

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

**OPTIMUM IMAGING TECHNOLOGIES
LLC,**

Plaintiff,

V.

**PANASONIC CORPORATION,
PANASONIC HOLDINGS
CORPORATION, PANASONIC
ENTERTAINMENT &
COMMUNICATION CO., LTD., and
PANASONIC OPERATIONAL
EXCELLENCE CO., LTD.**

Defendants.

JURY TRIAL DEMANDED

CIVIL ACTION NO. 4:23-cv-00926

PLAINTIFF'S AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Optimum Imaging Technologies LLC (“OIT” or “Plaintiff”) files this Complaint in the Eastern District of Texas (the “District”) against Defendants Panasonic Corporation, Panasonic Holdings Corporation, Panasonic Entertainment & Communication Co., Ltd., and Panasonic Operational Excellence Co., Ltd. (collectively “Defendants”) for infringement of U.S. Patent Nos. 7,612,805 (the “’805 patent”), 8,451,339 (the “’339 patent”), 10,873,685 (the “’685 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, the Panasonic Group (<https://holdings.panasonic/global/>) is a single organization of related Panasonic companies that was at relevant times to this Complaint led by Panasonic Corporation and today is led by Panasonic Holdings Corporation under which are multiple operating companies including Panasonic Corporation, Panasonic Entertainment & Communication Co., Ltd. (“PEAC”), and Panasonic Operational Excellence Co., Ltd. On information and belief, since at least April 25, 2024, some, if not all, of the companies of the Panasonic Group (including PEAC) have had actual notice of the disclosures of the Asserted Patents and OIT’s Original Complaint, but continued to commit acts infringing the Asserted Patents.

3. Subsequent to the filing of the Original Complaint in this litigation (Dkt. No. 1), a Panasonic entity informed OIT that in April 2022 Panasonic Corporation was renamed Panasonic Holdings Corporation, and that the responsibilities of the original Panasonic Corporation were divided amongst Panasonic Holdings Corporation and several operating companies including a new Panasonic Corporation, PEAC, and Panasonic Operational Excellence Co., Ltd. OIT was also informed that the Panasonic Corporation named as a Defendant in the Original Complaint was allegedly no longer responsible for any accused Panasonic Infringing Products. The same Panasonic entity also informed OIT that, for at least some portion of the damages period, PEAC made and exported into the United States for sale at least some of the accused Panasonic products.

4. On information and belief, Defendant Panasonic Corporation is a corporation organized under the laws of Japan, with its principal place of business located at Panasonic Tokyo Shiodome Bld. 1-5-1 Higashi Shimbashi, Minato-ku, Tokyo 105-8301, Japan. As noted above, OIT was informed that in April 2022 Panasonic Corporation became Panasonic Holdings Corporation and a new operating company called Panasonic Corporation was formed. OIT was informed that the new operating company called Panasonic Corporation allegedly is now no longer responsible

for Infringing Products. Nevertheless, on information and belief, prior to the corporate reorganization in April 2022, a company called Panasonic Corporation committed and was responsible for acts constituting infringement of the Asserted Patents. On information and belief, Panasonic Corporation retains liability for acts of infringement of the Asserted Patents alleged in this Complaint during at least a portion of the relevant damages period. Panasonic Corporation may be served with process via its registered agents and via its corporate officers.

5. On information and belief, Defendant Panasonic Holdings Corporation is a Japanese entity having a principal place of business at 1006, Kadoma, Kadoma City, Osaka 571-8501, Japan. On information and belief, Panasonic Holdings Corporation is the parent company of the other Panasonic entities named as Defendants. As discussed above, OIT was informed that in April 2022 Panasonic Corporation was renamed Panasonic Holdings Corporation, and that the responsibilities of the original Panasonic Corporation were divided amongst Panasonic Holdings Corporation and several operating companies. On information and belief, prior to a corporate reorganization in April 2022, Panasonic Holdings Corporation under its former name committed and was responsible for acts constituting infringement of the Asserted Patents. On information and belief, Panasonic Holdings Corporation retains liability for acts of infringement of the Asserted Patents alleged in this Complaint during at least a portion of the relevant damages period. Panasonic Holdings Corporation may be served with process via its registered agents and via its corporate officers.

6. On information and belief, Defendant Panasonic Entertainment & Communication Co., Ltd. (“PEAC”) is a Japanese entity having a principal place of business at 1-10-12 Yagumo-higashimachi, Moriguchi City, Osaka 570-0021, Japan. On information and belief, PEAC is engaged in the design, manufacture, and sale of consumer electronics, including audio and video products such

as OLED TVs, Lumix digital cameras, headphones, phones, intercoms, etc., as well as business products and solutions such as broadcast, professional AV, and sound systems. On further information and belief, PEAC makes, imports, distributes, offers for sale, and sells the Infringing Products in the United States and has done so in the past during at least some portion of the damages period. PEAC may be served with process via its registered agents and via its corporate officers.

7. On information and belief, Defendant Panasonic Operational Excellence Co., Ltd. is a Japanese entity have a principal place of business at 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8501, Japan. On information and belief, Panasonic Operational Excellence Co., Ltd. at least imported into the United States products that infringe the Asserted Patents for at least a portion of the damages period. Panasonic Operational Excellence Co., Ltd. may be served with process via its registered agents and via its corporate officers.

8. This Amended Complaint asserts legal claims that arose out of the conduct, transaction, or occurrence set out in the original Complaint. As such, the allegations of this Amended Complaint relate back to the date of the filing of the original Complaint at least pursuant to Rule 15(c) of the Federal Rules of Civil Procedure.

9. This Amended Complaint further relates back to the date of the filing of the original Complaint pursuant to Rule 15(c) of the Federal Rules of Civil Procedure because the amendment changes the party or the naming of the party against whom a claim is asserted, previously having named as a Defendant Panasonic Corporation but now including Panasonic Holdings Corporation, PEAC, and Panasonic Operational Excellence Co., Ltd.; and furthermore the parties brought by this Amended Complaint: (i) received such notice of the action that they will not be prejudiced in defending on the merits; and (ii) knew or should have known that the action would have been brought against it, but for a mistake concerning the proper party's identity, and specifically that the

allegations regarding the identity of Panasonic Holdings Corporation and PEAC in this Amended Complaint were made as the result of PEAC notifying Plaintiff of PEAC's belief that Plaintiff's original identification of Panasonic Corporation was mistaken at least since a reorganization of Panasonic Corporation in April 2022.

JURISDICTION AND VENUE

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

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

12. On information and belief, Defendants are 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 Defendants 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.

13. Furthermore, upon information and belief, Defendants have 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. For example, Defendants have a database of official Panasonic dealers and resellers on its website, including over 40 dealers in Texas and one or more in this District. *See Find a Dealer*, PANASONIC, <https://na.panasonic.com/us/dealers> (last visited Aug. 28, 2023).

14. Defendants also maintain commercial websites accessible to residents of the State of Texas and this judicial District, through which Defendants promote and facilitate sales of the infringing products. For example, Defendants' website shop.panasonic.com is accessible to consumers in the United States, including those in the State of Texas and this judicial District. Defendants not only supply information about the Infringing Products at these sites, but also direct consumers to websites and locations to purchase the Infringing Products. Defendants sell the Infringing Products through online stores such as Amazon.com, as well as brick-and-mortar stores located in this judicial District, including but not limited to Best Buy.

15. Thus, Defendants have established minimum contacts with the State of Texas and the exercise of jurisdiction would not offend traditional notions of fair play and substantial justice.

16. Venue is proper in this judicial district pursuant to 28 U.S.C. § 1391(b), (c) and 1400(b) because (i) Defendants have done and continue to do business in this district; (ii) Defendants have 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) Defendants are foreign entities. 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 Defendants are foreign entities.

FACTUAL ALLEGATIONS

17. 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"; the '685 Patent, titled "Digital imaging system for correcting video 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.

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

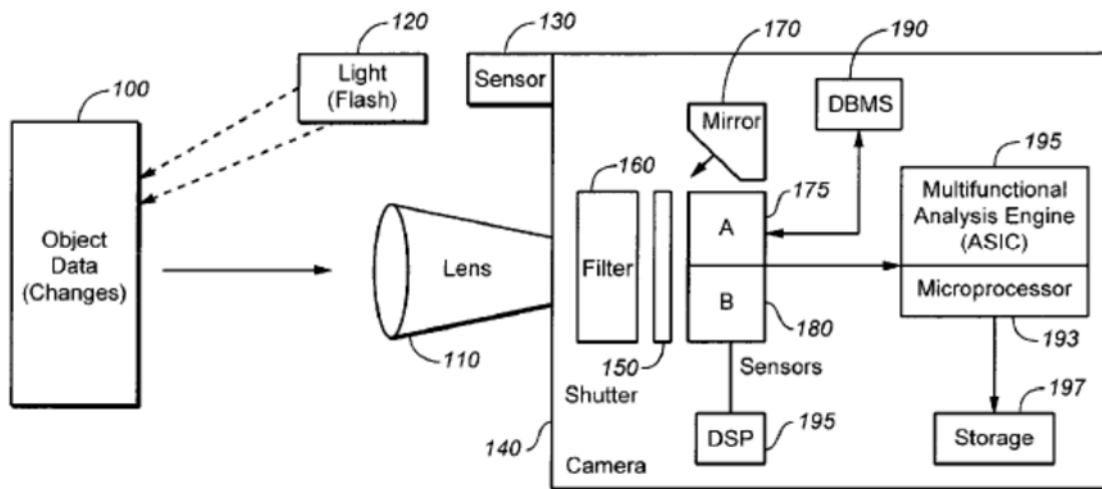
19. The Asserted Patents are directed toward digital imaging systems and methods, namely in-camera systems for filtering and correcting image aberrations or distortions. The systems as claimed relate to a combination of hardware and software throughout the cameras. The Abstract for the '339 patent, for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

20. 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.

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



22. Each Defendant imports, has imported, sells, has sold for sale and/or offers 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”).

23. Defendants market their Infringing Products specifically extolling the functionality of the Asserted Patents. As one example, Defendants provide guides that explain to users and potential customers that the Panasonic LUMIX S5M2 Full Frame Mirrorless Camera performs “Lens Compensation” which corrects vignetting, color shading, and diffraction aberrations in photos and videos taken with the LUMIX S5M2. LUMIX S5II Owner’s Manual, PANASONIC, at 323 (available for download at <https://help.na.panasonic.com/manuals/>) The camera firmware that supports photo shooting functions like Lens Compensation can be updated via download from Defendants. *See Digital AV Support > Digital Camera > Download*, PANASONIC, <https://av.jpn.support.panasonic.com/support/global/cs/dsc/download/index4.html> (last visited Aug. 28, 2023).

24. On information and belief, all of Defendants' digital cameras 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: Panasonic LUMIX S1, S1H, S1R, S5, S5M2, S5M2X, GH4, GH5, GH5S, GH5M2, G7, GH6, G9, GX9, G85, GX85, G95, and G100. 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)

25. Plaintiff incorporates and re-alleges the allegations contained in paragraphs 1 through 24 herein by reference.

26. 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.

27. 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.

28. 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.as follows:

29. Representative claims 1 and 9 are as follows:

30. 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.

31. Claim 9 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 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 lens type is a zoom lens;
 wherein the lens focal length alternates from specific fixed focal length lens settings in a succession of steps;
 wherein optical aberrations are corrected with digital filtration to modify multiple

images from different focal lengths in a succession of data files; 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.

32. Each Infringing Product is 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 Panasonic LUMIX S5M2:



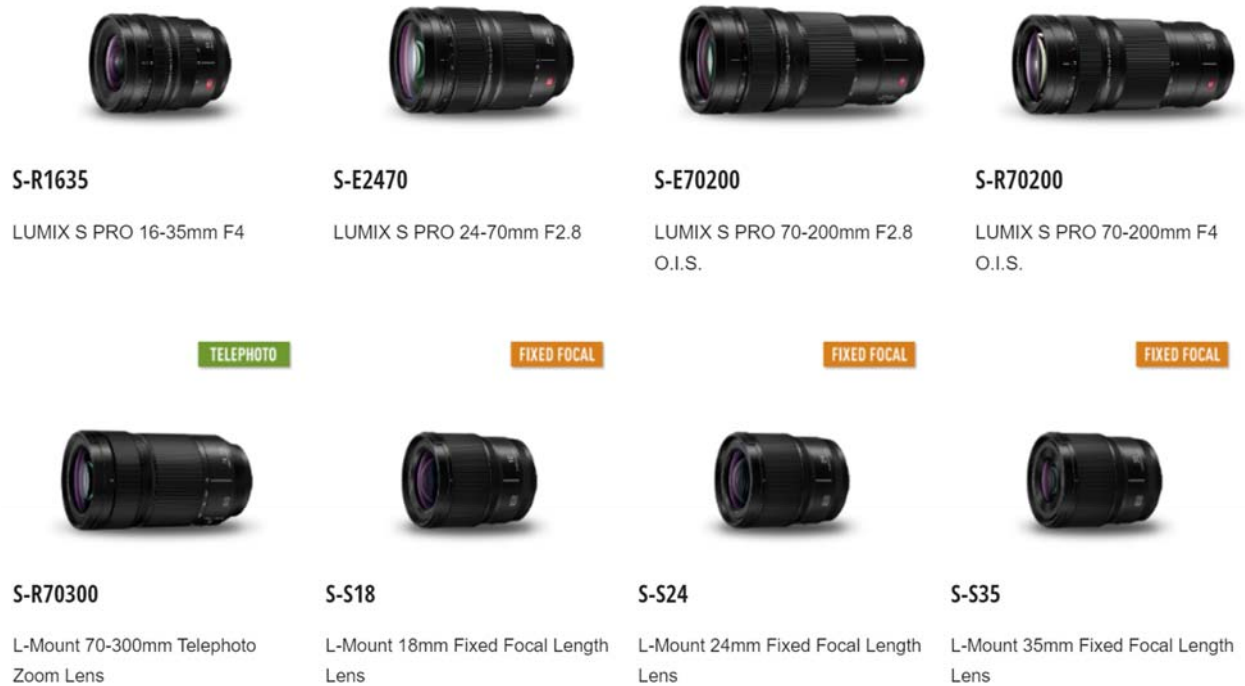
TYPE	
Type	Digital Single Lens Mirrorless camera
Lens mount	L-Mount

Source: *LUMIX S5II Full Frame Mirrorless Camera DC-S5M2 – Specs*, PANASONIC, <https://www.panasonic.com/uk/consumer/cameras-camcorders/lumix-mirrorless-cameras/lumix-s-full-frame-cameras/dc-s5m2.html#specs> (last visited Aug. 28, 2023)

33. 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 lens type is a zoom lens; wherein the lens focal length alternates from specific fixed focal length lens settings in a succession of steps; wherein optical aberrations are corrected with digital filtration to modify multiple images from different focal lengths in a succession of data files; 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.

34. Each of the Infringing Products comprises an optical lens mechanism that can be a zoom lens or a fixed focal length lens. As one example, the LUMIX S5M2 is used with a variety of compatible zoom or fixed focal length lenses. According to Defendants, the LUMIX S5M2 can be used with lenses of both types:

Lenses



Source: *LUMIX S5II Full Frame Mirrorless Camera DC-S5M2 – Accessories*, PANASONIC, <https://www.panasonic.com/uk/consumer/cameras-camcorders/lumix-mirrorless-cameras/lumix-s-full-frame-cameras/dc-s5m2.html#accessory> (last visited Aug. 28, 2023)

35. The Infringing Products also comprise a digital sensor. For example, the LUMIX S5M2 has a full-frame CMOS image sensor:

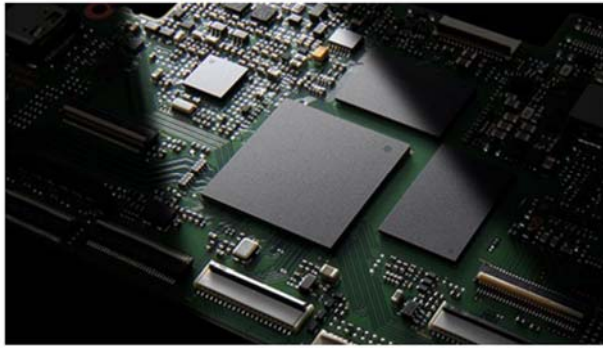
IMAGE SENSOR	
Type	35mm full-frame (35.6mm x 23.8mm) CMOS sensor
Camera effective pixels / Total pixels	24.20 megapixels / 25.28 megapixels
AR (Anti Reflection) coating	Yes
Aspect ratio / Color filter	3:2 / Primary color filter
Dust reduction system	Image sensor shift type

LUMIX S5II Full Frame Mirrorless Camera DC-S5M2 – Specs, PANASONIC.

36. On information and belief, the Infringing Products also store and use database data for lens aberration correction. For example, as discussed further below, the LUMIX S5M2 contains photo shooting functionality that automatically corrects optical aberrations based on the lens being used, which necessarily requires the use of database data stored on the LUMIX S5M2. Further, the camera system software that supports shooting functions like Lens Compensation can be updated via download from Defendants. *See Digital AV Support > Digital Camera > Download*, PANASONIC, <https://av.jpn.support.panasonic.com/support/global/cs/dsc/download/index4.html> (last visited Aug. 28, 2023).

37. On information and belief, Defendants' Infringing Products use at least one application specific integrated circuit (ASIC) and a digital signal processor as well as a microprocessor. For example, the LUMIX S5M2 contains an image processing engine (designed under Defendants' L2 Technology Partnership with Leica) that implements this functionality. *See Jason Murray, L2 Technology partnership and L-Mount Alliance: Panasonic draws the line between the two*, MACFILOS, <https://www.macfilos.com/2023/01/22/panasonic-draws-the-line-between-the-l-mount-alliance-and-the-l2-technology-partnership-l2-technology-partnership-and-l-mount-alliance-panasonic-draws-the-line-between-the-two/> (Jan. 22, 2023) Per Panasonic, the L2 Technology Partnership developed a new image processor for the LUMIX S5M2: "The combined expertise of the two companies in image processing enables this technology to achieve high image quality performance and high-speed arithmetic processing." *Id.*

38. Additionally, many other of Defendants' products, including Infringing Products, use Defendants' Venus image processing engine. For example, the LUMIX S5 uses the Venus engine:



Venus Engine

The marriage of a CMOS sensor with the beautiful Venus Engine reproduces extraordinary color detail and natural texture expression. Multipixel Luminance Generation and Intelligent Detail Processing render intense brightness and contrast. The Three-Dimensional Color Control zings with rich colors from dark to bright shades, and high-precision Multi Process NR makes your images pop even at high ISO sensitivity settings.

Source: *Outstanding Image Quality and Advanced Features*, PANASONIC, <https://www.panasonic.com/mea/en/consumer/cameras-camcorders/lumix-s-full-frame-system-learn/article/lumix-s5-special-features/outstanding-image-quality-and-advanced-features.html> (last visited Aug. 28, 2023).

39. 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 and correct aberrations wherein the lens focal length alternates from specific fixed focal length lens settings in a succession of steps; wherein optical aberrations are corrected with digital filtration to modify multiple images from different focal lengths in a succession of data files. For example, the LUMIX S5M2 includes a “Lens Compensation” function that corrects multiple types of optical aberrations:

Lens Compensation

- [Vignetting Comp.]: 323
- [Color Shading Compensation]: 324
- [Diffraction Compensation]: 328

[Vignetting Comp.]



When the screen periphery darkens as a result of the lens characteristics, you can record pictures with the brightness of the screen periphery corrected.

→ / → → Select [Vignetting Comp.]

Settings: [ON]/[OFF]

Source: LUMIX S5II Owner's Manual, PANASONIC, at 323 (available for download at <https://help.na.panasonic.com/manuals/>).




Because the Lens Compensation functionality automatically corrects aberrations, it necessarily corrects and modifies aberrations at different focal lengths based on the focal length chosen when using the zoom lens. Additionally, the “Vignetting Comp.” Lens Compensation function is set to “ON” by default. *See id.* at 751.

40. On information and belief, the system software in the Infringing Products forwards data from the digital sensor to the digital processor. For example, Defendants state that the LUMIX S5 contains a “marriage of a CMOS sensor with the beautiful Venus Engine.” *Outstanding Image Quality and Advanced Features*, PANASONIC. The data collected by the sensor must necessarily be forwarded to the digital processor in order to process the image.







41. 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.

42. 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, the LUMIX S5M2 automatically records images to memory cards based on the default card priority or the priority set by the user:

[Double Card Slot Function]

[Recording Method]	▶[1] / [2] / [3]
This sets the way recording to the card slots 1 and 2 is performed.	
<p> [Relay Rec]: Selects the priority of card slots for recording.</p> <p>[Destination Card Slot]: [1→2]/[2→1]</p> <p>Relays recording to the card in the other card slot after the first card runs out of free space.</p> <ul style="list-style-type: none"> You can assign the function that changes the card which is prioritized for recording to an Fn button. (→[Destination Card Slot]: 514) 	
<p> [Backup Rec]: Records the same images to both cards simultaneously.</p>	
<p> [Allocation Rec]: Allows you to specify the card slot to be used for recording for different image formats.</p> <p>[JPEG Destination]/[RAW Destination]/[Video Destination]</p>	

Source: LUMIX S5II Owner's Manual at 574.

Menu		Default setting			
 [Setup]:  [Card/File]					
[Card Format]		—			
[Double Card Slot Function]	[Recording Method]		✓		✓
	[Destination Card Slot]	[1 → 2]	✓		✓
[Folder / File Settings]	[Select Folder]	—			
	[Create a New Folder]	—			
	[File Name Setting]	[Folder Number Link]	✓		✓
[File Number Reset]		—			
[Copyright Information]	[Artist]	[OFF]	✓		✓
	[Copyright Holder]	[OFF]	✓		✓
	[Display Copyright Info.]	—			

Id. at 767.

43. Each Defendant has been and/or is now directly infringing, literally and/or under the doctrine of equivalents because without authority each Defendant has or currently makes, uses, offers to sell, sells, and/or imports into the United States the patented invention of one or more claims, including at least claims 1 and 9 of the '805 Patent. Each Defendant is therefore liable to OIT for patent infringement under 35 U.S.C. § 271(a) for at least a portion of the damages period.

44. Further, Defendants' customers and end users who offer for sale, sell, and/or use the Infringing Products directly infringe at least claims 1 and 9 of the '805 Patent.

45. Furthermore, each Defendant has been and/or is now liable under 35 U.S.C. § 271(b) for actively inducing infringement of one or more claims including at least claims 1 and 9 of the '805 patent. On information and belief, as set forth below, each Defendant has or should have had actual notice of the '805 Patent since at least 2014. Additionally, Defendants have had actual notice of the '805 Patent since at least their receipt of OIT's complaint. Despite such knowledge, Defendants have 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 have 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 Defendants became aware of the '805 Patent.

46. Further, each Defendant has been and/or 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 claims 1 and 9 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.

47. As a result of each Defendant's infringement of the '805 Patent, OIT has suffered and continues to suffer damages. Thus, OIT is entitled to recover from each Defendant the damages OIT sustained as a result of each Defendant'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.

48. OIT has suffered damage because of the infringing activities of each Defendant, their 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 each Defendant's infringing activities are preliminarily and permanently enjoined by this Court.

49. Each Defendant's infringement of the '805 Patent was, is, and/or 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, each Defendant has had actual notice of the disclosures in the '805 Patent at least as early as December 17, 2014, the issue date of

Defendants' Japanese Patent, No. JP 5643153 B2. The patent family that includes the '805 Patent was cited by the examiner during the prosecution of Defendants' Japanese Patent. Thus, each Defendant was informed of the disclosures of the '805 Patent, but continued to infringe, nonetheless. Moreover, each Defendant was and/or 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)

50. Plaintiff incorporates and re-alleges the allegations contained in paragraphs 1 through 49 herein by reference.

51. 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 July 11, 2006. A true and accurate copy of the '339 Patent is attached hereto as Exhibit B.

52. 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.

53. 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.

54. Representative claims 1 and 14 are as follows:

55. 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.

56. Claim 14 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 zoom lens;
 wherein the zoom lens changes focal length positions;
 wherein when the image file is captured by the digital sensor the file is forwarded to the digital signal processor and to memory;
 wherein the microprocessor uses system software to access the database to identify at least one optical aberration in the image file at any focal length of a zoom lens configuration;
 wherein the microprocessor accesses the database to obtain at least one filtration correction algorithm to the optical aberrations and forwards the at least one filtration algorithms to the digital signal processor;
 wherein the image file is forwarded to the digital signal processor which applies at least one filtration algorithm to optimize the image and corrects the at least one optical aberration at the specific focal length in the zoom lens configuration; and
 wherein the modified image file consisting of the digital data optimized from the at least one optical aberration of a specific focal length of the zoom lens that are corrected from the original optical image is stored in memory.

57. Each Infringing Product is 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 Panasonic LUMIX S5M2:



TYPE	
Type	Digital Single Lens Mirrorless camera
Lens mount	L-Mount

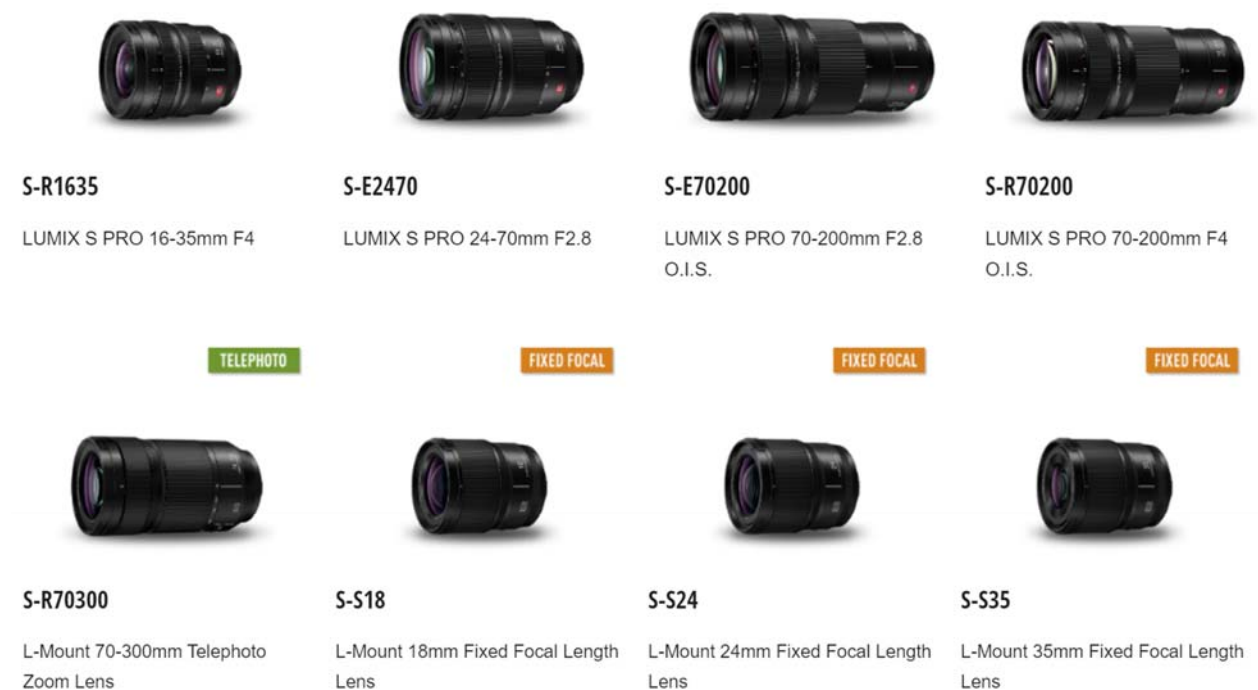
Source: *LUMIX S5II Full Frame Mirrorless Camera DC-S5M2 – Specs*, PANASONIC.

58. 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.

59. On information and belief, each of the Infringing Products also comprises a fixed focal length lens or a zoom lens. As one example, the LUMIX S5M2 is used with a variety of compatible zoom or fixed focal length lenses. According to Defendants, the LUMIX S5M2 can be used with lenses of both types:

Lenses



Source: *LUMIX S5II Full Frame Mirrorless Camera DC-S5M2 – Accessories*, PANASONIC.

60. The Infringing Products also comprise a digital sensor. For example, the LUMIX S5M2 has a full-frame CMOS image sensor:

IMAGE SENSOR	
Type	35mm full-frame (35.6mm x 23.8mm) CMOS sensor
Camera effective pixels / Total pixels	24.20 megapixels / 25.28 megapixels
AR (Anti Reflection) coating	Yes
Aspect ratio / Color filter	3:2 / Primary color filter
Dust reduction system	Image sensor shift type

LUMIX S5II Full Frame Mirrorless Camera DC-S5M2 – Specs, PANASONIC.

61. On information and belief, Defendants’ Infringing Products comprise an integrated circuit, a digital signal processor, and a microprocessor. For example, the LUMIX S5M2 contains an image processing engine (designed under Defendants’ L2 Technology Partnership with Leica) that implements this functionality. *See* Jason Murray, *L2 Technology partnership and L-Mount Alliance: Panasonic draws the line between the two*, MACFILOS. Per Defendants, the L2 Technology Partnership developed a new image processor for the LUMIX S5M2: “The combined expertise of the two companies in image processing enables this technology to achieve high image quality performance and high-speed arithmetic processing.” *Id.*

62. Additionally, many other of Defendants’ products, including Infringing Products, use Defendants’ Venus image processing engine. For example, the LUMIX S5 uses the Venus engine:



Venus Engine

The marriage of a CMOS sensor with the beautiful Venus Engine reproduces extraordinary color detail and natural texture expression. Multipixel Luminance Generation and Intelligent Detail Processing render intense brightness and contrast. The Three-Dimensional Color Control zings with rich colors from dark to bright shades, and high-precision Multi Process NR makes your images pop even at high ISO sensitivity settings.

Source: *Outstanding Image Quality and Advanced Features*, PANASONIC.

63. Defendants' Infringing Products comprise system software. For example, as discussed below, the LUMIX S5M2 contains "Lens Compensation" software for correcting optical aberrations.

64. On information and belief, the Infringing Products also comprise a database management system. For example, as discussed further below, the LUMIX S5M2 contains photo shooting functionality that automatically corrects optical aberrations based on the lens being used, which necessarily requires managing database data stored on the LUMIX S5M2. Further, the camera system software and associated database that supports shooting functions like Lens Compensation can be updated via download from Defendants. *See Digital AV Support > Digital Camera > Download*, PANASONIC.

65. Defendants' Infringing Products also comprise a memory storage subsystem. For example, as discussed below, the LUMIX S5M2 uses memory cards to which photos and videos are automatically recorded.

66. 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 LUMIX S5M2 includes a "Lens Compensation" function that corrects multiple types of optical aberrations:

Lens Compensation

- [Vignetting Comp.]: 323
- [Color Shading Compensation]: 324
- [Diffraction Compensation]: 328

[Vignetting Comp.]



When the screen periphery darkens as a result of the lens characteristics, you can record pictures with the brightness of the screen periphery corrected.

⇒ /[] ⇒ [] ⇒ Select [Vignetting Comp.]

Settings: [ON]/[OFF]

Source: LUMIX S5II Owner's Manual at 323.

In order to automatically compensate for these optical aberrations, the LUMIX S5M2 must necessarily use system software to access a database of lens data on the camera. Additionally, the “Vignetting Comp.” Lens Compensation function is set to “ON” by default. *See id.* at 751.

67. 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, Defendants states that the LUMIX S5 contains a “marriage of a CMOS sensor with the beautiful Venus Engine.” *Outstanding Image Quality and Advanced Features*, PANASONIC. The data collected by the sensor must necessarily be forwarded to the digital processor in order to process the image.

68. 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, the LUMIX S5M2 automatically records images to memory cards based on the default card priority or the priority set by the user:

[Double Card Slot Function]

[Recording Method]	▶[1] / [2] / [3]
This sets the way recording to the card slots 1 and 2 is performed.	
<p> [Relay Rec]: Selects the priority of card slots for recording.</p> <p>[Destination Card Slot]: [1→2]/[2→1]</p> <p>Relays recording to the card in the other card slot after the first card runs out of free space.</p> <ul style="list-style-type: none"> You can assign the function that changes the card which is prioritized for recording to an Fn button. (→[Destination Card Slot]: 514) <p> [Backup Rec]: Records the same images to both cards simultaneously.</p> <p> [Allocation Rec]: Allows you to specify the card slot to be used for recording for different image formats.</p> <p>[JPEG Destination]/[RAW Destination]/[Video Destination]</p>	

Source: LUMIX S5II Owner's Manual at 574.

Menu		Default setting			
[Setup] : [Card/File]					
[Card Format]		—			
[Double Card Slot Function]	[Recording Method]		✓		✓
	[Destination Card Slot]	[1→2]	✓		✓
[Folder / File Settings]	[Select Folder]	—			
	[Create a New Folder]	—			
	[File Name Setting]	[Folder Number Link]	✓		✓
[File Number Reset]		—			
[Copyright Information]	[Artist]	[OFF]	✓		✓
	[Copyright Holder]	[OFF]	✓		✓
	[Display Copyright Info.]	—			

Id. at 767.

69. Each Defendant has been and/or is now directly infringing, literally and/or under the doctrine of equivalents because without authority each Defendant has or currently makes, uses, offers to sell, sells, and/or imports into the United States the patented invention of one or more claims, including at least claims 1 and 14 of the '339 Patent. Each Defendant is therefore liable to OIT for patent infringement under 35 U.S.C. § 271(a) for at least a portion of the damages period.

70. Further, Defendants' customers and end users who offer for sale, sell, and/or use the Infringing Products directly infringe at least claims 1 and 14 of the '339 Patent.

71. Furthermore, each Defendant has been and/or is now liable under 35 U.S.C. § 271(b) for actively inducing infringement of one or more claims including at least claims 1 and 14 of the '339 patent. On information and belief, as set forth below, each Defendant has or should have had actual notice of the disclosures in the '339 Patent since at least 2014. Additionally, Defendants have had actual notice of the '339 Patent since at least its receipt of OIT's complaint. Despite such knowledge, Defendants have 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 have 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 Defendants became aware of the disclosures of '339 Patent.

72. Further, each Defendant has been and/or 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.

73. As a result of each Defendant's infringement of the '339 Patent, OIT has suffered and continues to suffer damages. Thus, OIT is entitled to recover from each Defendant the damages OIT sustained as a result of each Defendant'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.

74. OIT has suffered damage because of the infringing activities of each Defendant, their 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 each Defendant's infringing activities.

75. Each Defendant's infringement of the '339 Patent was, is, and/or continues to be deliberate and willful. 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, each Defendant has had actual notice of the disclosures in the '339 Patent at least as early as December 17, 2014, the issue date of Defendants' Japanese Patent, No. JP 5643153 B2. The patent family that includes the '805 Patent was cited by the examiner during the prosecution of Defendants' Japanese Patent. Thus, each Defendant was informed of the disclosures of the '339 Patent, but continued to infringe, nonetheless. Moreover, each Defendant was and/or is on notice of the disclosures in the '339 Patent at least as early as the filing of the Complaint in this lawsuit, yet each Defendant continued and continues to infringe the '339 Patent.

COUNT III

(Infringement of the '685 Patent)

76. Plaintiff incorporates and re-alleges the allegations contained in paragraphs 1 through 75 herein by reference.

77. The '685 Patent entitled "Digital imaging system for correcting video image aberrations" was duly and legally issued by the U.S. Patent and Trademark Office on December 22, 2020, from Application No. 13/691,805, claiming priority to the '805 Patent application as well as the provisional application 60/807,065 filed on July 11, 2006. A true and accurate copy of the '685 Patent is attached hereto as Exhibit C.

78. Each and every claim of the '685 Patent is valid and enforceable, and each enjoys a statutory presumption of validity under 35 U.S.C. § 282.

79. OIT exclusively owns all rights, title, and interest in and to the '685 Patent and possesses the exclusive right of recovery, including the exclusive right to recover for past, present and future infringement.

80. Representative claim 1 of the '685 Patent recites:

A digital imaging system for correcting optical image aberrations in a digital video, comprising:

a digital video camera including in-camera software, an optical lens mechanism, at least one digital sensor for capturing the digital video, an integrated circuit including; a digital signal processor configured to access a database management system including a plurality of optical image aberration corrections, and a memory storage sub-system;

wherein the optical lens mechanism is a zoom lens or a fixed focal length lens;

wherein the integrated circuit uses the in-camera software to identify at least one optical image aberration and to correct the at least one optical image aberration in at least one frame of the digital video using at least one of the plurality of optical image aberration corrections in the database;

wherein the video is captured by the at least one digital sensor and is forwarded to the digital signal processor;

wherein the video image file with the at least one optical image aberration is corrected by applying digital filtration using the digital signal processor; and

wherein the corrected video consisting of the digital data optimized from the at least one optical image aberration that are corrected from the original video image is stored in the memory storage sub-system.

81. Each Infringing Product is a digital camera that constitutes a digital imaging system for correcting image aberrations comprising a digital video camera including in-camera software, an optical lens mechanism, at least one digital sensor for capturing the digital video, an integrated circuit, a digital signal processor configured to access a database management system including a plurality of optical image aberration corrections, and a memory storage sub-system. The cameras require optical lens mechanisms to operate, as seen, for example, with the LUMIX S5M2:



TYPE	
Type	Digital Single Lens Mirrorless camera
Lens mount	L-Mount
MOTION PICTURE	
Recording file format	MOV: H.264/MPEG-4 AVC, H.265/HEVC MP4: H.264/MPEG-4 AVC, H.265/HEVC
Audio format	MOV: LPCM (2ch 48kHz/24-bit, 96kHz/24-bit*) (4ch 48kHz/24-bit**, 96kHz/24-bit**) MP4: AAC (2ch 48kHz/16-bit) *When attaching Φ 3.5mm microphone or DMW-XLR1 (sold separately). **When attaching DMW-XLR1 (sold separately).

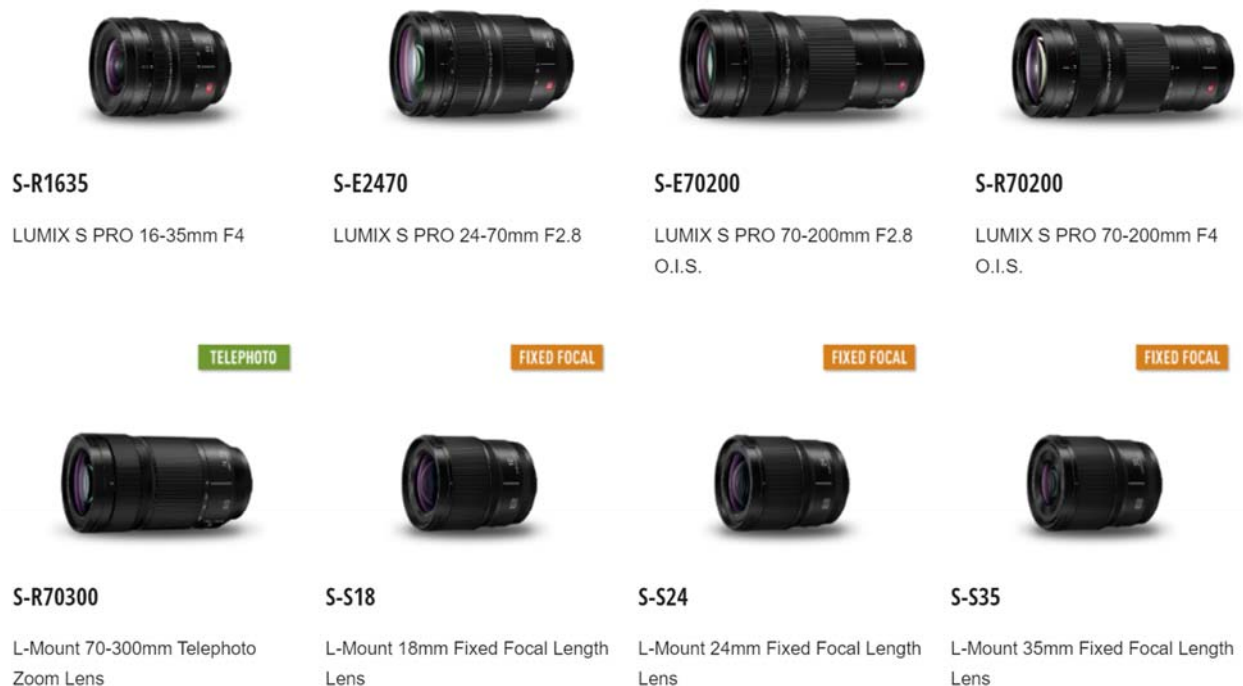
Source: *LUMIX S5II Full Frame Mirrorless Camera DC-S5M2 – Specs*, PANASONIC.

82. On information and belief, each of the Infringing Products is further configured such that: the optical lens mechanism is a zoom lens or a fixed focal length lens; the integrated circuit uses the in-camera software to identify at least one optical image aberration and to correct the at least one optical image aberration in at least one frame of the digital video using at least one of the plurality of optical image aberration corrections in the database; the video is captured by the at least one digital sensor and is forwarded to the digital signal processor; the video image file with the at

least one optical image aberration is corrected by applying digital filtration using the digital signal processor; and the corrected video consisting of the digital data optimized from the at least one optical image aberration that is corrected from the original video image is stored in the memory storage sub-system.

83. Each of the Infringing Products comprises an optical lens mechanism that is a zoom lens or a fixed focal length lens. As one example, the LUMIX S5M2 is used with a variety of compatible zoom or fixed focal length lenses. According to Defendants, the LUMIX S5M2 can be used with lenses of both types:

Lenses



Source: *LUMIX S5II Full Frame Mirrorless Camera DC-S5M2 – Accessories*, PANASONIC.

84. The Infringing Products also comprise in-camera software. For example, as discussed below, the LUMIX S5M2 contains “Lens Compensation” software for correcting optical aberrations.

85. The Infringing Products also include digital sensors. For example, the LUMIX S5M2 has a full-frame CMOS image sensor:

IMAGE SENSOR	
Type	35mm full-frame (35.6mm x 23.8mm) CMOS sensor
Camera effective pixels / Total pixels	24.20 megapixels / 25.28 megapixels
AR (Anti Reflection) coating	Yes
Aspect ratio / Color filter	3:2 / Primary color filter
Dust reduction system	Image sensor shift type

LUMIX S5II Full Frame Mirrorless Camera DC-S5M2 – Specs, PANASONIC.

86. On information and belief, Defendants’ Infringing Products use an integrated circuit (ASIC) and a digital signal processor. For example, the LUMIX S5M2 contains an image processing engine (designed under Defendants’ L2 Technology Partnership with Leica) that implements this functionality. *See* Jason Murray, *L2 Technology partnership and L-Mount Alliance: Panasonic draws the line between the two*, MACFILOS. Per Defendants, the L2 Technology Partnership developed a new image processor for the LUMIX S5M2: “The combined expertise of the two companies in image processing enables this technology to achieve high image quality performance and high-speed arithmetic processing.” *Id.*

87. Additionally, many other of Defendants’ products, including Infringing Products, use Defendants’ Venus image processing engine. For example, the LUMIX S5 uses the Venus engine:



Venus Engine

The marriage of a CMOS sensor with the beautiful Venus Engine reproduces extraordinary color detail and natural texture expression. Multipixel Luminance Generation and Intelligent Detail Processing render intense brightness and contrast. The Three-Dimensional Color Control zings with rich colors from dark to bright shades, and high-precision Multi Process NR makes your images pop even at high ISO sensitivity settings.

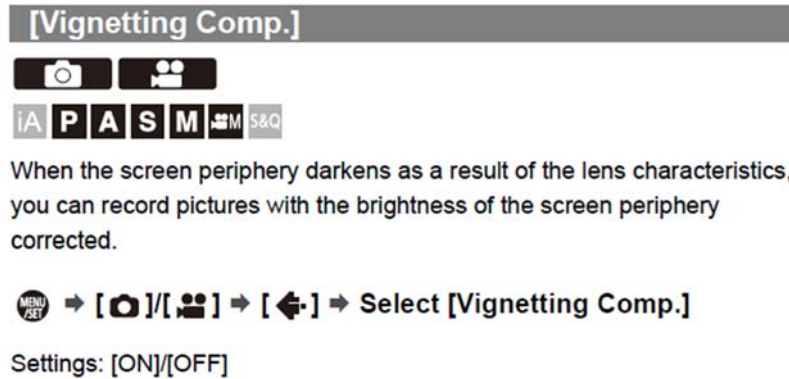
Source: *Outstanding Image Quality and Advanced Features*, PANASONIC.

88. The digital signal processor in each of the Infringing Products is also configured to access a database management system of optical image aberration corrections. For example, as discussed further below, the LUMIX S5M2 contains photo shooting functionality that automatically corrects optical aberrations based on the lens being used, which necessarily requires managing database data stored on the LUMIX S5M2. Further, the camera system software and associated database that supports shooting functions like Lens Compensation can be updated via download from Defendants. *See Digital AV Support > Digital Camera > Download*, PANASONIC.

89. The Infringing Products also use the in-camera software to identify and correct optical image aberrations in frames of digital videos. For example, the LUMIX S5M2 includes a “Lens Compensation” function that corrects multiple types of optical aberrations in both photos and videos:

Lens Compensation

- [Vignetting Comp.]: 323
- [Color Shading Compensation]: 324
- [Diffraction Compensation]: 328



Source: LUMIX S5II Owner's Manual at 323.

Additionally, the “Vignetting Comp.” Lens Compensation function is set to “ON” by default. *See id.* at 751.

90. Each Defendant has been and/or is now directly infringing, literally and/or under the doctrine of equivalents because without authority each Defendant has or currently 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 '685 Patent. Each Defendant is therefore liable to OIT for patent infringement under 35 U.S.C. § 271(a) for at least a portion of the damages period.

91. Further, Defendants' customers and end users who offer for sale, sell, and/or use the Infringing Products directly infringe at least claim 1 of the '685 Patent.

92. Furthermore, each Defendant has been and/or 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 '685 patent. On information and belief, as set forth below, each Defendant has or should have had actual notice of the disclosures in the '685 Patent since at least 2014. Additionally, Defendants have had

actual notice of the '685 Patent since at least its receipt of OIT's complaint. Despite such knowledge, Defendants have intended that its customers and end users infringe the '685 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 '685 patent claims in their user manuals, posted videos and/or other materials with knowledge of the '685 patent as set forth in this complaint and with knowledge of the '685 patent since at least the time Defendants became aware of the '685 Patent.

93. Further, each Defendant has been and/or 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 '685 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.

94. As a result of each Defendant's infringement of the '685 Patent, OIT has suffered and continues to suffer damages. Thus, OIT is entitled to recover from each Defendant the damages OIT sustained as a result of each Defendant'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.

95. OIT has suffered damage because of the infringing activities of each Defendant, their 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 each Defendant's infringing activities.

96. Each Defendant's infringement of the '685 Patent was, is, and/or continues to be deliberate and willful. The '805 Patent application with the same specification as the '685 patent was published on July 24, 2008, and the related '805 Patent issued on November 3, 2009. On information and belief, each Defendant has had actual notice of the disclosures in the '685 Patent at least as early as December 17, 2014, the issue date of Defendants' Japanese Patent, No. JP 5643153 B2. The patent family that includes the '805 Patent was cited by the examiner during the prosecution of Defendants' Japanese Patent. Thus, each Defendant was informed of the disclosures of the '685 Patent, but continued to infringe, nonetheless. Moreover, each Defendant was and/or is on notice of the '685 Patent at least as early as the filing of the Complaint in this lawsuit, yet each Defendant continued and continues to infringe the '685 Patent.

COUNT IV

(Infringement of the '266 Patent)

97. Plaintiff incorporates and re-alleges the allegations contained in paragraphs 1 through 96 herein by reference.

98. 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 July 11, 2006. A true and accurate copy of the '266 Patent is attached hereto as Exhibit D.

99. 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.

100. 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.

101. 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.

102. Each Infringing Product is a digital camera that is configured to process one or more images as seen, for example, Panasonic LUMIX S5M2:



TYPE	
Type	Digital Single Lens Mirrorless camera
Lens mount	L-Mount

Source: *LUMIX S5II Full Frame Mirrorless Camera DC-S5M2 – Specs*, PANASONIC.

103. 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.

104. 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.

105. The Infringing Products contain in-camera hardware and software for image processing. For example, the LUMIX S5M2 has a full-frame CMOS image sensor:

IMAGE SENSOR	
Type	35mm full-frame (35.6mm x 23.8mm) CMOS sensor
Camera effective pixels / Total pixels	24.20 megapixels / 25.28 megapixels
AR (Anti Reflection) coating	Yes
Aspect ratio / Color filter	3:2 / Primary color filter
Dust reduction system	Image sensor shift type

LUMIX S5II Full Frame Mirrorless Camera DC-S5M2 – Specs, PANASONIC.

The LUMIX S5M2 also contains an image processing engine (designed under Defendants’ ’s L2 Technology Partnership with Leica) that implements this functionality. *See Jason Murray, L2 Technology partnership and L-Mount Alliance: Panasonic draws the line between the two,*

MACFILOS. Per Defendants, the L2 Technology Partnership developed a new image processor for the LUMIX S5M2: “The combined expertise of the two companies in image processing enables this technology to achieve high image quality performance and high-speed arithmetic processing.” *Id.*

106. Additionally, many other of Defendants’ products, including Infringing Products, use Defendants’ Venus image processing engine. For example, the LUMIX S5 uses the Venus engine:



Venus Engine

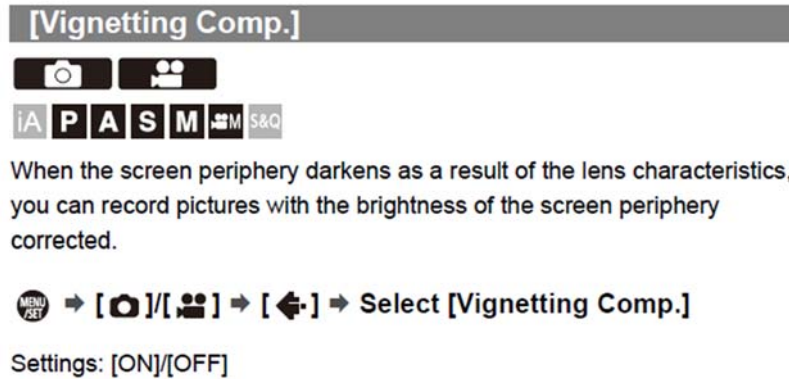
The marriage of a CMOS sensor with the beautiful Venus Engine reproduces extraordinary color detail and natural texture expression. Multipixel Luminance Generation and Intelligent Detail Processing render intense brightness and contrast. The Three-Dimensional Color Control zings with rich colors from dark to bright shades, and high-precision Multi Process NR makes your images pop even at high ISO sensitivity settings.

Source: *Outstanding Image Quality and Advanced Features*, PANASONIC.

107. The hardware and software components of the Infringing Products also perform a plurality of image correction algorithms. For example, the LUMIX S5M2 includes a “Lens Compensation” function that corrects multiple types of optical aberrations:

Lens Compensation

- [Vignetting Comp.]: 323
- [Color Shading Compensation]: 324
- [Diffraction Compensation]: 328









Source: LUMIX S5II Owner's Manual at 323.

Additionally, the “Vignetting Comp.” Lens Compensation function is set to “ON” by default. *See id.* at 751.







108. Defendants’ Infringing Products also store and use database data for lens aberration correction. For example, as discussed further above, the LUMIX S5M2 contains photo shooting functionality that automatically corrects optical aberrations based on the lens being used, which necessarily requires managing database data stored on the LUMIX S5M2. Further, the camera system software and associated database that supports shooting functions like Lens Compensation can be updated via download from Defendants. *See Digital AV Support > Digital Camera > Download*, PANASONIC.

109. The Infringing Products also store the corrected images in memory. For example, the LUMIX S5M2 automatically records images to memory cards based on the default card priority or the priority set by the user:

[Double Card Slot Function]

[Recording Method]	▶[]/[]/[]
This sets the way recording to the card slots 1 and 2 is performed.	
 [Relay Rec] : Selects the priority of card slots for recording. [Destination Card Slot] : [1 → 2]/[2 → 1] Relays recording to the card in the other card slot after the first card runs out of free space. • You can assign the function that changes the card which is prioritized for recording to an Fn button. (→[Destination Card Slot]: 514)	
 [Backup Rec] : Records the same images to both cards simultaneously.	
 [Allocation Rec] : Allows you to specify the card slot to be used for recording for different image formats.	
[JPEG Destination]/[RAW Destination]/[Video Destination]	

Source: LUMIX S5II Owner's Manual at 574.

Menu		Default setting			
 [Setup] : [] [Card/File]					
[Card Format]		—			
[Double Card Slot Function]	[Recording Method]		✓		✓
	[Destination Card Slot]	[1 → 2]	✓		✓
[Folder / File Settings]	[Select Folder]	—			
	[Create a New Folder]	—			
	[File Name Setting]	[Folder Number Link]	✓		✓
[File Number Reset]		—			
[Copyright Information]	[Artist]	[OFF]	✓		✓
	[Copyright Holder]	[OFF]	✓		✓
	[Display Copyright Info.]	—			

Id. at 767.

110. The Infringing Products are also configured to wirelessly transmit the corrected images. For example, the LUMIX S5M2 can connect to smartphones and tablets via Wi-Fi and Bluetooth:




Wi-Fi / Bluetooth

This chapter explains the Wi-Fi® and Bluetooth® functions of the camera.

• This document refers to both smartphones and tablets as **smartphones**.

- [Connecting to a Smartphone: 612](#)
- [Operating the Camera with a Smartphone: 628](#)
- [Sending Images from the Camera to a PC: 645](#)
- [Wi-Fi Connections: 649](#)
- [Send Settings and Selecting Images: 659](#)
- [\[Wi-Fi Setup\] Menu: 661](#)

❖ Checking operation of the Wi-Fi and Bluetooth functions

Light (blue)	Monitor	Operation
Lit		The Wi-Fi function is set to on, or there is a connection.
		The Bluetooth function is set to on, or there is a connection.
Blinking		When image data is sent using a camera operation.

Source: LUMIX S5II Owner's Manual at 610.

111. The LUMIX S5M2 can then wirelessly send images to a connected device:

Sending Images on the Camera to a Smartphone with Simple Operations

You can transfer pictures to a smartphone connected by Bluetooth just by pressing [Q] during playback.


You can also use the menu to connect easily.

- You can also perform the same operation by pressing the Fn button registered with [Send Image (Smartphone)]. (→ [Fn Buttons: 503](#))

Getting started:

- Install "LUMIX Sync" on your smartphone. (→ [Installing "LUMIX Sync": 613](#))
- Connect the camera to a smartphone by Bluetooth. (→ [Connecting to a Smartphone \(Bluetooth Connection\): 614](#))
- Press [

Send a single image

- 1 Press  to select the image.
- 2 Press [Q].
- 3 Select [Single Select].
 - To change the send settings of images, press [DISP.]. (→ [Image Send Settings: 659](#))
- 4 On the smartphone, select [Yes] (for Android devices) or [Join] (for iOS devices).
 - This connects automatically using Wi-Fi.

Source: LUMIX S5II Owner's Manual at 626.

112. Each Defendant has been and/or 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

into the United States the patented invention of one or more claims, including at least claim 1 of the '266 Patent. Each Defendant is therefore liable to OIT for patent infringement under 35 U.S.C. § 271(a) for at least a portion of the damages period.

113. Further, Defendants' 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.

114. Furthermore, each Defendant has been and/or 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, each Defendant has or should have had actual notice of the disclosures in the '266 Patent since at least 2014. Additionally, Defendants have had actual notice of the '266 Patent since at least its receipt of OIT's complaint. Despite such knowledge, Defendants have 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 have 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 Defendants became aware of the '266 Patent.

115. Further, each Defendant has been and/or 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.

116. As a result of each Defendant's infringement of the '266 Patent, OIT has suffered and continues to suffer damages. Thus, OIT is entitled to recover from each Defendant the damages OIT sustained as a result of each Defendant'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.

117. OIT has suffered damage because of the infringing activities of each 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 each Defendant's infringing activities.

118. Each Defendant's infringement of the '266 Patent was, is, and/or continues to be deliberate and willful. 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, each Defendant has had actual notice of the disclosures in the '266 Patent at least as early as December 17, 2014, the issue date of Defendants' Japanese Patent, No. JP 5643153 B2. The patent family that includes the '805 Patent was cited by the examiner during the prosecution of Defendants' Japanese Patent. Thus, each Defendant was informed of the disclosures of the '266 Patent, but continued to infringe, nonetheless. Moreover, each Defendant was and/or is on notice of the '266 Patent at least as early as the filing of the Complaint in this lawsuit, yet each Defendant continued and continues to infringe the '266 Patent.

CONCLUSION

119. Each Defendant has directly, indirectly, and/or contributorily infringed on Plaintiff's rights as owner of the Asserted Patents for at least a portion of the damages period. Plaintiff is entitled to recover from each Defendant the damages sustained by Plaintiff as a result of each

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.

120. 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

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

PRAYER FOR RELIEF

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

1. A judgment that each Defendant has infringed the Asserted Patents as alleged herein, directly, indirectly, and/or contributorily;
2. A judgment that each 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 each Defendant;
4. A judgment and order requiring each 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 each 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 each 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: June 6, 2024

Respectfully submitted,

/s/ Robert M. Harkins

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