

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION**

**OPTIMUM IMAGING TECHNOLOGIES
LLC,**

Plaintiff,

v.

SAMSUNG ELECTRONICS CO., LTD.,

Defendant.

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JURY TRIAL DEMANDED

CIVIL ACTION NO. _____

PLAINTIFF’S ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Optimum Imaging Technologies LLC (“OIT” or “Plaintiff”) files this Complaint in the Eastern District of Texas (the “District”) against Defendant Samsung Electronics Co., Ltd. (“Samsung” or “Defendant”) for infringement of U.S. Patent Nos. 7,612,805 (the “’805 patent”), 8,451,339 (the “’339 patent”), and 10,877,266 (the “’266 patent”), which are collectively referred to as the “Asserted Patents.”

THE PARTIES

1. Plaintiff OIT is a Texas limited liability company founded in 2009 and with an address at 8701 Shoal Creek Blvd. #401, Austin, Texas 78757.

2. On information and belief, Defendant Samsung is a multi-national corporation organized under the laws of the Republic of Korea, with its principal place of business located at 129 Samsung-Ro, Yeongtong-Gu, Suwon, Gyeonggi-do, South Korea. Samsung may be served with process via its registered agents and via its corporate officers.

JURISDICTION AND VENUE

3. This action arises under the patent laws of the United States, namely 35 U.S.C. §§ 271, 281, and 284-285, among others.

4. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

5. On information and belief, Defendant is subject to this Court’s specific and general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, due at least to its substantial business in this State and this District, including: (A) at least part of its infringing activities alleged herein which purposefully avail the Defendant of the privilege of conducting those activities in this state and this District and, thus, submits itself to the jurisdiction of this court; and (B) regularly doing or soliciting business, engaging in other persistent conduct targeting residents of Texas and this District, and/or deriving substantial revenue from infringing goods offered for sale, sold, and imported and services provided to and targeting Texas residents and residents of this District vicariously through and/or in concert with its alter egos, intermediaries, agents, distributors, partners, subsidiaries, clients, customers, affiliates, and/or consumers.

6. Furthermore, upon information and belief, Defendant has purposefully and voluntarily placed one or more infringing products into the stream of commerce with the expectation that they will be purchased and/or used by residents of this judicial District, including by directly and indirectly working with distributors, and other entities located in the State of Texas, to ensure the accused products reach the State of Texas and this judicial District, including in this Division. For example, Samsung has hundreds of authorized internet and in-store resellers. *See Samsung Authorized Resellers, SAMSUNG, https://www.samsung.com/us/shop/authorized_resellers/* (last visited Sept. 19, 2023). This includes

businesses that operate in this District and/or sell to consumers in this District, such as Amazon, Best Buy, and Walmart, among others. *Id.*

7. Defendant also maintains commercial websites accessible to residents of the State of Texas and this judicial District, through which Samsung promotes and facilitates sales of the infringing products. For example, Samsung advertises and directly sells smartphones, including the Infringing Products, from its website. *See, e.g., Home / Phones / All Phones, SAMSUNG*, <https://www.samsung.com/us/mobile/phones/all-phones/> (last visited Aug. 31, 2023). Moreover, Samsung utilizes its subsidiaries and intermediaries to design, develop, import, distribute, and service infringing products, such as the Samsung Galaxy line of mobile devices. Such Samsung products have been sold in retail stores, both brick and mortar and online, within this judicial District. *See, e.g., Samsung Galaxy S23 Ultra 256GB (Unlocked) – Phantom Black, BEST BUY*, <https://www.bestbuy.com/site/samsung-galaxy-s23-ultra-256gb-unlocked-phantom-black/6529723.p?skuId=6529723> (last visited Sept. 1, 2023) (offering a Samsung Galaxy S23 Ultra phone for sale at BestBuy location at 422 W Loop 281, Ste. 100, Longview, TX 75605, i.e., in this judicial district).

8. Thus, Defendant has established minimum contacts with the State of Texas and the exercise of jurisdiction would not offend traditional notions of fair play and substantial justice.

9. Venue is proper in this judicial district pursuant to 28 U.S.C. § 1391(b), (c) and 1400(b) because (i) Defendant has done and continues to do business in this district; (ii) Defendant has committed and continues to commit acts of patent infringement in this district, including making, using, offering to sell, and/or selling accused products in this district, and/or importing accused products into this district, including by internet sales and sales via retail and wholesale stores, and/or inducing others to commit acts of patent infringement in this district; and (iii)

Defendant is foreign entity. 28 U.S.C. § 1391(c)(3) provides that “a defendant not resident in the United States may be sued in any judicial district.” *See also Brunette Machine Works v. Kockum Industries, Inc.*, 406 U.S. 706 (1972), holding that venue is proper pursuant to 28 U.S.C. §§ 1391 and 1400(b) when Defendant is a foreign entity.

FACTUAL ALLEGATIONS

10. Neal Solomon is the sole inventor of the Asserted Patents: the '805 Patent, titled “Digital imaging system and methods for selective image filtration”; the '339 Patent, titled “Digital imaging system for correcting image aberrations”; and the '266 Patent, titled “Digital camera with wireless image transfer.” The Asserted Patents share a specification and a priority date at least as early as July 11, 2006.

11. OIT, a Texas limited liability company formed by Mr. Solomon in 2009, owns the Asserted Patents.

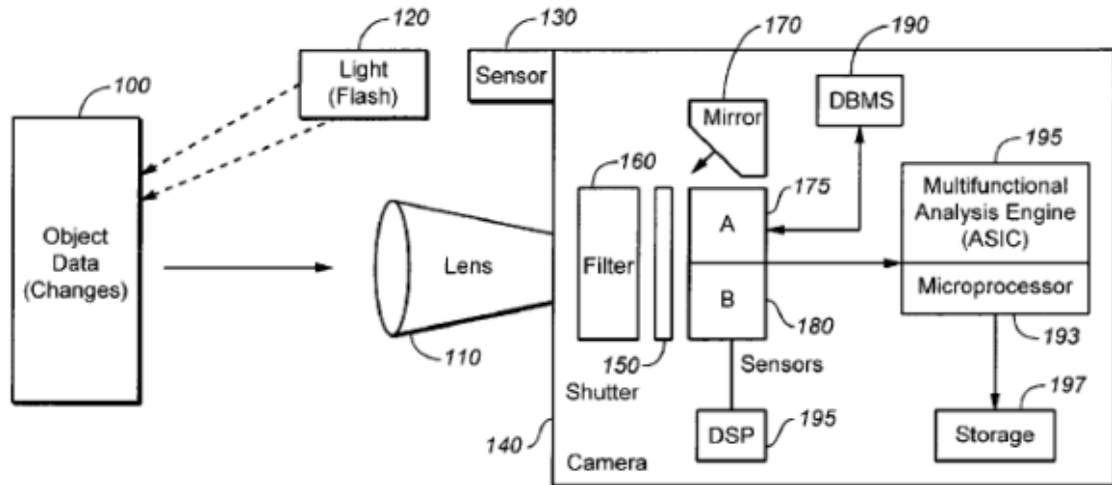
12. The Asserted Patents are directed toward digital imaging systems and methods, namely in-camera systems for filtering and correcting image aberrations or distortions. The systems as claimed relate to a combination of hardware and software throughout the cameras. The Abstract for the '339 patent, for example, states as follows:

A system is disclosed for the automated correction of optical and digital aberrations in a digital imaging system. The system includes (a) digital filters, (b) hardware modifications and (c) digital system corrections. The system solves numerous problems in still and video photography that are presented in the digital imaging environment.

13. The Asserted Patents describe aberration correction systems and methods particular to various types of lenses, a database system for useful access to those systems and methods, and specially designed processors which operate those systems and methods to correct specifically enumerated aberrations. The Asserted Patents describe a claimed combination of dedicated

elements and processes that were not, at the time of invention, well-understood, routine, or conventional.

14. An exemplary embodiment is shown in Figure 1 of each of the Asserted Patents:



15. Defendant imports, has imported, sell, has sold, offers and/or offered for sale in the United States cameras and lenses (and components of the same) that are not made or licensed by OIT and that infringe the Asserted Patents (“Infringing Products”).

16. Samsung markets its Infringing Products specifically extolling the functionality of the Asserted Patents. As one example, Samsung provides support articles that explain to users and potential customers that Samsung phones perform “Ultra wide shape correction,” which “minimizes” the “optical distortion around the edges of photos and videos” cause by the “wide angle lenses” in their phones’ cameras. *Picture and video distortion*, SAMSUNG, <https://www.samsung.com/us/support/troubleshooting/TSG01001426/> (last visited Sept. 1, 2023)

17. On information and belief, all Samsung Galaxy phones that include digital lens aberration correction imported, sold, offered for sale or used in the United States within the statutory period are Infringing Products, including but not limited to the following: Samsung Galaxy S10, S10+, S10 5G, S10 Lite, S20, S20+, S20 Ultra 5G, S20 FE, S21, S21 Ultra, S21 FE, S22, S22+,

S22 Ultra, S23, S23+, S23 Ultra, Z Fold, Z Flip, Z Flip 5G, Z Fold 2, Z Fold 3, Z Flip 3, Z Fold 4, Z Flip 4, Z Fold 5, and Z Flip 5. The model numbers listed in this complaint are exemplary and not exhaustive. These cameras use both zoom and fixed focal lenses, and also have video capabilities.

COUNT I

(Infringement of the '805 Patent)

18. Plaintiff incorporates and re-alleges the allegations contained in paragraphs 1 through 17 herein by reference.

19. The '805 Patent entitled "Digital imaging system and methods for selective image filtration" was duly and legally issued by the U.S. Patent and Trademark Office on November 3, 2009, from Application No. 11/825/521, published at US2008/0174678 on July 24, 2008, claiming priority to provisional application 60/807,065 filed on July 11, 2006. A true and accurate copy of the '805 Patent is attached hereto as Exhibit A.

20. Each and every claim of the '805 Patent is valid and enforceable, and each enjoys a statutory presumption of validity under 35 U.S.C. § 282.

21. OIT exclusively owns all rights, title, and interest in and to the '805 Patent and possesses the exclusive right of recovery, including the exclusive right to recover for past, present and future infringement.

22. Representative claim 1 of the '805 Patent recites:

A digital imaging system for image filtration comprising:
a digital camera mechanism, an optical lens mechanism, a digital sensor, a microprocessor, a digital signal processor, an application specific integrated circuit, system software, a database management system and a memory storage sub-system;
wherein the optical lens mechanism is a fixed focal length;
wherein the aberrations from the optical lens mechanism are corrected by applying digital filtration by using the application specific integrated circuit and the digital signal processor,
wherein the microprocessor is used to provide digital and optical data to the digital signal processor,

wherein the system software is organized to identify specific optical aberrations and to access the database to identify specific corrections to the aberrations; wherein the system software forwards the data from the digital sensor to the digital processor;

wherein the digital signal processor selects a specific procedure to optimize the image and corrects the aberrations;

wherein the data are forwarded from the digital sensor to the digital signal processor by an application specific integrated circuit;

wherein the digital signal processor applies a fast Fourier transform to a data file in order to satisfy a user specified special effects function;

wherein the digital signal processor modifies the data file by applying the special effects function; and

wherein the modified data file consisting of the digital data optimized from the aberrations that are corrected from the original optical image is stored in memory.

23. Each Infringing Product is a smart phone containing a digital camera that constitutes a digital imaging system for image filtration comprising a digital camera mechanism, an optical lens mechanism, a digital sensor, a microprocessor, a digital signal processor, an application specific integrated circuit, system software, a database management system, and a memory storage sub-system. The cameras require optical lens mechanisms to operate, as seen, for example, with the Samsung Galaxy S10:

Galaxy S10

Single front camera

The S10 has a single front camera which features a 10MP dual pixel auto focus and UHD selfie technology.



Triple rear camera

In the rear side you have the following three cameras aligned horizontally:

- 1 A 12MP telephoto lens (45°) with a 2x zoom and OIS anti-blur software.
- 2 A 12MP wide angle lens (77°) with dual aperture and dual pixel. It also includes in-built Optical Image Stabilisation (OIS) software to reduce blurry images.
- 3 A 16MP ultra wide angle lens (123°).



Source: *Camera specifications on the Galaxy S10*, SAMSUNG, <https://www.samsung.com/levant/support/mobile-devices/camera-specifications-on-the-galaxy-s10/> (last visited Aug. 31, 2023)

24. On information and belief, each of the Infringing Products is further configured wherein the aberrations from the optical lens mechanism are corrected by applying digital filtration by using the application specific integrated circuit and the digital signal processor; wherein the microprocessor is used to provide digital and optical data to the digital signal processor; wherein the system software is organized to identify specific optical aberrations and to access the database to identify specific corrections to the aberrations; wherein the system software forwards the data from the digital sensor to the digital processor; wherein the digital signal processor selects a specific procedure to optimize the image and corrects the aberrations; wherein the data are forwarded from

the digital sensor to the digital signal processor by an application specific integrated circuit; wherein the digital signal processor applies a fast Fourier transform to a data file in order to satisfy a user specified special effects function; wherein the digital signal processor modifies the data file by applying the special effects function; and wherein the modified data file consisting of the digital data optimized from the aberrations that are corrected from the original optical image is stored in memory.

25. Each of the Infringing Products comprises an optical lens mechanism that is a fixed focal length lens. As one example, the Galaxy S10 has an ultra wide angle lens with a fixed focal length:

Triple rear camera

In the rear side you have the following three cameras aligned horizontally:

- 1 A 12MP telephoto lens (45°) with a 2x zoom and OIS anti-blur software.
- 2 A 12MP wide angle lens (77°) with dual aperture and dual pixel. It also includes in-built Optical Image Stabilisation (OIS) software to reduce blurry images.
- 3 A 16MP ultra wide angle lens (123°).



Source: Source: *Camera specifications on the Galaxy S10*, SAMSUNG.

26. On information and belief, the Infringing Products also comprise a digital sensor. For example, Samsung uses their ISOCELL digital sensors in the cameras on their smartphones. See *Image Sensor – Mobile Image Sensor*, SAMSUNG, <https://semiconductor.samsung.com/us/image-sensor/mobile-image-sensor/> (last visited Aug. 31, 2023). For example, on information and belief, the Galaxy S10's rear cameras use a variety of Samsung's ISOCELL sensors, including the ISOCELL 2L4, ISOCELL 3M3, and/or the ISOCELL

3P9. *See ISOCELL*, WIKIPEDIA, <https://en.wikipedia.org/wiki/ISOCELL> (last visited Sept. 1, 2023).

27. Samsung Infringing Products also comprise an application specific integrated circuit (ASIC), a digital signal processor, and a microprocessor. For example, the Galaxy S10 uses Qualcomm's Snapdragon 855 Mobile Platform. *See Samsung Galaxy S10*, QUALCOMM, <https://www.qualcomm.com/snapdragon/device-finder/smartphones/samsung-galaxy-s10> (last visited Aug. 31, 2023). The Snapdragon 855 contains a Qualcomm Octa-core CPU and a Qualcomm Spectra 380 image signal processor. *Snapdragon 855 Mobile Platform*, QUALCOMM, <https://www.qualcomm.com/products/mobile/snapdragon/smartphones/snapdragon-8-series-mobile-platforms/snapdragon-855-mobile-platform> (last visited Aug. 31, 2023).


28. Samsung Infringing Products also comprise system software. For example, as discussed below, the Galaxy S10 contains "ultra wide shape correction" software for correcting optical aberrations.

29. On information and belief, the Infringing Products also comprise a database management system. For example, the Galaxy S10 contains a database of camera software and data, including new and updated camera features, which can be updated via downloads from Samsung. *See Support Update*, SAMSUNG, <https://www.samsung.com/za/support/mobile-devices/after-updating-the-galaxy-s10es10s10-device-some-features-related-to-the-camera-are-automatically-added/> (Nov. 23, 2020).

30. The Infringing Products also comprise a memory storage sub-system. For example, the Galaxy S10 contains memory storage on the phone and through installed memory cards:

Storage

View your storage capacity and detailed usage by category and file type. You can also mount, unmount, or format an optional memory card (not included).

- From Settings, tap  **Battery and device care** > **Storage**.
 - Tap a category to view and manage files.


Memory card

Once an optional microSD memory card (not included) has been installed in your device, the card memory is displayed in the Storage setting.

For more information, see [Set up your device](#).



Mount a memory card

When you install an optional memory card, it is automatically mounted (connected to the device) and prepared for use. However, should you unmount the card without removing it from the device, you need to mount it before it can be accessed.

1. From Settings, tap  **Battery and device care** > **Storage**.
2. Swipe the screen to **SD card**, and then tap **Mount**.

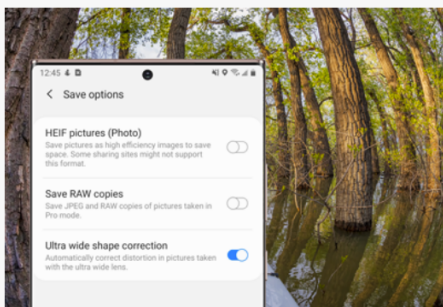
Remove a memory card

To prevent damage to information stored on the memory card, unmount the card before removing it from the device.

1. From Settings, tap  **Battery and device care** > **Storage**.
2. Swipe the screen to **SD card**, and then tap  **More options** > **Unmount**.
3. Remove your memory card from the device.

Source: Samsung Galaxy S10 User Manual, SAMSUNG, at 151 (available for download at <https://www.samsung.com/us/support/downloads/?model=N0053249>, last visited Aug. 31, 2023)

31. On information and belief, the Infringing Products include onboard software that directs the digital signal processor to select a specific procedure to optimize the image, correct aberrations, and store in memory the modified data file consisting of the digital data optimized from the aberrations that are corrected from the original optical image. For example, the Galaxy S10 includes an “ultra wide shape correction” function that corrects optical aberrations:



Picture and video distortion from a Galaxy phone's camera

The wide angle lenses on your phone's camera may cause some slight optical distortion around the edges of photos and videos. This is a normal side effect of a wide angle lens. Enabling Ultra wide shape correction can minimize this effect.

1 Open the Camera's settings.

Open the **Camera** app, and then tap the **Settings** icon. Next, tap **Format and advanced options**.

2 Enable or disable Ultra wide shape correction.

Tap the **switch** next to "Ultra wide shape correction" to turn this feature on or off.

Source: *Picture and video distortion*, SAMSUNG.

32. On information and belief, the system software in the Infringing Products forwards data from the digital sensor to the digital processor. For example, the Snapdragon 855 uses its image signal processor to process captured camera images, which necessarily requires that the images be forwarded from the sensor to the digital processor:

Camera	Image Signal Processor (ISP) Name: Qualcomm® Spectra™ 380
	Image Signal Processor (ISP) Type: Hardware Accelerator for Computer Vision (CV-ISP)
	Image Signal Processor (ISP) Number: Dual ISP
	Image Signal Processor (ISP) Bit Depth: 14-bit
	Dual Camera (MFNR, ZSL, 30 fps): Up to 22 MP ¹
	Single Camera (MFNR, ZSL, 30 fps): Up to 48 MP ²
	Single Camera: Up to 192 MP

Source: *Snapdragon 855 Mobile Platform*, QUALCOMM.

33. On information and belief, the Infringing Products apply a fast Fourier transform to a data file in order to satisfy and apply user specified special effects functions.

34. On information and belief, the Infringing Products store in memory the modified data file consisting of the digital data optimized from the original optical image that has had its optical aberrations corrected. For example, when taking photos, the Galaxy S10 automatically saves them to memory on the phone or to an installed memory card:

Camera and Gallery

- **Shooting methods:**
 - **Press Volume keys to:** Use the Volume keys to take pictures, record video, zoom, or control system volume.
 - **Voice commands:** Take pictures speaking key words.
 - **Floating shutter button:** Add an extra shutter button that you can move anywhere on the screen.
 - **Show palm:** Hold your hand out with your palm facing the camera to have your picture taken in a few seconds.
- **Settings to keep:** Choose whether to launch Camera with the same shooting mode, selfie angle, and filters as the last time.
- **Storage location:** Select a memory location (Galaxy S10e, Galaxy S10, and Galaxy S10+ only).
 - A memory card (not included) must be installed to view Storage location.

Source: Samsung Galaxy S10 User Manual at 57.

35. Defendant has been and is now directly infringing, literally and/or under the doctrine of equivalents because without authority it makes, uses, offers to sell, sells, and/or imports within the United States the patented invention of one or more claims, including at least claim 1 of the '805 Patent. Defendant is therefore liable to OIT for patent infringement under 35 U.S.C. § 271(a).

36. Further, Defendant's customers and end users who offer for sale, sell, and/or use the Infringing Products directly infringe at least claim 1 of the '805 Patent.

37. Furthermore, Defendant has been and is now liable under 35 U.S.C. § 271(b) for actively inducing infringement of one or more claims including at least claim 1 of the '805 patent. On information and belief, as set forth below, Samsung has or should have had actual notice of the '805 Patent since at least 2008. Additionally, Samsung has had actual notice of the '805 Patent since at least its receipt of OIT's complaint. Despite such knowledge, Samsung has intended that its customers and end users infringe the '805 Patent by selling, offering for sale, importing, and/or using the Infringing Products in the United States, and has actively induced such infringement by instructing users in the United States to practice '805 patent claims in their user manuals, posted videos and/or other materials with knowledge of the '805 patent as set forth in this complaint and

with knowledge of the '805 patent since at least the time Panasonic became aware of the '805 Patent.

38. Further, Defendant has been and is now liable under 35 U.S.C. § 271(c) because it offers to sell or sells within the United States or imports into the United States a component of a machine patented by one or more claims including at least claim 1 of the '805 patent that constitutes a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.

39. As a result of Defendant's infringement of the '805 Patent, OIT has suffered and continues to suffer damages. Thus, OIT is entitled to recover from Defendant the damages OIT sustained as a result of Panasonic's wrongful and infringing acts in an amount no less than a reasonable royalty, together with interest and costs fixed by this Court under 35 U.S.C. § 284.

40. OIT has suffered damage because of the infringing activities of Defendant, its officers, agents, servants, employees, associates, partners, and other persons who are in active concert or participation therewith, and OIT will continue to suffer irreparable harm for which there is no adequate remedy at law unless Defendant's infringing activities are preliminarily and permanently enjoined by this Court.

41. Defendant's infringement of the '805 Patent was, is, and continues to be deliberate and willful. The '805 Patent application was published on July 24, 2008, and the '805 Patent issued on November 3, 2009. On information and belief, the '805 Patent was cited by a Korean patent examiner during the prosecution of Samsung's own Korean patent, KR100866490B1. Thus, Samsung has had actual notice of the disclosures of the '339 Patent at least as early as November 3, 2008, the issue date of KR100866490B1. Further, Samsung also had actual notice of the

disclosures of the '339 Patent at least as early as July 23, 2010, when U.S. Patent App. Pub. 2008/0174678, the application for the '805 Patent, was cited as prior art during the prosecution of another of Samsung's own patent applications, U.S. Patent App. No. 12/121,264, which issued as U.S. Patent No. 8,248,482. Thus, Samsung was informed of the disclosures of the '805 Patent, but continued to infringe, nonetheless. Moreover, Panasonic was and is on notice of the '805 Patent at least as early as the filing of the Complaint in this lawsuit, yet continued and continues to infringe the '805 Patent.

COUNT II

(Infringement of the '339 Patent)

42. Plaintiff incorporates and re-alleges the allegations contained in paragraphs 1 through 41 herein by reference.

43. The '339 Patent entitled "Digital imaging system for correcting image aberrations" was duly and legally issued by the U.S. Patent and Trademark Office on May 28, 2013, from Application No. 12/586,221, claiming priority to the '805 Patent application as well as the provisional application 60/807,065 filed on Jul. 11, 2006. A true and accurate copy of the '339 Patent is attached hereto as Exhibit B.

44. Each and every claim of the '339 Patent is valid and enforceable, and each enjoys a statutory presumption of validity under 35 U.S.C. § 282.

45. OIT exclusively owns all rights, title, and interest in and to the '339 Patent and possesses the exclusive right of recovery, including the exclusive right to recover for past, present and future infringement.

46. Representative claim 1 of the '339 Patent recites:

A digital imaging system for correcting image aberrations comprising:
a digital camera mechanism, an optical lens mechanism, a digital sensor, a

microprocessor, a digital signal processor, system software, a database management system and a memory storage sub-system;
wherein the optical lens mechanism is a fixed focal length lens;
wherein a microprocessor uses system software to identify at least one optical aberration by accessing the database;
wherein the microprocessor uses the database to identify at least one algorithm to use to correct the at least one optical aberration;
wherein when the image file is captured by the digital sensor the digital file is forwarded to the digital signal processor;
wherein the image file with at least one optical aberration is corrected by applying digital filtration by using at least one algorithm in the digital signal processor; and
wherein the modified digital file consisting of the digital data optimized from the at least one optical aberration that are corrected from the original optical image is stored in memory.

47. Each Infringing Product is a smart phone containing a digital camera that constitutes a digital imaging system for correcting image aberrations comprising a digital camera mechanism, an optical lens mechanism, a digital sensor, a microprocessor, a digital signal processor, an application specific integrated circuit, system software, a database management system and a memory storage sub-system. The cameras require optical lens mechanisms to operate, as seen, for example, with the Samsung Galaxy S10:

Galaxy S10

Single front camera

The S10 has a single front camera which features a 10MP dual pixel auto focus and UHD selfie technology.



Triple rear camera

In the rear side you have the following three cameras aligned horizontally:

- 1 A 12MP telephoto lens (45°) with a 2x zoom and OIS anti-blur software.
- 2 A 12MP wide angle lens (77°) with dual aperture and dual pixel. It also includes in-built Optical Image Stabilisation (OIS) software to reduce blurry images.
- 3 A 16MP ultra wide angle lens (123°).



Source: *Camera specifications on the Galaxy S10*, SAMSUNG.

48. On information and belief, each of the Infringing Products further includes a database management system and memory storage sub-system; wherein the microprocessor uses system software to identify at least one optical aberration by accessing the database; wherein the microprocessor uses system software to identify at least one algorithm to use to correct the at least one optical aberration; wherein when the image file is captured by the digital sensor the digital file is forwarded to the digital signal processor; wherein the image file with at least one optical aberration is corrected by applying digital filtration by using at least one algorithm in the digital signal processor; and wherein the modified digital file consisting of the digital data optimized from

the at least one optical aberration that are corrected from the original optical image is stored in memory.

49. On information and belief, each of the Infringing Products also comprises a fixed focal length lens. As one example, the Galaxy S10 has an ultra wide angle lens with a fixed focal length:

Triple rear camera

In the rear side you have the following three cameras aligned horizontally:

- 1 A 12MP telephoto lens (45°) with a 2x zoom and OIS anti-blur software.
- 2 A 12MP wide angle lens (77°) with dual aperture and dual pixel. It also includes in-built Optical Image Stabilisation (OIS) software to reduce blurry images.
- 3 A 16MP ultra wide angle lens (123°).



Source: Source: *Camera specifications on the Galaxy S10*, SAMSUNG.

50. On information and belief, the Infringing Products also comprise a digital sensor. For example, Samsung uses their ISOCELL digital sensors in the cameras on their smartphones. *See Image Sensor – Mobile Image Sensor*, SAMSUNG, <https://semiconductor.samsung.com/us/image-sensor/mobile-image-sensor/> (last visited Aug. 31, 2023). For example, on information and belief, the Galaxy S10's rear cameras use a variety of Samsung's ISOCELL sensors, including the ISOCELL 2L4, ISOCELL 3M3, and/or the ISOCELL 3P9. *See ISOCELL*, WIKIPEDIA, <https://en.wikipedia.org/wiki/ISOCELL> (last visited Sept. 1, 2023).

51. Samsung Infringing Products comprise an integrated circuit, a digital signal processor, and a microprocessor. For example, the Galaxy S10 uses Qualcomm's Snapdragon 855 Mobile Platform. *See Samsung Galaxy S10*, QUALCOMM,

<https://www.qualcomm.com/snapdragon/device-finder/smartphones/samsung-galaxy-s10> (last visited Aug. 31, 2023). The Snapdragon 855 contains a Qualcomm Octa-core CPU and a Qualcomm Spectra 380 image signal processor. *Snapdragon 855 Mobile Platform*, QUALCOMM, <https://www.qualcomm.com/products/mobile/snapdragon/smartphones/snapdragon-8-series-mobile-platforms/snapdragon-855-mobile-platform> (last visited Aug. 31, 2023).


52. Samsung Infringing Products comprise system software. For example, as discussed below, the Galaxy S10 contains “ultra wide shape correction” software for correcting optical aberrations.

53. On information and belief, the Infringing Products also comprise a database management system. For example, the Galaxy S10 contains a database of camera software and data, including new and updated camera features, which can be updated via downloads from Samsung. *See Support Update*, SAMSUNG, <https://www.samsung.com/za/support/mobile-devices/after-updating-the-galaxy-s10es10s10-device-some-features-related-to-the-camera-are-automatically-added/> (Nov. 23, 2020).

54. Samsung Infringing Products also comprise a memory storage subsystem. For example, the Galaxy S10 contains memory storage on the phone and through installed memory cards:

Storage

View your storage capacity and detailed usage by category and file type. You can also mount, unmount, or format an optional memory card (not included).

- From Settings, tap  **Battery and device care** > **Storage**.
 - Tap a category to view and manage files.


Memory card

Once an optional microSD memory card (not included) has been installed in your device, the card memory is displayed in the Storage setting.

For more information, see [Set up your device](#).



Mount a memory card

When you install an optional memory card, it is automatically mounted (connected to the device) and prepared for use. However, should you unmount the card without removing it from the device, you need to mount it before it can be accessed.

1. From Settings, tap  **Battery and device care** > **Storage**.
2. Swipe the screen to **SD card**, and then tap **Mount**.

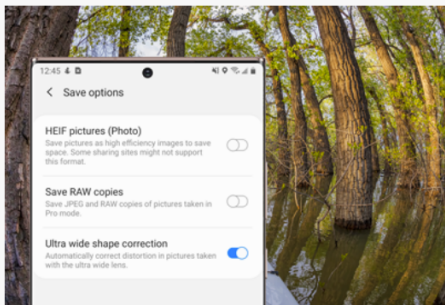
Remove a memory card

To prevent damage to information stored on the memory card, unmount the card before removing it from the device.

1. From Settings, tap  **Battery and device care** > **Storage**.
2. Swipe the screen to **SD card**, and then tap  **More options** > **Unmount**.
3. Remove your memory card from the device.

Source: Samsung Galaxy S10 User Manual at 151.

55. On information and belief, the Infringing Products utilize a microprocessor that uses system software to identify at least one optical aberration by accessing the database and uses the database to identify at least one algorithm to use to correct the at least one optical aberration. Further, on information and belief, the Infringing Products correct image files with optical aberrations by applying digital filtration by using at least one algorithm in the digital signal processor. For example, the Galaxy S10 includes an “ultra wide shape correction” function that corrects optical aberrations:



Picture and video distortion from a Galaxy phone's camera

The wide angle lenses on your phone's camera may cause some slight optical distortion around the edges of photos and videos. This is a normal side effect of a wide angle lens. Enabling Ultra wide shape correction can minimize this effect.

1 Open the Camera's settings.

Open the **Camera** app, and then tap the **Settings** icon. Next, tap **Format and advanced options**.

2 Enable or disable Ultra wide shape correction.

Tap the **switch** next to "Ultra wide shape correction" to turn this feature on or off.

Source: *Picture and video distortion*, SAMSUNG.

In order to automatically compensate for these optical aberrations, the Galaxy S10 must necessarily use system software to access a database of lens data on the camera.

56. On information and belief, in the Infringing Products, when an image file is captured by the digital sensor the digital file is forwarded to the digital signal processor. For example, the Snapdragon 855 uses its image signal processor to process captured camera images, which necessarily requires that the images be forwarded from the sensor to the digital processor:

Camera	Image Signal Processor (ISP) Name: Qualcomm® Spectra™ 380
	Image Signal Processor (ISP) Type: Hardware Accelerator for Computer Vision (CV-ISP)
	Image Signal Processor (ISP) Number: Dual ISP
	Image Signal Processor (ISP) Bit Depth: 14-bit
	Dual Camera (MFNR, ZSL, 30 fps): Up to 22 MP ¹
	Single Camera (MFNR, ZSL, 30 fps): Up to 48 MP ²
	Single Camera: Up to 192 MP

Source: *Snapdragon 855 Mobile Platform*, QUALCOMM.

57. On information and belief, the Infringing Products store in memory the modified digital file consisting of the digital data optimized from the original optical image that has had its optical aberrations corrected. For example, when taking photos, the Galaxy S10 automatically saves them to memory on the phone or to an installed memory card:

Camera and Gallery

- **Shooting methods:**
 - **Press Volume keys to:** Use the Volume keys to take pictures, record video, zoom, or control system volume.
 - **Voice commands:** Take pictures speaking key words.
 - **Floating shutter button:** Add an extra shutter button that you can move anywhere on the screen.
 - **Show palm:** Hold your hand out with your palm facing the camera to have your picture taken in a few seconds.
- **Settings to keep:** Choose whether to launch Camera with the same shooting mode, selfie angle, and filters as the last time.
- **Storage location:** Select a memory location (Galaxy S10e, Galaxy S10, and Galaxy S10+ only).
 - A memory card (not included) must be installed to view Storage location.

Source: Samsung Galaxy S10 User Manual at 57.

58. Defendant has been and is now directly infringing, literally and/or under the doctrine of equivalents because without authority it makes, uses, offers to sell, sells, and/or imports within the United States the patented invention of one or more claims, including at least claim 1 of the '339 Patent. Defendant is therefore liable to OIT for patent infringement under 35 U.S.C. § 271(a).

59. Further, Defendant's customers and end users who offer for sale, sell, and/or use the Infringing Products directly infringe at least claim 1 of the '339 Patent.

60. Furthermore, Defendant has been and is now liable under 35 U.S.C. § 271(b) for actively inducing infringement of one or more claims including at least claim 1 of the '339 patent. On information and belief, as set forth below, Samsung has or should have had actual notice of the disclosures in the '339 Patent since at least 2008. Additionally, Samsung has had actual notice of the '339 Patent since at least its receipt of OIT's complaint. Despite such knowledge, Samsung has intended that its customers and end users infringe the '339 Patent by selling, offering for sale, importing, and/or using the Infringing Products in the United States, and has actively induced such infringement by instructing users in the United States to practice '339 patent claims in their user manuals, posted videos and/or other materials with knowledge of the '339 patent as set forth in this

complaint and with knowledge of the '339 patent since at least the time Samsung became aware of the disclosures of '339 Patent.

61. Further, Defendant has been and is now liable under 35 U.S.C. § 271(c) because it offers to sell or sells within the United States or imports into the United States a component of a machine patented by one or more claims of the '339 Patent as set forth above that constitutes a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.

62. As a result of Defendant's infringement of the '339 Patent, OIT has suffered and continues to suffer damages. Thus, OIT is entitled to recover from Defendant the damages OIT sustained as a result of Samsung's wrongful and infringing acts in an amount no less than a reasonable royalty, together with interest and costs fixed by this Court under 35 U.S.C. § 284.

63. OIT has suffered damage because of the infringing activities of Defendant, its officers, agents, servants, employees, associates, partners, and other persons who are in active concert or participation therewith, and OIT will continue to suffer irreparable harm for which there is no adequate remedy at law unless this Court preliminarily and permanently enjoins Defendant's infringing activities.

64. Defendant's infringement of the '339 Patent was, is, and continues to be deliberate and willful. The '339 Patent is a continuation of U.S. Patent No. 7,612,805. The '805 Patent application with the same specification as the '339 patent was published on July 24, 2008, and the related '805 Patent issued on November 3, 2009. On information and belief, the '805 Patent was cited by a Korean patent examiner during the prosecution of Samsung's own Korean patent, KR100866490B1. Thus, Samsung has had actual notice of the disclosures of the '339 Patent at least

as early as November 3, 2008, the issue date of KR100866490B1. Further, Samsung also had actual notice of the disclosures of the '339 Patent at least as early as July 23, 2010, when U.S. Patent App. Pub. 2008/0174678, the application for the '805 Patent, was cited as prior art during the prosecution of another of Samsung's own patent applications, U.S. Patent App. No. 12/121,264, which issued as U.S. Patent No. 8,248,482. Thus, Samsung was informed of the disclosures of the '339 Patent, but continued to infringe, nonetheless. Moreover, Samsung was and is on notice of the disclosures in the '339 Patent at least as early as the filing of the Complaint in this lawsuit, yet Defendant continued and continues to infringe the '339 Patent.

COUNT III

(Infringement of the '266 Patent)

65. Plaintiff incorporates and re-alleges the allegations contained in paragraphs 1 through 64 herein by reference.

66. The '266 Patent entitled "Digital camera with wireless image transfer" was duly and legally issued by the U.S. Patent and Trademark Office on December 29, 2020, from Application No. 16/692,972, claiming priority to the '805 Patent application as well as the provisional application 60/807,065 filed on Jul. 11, 2006. A true and accurate copy of the '266 Patent is attached hereto as Exhibit C.

67. Each and every claim of the '266 Patent is valid and enforceable, and each enjoys a statutory presumption of validity under 35 U.S.C. § 282.

68. OIT exclusively owns all rights, title, and interest in and to the '266 Patent and possesses the exclusive right of recovery, including the exclusive right to recover for past, present and future infringement.

69. Representative claim 1 of the '266 Patent recites:

A method of processing one or more images with a digital camera, comprising:

digitally processing at least one captured image, the processing using in-camera hardware and software that is configured to:
perform a plurality of image correction algorithms,
process image correction data stored in a database system,
receive updated software and image correction data, and
upgrade the digital camera with the updated software and image correction data;
storing in memory one or more corrected images resulting from digitally processing the at least one captured image; and
wirelessly transmitting at least one of the one or more corrected images, wherein the in-camera software and database system are upgradable to provide improved algorithms and correction data for correction of images.

70. Each Infringing Product is a smartphone that contains a digital camera that is configured to process one or more images as seen, for example, with the Samsung Galaxy S10:

Galaxy S10

Single front camera

The S10 has a single front camera which features a 10MP dual pixel auto focus and UHD selfie technology.



Triple rear camera

In the rear side you have the following three cameras aligned horizontally:

- 1 A 12MP telephoto lens (45°) with a 2x zoom and OIS anti-blur software.
- 2 A 12MP wide angle lens (77°) with dual aperture and dual pixel. It also includes in-built Optical Image Stabilisation (OIS) software to reduce blurry images.
- 3 A 16MP ultra wide angle lens (123°).



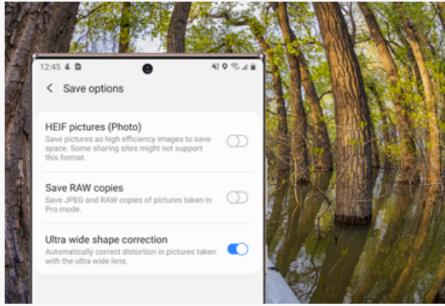
Source: *Camera specifications on the Galaxy S10*, SAMSUNG.

71. On information and belief, each of the Infringing Products is further configured to digitally process at least one captured image, the processing using in-camera hardware and software that is configured to perform a plurality of image correction algorithms, process image correction data stored in a database system, receive updated software and image correction data, and upgrade the digital camera with the updated software and image correction data.

72. On information and belief, each of the Infringing Products is further configured to store in memory one or more corrected images resulting from digitally processing the at least one captured image and wirelessly transmit at least one or more corrected images. On information and belief, each of the Infringing Products is also further configured such that the in-camera software and database system are upgradable to provide improved algorithms and correction data for correction of images.

73. The Infringing Products contain in-camera hardware and software for image processing. As one example, the Infringing Products comprise a digital sensor. For example, Samsung uses their ISOCELL digital sensors in the cameras on their smartphones. *See Image Sensor – Mobile Image Sensor*, SAMSUNG. For example, on information and belief, the Galaxy S10's rear cameras use a variety of Samsung's ISOCELL sensors, including the ISOCELL 2L4, ISOCELL 3M3, and/or the ISOCELL 3P9. *See ISOCELL*, WIKIPEDIA. Further, the Infringing Products comprise processing hardware. For example, the Galaxy S10 uses Qualcomm's Snapdragon 855 Mobile Platform. *See Samsung Galaxy S10*, QUALCOMM. The Snapdragon 855 contains a Qualcomm Octa-core CPU and a Qualcomm Spectra 380 image signal processor. *Snapdragon 855 Mobile Platform*, QUALCOMM.

74. The hardware and software components of the Infringing Products also perform a plurality of image correction algorithms. For example, the Galaxy S10 includes an “ultra wide shape correction” function that corrects optical aberrations:



Picture and video distortion from a Galaxy phone's camera

The wide angle lenses on your phone's camera may cause some slight optical distortion around the edges of photos and videos. This is a normal side effect of a wide angle lens. Enabling Ultra wide shape correction can minimize this effect.

1 Open the Camera's settings.

Open the **Camera** app, and then tap the **Settings** icon. Next, tap **Format and advanced options**.

2 Enable or disable Ultra wide shape correction.

Tap the **switch** next to "Ultra wide shape correction" to turn this feature on or off.

Source: *Picture and video distortion*, SAMSUNG.

75. Samsung Infringing Products also store and use database data for lens aberration correction. For example, the Galaxy S10 contains a database of camera software and data, including new and updated camera features, which can be updated via downloads from Samsung. *See Support Update*, SAMSUNG.

76. The Infringing Products also store the corrected images in memory. For example, when taking photos, the Galaxy S10 automatically saves them to memory on the phone or to an installed memory card:

Camera and Gallery

- **Shooting methods:**
 - **Press Volume keys to:** Use the Volume keys to take pictures, record video, zoom, or control system volume.
 - **Voice commands:** Take pictures speaking key words.
 - **Floating shutter button:** Add an extra shutter button that you can move anywhere on the screen.
 - **Show palm:** Hold your hand out with your palm facing the camera to have your picture taken in a few seconds.
- **Settings to keep:** Choose whether to launch Camera with the same shooting mode, selfie angle, and filters as the last time.
- **Storage location:** Select a memory location (Galaxy S10e, Galaxy S10, and Galaxy S10+ only).
 - A memory card (not included) must be installed to view Storage location.



Source: Samsung Galaxy S10 User Manual at 57.

77. The Infringing Products are also configured to wirelessly transmit the corrected images. For example, the Galaxy S10 can wirelessly share photos through text message, e-mail, Bluetooth, and other methods:

Samsung Galaxy S10 - Share Picture from Gallery

NOTE

To take a new picture, refer to [Take and Share a Picture](#).

1. From a Home screen, swipe up or down from the center of the display to access the apps screen.
→ These instructions only apply to [Standard mode](#) and the default [Home screen layout](#).
2. Tap **Gallery** .
3. If applicable, select the album where the picture is located.
4. Tap the desired picture(s).
5. Tap the **Share icon**  (at the bottom).
6. Select one of the available options (e.g., Bluetooth, Cloud, Email, Gmail, Messages, etc.).
→ Depending upon the apps installed, the options presented may vary.
7. Enter any additional info required to send or share the picture.
→ Depending upon the share option selected, the remaining steps to send or share may vary.

Source: *Samsung Galaxy S10 – Share Picture from Gallery*, Verizon, <https://www.verizon.com/support/knowledge-base-223068/> (last visited Aug. 31, 2023).

78. Defendant has been and is now directly infringing, literally and/or under the doctrine of equivalents because without authority it makes, uses, offers to sell, sells, and/or imports within the United States the patented invention of one or more claims, including at least claim 1 of the '266 Patent. Defendant is therefore liable to OIT for patent infringement under 35 U.S.C. § 271(a).

79. Further, Defendant's customers and end users who offer for sale, sell, and/or use the Infringing Products directly infringe at least claim 1 of the '266 Patent.

80. Furthermore, Defendant has been and is now liable under 35 U.S.C. § 271(b) for actively inducing infringement of one or more claims including at least claim 1 of the '266 patent. On information and belief, as set forth below, Samsung has or should have had actual notice of the disclosures in the '266 Patent since at least 2008. Additionally, Defendant has had actual notice of the '266 Patent since at least its receipt of OIT's complaint. Despite such knowledge, Samsung has intended that its customers and end users infringe the '266 Patent by selling, offering for sale, importing, and/or using the Infringing Products in the United States, and has actively induced such infringement by instructing users in the United States to practice '266 patent claims in their user manuals, posted videos and/or other materials with knowledge of the '266 patent as set forth in this complaint and with knowledge of the '266 patent since at least the time Defendant became aware of the '266 Patent.

81. Further, Defendant has been and is now liable under 35 U.S.C. § 271(c) because it offers to sell or sells within the United States or imports into the United States a component of a machine patented by one or more claims of the '266 Patent as set forth above that constitutes a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.

82. As a result of Defendant's infringement of the '266 Patent, OIT has suffered and continues to suffer damages. Thus, OIT is entitled to recover from Defendant the damages OIT sustained as a result of Samsung's wrongful and infringing acts in an amount no less than a reasonable royalty, together with interest and costs fixed by this Court under 35 U.S.C. § 284.

83. OIT has suffered damage because of the infringing activities of Defendant, its officers, agents, servants, employees, associates, partners, and other persons who are in active concert or participation therewith, and OIT will continue to suffer irreparable harm for which there is no adequate remedy at law unless this Court preliminarily and permanently enjoins Defendant's infringing activities.

84. Defendant's infringement of the '266 Patent was, is, and continues to be deliberate and willful. The '266 Patent is a continuation of an application that is a continuation of the '339 Patent, which is a continuation of the '805 Patent. The '805 Patent application with the same specification as the '266 patent was published on July 24, 2008, and the related '805 Patent issued on November 3, 2009. On information and belief, the '805 Patent was cited by a Korean patent examiner during the prosecution of Samsung's own Korean patent, KR100866490B1. Thus, Samsung has had actual notice of the disclosures of the '266 Patent at least as early as November 3, 2008, the issue date of KR100866490B1. Further, Samsung also had actual notice of the disclosures of the '266 Patent at least as early as July 23, 2010, when U.S. Patent App. Pub. 2008/0174678, the application for the '805 Patent, was cited as prior art during the prosecution of another of Samsung's own patent applications, U.S. Patent App. No. 12/121,264, which issued as U.S. Patent No. 8,248,482. Thus, Samsung was informed of the disclosures of the '266 Patent, but continued to infringe, nonetheless. Moreover, Samsung was and is on notice of the '266 Patent at

least as early as the filing of the Complaint in this lawsuit, yet Defendant continued and continues to infringe the '266 Patent.

CONCLUSION

85. Defendant has directly, indirectly, and/or contributorily infringed on Plaintiff's rights as owner of the Asserted Patents. Plaintiff is entitled to recover from Defendant the damages sustained by Plaintiff as a result of Defendant's wrongful acts in an amount subject to proof at trial, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court.

86. Plaintiff has incurred and will incur attorneys' fees, costs, and expenses in the prosecution of this action. The circumstances of this dispute may give rise to an exceptional case within the meaning of 35 U.S.C. § 285, and Plaintiff is entitled to recover its reasonable and necessary attorneys' fees, costs, and expenses.

JURY DEMAND

87. Plaintiff hereby requests a trial by jury pursuant to Rule 38 of the Federal Rules of Civil Procedure.

PRAYER FOR RELIEF

88. Plaintiff requests that the Court find in its favor and against Defendant, and that the Court grant Plaintiff the following relief:

1. A judgment that Defendant has infringed the Asserted Patents as alleged herein, directly, indirectly, and/or contributorily;
2. A judgment that Defendant's infringement of the Asserted Patents was deliberate and willful;
3. A judgment for an accounting of damages sustained by Plaintiff as a result of the acts of infringement by Defendant;

4. A judgment and order requiring Defendant to pay Plaintiff damages under 35 U.S.C. § 284, including up to treble damages as provided by 35 U.S.C. § 284, and any royalties determined to be appropriate;
5. A judgment and order requiring Defendant to pay Plaintiff pre-judgment and post-judgment interest on the damages awarded;
6. A judgment and order finding this to be an exceptional case and requiring Defendant to pay the costs of this action (including all disbursements) and attorneys' fees as provided by 35 U.S.C. § 285; and
7. Such other and further relief as the Court deems just and equitable.

Dated: October 18, 2023

Respectfully submitted,

/s/ E. Leon Carter

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