperture smartphone camera, all zoom functionality is provided with digital
12 zoom, *i.e.*, a processor digitally modifies the image to create a magnified but poorer resolution
13 image. With Corephotonics' dual-aperture camera technology, by contrast, the second camera with
14 telephoto lens provides much higher optical resolution than the wide-angle camera. Images from
15 both of these cameras can also be processed by computational algorithms to create an effectively
16 greater level of zoom without degrading image quality by combining digital and optical zoom.

17 17. For video, which captures thirty or more frames per second, Corephotonics
18 discovered that implementing image fusion for each frame demands higher than normal processing
19 resources and power. At the same time, the beneficial pixel finesse achieved by image fusion is
20 less observable at the rapid frame rate of HD video due to human perception limits. Corephotonics
21 thus developed technology for dual-aperture cameras where image fusion is only used when taking
22 still pictures, but not for video. In video, when zooming in, digital zoom is used first on the image
23 from the wide-angle camera only and then switched to the image from the telephoto camera only.
24 When zooming back out, a similar transition happens from using the telephoto camera only,
25 switching back to the wide-angle camera only. This approach conserves resources and power.
26 Because the two lenses are different and necessarily view the subject from different points of view,
27 Corephotonics also developed special processing that can ensure that the transition from the wide
28 lens to the telephoto lens and back would be smooth.

1 18. Corephotonics has filed for and received patents on its advanced telephoto lens
2 designs, multi-aperture camera technologies, and optical processing technologies, including the
3 patents-in-suit. Corephotonics is continuing to develop multi-aperture camera technologies, and it
4 has filed and obtained patents on these technologies as well.

5 19. The press recognized Corephotonics' pioneering advances in dual-aperture camera
6 technology for smartphones. For example, Corephotonics demonstrated its dual-aperture camera
7 technology at Mobile World Congress (MWC) 2014 and received very positive reviews from the
8 tech media, including headlines such as "Corephotonics' dual-camera tech will change smartphone
9 imaging"¹ and statements like "We think [the Corephotonics dual camera technology] has the
10 potential to change the direction of smartphone photography."²

11 20. Corephotonics now employs over 60 staff, the majority of whom are engineers,
12 scientists, and technologists. Corephotonics depends on its patents to protect its business and
13 continue to develop its innovative miniaturized multi-camera technologies, for mobile devices and
14 new applications. The customers of Corephotonics' technology offerings include leading camera
15 module and mobile device manufacturers.

16 21. Corephotonics spent years demonstrating its technologies to Apple and discussing
17 potential collaborations and business arrangements. Apple, however, refused. Instead, Apple has
18 gone ahead and marketed its newest generations of iPhones with dual cameras that employ
19 Corephotonics' innovative designs – without any regard to Corephotonics' intellectual property
20 rights.

21 **B. Apple's Interest in Corephotonics' Technology and Intellectual**
22 **Property**

23 22. As one of its first acts as a company, Corephotonics reached out to Apple in the
24 hopes of establishing a strategic partnership. The founding team contacted someone they knew

25 ¹ "Corephotonics' dual-camera tech will change smartphone imaging," *C|Net*,
26 <https://www.cnet.com/news/corephotonics-dual-camera-tech-will-change-smartphone-imaging/>

27 ² "Best of Mobile World Congress: Samsung Galaxy S5, Mozilla \$25 phone, smart glove and
28 more," *C|Net*, " <https://www.cnet.com/news/best-of-mobile-world-congress-samsung-galaxy-s5-mozilla-25-phone-smart-glove-and-more/>

1 from their previous work in digital camera technology, Graham Townsend, then Senior Director
2 Camera Hardware at Apple, highlighting some of the innovations Corephotonics was working on
3 related to a high-end compact camera module (“CCM”) solution. Throughout 2012, Corephotonics
4 and Apple had meetings regarding the early technologies that Corephotonics was developing
5 during that time. At an early meeting in June 2012, Corephotonics told Apple of its intention to
6 protect its current and future developments in multi-camera technology with patents.

7 23. In May 2013, an Apple engineer emailed Corephotonics communicating Apple’s
8 interest in learning more about Corephotonics’ other technology offerings and intellectual
9 property, in particular a telephoto lens that for a dual-aperture camera that included a telephoto
10 lens and associated software algorithms and expressed interest in learning more about that
11 invention. Corephotonics provided a brief description of its telephoto lens architecture that was
12 part of its intellectual property and referenced other pending patents.

13 24. In June 2013, a meeting was held at Corephotonics’ headquarters in Tel Aviv, Israel
14 with Mr. Townsend and other Apple camera engineers. At this meeting Corephotonics described
15 its intellectual property and technology plans, which included a detailed presentation and
16 discussion of computational algorithms for dual-aperture cameras and numerous system
17 architecture and design details for a dual system. These design details closely resembled what was
18 eventually deployed in the market by Apple. At the same time, Corephotonics also engaged in
19 engineering discussions of its telephoto lens design, and sent a file describing the lens design and
20 including key design details. Corephotonics provided Apple with a full set of technology
21 descriptions covering what was discussed. At the meeting, Corephotonics provided Mr. Townsend
22 with a USB drive containing presentation files, which included a Corephotonics’ five element
23 telephoto lens design layout, information about Corephotonics’ algorithm, and a slide describing
24 Corephotonics’ pending patent applications and patent plans, including filing of applications
25 underlying the ’032, ’712, and ’291 patents, and a description of the provisional application that it
26 had filed that included image fusion features that later issued as the ’152 patent. Corephotonics
27 followed up with further correspondence, which included technical descriptions and responses to
28 Apple’s technical inquiries. Later, in October 2013, a larger team, this time including members of

1 Apple's image processing and system groups, visited Corephotonics' Tel Aviv office again for
2 more in-depth discussions, which included dual camera processing methods.

3 25. During this period through late 2014, Corephotonics personnel visited Apple's
4 facilities in California on numerous occasions, meeting with key members of Apple's camera team,
5 including the leaders of Apple's hardware and software efforts. Corephotonics personnel set up
6 numerous simulations and demonstrations of its technology for Apple. Apple further evaluated
7 Corephotonics' test boards, lens modules, and simulation files at its own facilities, in the absence
8 of Corephotonics personnel.

9 26. During this period in 2014, Corephotonics learned from the contractor who was
10 manufacturing Corephotonics' prototype telephoto lens modules that Apple had sought
11 Corephotonics' samples from them without notifying Corephotonics, and the contractor had
12 rejected that request. Corephotonics then contacted Apple and agreed to provide Apple with
13 physical samples of Corephotonics' lens and camera modules, which embody the claimed designs
14 of Corephotonics' '032 and '712 patents.

15 27. Apple also received "black box" simulation files for Corephotonics' lens designs
16 and a software simulator for the computational algorithms for image processing, which simulated
17 embodiments of claimed features of the '152 and '291 patents.

18 28. In May 2014, Corephotonics was told by Apple that high-level technical staff and
19 executives in Apple's camera engineering group had observed a demonstration of Corephotonics'
20 technology and had reacted very positively. Corephotonics understood that Apple's management
21 had determined to move forward and engage with Corephotonics.

22 29. In June 2014 Apple expressed interest in licensing Corephotonics' dual camera
23 algorithms and software for commercial use in its devices, and a meeting was arranged for July
24 30, 2014. Apple provided a business proposal prior to that meeting. Corephotonics provided
25 Apple's business team with a description of its range of technology offerings and provided Apple
26 with a description of its (then) over ten patent families, including low-profile telephoto lens designs
27 for mobile cameras and algorithms for improving dual-aperture cameras with telephoto lenses.
28 During this meeting, in response to Corephotonics claim about the commercial value of its patents,

1 Apple's lead negotiator responded that even if Apple infringed, it would take years and millions
2 of dollars in litigation before Apple might have to pay something.

3 30. By August, business negotiations were halted by Apple. Technical discussions
4 between Apple and Corephotonics continued until later that year, while Corephotonics was waiting
5 to hear from Apple's business team.

6 31. On November 18, 2014, an article appeared in the media reporting that Apple would
7 potentially adopt dual-aperture camera technology, suggesting that it would be similar to the dual
8 camera technology that Corephotonics had developed and presented earlier that year, and which
9 Corephotonics had been discussing over this period with Apple.³ Apple did not engage in further
10 efforts to obtain a license to Corephotonics' intellectual property.

11 32. In January 2016, after sporadic contacts with Apple personnel through 2015,
12 Corephotonics again reached out to Apple. Corephotonics' CEO, Dr. Mendlovic, emailed a high-
13 level hardware executive suggesting continued collaboration. Corephotonics pointed out,
14 "Corephotonics had the privilege to be the first to invent, implement and demonstrate dual cameras
15 which outperform the best single compact cameras. Thus, our IP portfolio is the widest and, in our
16 opinion, has the best defensive value for such applications." Corephotonics offered to discuss
17 collaboration and joint projects with Apple. The Apple executive wrote back that he was looking
18 into it, and that another Apple engineer would be in touch. That engineer and a colleague from
19 Apple visited Corephotonics' facility in Israel for an in-person meeting, at which Corephotonics
20 presented some of its most recent technology offerings.

21 33. At that meeting and in subsequent meetings and communications, Apple expressed
22 interest in learning more about Corephotonics' technologies. Corephotonics indicated a desire to
23 formalize a business arrangement, and in June 2016, Mr. Townsend emailed Corephotonics
24 introducing them to Apple personnel on its business side to engage in setting up a deal that would
25 govern the technology collaboration. Corephotonics sent Apple a proposal, and in August 2016,
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28 ³ See "Apple May Introduce 'Biggest Camera Jump Ever' in Next-Generation iPhone,"
<https://www.macrumors.com/2014/11/18/apple-biggest-camera-jump-ever/>.

1 Apple followed up and asked Corephotonics to provide a proposal for licensing its intellectual
2 property to Apple. Corephotonics informed Apple that its intellectual property included over 25
3 patent families, and discussions continued to proceed.

4 34. On September 7, 2016, Apple announced the iPhone 7 Plus, which included, for
5 the first time for Apple, a real dual camera assembly including a telephoto camera for enhanced
6 zoom – one of Corephotonics’ core innovative concepts. Apple specifically touted the telephoto
7 camera on iPhone 7 Plus as a key feature. The hardware specifications and important software
8 functionalities were similar to what Corephotonics had shown and demonstrated to Apple
9 throughout the aforementioned exchanges starting in 2013.

10 35. By October 2016, negotiations between Corephotonics had stopped progressing,
11 and Corephotonics arranged a face-to-face meeting with Apple. Two meetings were set up, which
12 included technical and business personnel from Apple. During these meetings, Corephotonics
13 offered to negotiate an agreement with Apple for access to Corephotonics’ technology offerings
14 and patents. Corephotonics offered to share its patents with Apple employees at both meetings. At
15 the second meeting, Mr. Townsend stated that he was not permitted by his company to look at the
16 patents, and he asked Corephotonics instead to send it to Apple’s business personnel instead. One
17 of Apple’s business personnel followed up immediately thereafter with an unsolicited email
18 stating, “Please do not send any patents to us until further notice. Legal counsel might reach out
19 with any questions.”

20 36. Corephotonics did not hear from Apple’s legal counsel after receiving that email.
21 In an attempt to continue efforts to develop a business relationship, during 2017 Corephotonics
22 again met with and communicated with individuals from Apple’s camera team on several
23 occasions, but Apple no longer expressed interest in continuing to discuss a collaboration with
24 Corephotonics.

25 37. On October 31, 2017, Corephotonics wrote to Apple informing it that after
26 examining Apple’s iPhone 7 Plus and 8 Plus cameras and zoom functionality, it believed that these
27 products infringed Corephotonics’ patents, including the ’032, ’712, ’291, and ’152 patents. Apple
28 did not respond. On November 6, 2017, Corephotonics filed the original Complaint in this action,

1 which included a description of the infringement by Apple's iPhone 7 Plus product of the Asserted
2 Patents.

3 38. During the period that Apple was in discussions with Corephotonics, and
4 investigating and evaluating Corephotonics' technology, Apple was filing its own patent
5 applications on small-format camera designs, including telephoto cameras that could be used in a
6 mobile device. During this time, Corephotonics' patents and related patent applications were
7 significant in the art. Apple was well aware of Corephotonics' patents and related patent
8 applications, including the patents in suit and applications that issued as the patents in suit, as it
9 sought to obtain its own patents over Corephotonics' prior art.

10 39. For instance, Apple filed U.S. Patent Application No. 14/069,027 (the "'027
11 application"), which later issued as U.S. Patent No. 9,223,118. On February 18, 2015, the U.S.
12 Patent & Trademark Office issued an Office Action in the prosecution of the '027 application. The
13 examiner cited published application U.S. Pub. App. No. 2015/0029601A1 to Dror, *et al.* (the
14 "Dror Application"), as anticipating, or rendering obviousness in combination with other
15 references, all the pending claims of the '027 application. The Dror Application is a family member
16 of the '032 and '712 patents asserted by Corephotonics in this case, and it shares the same
17 specification and discloses embodiments described in the claims of the '032 and '712 patents.
18 Amendments and arguments associated with those amendments were filed on May 15, 2015, which
19 extensively discussed Corephotonics' patent application and analyzed purported differences
20 between its disclosures and the claims of Apple's '027 application. The inventor of Apple's '027
21 application, Roman Mercado continued to work for Apple through the introduction of the iPhone
22 7 Plus, and he appears to still be an employee of Apple.

23 40. Apple filed another patent application, U.S. Patent App. No. 14/871,720 (the "'720
24 application") in September 2015, which issued as U.S. Patent No. 9,769,389. Among the named
25 inventors of this patent is Scott Miller, who appears to be currently employed as a camera engineer
26 at Apple. During the prosecution of this application, on March 24, 2016, Apple cited
27 Corephotonics' asserted '291 patent in an Information Disclosure Statement ("IDS") form, which
28 describes prior art known by the patent applicant and submitted to the Patent Office.

1 Claim 15:

2 *1. A lens assembly, comprising:* To the extent the preamble is limiting, the iPhone
3 7 Plus telephoto lens is a lens assembly.

4 [1a] *a plurality of refractive lens elements arranged along an optical axis,* The
5 iPhone 7 plus telephoto lens consists of five refractive lens elements arranged along
6 an optical axis.

7 [1b] *wherein at least one surface of at least one of the plurality of lens elements is*
8 *aspheric,* Each of the five lens elements in the iPhone 7 Plus telephoto lens is
9 aspheric.

10 [1c] *wherein the lens assembly has an effective focal length (EFL), and wherein the*
11 *lens assembly has a total track length (TTL) of 6.5 millimeters or less and a ratio*
12 *TTL/EFL of less than 1.0,* The TTL of the iPhone 7 Plus telephoto lens is less than
13 6.0 mm and its EFL is greater than 6.5 mm. Therefore, the ratio of TTL/EFL in the
14 iPhone 7 Plus telephoto lens is less than 1 ($6/6.5 < 1$).

15 [1d] *wherein the plurality of lens elements comprises, in order from an object side*
16 *to an image side, a first lens element with positive refractive power and a second*
17 *lens element with negative refractive power, wherein a focal length f_1 of the first*
18 *lens element is smaller than $TTL/2$.* The first lens element in the iPhone 7 Plus
19 telephoto lens, from an object side, has a positive refractive power and a focal
20 length less than 2.7 mm. The TTL of the iPhone 7 Plus telephoto lens is greater
21 than 5.8 mm. The second lens element has a negative refractive power. The focal
22 length of the first lens element is less than $TTL/2$ ($2.7 < 5.8/2$).

23 *13. The lens assembly of claim 1, wherein the first lens element has an Abbe number*
24 *greater than 50 and the second lens element has an Abbe number smaller than 30.*
25 The first lens in the iPhone 7 Plus telephoto lens has an Abbe number greater than
26 50. The second lens in the iPhone 7 Plus telephoto lens has an Abbe number less
27 than 30.

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1 14. The lens assembly of claim 13, wherein the first lens element has a convex
2 object-side surface and a convex or concave image-side surface and wherein the
3 second lens element is a meniscus lens having a convex object-side surface. In the
4 iPhone 7 plus telephoto lens, the first lens has a convex object-side surface and a
5 convex image-side surface, and the second lens element is a meniscus lens having
6 a convex object-side surface.

7 15. The lens assembly of claim 14, wherein a lens assembly F # is smaller than 2.9.
8 The iPhone 7 Plus telephoto lens has an F# of 2.8. See
9 <https://www.apple.com/iphone-7/specs/>:

	iPhone 7	iPhone 7 Plus
Camera	12MP camera <i>f</i> /1.8 aperture Digital zoom up to 5x	12MP wide-angle and telephoto cameras Wide-angle: <i>f</i> /1.8 aperture Telephoto: <i>f</i> /2.8 aperture Optical zoom; digital zoom up to 10x Portrait mode

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18 48. As set forth in its Factual Allegations of this Complaint, Apple's infringement of
19 the '032 patent has been and continues to be wanton, deliberate, egregious, and willful. Prior to
20 the introduction of the Accused Products, Apple was engaged in five years of technical and
21 business discussions surrounding a potential collaboration. Apple repeatedly expressed interest in
22 learning more about and ultimately obtaining the right to use Corephotonics' technology and
23 intellectual property in the software and hardware associated with small-format multi-aperture
24 cameras for use in mobile devices. Corephotonics disclosed a telephoto lens assembly design to
25 Apple and told Apple that it was seeking patent protection on its small photo telephoto lens
26 assembly designs as early as June 2013. Apple later sought and obtained samples of lens
27 assemblies like those disclosed in the '032 patent. Corephotonics continued to inform Apple that
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1 it had a substantial and growing portfolio of patents and patent applications in that space, which
2 included the lens design that could be used for a small-format telephoto camera suitable for use in
3 mobile devices, the subject matter of the '032 patent. Apple further learned of and had to analyze
4 the features claimed in the '032 patent in its own patenting efforts. Even while the '032 patent was
5 pending and after it had published, Apple knew that a patent on a small format telephoto design
6 that claimed the design features of the embodiments disclosed in its specification was pending and
7 potentially going to issue.

8 49. Accordingly, by the date the '032 patent issued or thereafter Apple should have
9 known of the patent's existence. Thus, when Apple put on sale the iPhone 7 Plus and included in
10 it a small format telephoto camera using Corephotonics' intellectual property, it either knew of the
11 issued claims of the '032 patent or was willfully blind to them. Apple also would have known or
12 was willfully blind to its infringement of the '032 patent by then. Shortly after Apple announced
13 the iPhone 7 Plus, Corephotonics tried to inform Apple of specific patents and patent applications
14 in the context of a business negotiations. Apple's employees, however, refused to receive the
15 patents in the context of business and technical discussions. Apple at that time either knew or was
16 willfully blind to the specific patents that they were infringing, including the '032 patent. Apple
17 further compounded its infringement, either with knowledge or willful blindness in wanton
18 disregard to Corephotonics' rights under the '032 patent, with its introduction of the iPhone 8 Plus.
19 Corephotonics ultimately sent Apple a letter stating that Corephotonics had examined Apple's
20 iPhone 7 Plus and 8 Plus products and believed that they were infringing the '032 patent, and
21 Corephotonics thereafter filed the original Complaint alleging Apple's infringement of the '032
22 patent. Even in spite of that Complaint being filed, and Apple having already had extensive
23 knowledge of and recognizing Corephotonics' inventive contributions in the '032 patent, Apple
24 has continued to infringe the '032 patent. Apple's conduct, and its past and continued willful
25 infringement of the '032 patent, has been egregious.

26 50. For at least the foregoing and other reasons set forth herein, Corephotonics is
27 entitled to enhanced damages for Apple's infringement of the '032 patent in accordance with 35
28 U.S.C. § 284.

1 51. As set forth in the Factual Allegations in this Complaint, Apple has also had
2 knowledge of or been willfully blind to its infringement of the '032 patent such that based on that
3 knowledge or willful blindness, it has also indirectly infringed the '032 patent since at least the
4 date of issuance of the '032 patent and the date of the public introduction of the iPhone 7 Plus on
5 September 7, 2016.

6 52. Apple has also had actual knowledge of Corephotonics' rights in the '032 patent
7 and details of Apple's infringement of the '032 patent based on at least the filing of Corephotonics'
8 original Complaint and, based on that knowledge, is also indirectly infringing the '032 patent.

9 53. Apple manufactures, uses, imports, offers for sale, and/or sells the iPhone 7 Plus
10 and the iPhone 8 Plus with knowledge of or willful blindness to the fact that its actions will induce
11 Apple's customers and end users to infringe the '032 patent by at least using the telephoto lens on
12 the iPhone 7 Plus and the iPhone 8 Plus.

13 54. Apple actively and knowingly induces its customers and end users to infringe the
14 '032 patent by publishing information promoting the zoom features of the iPhone 7 Plus and the
15 iPhone 8 Plus, and by providing its customers and end users with instructions for using those
16 features. For example, Apple highlighted the benefits of the telephoto lens when it introduced the
17 iPhone 7 Plus. See https://www.youtube.com/watch?v=NS0txu_KzI8 at 1:08:22, and
18 <https://www.youtube.com/watch?v=Q6dsRpVyyWs> at 1:05.

19 55. As the direct and proximate result of Apple's conduct, Corephotonics has suffered
20 and, if Apple's conduct is not stopped, will continue to suffer, severe competitive harm, irreparable
21 injury, and significant damages, in an amount to be proven at trial. Because Corephotonics' remedy
22 at law is inadequate, Corephotonics seeks, in addition to damages, permanent injunctive relief.
23 Corephotonics' business operates in a competitive market and it will continue suffering irreparable
24 harm absent injunctive relief.

25 56. Corephotonics is entitled to injunctive relief and damages of no less than a
26 reasonable royalty in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

27 57. Apple's infringement of the '032 patent is exceptional and entitles Corephotonics
28 to attorneys' fees and costs under 35 U.S.C. § 285.

SECOND CAUSE OF ACTION

Infringement of Patent No. 9,568,712

58. Corephotonics incorporates the foregoing paragraphs as though fully set forth herein.

59. Apple has directly infringed, and continues to directly infringe, at least claims 15, 16, and 19 of the '712 patent pursuant to 35 U.S.C. § 271, by making, using, selling, offering to sell, and/or importing within the United States, without authority, the iPhone 7 Plus and iPhone 8 Plus.

60. As just one non-limiting example, set forth below (with claim language in italics) is a description of infringement of exemplary claim 15 of the '712 patent in connection with the iPhone 7 Plus, which applies similarly to the iPhone 8 Plus. Corephotonics reserves the right to modify this description, including, for example, on the basis of information about the iPhone 7 Plus and iPhone 8 Plus that it obtains during discovery:

Claim 15:

15. A lens assembly, comprising: To the extent the preamble is limiting, the iPhone 7 Plus telephoto lens is a lens assembly.

[15a] a plurality of refractive lens elements arranged along an optical axis, The iPhone 7 plus telephoto lens consists of five refractive lens elements arranged along an optical axis.

[15b] wherein the lens assembly has an effective focal length (EFL) and a total track length (TTL) smaller than the effective focal length (EFL), The TTL of the iPhone 7 Plus telephoto lens is less than 6.0 mm and its EFL is greater than 6.5 mm. Therefore, the TTL is smaller than the EFL in the iPhone 7 Plus telephoto lens (6 < 6.5).

[15c] the plurality of refractive lens elements comprising, in order from an object plane to an image plane along the optical axis, a first lens element having positive optical power, a pair of second and third lens elements having together a negative optical power, and a combination of fourth and fifth lens elements, the fourth lens

1 *element separated from the third lens element by an air gap greater than $TTL/5$.*

2 The first lens element in the iPhone 7 Plus telephoto lens, from an object side, has
3 a positive refractive power and the second lens element has a negative refractive
4 power. The telephoto lens in the iPhone 7 Plus camera also has a fourth and a fifth
5 lens element where the gap between the fourth lens element and the third lens
6 element is greater than 1.4 mm. The TTL of the iPhone 7 Plus telephoto lens is less
7 than 6.0 mm. $TTL/5$ is, therefore, less than 1.2 mm. The gap between the third lens
8 element and the fourth lens element (1.4 mm) is, therefore, greater than $TTL/5$ (1.4
9 > 1.2).

10 61. As set forth in its Factual Allegations of this Complaint, Apple's infringement of
11 the '712 patent has been and continues to be wanton, deliberate, egregious, and willful. Prior to
12 the introduction of the Accused Products, Apple was engaged in five years of technical and
13 business discussions surrounding a potential collaboration. Apple repeatedly expressed interest in
14 learning more about and ultimately obtaining the right to use Corephotonics' technology and
15 intellectual property in the software and hardware associated with small-format multi-aperture
16 cameras for use in mobile devices. Corephotonics disclosed a telephoto lens assembly design to
17 Apple and told Apple that it was seeking patent protection on its small photo telephoto lens
18 assembly designs as early as June 2013. Apple later sought and obtained samples of lens
19 assemblies like those disclosed in the '712 patent. Corephotonics continued to inform Apple that
20 it had a substantial and growing portfolio of patents and patent applications in that space, which
21 included the lens design that could be used for a small-format telephoto camera suitable for use in
22 mobile devices, the subject matter of the '712 patent. Apple further learned of and had to analyze
23 the features claimed in the '712 patent in its own patenting efforts. Even while the '712 patent was
24 pending and after it had published, Apple knew that a patent on a small format telephoto design
25 that claimed the design features of the embodiments was potentially going to issue. Shortly after
26 Apple announced the iPhone 7 Plus, Corephotonics tried to inform Apple of its specific patents
27 and patent applications in the context of a business negotiations. Apple's employees, however,
28 refused to receive the patents in the context of business and technical discussions.

1 62. Accordingly, by the date the '712 patent issued or thereafter, Apple should have
2 known of the patent's existence. Apple had already had begun selling iPhone 7 Plus in the
3 marketplace by that time, which included a small format telephoto camera lens assembly. Apple,
4 therefore, either knew it was infringing the '712 patent or was willfully blind to its infringement.
5 Apple further compounded its infringement, either with knowledge or willful blindness and in
6 wanton disregard to Corephotonics' rights under the '712 patent, with its introduction of the iPhone
7 8 Plus. Corephotonics ultimately sent Apple a letter stating that Corephotonics had examined
8 Apple's iPhone 7 Plus and 8 Plus products and believed that they were infringing the '712 patent,
9 and Corephotonics thereafter filed the original Complaint alleging Apple's infringement of the
10 '712 patent. Even in spite of that Complaint being filed, and Apple having already had extensive
11 knowledge of and recognizing Corephotonics' inventive contributions in the '712 patent, Apple
12 has continued to infringe the '712 patent. Apple's conduct, and its past and continued willful
13 infringement of the '712 patent, has been egregious.

14 63. For at least the foregoing and other reasons set forth herein, Corephotonics is
15 entitled to enhanced damages for Apple's infringement of the '712 patent in accordance with 35
16 U.S.C. § 284.

17 64. As described in the Factual Allegations in this Complaint, Apple has also had
18 knowledge of or been willfully blind to its infringement of the '712 patent such that based on that
19 knowledge or willful blindness, it has also indirectly infringed the '712 patent since at least as
20 early as the date of issuance of the '712 patent.

21 65. Apple has also had actual knowledge of Corephotonics' rights in the '712 patent
22 and details of Apple's infringement of the '712 patent based on at least the filing of Corephotonics'
23 original Complaint and, based on that knowledge, is also indirectly infringing the '032 patent.

24 66. Apple manufactures, uses, imports, offers for sale, and/or sells the Accused
25 Products with knowledge of or willful blindness to the fact that its actions will induce Apple's
26 customers and end users to infringe the '712 patent by using the telephoto lens on the Accused
27 Products.

28

1 67. Apple actively and knowingly induces its customers and end users to infringe the
2 '712 patent by publishing information promoting the zoom features of the Accused Products, and
3 by providing its customers and end users with instructions for using those features. For example,
4 Apple highlighted the benefits of the telephoto lens when it introduced the iPhone 7 Plus. *See*
5 https://www.youtube.com/watch?v=NS0txu_KzI8 at 1:08:22, [https://www.youtube.com/](https://www.youtube.com/watch?v=Q6dsRpVyyWs)
6 [watch?v=Q6dsRpVyyWs](https://www.youtube.com/watch?v=Q6dsRpVyyWs) at 1:05.

7 68. As the direct and proximate result of Apple's conduct, Corephotonics has suffered
8 and, if Apple's conduct is not stopped, will continue to suffer, severe competitive harm, irreparable
9 injury, and significant damages, in an amount to be proven at trial. Because Corephotonics' remedy
10 at law is inadequate, Corephotonics seeks, in addition to damages, preliminary and permanent
11 injunctive relief. Corephotonics' business operates in a competitive market and will continue
12 suffering irreparable harm absent injunctive relief.

13 69. Corephotonics is entitled to injunctive relief and damages of no less than a
14 reasonable royalty in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

15 70. Apple's infringement of the '712 patent is exceptional and entitles Corephotonics
16 to attorneys' fees and costs under 35 U.S.C. § 285.

THIRD CAUSE OF ACTION

Infringement of Patent No. 9,185,291

19 71. Corephotonics incorporates the foregoing paragraphs as though fully set forth
20 herein.

21 72. Apple has directly infringed, and continues to directly infringe, at least claims 1, 2,
22 3, 4, 5, 6, 7, 10, 12, and 13 of the '291 patent pursuant to 35 U.S.C. § 271, by making, using,
23 selling, offering to sell, and/or importing within the United States, without authority, the iPhone 7
24 Plus.

25 73. As just one non-limiting example, set forth below (with claim language in italics)
26 is a description of infringement of exemplary claim 12 of the '291 patent in connection with the
27 iPhone 7 Plus. Corephotonics reserves the right to modify this description, including, for example,
28 on the basis of information about the iPhone 7 Plus that it obtains during discovery:

1 12. *A method for obtaining zoom images of an object or scene in both still and video*
2 *modes using a digital camera, the method comprising the steps of:* To the extent
3 the preamble is limiting, Apple practices a method for enabling the iPhone 7 Plus
4 to use its digital camera to obtain zoom images of an object or a scene in both still
5 and video modes.

6 *a) providing in the digital camera a Wide imaging section having a Wide lens with*
7 *a Wide field of view (FOV), a Wide sensor and a Wide image signal processor*
8 *(ISP), a Tele imaging section having a Tele lens with a Tele FOV that is narrower*
9 *than the Wide FOV, a Tele sensor and a Tele ISP, and a camera controller*
10 *operatively coupled to the Wide and Tele imaging sections; and Apple has provided*
11 *the iPhone 7 Plus rear-facing digital camera with a wide imaging section having a*
12 *28 mm wide- angle lens with an associated field of view, an associated sensor and*
13 *associated image signal processing, including within the A10 Fusion chip. Apple*
14 *has also provided the iPhone 7 Plus rear-facing digital camera with a telephoto*
15 *imaging section having a 56 mm telephoto lens with an associated field of view, an*
16 *associated sensor and associated image signal processing within the A10 Fusion*
17 *chip. The field of view associated with the telephoto lens is narrower than the field*
18 *of view associated with the wide-angle lens. Apple also provides the iPhone 7 Plus*
19 *with a camera controller coupled to both the wide and telephoto imaging sections.*
20 *See <https://support.apple.com/kb/SP744>; [http://appleinsider.com/articles/16/09/](http://appleinsider.com/articles/16/09/23/apples-iphone-7-camera-delivers-nice-slice-of-enhancements-but-iphone-7-plus-takes-the-cake)*
21 *[23/apples-iphone-7-camera-delivers-nice-slice-of-enhancements-but-iphone-7-](http://appleinsider.com/articles/16/09/23/apples-iphone-7-camera-delivers-nice-slice-of-enhancements-but-iphone-7-plus-takes-the-cake)*
22 *[plus-takes-the-cake](http://appleinsider.com/articles/16/09/23/apples-iphone-7-camera-delivers-nice-slice-of-enhancements-but-iphone-7-plus-takes-the-cake) (“Apple’s A10 Fusion chip incorporates an enhanced custom*
23 *Image Signal Processor that now performs over 100 billion calculations on every*
24 *photograph it takes.”).*

25 *b) configuring the camera controller to combine in still mode at least some of the*
26 *Wide and Tele image data to provide a fused output image of the object or scene*
27 *from a particular point of view, and Apple has configured the iPhone 7 Plus to*
28 *combine image data from both the wide imaging section and the telephoto imaging*

1 section. The output image will be either from the point of view of the wide lens or
 2 the telephoto lens, depending on the zoom factor. See
 3 <https://forums.developer.apple.com/thread/63347> from an Apple staff member
 4 (emphasis added):

5 **When zoomed, the Dual camera intelligently fuses images from the wide-angle**
 6 **and telephoto cameras to improve image quality.** This process is transparent to
 7 the user and happens automatically when you take pictures The point at which
 8 the cross over from wide-angle to telephoto happens depends on a variety of factors
 9 including current focus position, current zoom factor, and current exposure.

10 *See also* <https://developer.apple.com/videos/play/wwdc2017/507/> (Transcript of
 11 Presentation, 2017 Apple WWDC, Session 507 by Brad Ford (emphasis added)):

12 So far, when you use the dual camera and take a picture, you still just get one image.
 13 It's either from the wide or it's from the tele, depending where you're zoomed, or **if**
 14 **you're in the area between one and 2X you might get portions of both as we do**
 15 **some blending to make an even nicer picture**, but you still only get one.

16 *[b) configuring the camera controller . . .] to provide without fusion continuous*
 17 *zoom video mode output images of the object or scene, each output image having a*
 18 *respective output resolution, wherein the video mode output images are provided*
 19 *with a smooth transition when switching between a lower zoom factor (ZF) value*
 20 *and a higher ZF value or vice versa, and wherein at the lower ZF value the output*
 21 *resolution is determined by the Wide sensor while at the higher ZF value the output*
 22 *resolution is determined by the Tele sensor. Apple has configured the iPhone 7 Plus*
 23 *dual-aperture camera to provide a continuous zoom in video mode, which does not*
 24 *use image fusion. According to Apple “[t]he Dual camera’s defining feature is its*
 25 *ability to smoothly transition between wide and tele cameras, acting like a single*
 26 *lens camera with optical zoom at 2x.”*
 27 <https://forums.developer.apple.com/thread/63347>. Samples of the iPhone 7 Plus’
 28 smooth transition in video mode are available at

1 [http://appleinsider.com/articles/16/09/23/apples-iphone-7-camera-delivers-nice-](http://appleinsider.com/articles/16/09/23/apples-iphone-7-camera-delivers-nice-slice-of-enhancements-but-iphone-7-plus-takes-the-cake)
2 [slice-of-enhancements-but-iphone-7-plus-takes-the-cake](http://appleinsider.com/articles/16/09/23/apples-iphone-7-camera-delivers-nice-slice-of-enhancements-but-iphone-7-plus-takes-the-cake). Each output image has
3 an output resolution, which is determined by the sensor being used, *i.e.*, wide sensor
4 being used at low zoom factor and telephoto sensor being used at high zoom factor.

5 74. As set forth in its Factual Allegations of this Complaint, Apple's infringement of
6 the '291 patent has been and continues to be wanton, deliberate, egregious, and willful. Prior to
7 the introduction of the Accused Products, Apple was engaged in five years of technical and
8 business discussions surrounding a potential collaboration. Apple repeatedly expressed interest in
9 learning more about and ultimately obtaining the right to use Corephotonics' technology and
10 intellectual property in the software and hardware associated with small-format multi-aperture
11 cameras for use in mobile devices. As set forth in the foregoing Factual Allegations, Corephotonics
12 described its smooth zoom design concepts to Apple and told Apple that it was seeking patent
13 protection on continuous and smooth zoom transitions for dual-aperture cameras as early as 2014.
14 Corephotonics demonstrated the technology to Apple, and it provided Apple with programs that
15 Apple used to independently test and evaluate Corephotonics' technology. Corephotonics
16 continued to inform Apple that it had a substantial and growing portfolio of patents and patent
17 applications in that space, which included image fusion and smooth zoom for dual-aperture
18 cameras that included telephoto lenses suitable for use in mobile devices, the subject matter of the
19 '291 patent. Apple further knew of the issued '291 patent well enough by March 2016 to cite it as
20 prior art in its patent applications. Shortly after Apple announced the iPhone 7 Plus, which
21 exhibited a continuous zooming feature that used Corephotonics' intellectual property, in
22 particular the '291 patent, Corephotonics tried to inform Apple of its specific patents and patent
23 applications in the context of a business negotiations. Apple's employees, however, refused to
24 receive the patents in the context of business and technical discussions.

25 75. Accordingly, by the date the '291 patent issued or thereafter, Apple should have
26 known of the patent's existence. Indeed, Apple must have actually known of the issued '291 patent,
27 as Apple cited that patent as prior art in the prosecution of its own patents. Apple subsequently
28 publicly announced and began offering the iPhone 7 Plus. By at least that time, therefore, Apple,

1 either knew it was infringing the '291 patent or was willfully blind to its infringement. Apple
2 further compounded its infringement, either with knowledge or willful blindness and in wanton
3 disregard to Corephotonics' rights under the '291 patent, with its introduction of the iPhone 8 Plus.
4 Corephotonics ultimately sent Apple a letter stating that Corephotonics had examined Apple's
5 products and believed that Apple was infringing the '291 patent, and Corephotonics thereafter filed
6 the original Complaint alleging Apple's infringement of the '291 patent. Even in spite of that
7 Complaint being filed, and Apple having already had extensive knowledge of and recognizing
8 Corephotonics' inventive contributions in the '291 patent, Apple has continued to infringe the '291
9 patent. Apple's conduct, and its past and continued willful infringement of the '291 patent, has
10 been egregious.

11 76. For at least the foregoing and other reasons as set forth herein, Corephotonics is
12 entitled to enhanced damages for Apple's infringement of the '291 patent in accordance with 35
13 U.S.C. § 284.

14 77. As described in the Factual Allegations in this Complaint, Apple has also had
15 knowledge of or been willfully blind to its infringement of the '291 patent such that based on that
16 knowledge or willful blindness, it has also indirectly infringed the '291 patent since at least as
17 early as the date of issuance of the '291 patent and the public introduction of the iPhone 7 Plus to
18 the marketplace on September 7, 2016.

19 78. Apple has also had actual knowledge of Corephotonics' rights in the '291 patent
20 and details of Apple's infringement of the '291 patent based on at least the filing of Corephotonics'
21 original Complaint and, based on that knowledge, is also indirectly infringing the '291 patent.

22 79. Apple manufactures, uses, imports, offers for sale, and/or sells the Accused
23 Products with knowledge of or willful blindness to the fact that its actions will induce Apple's
24 customers and end users to infringe the '291 patent by using the dual-aperture camera on the
25 Accused Products.

26 80. Apple actively and knowingly induces its customers and end users to infringe the
27 '291 patent by publishing information promoting the dual-aperture camera of the Accused
28 Products, and by providing its customers and end users with instructions for using that camera.

1 For example, Apple highlighted the benefits of the dual-aperture camera when it introduced the
2 iPhone 7 Plus. See https://www.youtube.com/watch?v=NS0txu_Kzl8 at 1:08:22,
3 <https://www.youtube.com/watch?v=Q6dsRpVyyWs> at 1:05.

4 81. As the direct and proximate result of Apple's conduct, Corephotonics has suffered
5 and, if Apple's conduct is not stopped, will continue to suffer, severe competitive harm, irreparable
6 injury, and significant damages, in an amount to be proven at trial. Because Corephotonics' remedy
7 at law is inadequate, Corephotonics seeks, in addition to damages, preliminary and permanent
8 injunctive relief. Corephotonics' business operates in a competitive market and will continue
9 suffering irreparable harm absent injunctive relief.

10 82. Corephotonics is entitled to injunctive relief and damages of no less than a
11 reasonable royalty in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

12 83. Apple's infringement of the '291 patent is exceptional and entitles Corephotonics
13 to attorneys' fees and costs under 35 U.S.C. § 285.

14 **FOURTH CAUSE OF ACTION**

15 **Infringement of Patent No. 9,538,152**

16 84. Corephotonics incorporates the foregoing paragraphs as though fully set forth
17 herein.

18 85. Apple has directly infringed, and continues to directly infringe, at least claims 1, 2,
19 3, and 4 of the '152 patent pursuant to 35 U.S.C. § 271, by making, using, selling, offering to sell,
20 and/or importing within the United States, without authority, the iPhone 7 Plus.

21 86. As just one non-limiting example, set forth below (with claim language in italics)
22 is a description of infringement of exemplary claim 1 of the '152 patent in connection with the
23 iPhone 7 Plus. Corephotonics reserves the right to modify this description, including, for example,
24 on the basis of information about the iPhone 7 Plus that it obtains during discovery:

25 *1. A multi-aperture imaging system comprising:* To the extent the preamble is
26 limiting, the iPhone 7 Plus has a two-lens camera and, therefore, has a multi-
27 aperture imaging system.
28

1 a) a first camera that provides a first image, the first camera having a first field of
2 view (FOV_1) and a first sensor with a first plurality of sensor pixels covered at least
3 in part with a standard color filter array (CFA); The iPhone 7 Plus rear-facing
4 digital camera has two cameras. The first camera is a wide-angle camera with a 28
5 mm wide-angle lens having a first field of view to provide a first image. The wide-
6 angle camera has a first sensor, which contains a plurality of sensor pixels. The
7 pixels of the sensor of the wide-angle camera are covered with a standard color
8 filter array.

9 b) a second camera that provides a second image, the second camera having a
10 second field of view (FOV_2) such that $FOV_2 < FOV_1$ and a second sensor with a
11 second plurality of sensor pixels, the second plurality of sensor pixels being either
12 Clear or covered with a standard CFA, the second image having an overlap area
13 with the first image; and, The iPhone 7 Plus rear-facing digital camera also has a
14 second camera, which is a telephoto camera with a 56 mm telephoto lens having a
15 second field of view to provide a second image that overlaps with the first image.
16 The second field of view of the telephoto camera is narrower than the first field of
17 view of the wide-angle camera. The telephoto camera has a sensor with sensor
18 pixels. These sensor pixels are covered with a standard filter array. See
19 <https://support.apple.com/kb/SP744>.

20 c) a processor configured to provide an output image from a point of view of the
21 first camera based on a zoom factor (ZF) input that defines a respective field of
22 view (FOV_{ZF}), the first image being a primary image and the second image being
23 a non-primary image, wherein if $FOV_2 < FOV_{ZF} < FOV_1$ then the point of view of the
24 output image is that of the first camera, the processor further configured to register
25 the overlap area of the second image as non-primary image to the first image as
26 primary image to obtain the output image. The iPhone 7 Plus includes an image
27 signal processor (ISP) in the A10 SOC, which is programmed to provide an output
28 image from the point of view of the wide-angle camera when the field of view at

1 the selected zoom factor is greater than the telephoto field of view but less than the
2 wide-angle field of view. The ISP is also programmed to register the overlap of the
3 two images and, using the wide-angle image as the primary image, use both the
4 wide-angle and telephoto images to produce the output image. *See*
5 <https://forums.developer.apple.com/thread/63347> from an Apple staff member
6 (emphasis added):

7 **When zoomed, the Dual camera intelligently fuses images from the wide-angle**
8 **and telephoto cameras to improve image quality.** This process is transparent to
9 the user and happens automatically when you take pictures The point at which
10 the cross over from wide-angle to telephoto happens depends on a variety of factors
11 including current focus position, current zoom factor, and current exposure.

12 *See also* <https://developer.apple.com/videos/play/wwdc2017/507/> (Transcript of
13 Presentation, 2017 Apple WWDC, Session 507 by Brad Ford (emphasis added)):

14 So far, when you use the dual camera and take a picture, you still just get one image.
15 It's either from the wide or it's from the tele, depending where you're zoomed, or **if**
16 **you're in the area between one and 2X you might get portions of both as we do**
17 **some blending to make an even nicer picture**, but you still only get one.

18 87. As set forth in its Factual Allegations of this Complaint, Apple's infringement of
19 the '152 patent has been and continues to be wanton, deliberate, egregious, and willful. Prior to
20 the introduction of the Accused Products, Apple was engaged in five years of technical and
21 business discussions surrounding a potential collaboration. Apple repeatedly expressed interest in
22 learning more about and ultimately obtaining the right to use Corephotonics' technology and
23 intellectual property in the software and hardware associated with small-format multi-aperture
24 cameras for use in mobile devices. As set forth in the foregoing Factual Allegations, Corephotonics
25 described its image fusion concepts to Apple and told Apple that it was seeking patent protection
26 on its technology for image fusion between wide-angle and telephoto lenses for dual-aperture
27 cameras in June 2013. From that time through 2014, Corephotonics demonstrated the technology
28 to Apple, and it provided Apple with programs that Apple used to independently test and evaluate

1 Corephotonics' technology. Corephotonics continued to inform Apple that it had a substantial and
2 growing portfolio of patents and patent applications in that space, which included image fusion for
3 dual-aperture cameras that included telephoto lenses suitable for use in mobile devices, the subject
4 matter of the '152 patent. Apple was familiar with Corephotonics' patent applications, and Apple
5 cited the application that issued as the '152 patent as prior art in its efforts to obtain small-format
6 camera patents. Even while the '152 patent was pending and after it had published, Apple knew
7 that a patent on a small format telephoto design that claimed the design features of the
8 embodiments disclosed in its specification was pending and potentially going to issue.

9 88. Accordingly, by the date the '152 patent issued or thereafter Apple should have
10 known of the patent's existence. Thus, when Apple put on sale the iPhone 7 Plus and included in
11 it a small format telephoto camera using Corephotonics' intellectual property, it either knew of the
12 issued claims of the '152 patent or was willfully blind to them. Apple also would have known or
13 was willfully blind to its infringement of the '152 patent by then. Shortly after Apple announced
14 the iPhone 7 Plus, Corephotonics tried to inform Apple of specific patents and patent applications
15 in the context of a business negotiations. Apple's employees, however, refused to receive the
16 patents in the context of business and technical discussions. Apple at that time either knew or was
17 willfully blind to the specific patents that they were infringing, including the '152 patent.
18 Corephotonics ultimately sent Apple a letter stating that Corephotonics had examined Apple's
19 products and believed that Apple was infringing the '152 patent, and Corephotonics thereafter filed
20 the original Complaint alleging Apple's infringement of the '152 patent. Even in spite of that
21 Complaint being filed, and Apple having already had extensive knowledge of and recognizing
22 Corephotonics' inventive contributions in the '152 patent, Apple has continued to infringe the '152
23 patent. Apple's conduct, and its past and continued willful infringement of the '152 patent, has
24 been egregious.

25 89. For at least the foregoing and other reasons set forth herein, Corephotonics is
26 entitled to enhanced damages for Apple's infringement of the '152 patent in accordance with 35
27 U.S.C. § 284.

28

RUSS, AUGUST & KABAT

1 90. Apple has also had actual knowledge of Corephotonics’ rights in the ’152 patent
2 and details of Apple’s infringement of the ’152 patent based on at least the filing of Corephotonics’
3 original Complaint and, based on that knowledge, is also indirectly infringing the ’152 patent.

4 91. Apple manufactures, uses, imports, offers for sale, and/or sells the Accused
5 Products with knowledge of or willful blindness to the fact that its actions will induce Apple’s
6 customers and end users to infringe the ’152 patent by using the dual-aperture camera on the
7 Accused Products.

8 92. Apple actively and knowingly induces its customers and end users to infringe the
9 ’152 patent by publishing information promoting the dual-aperture camera of the Accused
10 Products, and by providing its customers and end users with instructions for using that camera.
11 For example, Apple highlighted the benefits of the dual-aperture camera when it introduced the
12 iPhone 7 Plus. See https://www.youtube.com/watch?v=NS0txu_Kzl8 at 1:08:22,
13 <https://www.youtube.com/watch?v=Q6dsRpVyyWs> at 1:05.

14 93. As the direct and proximate result of Apple’s conduct, Corephotonics has suffered
15 and, if Apple’s conduct is not stopped, will continue to suffer, severe competitive harm, irreparable
16 injury, and significant damages, in an amount to be proven at trial. Because Corephotonics’ remedy
17 at law is inadequate, Corephotonics seeks, in addition to damages, preliminary and permanent
18 injunctive relief. Corephotonics’ business operates in a competitive market and will continue
19 suffering irreparable harm absent injunctive relief.

20 94. Corephotonics is entitled to injunctive relief and damages of no less than a
21 reasonable royalty in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

22 95. Apple’s infringement of the ’152 patent is exceptional and entitles Corephotonics
23 to attorneys’ fees and costs under 35 U.S.C. § 285.

DEMAND FOR A JURY TRIAL

25 96. Corephotonics hereby demands a jury trial for all causes of action, claims, or issues
26 in this action that are triable as a matter of right to a jury.

27
28

PRAYER FOR RELIEF

WHEREFORE, Plaintiff Corephotonics respectfully requests the following relief:

- A. Judgment in Corephotonics’ favor and against Apple on all causes of action alleged herein;
 - B. An award of damages to Corephotonics in an amount to be further proven at trial;
 - C. Permanent injunctive relief against Apple;
 - D. A finding that this case is exceptional under 35 U.S.C. § 285 and that Corephotonics be awarded its attorneys’ fees;
 - E. An award of enhanced damages to Corephotonics as a result of Apple’s willful infringement;
 - F. An award of prejudgment and post-judgment interest, costs and other expenses; and
- Such other and further relief as the Court may deem to be just and proper.

DATED: April 11, 2018

Respectfully submitted,

RUSS, AUGUST & KABAT

By: /s/ Marc Fenster
 Marc A. Fenster (CA Bar No. 181067)
 Benjamin T. Wang (CA Bar No. 228712)
 Neil A. Rubin (CA Bar No. 250761)
 Bahrad A. Sokhansanj (CA Bar No. 285185)
 RUSS AUGUST & KABAT
 12424 Wilshire Boulevard, 12th Floor
 Los Angeles, California 90025
 Telephone: (310) 826-7474
 Facsimile: (310) 826-6991
mfenster@raklaw.com
bwang@raklaw.com
nrubin@raklaw.com
bsokhansanj@raklaw.com

Attorneys for Plaintiff
Corephotonics, Ltd.

RUSS, AUGUST & KABAT

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CERTIFICATE OF SERVICE

I certify that counsel of record who are deemed to have consented to electronic service are being served on April 11, 2018, with a copy of this document via the Court’s CM/ECF systems per Local Rule CV-5(a)(3). Any other counsel will be served by electronic mail, facsimile, overnight delivery and/or First Class Mail on this date.

_____ /s/ *Marc A. Fenster*

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