IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

CLEAR IMAGING RESEARCH, LLC **Plaintiff,** **v.** **SAMSUNG ELECTRONICS CO. LTD. and SAMSUNG ELECTRONICS AMERICA, INC.** **Defendants.**	**Civil Action No. 2:19-cv-326** **JURY TRIAL REQUESTED**

COMPLAINT

Plaintiff Clear Imaging Research, LLC ("Clear Imaging," or "Plaintiff") files this Complaint for patent infringement against Defendants Samsung Electronics Co., Ltd. ("SEC") and Samsung Electronics America, Inc. ("SEA") (collectively "Samsung") for infringement of U.S. Patent No. 8,630,484 ("the '484 patent"), U.S. Patent No. 9,154,699 ("the '699 patent"), U.S. Patent No. 9,392,175 ("the '175 patent"), U.S. Patent No. 9,860,450 ("the '450 patent"), U.S. Patent No. 10,171,740 ("the '740 patent"), and U.S. Patent No. 10,389,944 ("the '944 patent") (collectively the "patents-in-suit"), pursuant to 35 U.S.C. § 271.

I. PARTIES

1. Plaintiff Clear Imaging is a limited liability company organized and existing under laws of the State of Delaware. Plaintiff Clear Imaging has its principal place of business in New York and an office at 415 Madison Avenue, 4th Floor, New York, New York 10017.

2. Upon information and belief, Defendant SEC is a company organized and existing under the laws of the Republic of Korea with its principal place of business located at 129

Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-742 in the Republic of Korea. SEC may be served at least by process under the Hague Convention.

3. Upon information and belief, Defendant SEA conducts its business operations in the Eastern District of Texas, is a New York corporation with its principal place of business at 85 Challenger Road, Ridgefield Park, New Jersey 07660 and is a wholly-owned subsidiary of SEC. SEA may be served in Texas at least via its registered agent, CT Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201.

4. Upon information and belief, prior to January 1, 2015, Samsung Telecommunications America ("STA") sold Samsung mobile phones, tablets, and Galaxy cameras in the United States. STA was merged into SEA effective January 1, 2015. Following the merger, SEA has sold certain mobile phone and tablet models in the United States that STA used to sell.

5. The patents-in-suit are infringed by various Samsung products, including at least those identified in Section V and all structurally similar devices. Defendants SEC and SEA are related entities that work in concert to design, manufacture, import, distribute, and/or sell those infringing devices.

II. JURISDICTION AND VENUE

6. This is an action for patent infringement under the patent laws of the United States, 35 U.S.C. §271. This court has jurisdiction on federal question claims pursuant to 28 U.S.C. §§ 1331 and 1338(a).

7. The Court has personal jurisdiction over each of the Defendants consistent with the requirements of the Due Process Clause of the United States Constitution and the Texas Long Arm Statute. Each Defendant has regularly and systematically transacted business in Texas,

directly or through subsidiaries or intermediaries, and/or committed acts of patent infringement in Texas as alleged more particularly below. Samsung has also placed infringing products into the stream of commerce by shipping those products into Texas or knowing that the products would be shipped into Texas. In addition, SEA's business operations relating to cellular mobile devices, which are devices accused of infringement in this Action, are conducted at its Texas facilities. *See, e.g.,* U.S. Patent Nos. 9,531,962, 9,838,603, and U.S. Patent Application Publication No. 2018/0192098 (Samsung patents relating to cellular mobile devices and digital imaging which list Samsung inventors located in the Eastern District of Texas).

8. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391 and 1400(b).

9. With respect to Defendant SEC, a Korean company, venue is proper because suits against foreign entities are proper in any judicial district.

10. With respect to Defendant SEA, venue is proper in this district under 28 U.S.C. §1400(b) because Defendant SEA has a regular and established place of business in this district and has committed acts of infringement in this district. On information and belief, Defendant SEA has regular and established places of business in Plano, Texas and Richardson, Texas. Defendant SEA has operated, and on information and belief continues to operate, a permanent office located at 1301 East Lookout Drive, Richardson, Texas 75082, which is located in Collin County—in this district. Defendant SEA announced in 2019 it was relocating to an office in Plano, Texas, which is also located in Collin County—in this district. On information and belief, Defendant SEA has operated, and on information and belief continues to operate, a permanent office located at 6625 Excellence Way, Plano, Texas 75023—in this district. Defendant SEA also employs full-time personnel, such as engineers and senior managers in this district, including in Collin County. On information and belief, Samsung's business operations relating

to cellular mobile devices are conducted at these SEA facilities located in this district. Defendant SEA has also committed acts of infringement in this district by commercializing, marketing, selling, distributing, and servicing certain Samsung-branded devices, including but not limited to phones and tablets, which are devices Plaintiff accuses of infringement in this Action.

11. In other patent infringement matters involving Samsung's mobile products, such as *Gummarus LLC v. Samsung Electronics Co., Ltd. et al.*, No. 2:16-cv-505, *Richardson v. Samsung Electronics Co.*, No. 6-17-cv-428, and *Image Processing Technologies, LLC v. Samsung Electronics Co., Ltd. et al.*, No. 2:16-cv-505, Samsung has admitted that for patent infringement actions involving mobile products venue is proper in this District and that this Court may exercise personal jurisdiction over SEC and SEA. For example, Samsung averred in a litigation regarding similar cellular phone technology that "[t]he majority of potentially relevant documents and things related to the marketing, sale, and distrubition of the accused smartphones, cellular-equipped tablets, and Galaxy cameras sold by STA . . . are physically located at STA's offices in Richardson, Texas. *See, e.g., Image Processing Technologies,* Samsung's August 18, 2016 Answer (ECF 23) at ¶¶8-14. Samsung also admitted that "[t]he majority of potential witnesses from STA with relevant knowledge concerning the accused products . . . work at STA's offices in Richardson, Texas, and reside nearby." *Id.*

III. BACKGROUND

12. Clear Imaging was founded by Fatih Ozluturk, the sole inventor on each of the patents-in-suit and an accomplished innovator. Indeed, Dr. Ozluturk is an inventor on over 450 U.S. patents and pending applications, over 225 of which have issued as U.S. patents, making him a very accomplished inventor. Dr. Ozluturk has a history of inventing solutions that have

proved to be significant to multiple generations of wireless technologies, including 3G, and 4G LTE. It has been said that "Fatih's groundbreaking inventions span multiple generations of wireless technology and directly benefit the entire wireless ecosystem and billions of consumers globally." *See, e.g.,* https://www.businesswire.com/news/home/20110418006517/en/InterDigital-Honors-Dr.-Fatih-Ozluturk-Inventor-Named.

13. After receiving his Ph.D. in Electrical Engineering from the University of Massachusetts, Amherst, Dr. Ozluturk went to work as an engineer at InterDigital, a mobile technology research and development company based in Delaware that currently has over 300 employees. Dr. Ozluturk worked at InterDigital for almost two decades and became one of the most prolific inventors at InterDigital. Dr. Ozluturk has received a number of awards for his technical leadership and innovation, including the "Outstanding Young Engineer" award from the Long Island Chapter of the IEEE in 2001 and the "Chairman's Award" from InterDigital in 2011.

14. Since leaving InterDigital in 2012, Dr. Ozluturk has been Chief Executive Officer of Clear Imaging. Dr. Ozluturk is also an active member of the New York startup community, where he regularly teaches workshops at startup accelerators on topics related to entrepreneurial management, finance of innovation, and intellectual property. He mentors technology startups as a Venture Partner at a leading New York City startup accelerator.

15. The relationship between Dr. Ozluturk and Samsung as related to Clear Imaging's patent portfolio dates back many years—thus, Samsung has long been aware of Clear Imaging's patent portfolio.

16. In 2014, for example, Dr. Ozluturk and at least five senior Samsung executives, including a Vice-President of Electronics, a Manager of Business Development, a Principal of

Software Engineering, a Senior Vice-President of IP acquisition, and a Vice-President of IP acquisition exchanged correspondence regarding the Clear Imaging patent portfolio. Dr. Ozluturk also spoke by phone to certain of these executives regarding the Clear Imaging patent portfolio.

17. Shortly after the 2014 communications, however, Samsung stopped communicating with Clear Imaging. Dr. Ozluturk continued to write to Samsung hoping to negotiate a license for Samsung's unauthorized use of the Clear Imaging patent portfolio. In June 2017, for example, Clear Imaging sent a letter to Jamal Haughton, SEA's Senior Vice-President and General Counsel, which identified Clear Imaging's patents and relevant Samsung products and stated that Samsung needs to take a license to Clear Imaging's patents. The letter also requested an opportunity to discuss a non-exclusive license to Clear Imaging's patents because it appeared that Samsung's products were infringing Clear Imaging's patents. Samsung never responded.

18. In November 2017, Clear Imaging sent another letter to Mr. Haughton at SEA again stating that Samsung's products need to take a license to Clear Imaging's patents. The letter also requested a phone call between Clear Imaging and Samsung to discuss the matter. Samsung again never responded.

19. In May 2018, Clear Imaging sent email correspondence to seven Samsung executives again checking if Samsung would be open to a conversation about the digital camera patents in Clear Imaging Research's portfolio which are in wide use in the industry. Samsung again never responded.

20. Rather than take a license for its infringing use, Samsung has instead chosen to use Clear Imaging's technologies without paying for them. Clear Imaging has invested

significant resources in developing its patented technologies and the patents-in-suit and has no choice but to file the instant lawsuit to protect its intellectual property.

21. As described in the paragraphs in this section and elsewhere in this complaint, Samsung's infringement of the patents-in-suit has been and continues to be willful. Samsung has been on notice of the '484 patent-in-suit at least June 15, 2014, when Dr. Ozluturk and Samsung executives had written and verbal correspondence about the Clear Imaging portfolio, including the '484 patent-in-suit. Samsung has also been on notice of the '175 and '699 patents-in-suit since at least June 20, 2017 when Clear Imaging wrote to Jamal Haughton, SEA's Executive Vice-President and General Counsel, informing Samsung that certain of its products infringe these patents-in-suit (as well as the '484 patent-in-suit Dr. Ozluturk and Samsung discussed in June 2014). Clear Imaging again wrote Mr. Haughton in November 6, 2017 informing Samsung that certain of its products infringe the '484, '175, and '699 patents-in-suit. Clear Imaging again wrote Samsung in May 2018 regarding Clear Imaging's patented technology. Despite Clear Imaging's disclosure of its technology to Samsung and repeated attempts to negotiate a license, Samsung has ignored Clear Imaging while making significant revenue by using Clear Imaging's technology in its products.

IV. THE ASSERTED PATENTS

22. On January 14, 2014, the United States patent and Trademark Office issued U.S. patent No. 8,630,484 ("the '484 patent"), entitled "Method and Apparatus to Correct Digital Image Blur Due to Motion of Subject or Imaging Device," after full and fair examination. Plaintiff is the assignee of all rights, title, and interest in and to the '484 patent and possesses all rights of recovery under the '484 patent, including the right to recover damages for present, past, and future infringement. The '484 patent is valid and enforceable.

23. On October 6, 2015, the United States patent and Trademark Office issued U.S. patent No. 9,154,699 ("the '699 patent"), entitled "Method and Apparatus to Correct Blur in All or Part of a Digital Image by Combining Plurality of Images," after full and fair examination. Plaintiff is the assignee of all rights, title, and interest in and to the '699 patent and possesses all rights of recovery under the '699 patent, including the right to recover damages for present, past, and future infringement. The '699 patent is valid and enforceable.

24. On July 12, 2016, the United States patent and Trademark Office issued U.S. patent No. 9,392,175 ("the '175 patent"), entitled "Method and Apparatus for Using Motion Information and Image Data to Correct Blurred Images." Plaintiff is the assignee of all rights, title, and interest in and and to the '175 patent and possesses all rights of recovery under the '175 patent, including the right to recover damages for present, past, and future infringement. The '175 patent is valid and enforceable.

25. On January 2, 2018, the United States patent and Trademark Office issued U.S. patent No. 9,860,450 ("the '450 patent"), entitled "Method and Apparatus to Correct Digital Video to Counteract Effect of Camera Shake" after full and fair examination. Plaintiff is the assignee of all rights, title, and interest in and to the '450 patent and possesses all rights of recovery under the '450 patent, including the right to recover damages for present, past, and future infringement. The '450 patent is valid and enforceable.

26. On January 1, 2019, the United States patent and Trademark Office issued U.S. patent No. 10,171,740 ("the '740 patent"), entitled "Method and Apparatus to Correct Blur in All or Part of a Digital Image By Combining Plurality of Images," after full and fair examination. Plaintiff is the assignee of all rights, title, and interest in and to the '740 patent and possesses all

rights of recovery under the ’740 patent, including the right to recover damages for present, past, and future infringement. The ’740 patent is valid and enforceable.

27. On August 20, 2019, the United States patent and Trademark Office issued U.S. patent No. 10,389,944 (“the ’944 patent”), entitled “Method and Apparatus to Correct Blur in All or Part of an Image,” after full and fair examination. Plaintiff is the assignee of all rights, title, and interest in and to the ’944 patent and possesses all rights of recovery under the ’944 patent, including the right to recover damages for present, past, and future infringement. The ’944 patent is valid and enforceable.

28. The inventions of the patents-in-suit address technological problems and provide technological solutions to issues that were not well-understood, routine, or conventional at the time of the inventions. The patents’ disclosures and claims are drawn to solving specific, technical problems, as a person of ordinary skill in the art reading the patents-in-suit and their claims would understand. Moreover, a person of ordinary skill in the art would understand that the claimed subject matter represents advancement in the technical fields of the patents-in-suit and provide improvements over the prior art and inventive concepts. The claims do not preempt all techniques for or approaches to accomplishing the same or a similar end to what they recite, for example, including the prior art. The large amount of prior art cited on the faces, none of which, as the Examiners found, discloses or render obvious the claimed inventions further shows that the claims were not well-understood, routine, or conventional at the time of the inventions.

29. The claimed inventions of the ’484 and ’175 patents resolve technological problems related to reducing unwanted distortion or blur when capturing images with a camera. Common problems that significantly degrade the quality of a photograph are the blur that results from camera movement (or shaking) at the time the photograph is taken, the blur that results

when a portion of the image is moving, and equipment errors. '484 patent at 1:31-47, 3:28-37. Unwanted distortion or blur can be difficult to avoid, especially when a slow shutter speed is used, such as in low light conditions, or when a large depth of field is needed and the lens aperture is small. *Id.* at 1:42-47. At the time of invention, commonly used techniques for increasing the sharpness of an image did not really "correct" the blur that resulted, for example, from relative motion between a camera and a subject being photographed. *Id.* at 1:65-2:1. In fact, data loss from these prior techniques could result in a less accurate image than the original. *Id*. at 2:1-4. The patents further teach that "[i]n the prior art, electro-mechanical devices for correcting image blur due to camera motion are built into some high quality lenses" and "[t]hese devices seek to compensate for the camera/lens movement by moving one or more of the lens elements." *Id.* at 2:5-12. However, adding such a device to a lens typically makes the lens much more expensive, heavier and less sturdy, and can also compromise image quality. *Id.* at 2:11-14. Because existing solutions did not provide effective correction of unwanted distortion or blur, particularly for devices that were light-weight and not excessively expensive, a need existed for solutions that would better (*e.g.*, faster, more accurately, less, expensively, *etc.*) correct unwanted distortion or blur without adding excessively to the price, compromising robustness, or increasing weight of the imaging device and without compromising image quality. *Id.* at 2:5-17. The claimed inventions of the '484 and '175 patents provide solutions that solve these problems.

30. The claims of the '484 and '175 patent do not merely recite the performance of some business practice known from the precomputer world along with the requirement to perform it on a computer. Instead, the claims of the '484 and '175 patents recite inventive concepts in digital image processing technology, and overcome technical problems specifically arising in that realm. A person of ordinary skill in the art reading the '484 and '175 patents

would understand that the patents' disclosure and claims are drawn to solving a specific, technical problem. The claims do not preempt the use of all techniques taught in the field. For example, they do not preempt the use of the techniques taught in the prior art cited on the face of the patents or described in the specification. Each claim of the '484 and '175 patents recites a combination of elements sufficient to ensure that the claim in practice amounts to significantly more than a patent claiming an abstract idea.

31. The claimed inventions of the '699, '740, and '944 patents resolve technological problems related to reducing unwanted distortion or blur when capturing images with a camera, and, further, to correcting a selected part or subject of an image while another part or subject of the image is blurred compared to the selected part or subject. *See, e.g.*, '699, abstract; 10:52-11:2; Col. 12:13-23. The patents further teach that it may be desirable to make a designated subject in a field of view clear and sharp whereas other parts of the image may be blurred. *Id*. The patents further teach that it is desirable to have techniques that correct for distortion in photographs without adding excessively to the price, robustness or weight of a camera or other imaging device. '699, Col. 2:24-17. The patents further teach that "[i]n the prior art, electro-mechanical devices for correcting image blur due to camera motion are built into some high quality lenses" and "[t]hese devices seek to compensate for the camera/lens movement by moving one or more of the lens elements." *Id.* at 2:15-23. However, adding such a device to a lens typically makes the lens much more expensive, heavier and less sturdy, and can also compromise image quality. *Id.* at 2:21-23. Because existing solutions did not provide effective correction of unwanted distortion or blur, and at the same time provide an effective way for a designated subject in a field of view to be clear and sharp whereas other parts of the image may be blurred, particularly for devices that were light-weight and not excessively expensive, a need

existed for solutions that would better (*e.g.*, faster, more accurately, less expensively, *etc.*) provide these features without adding excessively to the price, compromising robustness, or increasing weight of the imaging device. *Id.* at 2:15-27. The claimed inventions of the '699, '740, and '944 patents provide solutions that solve these problems.

32. The claims of the '699, '740, and '944 patents do not merely recite the performance of some business practice known from the precomputer world along with the requirement to perform it on a computer. Instead, the claims of the '699, '740, and '944 patents recite inventive concepts in digital image processing technology, and overcome technical problems specifically arising in that realm. A person of ordinary skill in the art reading the '699, '740, and '944 patents would understand that the patents' disclosure and claims are drawn to solving a specific, technical problem. The claims do not preempt the use of all techniques taught in the field. For example, they do not preempt the use of the techniques taught in the prior art cited on the face of the patents or described in the specification. Each claim of the '699, '740, and '944 patents recites a combination of elements sufficient to ensure that the claim in practice amounts to significantly more than a patent claiming an abstract idea.

33. The claimed inventions of the '450 patent resolve technological problems related to reducing motion blur using a digital image processing technique that can take advantage of measurements of relative motion between the imaging device and the subject from motion sensors and present advantages over electro-mechanical devices that compensate using lens movement. '450, Col. 2:4-30. The patent further teaches that it is desirable to correct for distortion in photographs without adding excessively to the price, compromising robustness or increasing weight of a camera or other imaging device. *Id*. The patent further teach that "[i]n the prior art, electro-mechanical devices for correcting image blur due to camera motion are built

into some high quality lenses" and "[t]hese devices seek to compensate for the camera/lens movement by moving one or more of the lens elements." *Id*. However, adding such a device to a lens typically makes the lens much more expensive, heavier and less sturdy, and can also compromise image quality. *Id*. Because existing solutions did not provide effective correction of unwanted distortion or blur, particularly for devices that were light-weight and not excessively expensive, a need existed for solutions that would better (*e.g.*, faster, more accurately, less expensively, *etc.*) provide such correction through without adding excessively to the price, compromising robustness, or increasing weight of the imaging device. *Id.* The claimed inventions of the '450 patent provide solutions that solve this problem.

34. The claims of the '450 patent do not merely recite the performance of some business practice known from the precomputer world along with the requirement to perform it on a computer. Instead, the claims of the '450 patent recite one or more inventive concepts that are rooted in digital image processing technology, and overcome technical problems specifically arising in that realm. A person of ordinary skill in the art reading the '450 patent would understand that the patents' disclosure and claims are drawn to solving a specific, technical problem. The claims do not preempt the use of all techniques taught in the field. For example, they do not preempt the use of the techniques taught in the prior art cited on the face of the patents or described in the specification. Each claim of the '450 patent recites a combination of elements sufficient to ensure that the claim in practice amounts to significantly more than a patent claiming an abstract idea.

35. Samsung's own statements, and statements made in the industry, cited here and throughout this complaint regarding accused products and functionalities provide further evidence that the patented technologies were not well-understood, routine, or conventional at the

time of the invention. For example, in 2017 Samsung marketed its Galaxy S8 incorporating "multi-frame image processing" technology as "at the forefront of camera development" and taking "mobile photography to a new level."[1] Samsung has also attributed at least a "30% improved noise reduction" in its Galaxy S9 phones due to "multi-frame image processing" and "multi-frame noise reduction."[2] Further, in 2014, Samsung unveiled the Galaxy S5 at the Mobile World Congress in Barcelona and marketed its "new" selective focus feature as exciting and significant.[3] The industry noted that "[s]elective focus is one of the features which has gone big in 2014."[4] Samsung also markets its "revolutionary intelligent camera" in its recently released products, including the Galaxy Note 9, in part because "Live Focus" and because its devices "take[] multiple shots when you hit the shutter and blend[] them together for pin-sharp productions."[5] Samsung has marketed its accused products including gyro-based video digital

[1] https://news.samsung.com/global/in-depth-look-fast-fun-and-in-focus-the-galaxy-s8-camera.

[2] https://news.samsung.com/global/in-depth-look-1-how-the-galaxy-s9-reimagines-the-smartphone-camera; https://www.hardwarezone.com.sg/feature-exclusive-first-looks-samsung-galaxy-s9-and-s9/s9-camera; *see also* https://www.samsung.com/my/support/mobile-devices/amazing-photographs-as-captured-on-the-samsung-galaxy-s9-and-s9-plus/ (stating that multi-frame image processing "drastically reduce[s] the amount of noise.").

[3] https://www.youtube.com/watch?v=1HKOGdnJN-I.

[4] https://www.techradar.com/reviews/phones/mobile-phones/samsung-galaxy-note-edge-1263718/review/5.

[5] https://www.samsung.com/us/mobile/galaxy-note9/camera/.

image stabilization as allowing for "fast and accurate image capture,"[6] as well as "much easier calculation," "more accurate," and more "power efficient image stabilization."[7]

36. A person of ordinary skill in the art reading the patents-in-suit and their claims would understand that the patent's disclosure and claims are drawn to solving a specific, technical problem arising in photography. Moreover, a person of ordinary skill in the art would understand that the claimed subject matter presents advancements in the field of digital image processing. The claims do not preempt all types of digital image processing. For example, the claims do not preempt use of the techniques taught in the prior art cited on the face of the patents-in-suit. In light of the foregoing, a person of ordinary skill in the art would understand that the claims of the patents-in-suit are directed to a specific improvement for digital image processing of images captured by a digital camera.

V. CLAIMS FOR PATENT INFRINGEMENT

37. The allegations provided below are exemplary and without prejudice to Plaintiff's infringement contentions provided pursuant to the Court's scheduling order and local rules. Plaintiff's claim construction contentions regarding the meaning and scope of the claim terms will be provided under the Court's scheduling order and local rules. As detailed below, each element of at least one claim of each of the patents-in-suit is literally present in the accused products. To the extent that any element is not literally present, each such element is present under the doctrine of equivalents. Plaintiff's analysis below should not be taken as an admission

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[6] https://news.samsung.com/global/samsung-introduces-two-new-0-8%ce%bcm-isocell-image-sensors-to-the-smartphone-market; *compare with* https://smartphones.gadgethacks.com/news/why-eis-is-actually-better-than-ois-for-videos-0195575/ (describing slow, ineffective OIS techniques).

[7] https://www.samsung.com/semiconductor/global.semi/file/resource/2018/05/Brochure_EIS_Solution_180503.pdf.

that the preamble for any claim is limiting. While publicly available information is cited below, Plaintiff may rely on other forms of evidence to show infringement.

38. The accused products include at least the following products, as well as products with reasonably similar functionality, and all Edge, Plus (+), Active, 4G, and 5G varieties of these products. Identification of the accused products will be provided in plaintiff's infringement contentions pursuant to the Court's scheduling order and local rules. Samsung imports into the United States, uses, makes, offers for sale, and sells in the United States the following products and infringes the asserted claims of the patents-in-suit:

- '484, '699, '175, and '740 accused products: Galaxy S5 products (including S5, S5 Active, S5 Mini, S Duos 3, S5 Neo, and S5 Plus), Galaxy S6 products (including S6, S6 Edge, S6 Active, and S6 Edge Plus), Galaxy S7 products (including S7, S7 Edge, and S7 Active), Galaxy S8 products (including S8, S8 Plus, and S8 Active), Galaxy S9 products (including S9 and S9 Plus), Galaxy S10 products (including S10, S10e, S10 Plus, and S10 5G), Galaxy Fold/X, Galaxy A20, Galaxy A50, Galaxy A70, Galaxy A90, Galaxy Tab S4, Galaxy Tab S5, Galaxy Tab S6, Galaxy Note 4, Note Edge, Note 5, Note 7, Note Fan Edition, Note 8, Note 9, Note 10, Note 10 Plus, and Note 10 Plus 5G;
- '450 accused products: Galaxy S7 products (including S7, S7 Edge, and S7 Active), Galaxy S8 products (including S8, S8 Plus, and S8 Active), Galaxy S9 products (including S9 and S9 Plus), Galaxy S10 products (including S10, S10e, S10 Plus, and S10 5G), Galaxy Fold/X, Galaxy A50, Galaxy A70, Galaxy A90, Galaxy Tab S4, Galaxy Tab S5, Galaxy Tab S6, Galaxy Note 7, Note Fan Edition, Note 8, Note 9, Note 10, Note 10 Plus, and Note 10 Plus 5G.

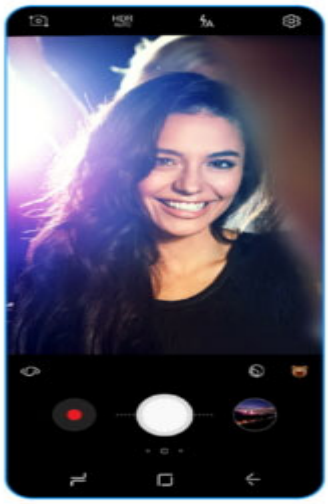
- '944 accused products: Galaxy S9 Plus, Galaxy S10 products (including S10, S10e, S10 Plus, and S10 5G), Galaxy Fold/X, Galaxy A20, Galaxy A50, Galaxy A70, Galaxy A90, Galaxy Tab S6, Galaxy Note 8, Note 9, Note 10, Note 10 Plus, and Note 10 Plus 5G.

COUNT I: PATENT INFRINGEMENT OF THE '484 PATENT

39. Clear Imaging incorporates by reference the preceding paragraphs as if fully stated herein.

40. Samsung has been and is now directly infringing and/or indirectly infringing the '484 patent by way of inducement and/or contributory infringement, literally and/or under the Doctrine of Equivalents, in violation of 35 U.S.C. § 271, including by making, using, selling, and/or offering for sale in the United States or importing into the United States infringing products, including at least '484 accused products. Samsung derives revenue from the activities relating to the '484 accused products. As explained below, these products are covered by one or more claims of the '484 patent, including but not limited to claim 28.

41. Claim 28 of the '484 patent recites an "apparatus" comprising "a viewfinder configured to display an image." The '484 accused products include a viewfinder configured to display an image. For example, Samsung's website shows that the display screen is used as a viewfinder to display an image for the camera, as shown in the examples below.



https://news.samsung.com/global/in-depth-look-fast-fun-and-in-focus-the-galaxy-s8-camera

Take Pictures

Take pictures with your device's front or rear camera.

1. From a Home screen, swipe up to access **Apps**.
2. Tap **Camera**.
3. Use the display screen as a viewfinder. While aiming the camera, these options are available:
   - To focus the shot, tap the screen. When you tap the screen, a brightness scale is displayed. Slide the light bulb to adjust the brightness.
   - To change the shooting mode, swipe the screen right or left.
   - To quickly switch between the front and rear cameras, swipe the screen up or down.
   - To change a camera setting, tap **Settings**.
4. Tap **Take a picture**.

http://downloadcenter.samsung.com/content/PM/201808/20180803063133735/EB/GEN_G960U1_G965U1_EN_FINAL_180712/toc.html#camera_and_video_tid1e4831

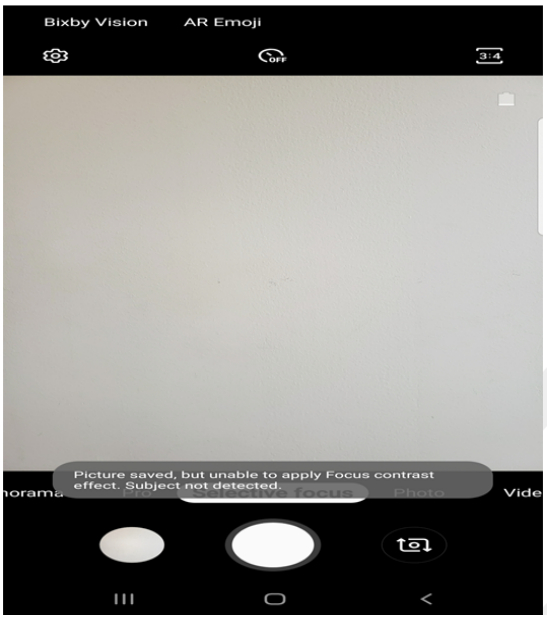
42. Claim 28 of the '484 patent recites an "apparatus" comprising "a processor configured to receive user input data that designates a subject in the image." The '484 accused products include a processor configured to receive user input data that designates a subject in the image. For example, Samsung's website shows that the display screen is used to receive user input that designates a subject in the image for the camera, as shown in the examples below.

Take Pictures

Take pictures with your device's front or rear camera.

1. From a Home screen, swipe up to access **Apps**.
2. Tap **Camera**.
3. Use the display screen as a viewfinder. While aiming the camera, these options are available:
   - To focus the shot, tap the screen. When you tap the screen, a brightness scale is displayed. Slide the light bulb to adjust the brightness.
   - To change the shooting mode, swipe the screen right or left.
   - To quickly switch between the front and rear cameras, swipe the screen up or down.
   - To change a camera setting, tap **Settings**.
4. Tap **Take a picture**.

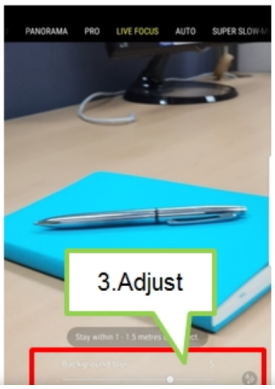
http://downloadcenter.samsung.com/content/PM/201808/20180803063133735/EB/GEN_G960U1_G965U1_EN_FINAL_180712/toc.html#camera_and_video_tid1e4831



5 Select a location on the screen where you would like your camera to focus.

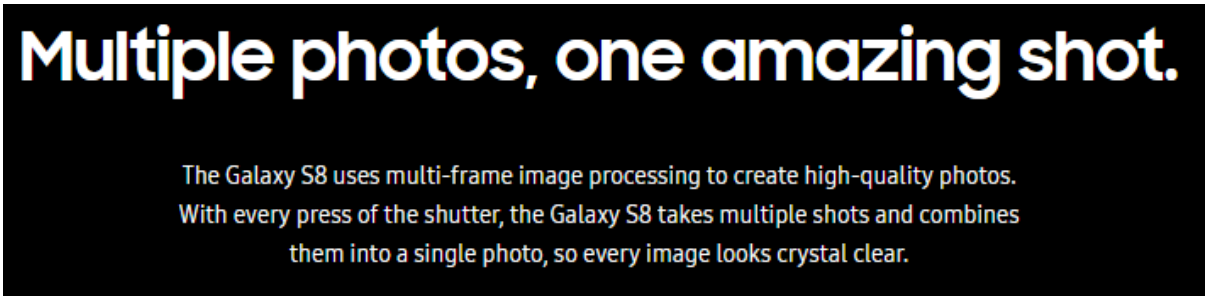
https://www.samsung.com/my/support/mobile-devices/galaxy-s7-edge-how-do-i-use-the-selective-focus-mode-on-the-camera/

3 Focus on a particular subject by dragging the background blur adjustment bar to the left or right to adjust the blur level.



https://www.samsung.com/hk_en/support/mobile-devices/galaxy-s9-plus-only-how-do-i-take-portraits-using-live-focus-feature/

43. Claim 28 of the '484 patent recites an "apparatus" comprising "a recording medium configured to capture a plurality of images, wherein the images are two-dimensional photographic images and include the designated subject." The '484 accused products include a recording medium configured to capture a plurality of images, wherein the images are two-dimensional photographic images and include the designated subject. For example, Samsung's website explains that the '484 accused products, including through "multi-frame image processing," "multi-frame noise reduction," "selective focus," and/or "live focus," capture a plurality of two-dimensional photographic images, as shown in the examples below.



https://www.samsung.com/us/explore/galaxy-s8/camera/

The Galaxy S9's upgraded Multi-Frame Noise Reduction technology enhances low-light image quality even further by capturing and combining 12 pictures in quick succession to eliminate up to 30 percent[1] more noise and create a stunning shot.

https://news.samsung.com/global/in-depth-look-1-how-the-galaxy-s9-reimagines-the-smartphone-camera

With this technology, the camera takes three photos – instead of just one – then selects the clearest image and uses the other two to reduce the blur. By imposing the three images on top of one another, the resulting photograph is highly detailed with clearer contours. This even applies to images captured in less-than-ideal conditions, such as when zoomed-in in low light. Furthermore, the camera can capture and process the image so quickly that users cannot tell the difference between it and conventional smartphone cameras.

https://news.samsung.com/global/in-depth-look-fast-fun-and-in-focus-the-galaxy-s8-camera

The narrator says [starting @2:54 sec]: "How much you ever wished that you can take multiple photos of the same moment and then combine the best attributes of those photos to create the perfect shot?
That's what multi-frame image processing does. It uses multiple images to reduce noise and boost brightness – when you need it most."
https://www.youtube.com/watch?v=YL9arg1Ngdw (Samsung Galaxy's S8 Launch Event in 10 minutes)

Selective focus mode

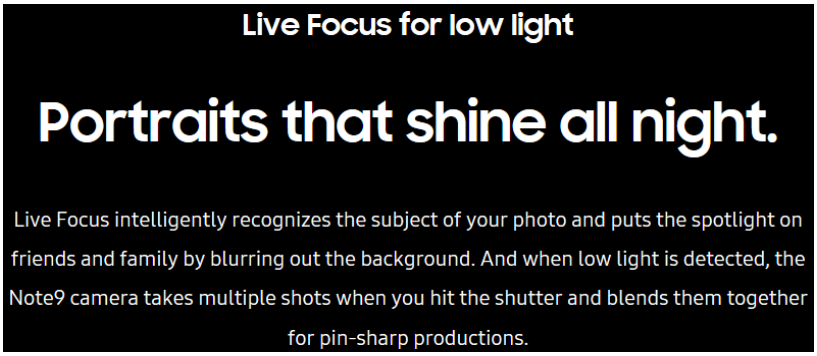
The selective focus mode works by taking multiple photos of your subject at varying focus levels then allowing you to change the focus of your photo after it's been saved to your gallery. A pretty good way of avoiding those annoying blurry images, though you do have to allow a fraction more time for the camera to snap multiple shots.

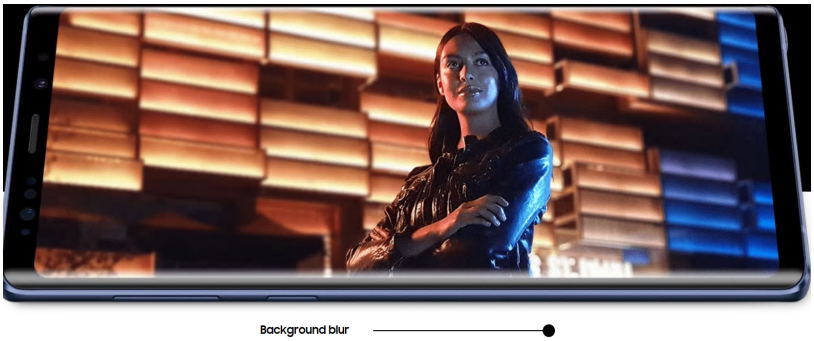
https://www.mobilefun.co.uk/blog/2016/03/how-to-take-better-photos-with-the-galaxy-s7-galaxy-s7-edge/

Selective focus:

Selective focus, a feature introduced on the Galaxy S5, snaps multiple photos consecutively with varying focus. The end result is a photo with an adjustable focus level; you can swap focus between objects in the foreground or background.

https://www.digitaltrends.com/photography/samsung-galaxy-s8-camera-tips/





https://www.samsung.com/us/mobile/galaxy-note9/camera/

44. Claim 28 of the ’484 patent recites an “apparatus” comprising “wherein the processor is further configured to: shift each of the plurality of images vertically and horizontally such that the designated subject is aligned at a same location in each of the shifted images.” The ’484 accused products include a processor configured to shift each of the plurality of images vertically and horizontally such that the designated subject is aligned at a same location in each of the shifted images. For example, the ’484 accused products, including through “multi-frame image processing,” “multi-frame noise reduction,” “selective focus,” and/or “live focus,” capture a plurality of images and shifts each of the plurality of images vertically and horizontally such that the designated subject is aligned at a same location in each of the shifted images, as shown in the examples below, including, by way of example, discussion from Samsung regarding how it combines multiple images and/or “impos[es]” images on top of one another.

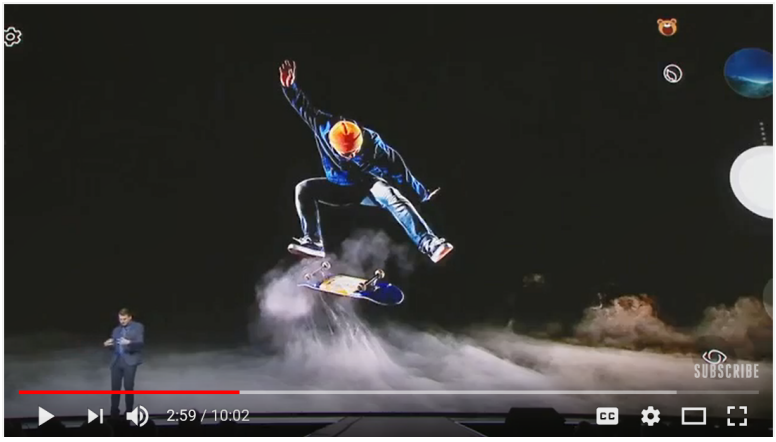
https://www.samsung.com/us/explore/galaxy-s8/camera/

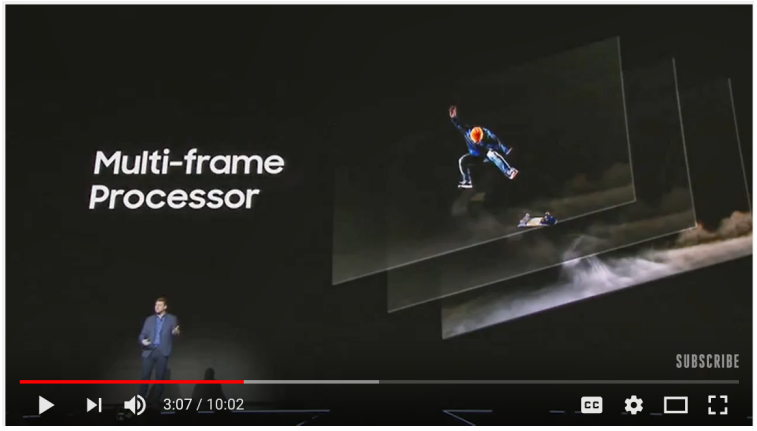
The Galaxy S9’s upgraded Multi-Frame Noise Reduction technology enhances low-light image quality even further by capturing and combining 12 pictures in quick succession to eliminate up to 30 percent[1] more noise and create a stunning shot.

https://news.samsung.com/global/in-depth-look-1-how-the-galaxy-s9-reimagines-the-smartphone-camera

> With this technology, the camera takes three photos – instead of just one – then selects the clearest image and uses the other two to reduce the blur. By imposing the three images on top of one another, the resulting photograph is highly detailed with clearer contours. This even applies to images captured in less-than-ideal conditions, such as when zoomed-in in low light. Furthermore, the camera can capture and process the image so quickly that users cannot tell the difference between it and conventional smartphone cameras.

https://news.samsung.com/global/in-depth-look-fast-fun-and-in-focus-the-galaxy-s8-camera





https://www.youtube.com/watch?v=YL9arg1Ngdw (Samsung Galaxy's S8 Launch Event)

The narrator says [starting @2:54 sec]: "How much you ever wished that you can take multiple photos of the same moment and then combine the best attributes of those photos to create the perfect shot? That's what multi-frame image processing does. It uses multiple images to reduce noise and boost brightness – when you need it most."
https://www.youtube.com/watch?v=YL9arg1Ngdw (Samsung Galaxy's S8 Launch Event)

Selective focus mode

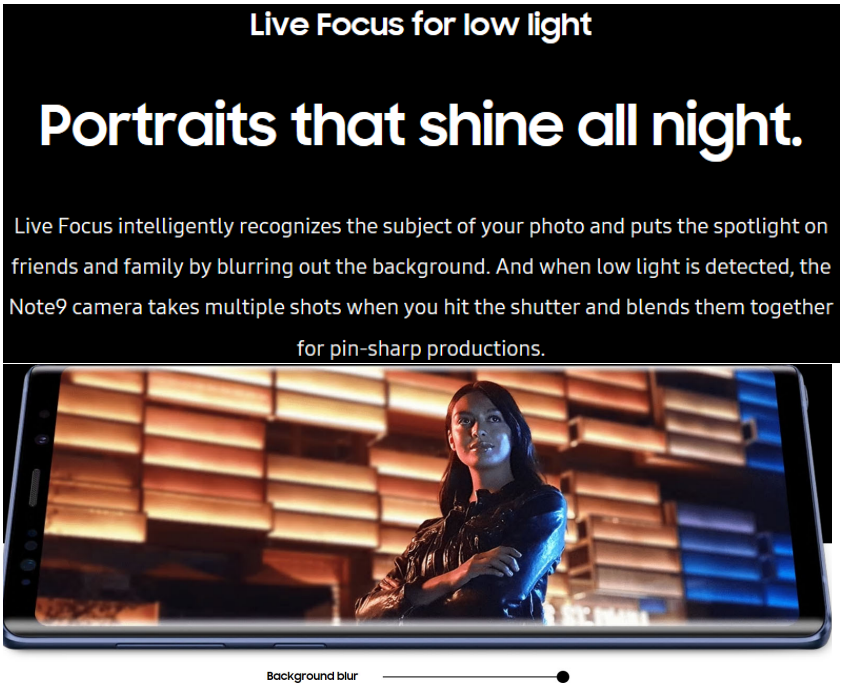
The selective focus mode works by taking multiple photos of your subject at varying focus levels then allowing you to change the focus of your photo after it's been saved to your gallery. A pretty good way of avoiding those annoying blurry images, though you do have to allow a fraction more time for the camera to snap multiple shots.

https://www.mobilefun.co.uk/blog/2016/03/how-to-take-better-photos-with-the-galaxy-s7-galaxy-s7-edge/

Selective focus:

Selective focus, a feature introduced on the Galaxy S5, snaps multiple photos consecutively with varying focus. The end result is a photo with an adjustable focus level; you can swap focus between objects in the foreground or background.

https://www.digitaltrends.com/photography/samsung-galaxy-s8-camera-tips/

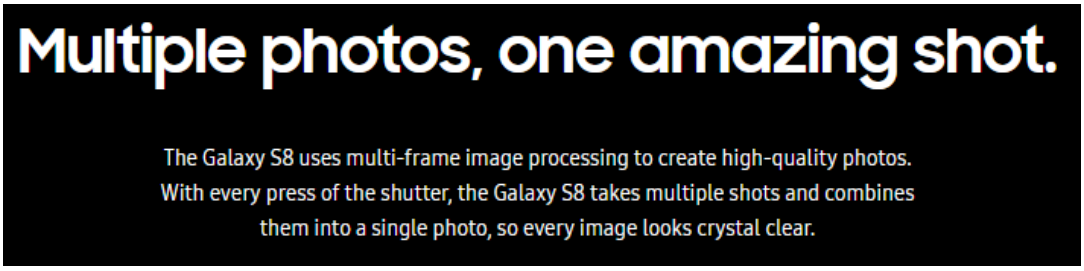


https://www.samsung.com/us/mobile/galaxy-note9/camera/

Remember the Note 8 uses software and hardware to add depth, or blur, to a photo. Because of this it can, and often does, get the exact edges of your subjects wrong leading to blurred hands, hair or clothes. Try and pick backgrounds that are far away from the subject, and don't match too closely in color for the best result.

https://www.cnet.com/news/best-chromebooks-for-2019/

45. Claim 28 of the '484 patent recites an "apparatus" comprising a processor configured to "combine the shifted images to obtain a corrected image, wherein the corrected image is a two-dimensional photographic image." The '484 accused products include a processor configured to combine the shifted images to obtain a corrected image, wherein the corrected image is a two-dimensional photographic image. For example, '484 accused products, including through "multi-frame image processing," "multi-frame noise reduction," "selective focus," and/or "live focus," capture a plurality of images and combine the shifted images to obtain a corrected image, as shown in the examples below, including, by way of example, discussion from Samsung regarding how it combines multiple images and/or "impos[es]" images on top of one another.



https://www.samsung.com/us/explore/galaxy-s8/camera/

The Galaxy S9's upgraded Multi-Frame Noise Reduction technology enhances low-light image quality even further by capturing and combining 12 pictures in quick succession to eliminate up to 30 percent[1] more noise and create a stunning shot.

https://news.samsung.com/global/in-depth-look-1-how-the-galaxy-s9-reimagines-the-smartphone-camera

With this technology, the camera takes three photos – instead of just one – then selects the clearest image and uses the other two to reduce the blur. By imposing the three images on top of one another, the resulting photograph is highly detailed with clearer contours. This even applies to images captured in less-than-ideal conditions, such as when zoomed-in in low light. Furthermore, the camera can capture and process the image so quickly that users cannot tell the difference between it and conventional smartphone cameras.

https://news.samsung.com/global/in-depth-look-fast-fun-and-in-focus-the-galaxy-s8-camera

The narrator says [starting @2:54 sec]: "How much you ever wished that you can take multiple photos of the same moment and then combine the best attributes of those photos to create the perfect shot? That's what multi-frame image processing does. It uses multiple images to reduce noise and boost brightness – when you need it most."
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https://www.mobilefun.co.uk/blog/2016/03/how-to-take-better-photos-with-the-galaxy-s7-galaxy-s7-edge/

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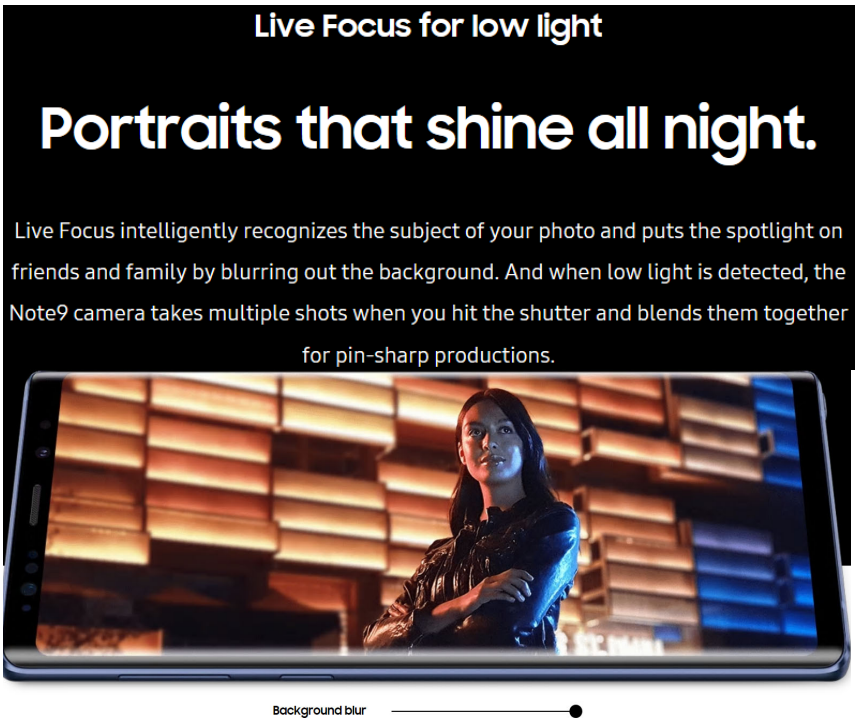
https://www.digitaltrends.com/photography/samsung-galaxy-s8-camera-tips/



https://www.samsung.com/us/mobile/galaxy-note9/camera/

46. As described above, Samsung has had actual knowledge of the '484 patent and actual knowledge that its activities constitute direct and/or indirect infringement of the '484 patent, yet they have not ceased their infringing activities. *See* Section III. Samsung's infringement of the '484 patent has been and continues to be willful and deliberate. Samsung also has knowledge of the '484 patent by way of this complaint and, to the extent they do not cease their infringing activities, their infringement is and continues to be willful and deliberate.

47. Samsung actively, knowingly, and intentionally induces infringement of one or more claims of the '484 patent under 35 U.S.C. § 271(b) by actively encouraging others to make, use, offer to sell, sell, and/or import '484 accused products in this judicial district and elsewhere in the United States. For example, Samsung actively instructs, promotes, and encourages the use of the infringing features in marketing materials, technical specifications, data sheets, web pages on its website (*e.g.*, www.samsung.com), press releases, and user manuals, as well as at trade shows (*e.g.*, CES and Mobile World Congress) and through its sales and distribution channels

that encourage infringing use, sales, offers to sell, and importation of the '484 accused products, as evidenced at least in part by the Samsung statements and documents cited in this complaint. Samsung user manuals for the '484 accused products instruct, promote, and encourage the use the camera capability in an infringing manner, including using "multi-frame image processing," "multi-frame noise reduction," "selective focus," and/or "live focus."[8] In addition, Samsung

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[8] *See, e.g,* http://downloadcenter.samsung.com/content/UM/201404/20140402111855054/SM-G900F_UM_EU_Kitkat_Eng_D06_140312.pdf (S5 user manual) at pages 84-87; http://downloadcenter.samsung.com/content/UM/201503/20150303094626458/SM-G920F_UM_EU_Lollipop_Eng_Rev.1.0_150302.pdf (S6 user manual) at pages 55-70; http://downloadcenter.samsung.com/content/UM/201602/20160222104408745/SM-G930_UM_EU_Marshmallow_Eng_Rev.1.0_160219.pdf (S7 user manual) at pages 74-94; http://downloadcenter.samsung.com/content/UM/201708/20170822042936979/UNL_SM-G950U1_GS8_EN_UM_N_7.0_051817_FINAL_AC.PDF (S8/S8+ user manual) at pages 60-66; http://downloadcenter.samsung.com/content/UM/201704/20170428055344107/ATT_SM-G950U_GS8_EN_UM_N_7.0_033017_FINAL_AC.pdf (S8/S8+ AT&T user manual) at pages 63-69; http://downloadcenter.samsung.com/content/UM/201712/20171214080933306/VZW_SM-G950U_GS8_EN_UM_N_7.0_090117_FINAL_AC.pdf (S8/S8+ Verizon user manual) at pages 63-69; http://downloadcenter.samsung.com/content/UM/201708/20170815001815941/ATT_SM-G892A_GS8_Active_EN_UM_071017_FINAL_AC.PDF (S8 Active AT&T) at 60-66; http://downloadcenter.samsung.com/content/UM/201803/20180320052236753/GEN_G960U1_G965U1_EN_UM_O_8.0_022718_FINAL_AC.pdf (S9/S9+ user manual) at pages 70-75; http://downloadcenter.samsung.com/content/UM/201802/20180228074216704/ATT_G960U_G965U_EN_UM_O_8.0_022718_FINAL.pdf (S9/S9+ AT&T user manual) at 70-75; http://downloadcenter.samsung.com/content/UM/201803/20180301045020534/VZW_G960U_G965U_EN_UM_O_8.0_022718_FINAL.pdf (S9/S9+ Verizon user manual) at 70-75; http://downloadcenter.samsung.com/content/UM/201907/20190721044642525/GEN_SM-G970U1_SM-G973U1_SM-G975U1_EN_UM_P_9.0_050319_FINAL.pdf (S10e, S10, and S10+) at 76-80; http://downloadcenter.samsung.com/content/UM/201409/20140926113431077/SM-N910_UM_EU_Kitkat_Eng_Rev.1.0_140926.pdf (Galaxy Note 4 user manual) at pages 90-98; http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwj9qOb8gqrfAhVRm-AKHXbQD_oQFjAAegQIBxAB&url=http%3A%2F%2Fdownloadcenter.samsung.com%2Fcontent%2FUM%2F201508%2F20150821044210180%2FVZW_SM-N920V_Galaxy-Note5_EN_UM_LL_5.1_OGE_FINAL.pdf&usg=AOvVaw1AgknIj4frnUVmow-ckwd_ (Galaxy Note 5 user manual) at pages 74-80; http://downloadcenter.samsung.com/content/UM/201503/20150303094626458/SM-

documents and materials for the '484 accused products instruct, promote, and encourage, for example, use of "multi-frame image processing," "multi-frame noise reduction," "selective focus," and "live focus."[9] Samsung also contributorily infringes the '484 patent under 35 U.S.C. § 271(c) because there is no substantial non-infringing use of the infringing features of the '484 accused products. The software and hardware components are installed and configured by Samsung to practice the patented operations and those structures do not constitute a staple article

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G920F_UM_EU_Lollipop_Eng_Rev.1.0_150302.pdf (Galaxy Note 6 user manual) at pages 55-70); https://www.samsung.com/levant/support/model/SM-N930FZDAMID/ (Galaxy Note 7 user manual) at pages 123-145; http://downloadcenter.samsung.com/content/UM/201710/20171011041539192/GEN_SM-N950U1_Galaxy_Note8_EN_UM_N_7.1_082917_FINAL_AC.PDF (Galaxy Note 8 user manual) at pages 73-78; http://downloadcenter.samsung.com/content/UM/201808/20180811053249409/GEN_SM-N960U1_Galaxy_Note9_EN_UM_O_8.0_080918_FINAL.pdf (Galaxy Note 9) at pages 75-80); http://downloadcenter.samsung.com/content/UM/201809/20180905040635055/WIF_SM-T830_Galaxy_Tab_S4_EN_UM_O_8.0_080218_FINAL_AC.pdf (Galaxy Tab S4); http://downloadcenter.samsung.com/content/UM/201908/20190828040555688/VZW_SM-T837V_Galaxy_Tab_S4_EN_UM_P_9.0_051019_FINAL_AC.pdf (Galaxy Tab S4); http://downloadcenter.samsung.com/content/UM/201904/20190426015516885/WIF_SM-T720_Galaxy_Tab_S5e_EN_UM_P_9.0_032819_FINAL_AC.pdf (Galaxy Tab S5); http://downloadcenter.samsung.com/content/UM/201907/20190731221116212/VZW_SM-T727V_Galaxy_Tab_S5e_EN_UM_P_9.0_071019_FINAL_AC.pdf (Galaxy Tab S5); http://downloadcenter.samsung.com/content/UM/201908/20190830064640327/WIF_SM-T860_Tab_S6_EN_UM_P_9.0_082819_FINAL.pdf (Galaxy Tab S6); http://downloadcenter.samsung.com/content/UM/201907/20190726005622563/VZW_SM-A102U_SM-A205U_EN_UM_P_9.0_072319_FINAL.pdf (Galaxy A20); http://downloadcenter.samsung.com/content/UM/201907/20190709055838413/VZW_SM-A505U_Galaxy_A50_EN_UM_P_9.0_052319_FINAL_AC.pdf (Galaxy A50); http://downloadcenter.samsung.com/content/UM/201906/20190619122204418/SM-A505_A705_UM_SWA_Pie_Eng_Rev.1.0_190516.pdf (Galaxy A70).

[9] *See, e.g.,* https://www.samsung.com/us/explore/galaxy-s8/camera/; https://news.samsung.com/global/in-depth-look-fast-fun-and-in-focus-the-galaxy-s8-camera; https://www.youtube.com/watch?v=YL9arg1Ngdw; https://www.samsung.com/in/support/mobile-devices/explain-super-low-light-feature-in-galaxy-s9-s9-plus/; https://www.samsung.com/us/mobile/galaxy-note9/camera/; https://www.samsung.com/levant/support/mobile-devices/galaxy-note4-how-to-use-selective-focus-in-the-camera/.

or commodity of commerce suitable for substantial non-infringing use, and Samsung's providing of the same results in direct infringement by others.

48. Plaintiff has no adequate remedy at law against Samsung's acts of infringement, and, unless Samsung is enjoined from its infringement of the '484 patent, Plaintiff will suffer irreparable harm.

49. Samsung, by way of its infringing activities, has caused and continues to cause Plaintiff to suffer damages, the exact amount to be determined at trial.

COUNT II: PATENT INFRINGEMENT OF THE '699 PATENT

50. Clear Imaging incorporates by reference the preceding paragraphs as if fully stated herein.

51. Samsung has been and is now directly infringing and/or indirectly infringing the '699 patent by way of inducement and/or contributory infringement, literally and/or under the Doctrine of Equivalents, in violation of 35 U.S.C. § 271, including by making, using, selling, and/or offering for sale in the United States or importing into the United States the "'699 accused products." Samsung derives revenue from the activities relating to the '699 accused products. As explained below, these products are covered by one or more claims of the '699 patent, including but not limited to, Claim 9.

52. Claim 9 of the '699 patent recites an "apparatus" comprising "a viewfinder configured to display an image." The '699 accused products include a viewfinder configured to display an image. For example, Samsung's website shows that the display screen is used as a viewfinder to display an image for the camera, as shown in the examples below.

Take Pictures

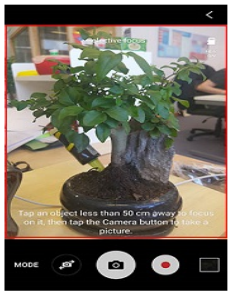
Take pictures with your device's front or rear camera or combine shots with Dual camera.

Note: Prior to using the camera, remove the plastic protective covering from the camera lens.

1. From a Home screen, tap **Apps** > **Camera**.
2. Using the display screen as a viewfinder, compose your shot by aiming the camera at the subject. While composing your picture, use the available options or these gestures:
   - Touch the screen with two fingers and pinch or spread them on the screen to zoom in or out.
   - Tap the screen to focus on the area you touched.
3. Before taking the photo, you can tap the icons to access various camera options and settings.
4. Tap **Take a picture** to take the picture.

http://downloadcenter.samsung.com/content/UM/201608/20160825002229338/ATT_SM-G900A_GS5_EN_UM_MM_6.0_FINAL_WAC.pdf

5 Select a location on the screen where you would like your camera to focus.

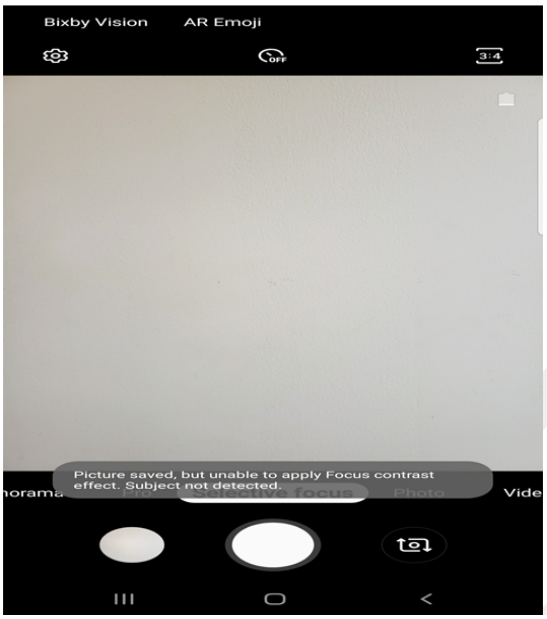


https://www.samsung.com/my/support/mobile-devices/galaxy-s7-edge-how-do-i-use-the-selective-focus-mode-on-the-camera/

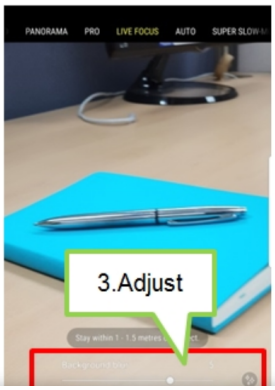
53. Claim 9 of the '699 patent recites an "apparatus" comprising "a processor configured to receive user input that designates a main subject in the image in the viewfinder." The '699 accused products include a processor configured to receive user input that designates a main subject in the image in the viewfinder. For example, Samsung's website shows that the display screen is used to receive user input that designates a subject in the image for the camera, as shown in the examples below.

5 Select a location on the screen where you would like your camera to focus.

https://www.samsung.com/my/support/mobile-devices/galaxy-s7-edge-how-do-i-use-the-selective-focus-mode-on-the-camera/



3 Focus on a particular subject by dragging the background blur adjustment bar to the left or right to adjust the blur level.



https://www.samsung.com/hk_en/support/mobile-devices/galaxy-s9-plus-only-how-do-i-take-portraits-using-live-focus-feature/

54. Claim 9 of the '699 patent recites an "apparatus" comprising "a recording medium configured to capture a plurality of photographic images, wherein the plurality of photographic images includes the designated main subject." The '699 accused products include a recording medium configured to capture a plurality of photographic images, wherein the plurality of photographic images includes the designated main subject. For example, industry websites explain that Samsung's accused products capture a plurality of photographic images, for example through the use of "selective focus" and/or "live focus," as shown below.

Selective focus mode

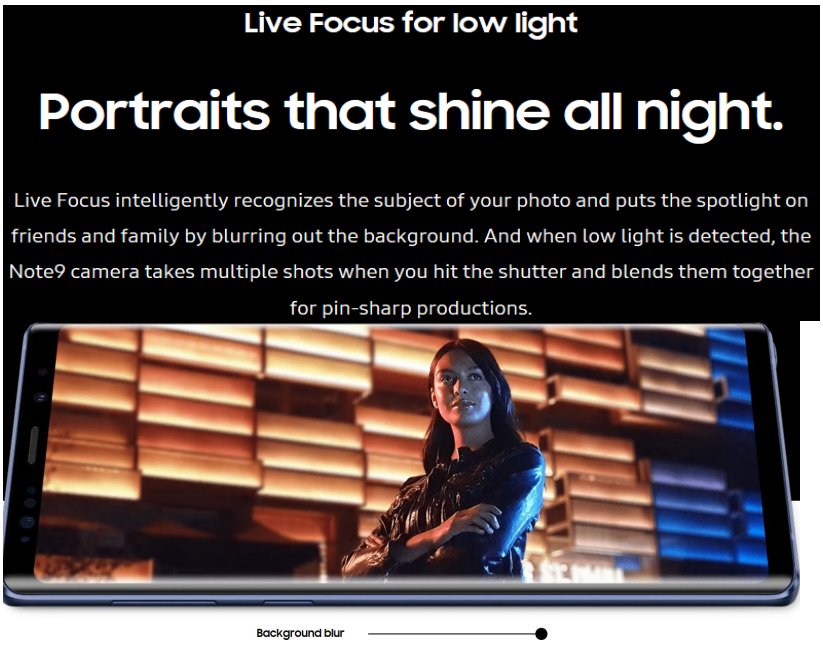
The selective focus mode works by taking multiple photos of your subject at varying focus levels then allowing you to change the focus of your photo after it's been saved to your gallery. A pretty good way of avoiding those annoying blurry images, though you do have to allow a fraction more time for the camera to snap multiple shots.

https://www.mobilefun.co.uk/blog/2016/03/how-to-take-better-photos-with-the-galaxy-s7-galaxy-s7-edge/

Selective focus:

Selective focus, a feature introduced on the Galaxy S5, snaps multiple photos consecutively with varying focus. The end result is a photo with an adjustable focus level; you can swap focus between objects in the foreground or background.

https://www.digitaltrends.com/photography/samsung-galaxy-s8-camera-tips/



https://www.samsung.com/us/mobile/galaxy-note9/camera/

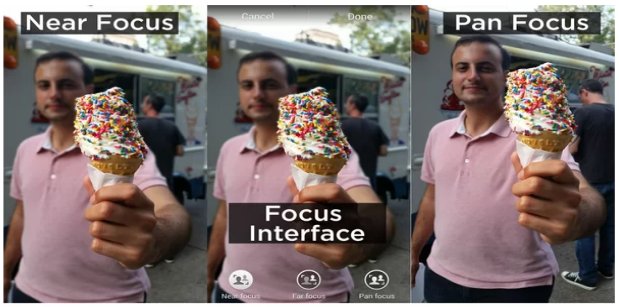
55. Claim 9 of the '699 patent recites an "apparatus" comprising "the processor further configured to combine the plurality of photographic images to create a combined photographic image such that the main subject in the combined photographic image is substantially blur free and areas of the combined photographic image other than the main subject are blurred." The '699 accused products include the processor further configured to combine the

plurality of photographic images to create a combined photographic image such that the main subject in the combined photographic image is substantially blur free and areas of the combined photographic image other than the main subject are blurred. For example, Samsung's website and industry websites explain that Samsung's accused products create a combined photographic image, including through the use of "selective focus" and/or "live focus," such that the main subject in the combined photographic image is substantially blur free and areas of the combined photographic image other than the main subject are blurred, as shown in the example discussion and images below.

Use Selective Focus for a blur effect

The Galaxy S5's Selective Focus mode allows you to blur out the foreground or background of a photo for an artistic effect To activate Selective Focus, simply tap the icon of two silhouettes on the top right of the camera app's interface. Make sure your foreground subject is within 1.5 feet of your camera, and that part of the background is at least 5 feet behind your subject.

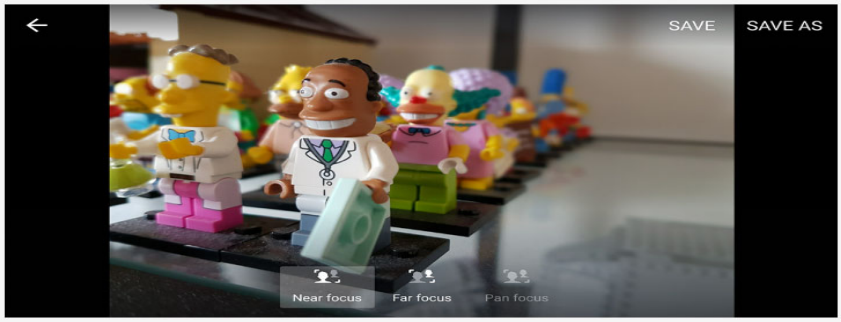
With Selective Focus activated, you can choose your subject by simply tapping it on the display. After your shot is taken, tap the edit icon to the top left of the image, which will pull up your focus options.



Credit: Michael Andronico/Tom's Guide

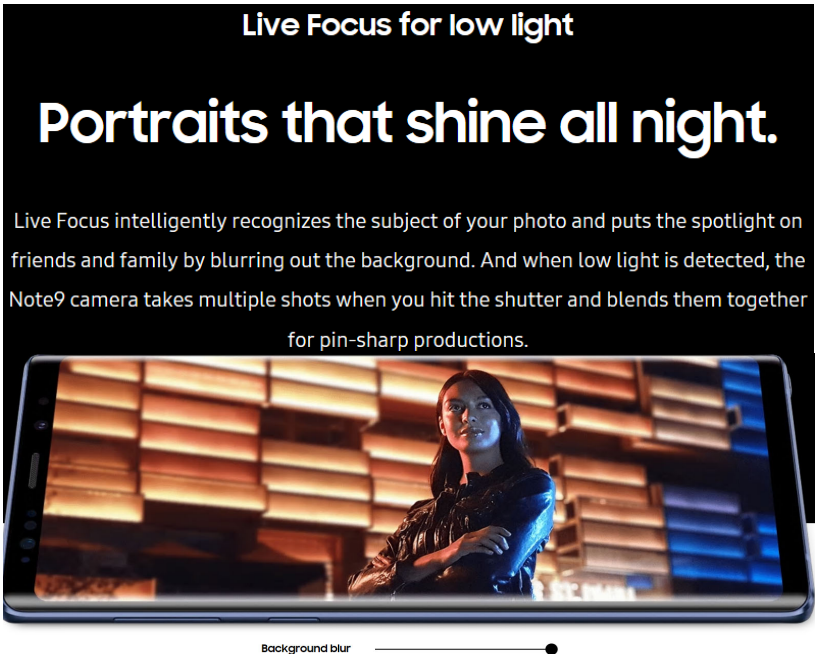
Select the Near Focus icon to highlight the foreground, the Far Focus icon for the background or the Pan Focus icon to spread the focus evenly. This mode is a great way to put the focus on a friend standing in a crowded city, for example.

https://www.tomsguide.com/us/galaxy-s5-camera-tips,news-19244.html



Selective Focus is a feature we've seen before that takes and combines multiple images, allowing you to adjust the focus after the image is taken. This mode seems refined on the Galaxy S7 Edge, and worked well throughout my testing. There's also a food mode, which highlights dishes in the center of frame, a standard panorama mode, and the ability to download more modes, including one that makes GIFs, via Samsung Apps.

https://www.techspot.com/review/1147-samsung-galaxy-s7-edge/page7.html



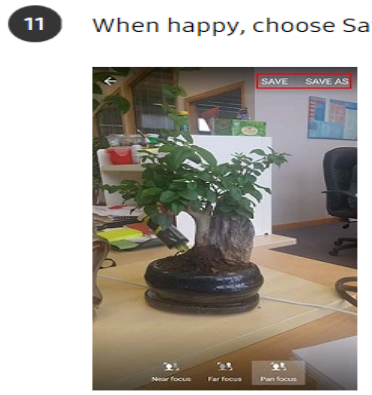
https://www.samsung.com/us/mobile/galaxy-note9/camera/

Remember the Note 8 uses software and hardware to add depth, or blur, to a photo. Because of this it can, and often does, get the exact edges of your subjects wrong leading to blurred hands, hair or clothes. Try and pick backgrounds that are far away from the subject, and don't match too closely in color for the best result.

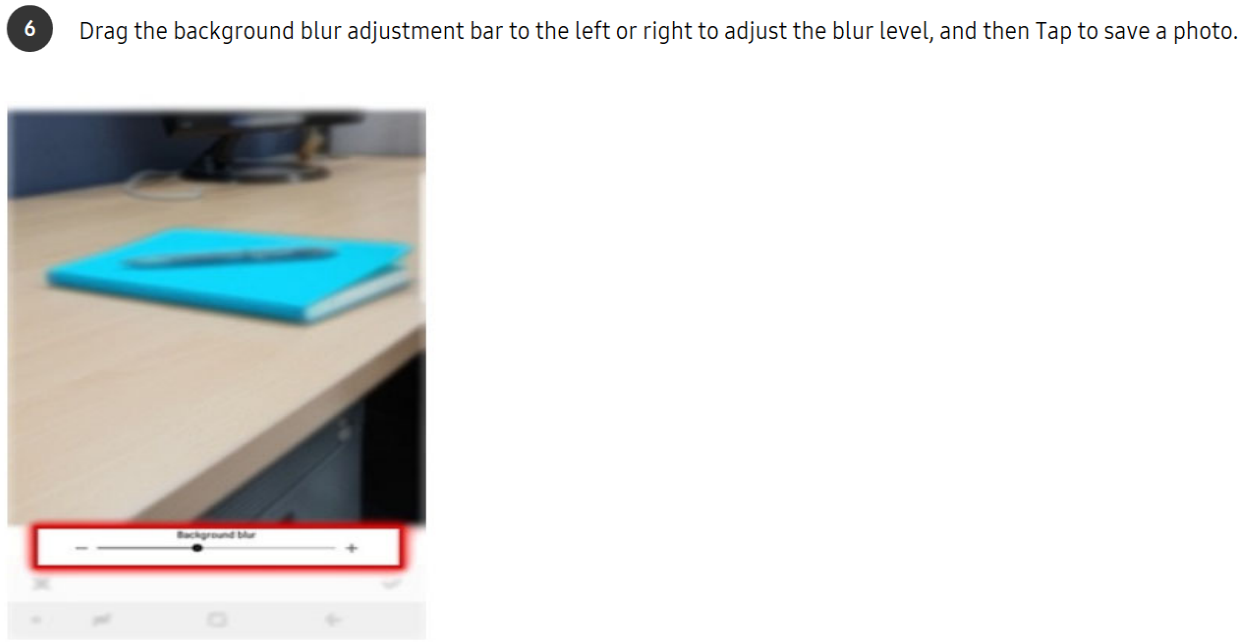
https://www.cnet.com/news/best-chromebooks-for-2019/

56. Claim 9 of the '699 patent recites an "apparatus" comprising "a memory configured to record the combined photographic image." The '699 accused products include a

memory configured to record the combined photographic image. For example, Samsung's website shows that the combined photographic image can be saved to memory, as shown below.



https://www.samsung.com/my/support/mobile-devices/galaxy-s7-edge-how-do-i-use-the-selective-focus-mode-on-the-camera/



https://www.samsung.com/in/support/mobile-devices/galaxy-note-9-how-to-take-portraits-using-live-focus/

57. As described above, Samsung has had actual knowledge of the '699 patent and actual knowledge that its activities constitute direct and/or indirect infringement of the '699 patent, yet they have not ceased their infringing activities. *See* Section III. Samsung's infringement of the '699 patent has been and continues to be willful and deliberate. Samsung

also has knowledge of the '699 patent by way of this complaint and, to the extent they do not cease their infringing activities, their infringement is and continues to be willful and deliberate.

58. Samsung actively, knowingly, and intentionally induces infringement of one or more claims of the '699 patent under 35 U.S.C. § 271(b) by actively encouraging others to make, use, offer to sell, sell, and/or import '699 accused products in this judicial district and elsewhere in the United States. For example, Samsung actively instructs, promotes, and encourages the use of the infringing features in marketing materials, technical specifications, data sheets, web pages on its website (*e.g.,* www.samsung.com), press releases, and user manuals, as well as at trade shows (*e.g.,* CES and Mobile World Congress) and through its sales and distribution channels that encourage infringing use, sales, offers to sell, and importation of the '699 accused products, as evidenced at least in part by the Samsung statements and documents cited in this complaint. Samsung user manuals for the '699 accused products instruct, promote, and encourage the use of the camera capability in an infringing manner.[10] In addition, Samsung documents and materials for the '699 accused products instruct, promote, and encourage use of "selective focus mode" and "live focus mode."[11] Samsung also contributorily infringes the '699 patent under 35 U.S.C. § 271(c) because there is no substantial non-infringing use of the infringing features of the '699 accused products. The software and hardware components are installed and configured by Samsung to practice the patented operations and those structures do not constitute a staple article or commodity of commerce suitable for substantial non-infringing use, and Samsung's providing of the same results in direct infringement by others.

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[10] *See, e.g,* fn 8 and 9.

[11] *See, e.g.,* fn. 8; *see also* https://www.samsung.com/my/support/mobile-devices/galaxy-s7-edge-how-do-i-use-the-selective-focus-mode-on-the-camera/; https://www.samsung.com/us/mobile/galaxy-note9/camera/.

59. Plaintiff has no adequate remedy at law against Samsung's acts of infringement, and, unless Samsung is enjoined from its infringement of the '699 patent, Plaintiff will suffer irreparable harm.

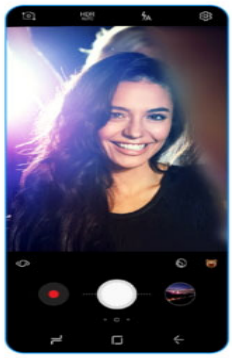
60. Samsung, by way of its infringing activities, has caused and continues to cause Plaintiff to suffer damages, the exact amount to be determined at trial.

COUNT III: PATENT INFRINGEMENT OF THE '175 PATENT

61. Clear Imaging incorporates by reference the preceding paragraphs as if fully stated herein.

62. Samsung has been and is now directly infringing and/or indirectly infringing the '175 patent by way of inducement and/or contributory infringement, literally and/or under the Doctrine of Equivalents, in violation of 35 U.S.C. § 271, including by making, using, selling, and/or offering for sale in the United States or importing into the United States the "'175 accused products." Samsung derives revenue from the activities relating to the '175 accused products. As explained below, these products are covered by one or more claims from the '175 patent, including but not limited to, Claim 23.

63. Claim 23 of the '175 patent recites an "apparatus" including "a viewfinder configured to display an image." The '175 accused products include a viewfinder configured to display an image. For example, Samsung's website shows that the display screen is used as a viewfinder to display an image for the camera, as shown in the examples below.



https://news.samsung.com/global/in-depth-look-fast-fun-and-in-focus-the-galaxy-s8-camera

Take Pictures

Take pictures with your device's front or rear camera.

1. From a Home screen, swipe up to access **Apps**.
2. Tap **Camera**.
3. Use the display screen as a viewfinder. While aiming the camera, these options are available:
   - To focus the shot, tap the screen. When you tap the screen, a brightness scale is displayed. Slide the light bulb to adjust the brightness.
   - To change the shooting mode, swipe the screen right or left.
   - To quickly switch between the front and rear cameras, swipe the screen up or down.
   - To change a camera setting, tap **Settings**.
4. Tap **Take a picture**.

http://downloadcenter.samsung.com/content/PM/201808/20180803063133735/EB/GEN_G960U1_G965U1_EN_FINAL_180712/toc.html#camera_and_video_tid1e4831

64. Claim 23 of the '175 patent recites an "apparatus" including "a processor configured to receive user input that designates a main subject in the image in the viewfinder." The '175 accused products include a processor configured to receive user input that designates a main subject in the image in the viewfinder. For example, Samsung's website shows that the display screen is used to receive user input that designates a main subject in the image in the viewfinder for the camera, as shown in the examples below.

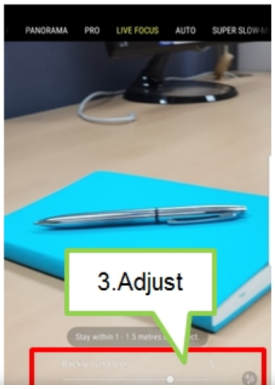
Take Pictures

Take pictures with your device's front or rear camera.

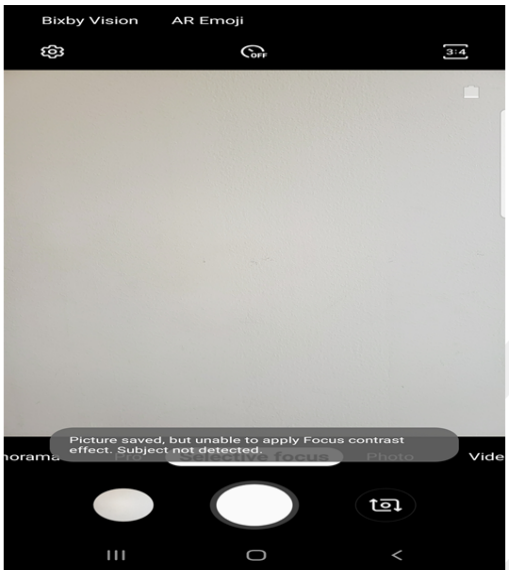
1. From a Home screen, swipe up to access **Apps**.
2. Tap **Camera**.
3. Use the display screen as a viewfinder. While aiming the camera, these options are available:
   - To focus the shot, tap the screen. When you tap the screen, a brightness scale is displayed. Slide the light bulb to adjust the brightness.
   - To change the shooting mode, swipe the screen right or left.
   - To quickly switch between the front and rear cameras, swipe the screen up or down.
   - To change a camera setting, tap **Settings**.
4. Tap **Take a picture**.

http://downloadcenter.samsung.com/content/PM/201808/20180803063133735/EB/GEN_G960U1_G965U1_EN_FINAL_180712/toc.html#camera_and_video_tid1e4831

3 Focus on a particular subject by dragging the background blur adjustment bar to the left or right to adjust the blur level.



https://www.samsung.com/hk_en/support/mobile-devices/galaxy-s9-plus-only-how-do-i-take-portraits-using-live-focus-feature/



5 Select a location on the screen where you would like your camera to focus.

https://www.samsung.com/my/support/mobile-devices/galaxy-s7-edge-how-do-i-use-the-selective-focus-mode-on-the-camera/

65. Claim 23 of the '175 patent recites an "apparatus" including "a recording medium configured to capture a plurality of photographic images, wherein the plurality of photographic images includes the designated main subject." The '175 accused products include a recording medium configured to capture a plurality of photographic images, wherein the plurality of photographic images includes the designated main subject. For example, Samsung's website explains that its accused products, including through "multi-frame image processing," "multi-frame noise reduction," "selective focus," and/or "live focus," captures a plurality of photographic images, as shown in the examples below.

capture nearly 60 percent more light than before. Samsung has even improved the S9's multi-frame image processing, which now smashes together three sets of four photos shot back-to-back into one image, with more details and less noise that one would theoretically get from a single pic.

https://gizmodo.com/heres-what-is-actually-new-about-the-samsung-galaxy-s9-1823232526

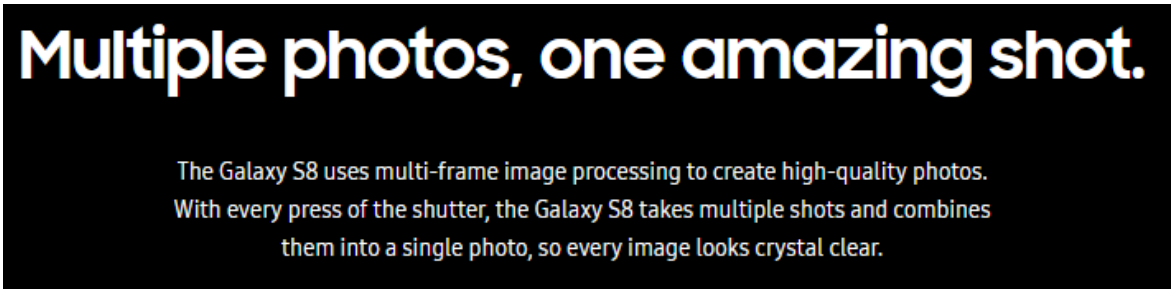
You get extra clarity with multi-frame processing

Put simply, when you take a photo on the S9 and S9+ the Samsung Galaxy camera actually captures 12 images and compiles them into 3 groups of 4. Each group of images (or frames) is then processed in a split second and combined into one premium pic that reduces 'noise'. 'Noise' refers to visual distortion which produces those grainy photos that we've all taken at some point in our lives. With multi-frame processing, you basically get much more clarity and a sharper image.

http://www.three.co.uk/hub/samsung-galaxy-camera-features/

The S9's camera is really good at capturing low-light images without resorting to a flash. In fact, each shot you take starts with 12 images that are divided into three groups of four for image processing, resulting in less speckle and more detail. The S9's camera also has a mechanical aperture that adjusts

https://www.tomsguide.com/us/samsung-galaxy-s9-guide,review-5253-4.html



https://www.samsung.com/us/explore/galaxy-s8/camera/

The Galaxy S9's upgraded Multi-Frame Noise Reduction technology enhances low-light image quality even further by capturing and combining 12 pictures in quick succession to eliminate up to 30 percent[1] more noise and create a stunning shot.
https://news.samsung.com/global/in-depth-look-1-how-the-galaxy-s9-reimagines-the-smartphone-camera

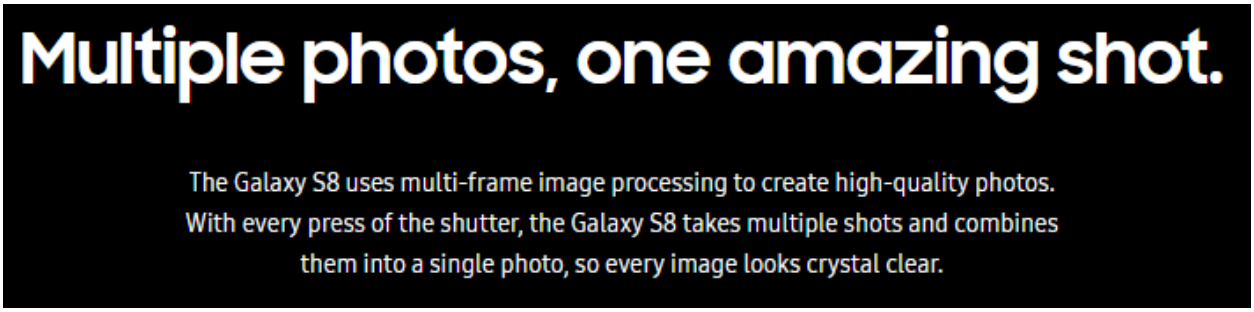
With this technology, the camera takes three photos – instead of just one – then selects the clearest image and uses the other two to reduce the blur. By imposing the three images on top of one another, the resulting photograph is highly detailed with clearer contours. This even applies to images captured in less-than-ideal conditions, such as when zoomed-in in low light. Furthermore, the camera can capture and process the image so quickly that users cannot tell the difference between it and conventional smartphone cameras.
https://news.samsung.com/global/in-depth-look-fast-fun-and-in-focus-the-galaxy-s8-camera

The narrator says [starting @2:54 sec]: "How much you ever wished that you can take multiple photos of the same moment and then combine the best attributes of those photos to create the perfect shot?
That's what multi-frame image processing does. It uses multiple images to reduce noise and boost brightness – when you need it most."
https://www.youtube.com/watch?v=YL9arg1Ngdw

66. Claim 23 of the '175 patent recites an "apparatus" including "the processor further configured to selectively combine the plurality of photographic images to generate a corrected image." The '175 accused products include a processor configured to selectively combine the plurality of photographic images to generate a corrected image. For example, Samsung's website and other documents explain that the '175 accused products, including through "multi-frame image processing," "multi-frame noise reduction," "selective focus,"

and/or "live focus," captures a plurality of images and selectively combines the photographic images to generate a corrected image, as shown in the examples below, including by way of example, discussion from Samsung regarding how it combines multiple images and/or "impos[es]" images on top of one another.

There is some news on the software side of things, though. A new multi-frame technology captures three photos and then selects the clearest image and uses the other two to reduce motion blur. Samsung says the merging of frames also results in better detail and exposures in low light. A new camera user interface allows for easier one-handed operation. The camera resolution at the front has been upped from 5 to 8MP and there is now also a face-detection AF. At F1.7 the aperture is the same as in the main camera.
https://www.dpreview.com/news/0120735311/samsung-galaxy-s8-and-s8-come-with-infinity-display-and-multi-frame-processing



https://www.samsung.com/us/explore/galaxy-s8/camera/

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https://news.samsung.com/global/in-depth-look-1-how-the-galaxy-s9-reimagines-the-smartphone-camera

With this technology, the camera takes three photos – instead of just one – then selects the clearest image and uses the other two to reduce the blur. By imposing the three images on top of one another, the resulting photograph is highly detailed with clearer contours. This even applies to images captured in less-than-ideal conditions, such as when zoomed-in in low light. Furthermore, the camera can capture and process the image so quickly that users cannot tell the difference between it and conventional smartphone cameras.
https://news.samsung.com/global/in-depth-look-fast-fun-and-in-focus-the-galaxy-s8-camera

The narrator says [starting @2:54 sec]: "How much you ever wished that you can take multiple photos of the same moment and then combine the best attributes of those photos to create the perfect shot? That's what multi-frame image processing does. It uses multiple images to reduce noise and boost brightness – when you need it most."
https://www.youtube.com/watch?v=YL9arg1Ngdw

67. Claim 23 of the '175 patent recites an "apparatus" including a processor wherein the processor "combines a first set of images from among the plurality of images to generate a first part of the corrected image, combines a second set of images from among the plurality of images to generate a second part of the corrected image, and at least one image in the first set of images is not included in the second set of images." The '175 accused products include a processor wherein the processor combines a first set of images from among the plurality of images to generate a first part of the corrected image, combines a second set of images from among the plurality of images to generate a second part of the corrected image, and at least one image in the first set of images is not included in the second set of images. For example, Samsung's website and other documents explain that its accused products, including through "multi-frame image processing," "multi-frame noise reduction," "selective focus," and/or "live focus," combine a first set of images from among the plurality of images to generate a first part of the corrected image and combines a second set of images from among the plurality of images to generate a second part of the corrected image, as shown in the examples below, including by way of example, discussion from Samsung regarding how it combines multiple images and/or "impos[es]" images on top of one another.

capture nearly 60 percent more light than before. Samsung has even improved the S9's multi-frame image processing, which now smashes together three sets of four photos shot back-to-back into one image, with more details and less noise that one would theoretically get from a single pic.
https://gizmodo.com/heres-what-is-actually-new-about-the-samsung-galaxy-s9-1823232526

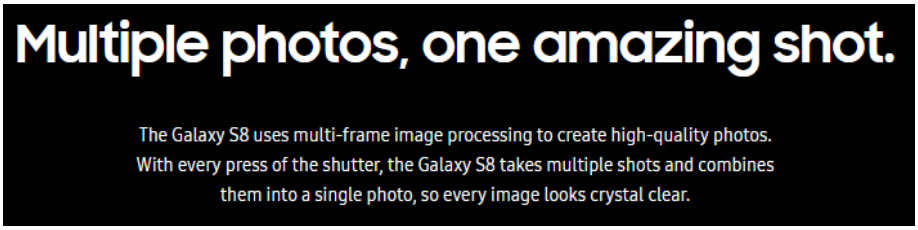
You get extra clarity with multi-frame processing

Put simply, when you take a photo on the S9 and S9+ the Samsung Galaxy camera actually captures 12 images and compiles them into 3 groups of 4. Each group of images (or frames) is then processed in a split second and combined into one premium pic that reduces 'noise'. 'Noise' refers to visual distortion which produces those grainy photos that we've all taken at some point in our lives. With multi-frame processing, you basically get much more clarity and a sharper image.

http://www.three.co.uk/hub/samsung-galaxy-camera-features/

The narrator says [starting @2:54 sec]: "How much you ever wished that you can take multiple photos of the same moment and then combine the best attributes of those photos to create the perfect shot? That's what multi-frame image processing does. It uses multiple images to reduce noise and boost brightness – when you need it most."

https://www.youtube.com/watch?v=YL9arg1Ngdw



https://www.samsung.com/us/explore/galaxy-s8/camera/

The Galaxy S9's upgraded Multi-Frame Noise Reduction technology enhances low-light image quality even further by capturing and combining 12 pictures in quick succession to eliminate up to 30 percent[1] more noise and create a stunning shot.

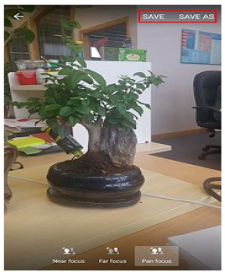
https://news.samsung.com/global/in-depth-look-1-how-the-galaxy-s9-reimagines-the-smartphone-camera

With this technology, the camera takes three photos – instead of just one – then selects the clearest image and uses the other two to reduce the blur. By imposing the three images on top of one another, the resulting photograph is highly detailed with clearer contours. This even applies to images captured in less-than-ideal conditions, such as when zoomed-in in low light. Furthermore, the camera can capture and process the image so quickly that users cannot tell the difference between it and conventional smartphone cameras.

https://news.samsung.com/global/in-depth-look-fast-fun-and-in-focus-the-galaxy-s8-camera[12]

68. Claim 23 of the '175 patent recites an apparaturs including "a memory configured to store the corrected image." The '175 accused products include a memory configured to store the corrected image as shown by the exemplary documentation below.

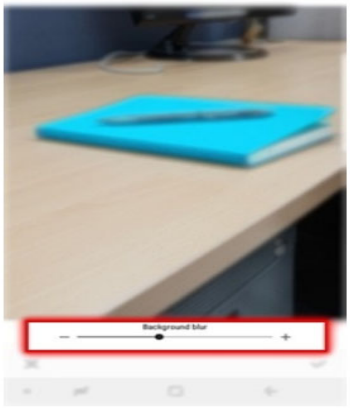
11 When happy, choose Save or Save As.



https://www.samsung.com/my/support/mobile-devices/galaxy-s7-edge-how-do-i-use-the-selective-focus-mode-on-the-camera/

6 Drag the background blur adjustment bar to the left or right to adjust the blur level, and then Tap to save a photo.

[12] *See also* https://www.mobilefun.co.uk/blog/2016/03/how-to-take-better-photos-with-the-galaxy-s7-galaxy-s7-edge/; https://www.digitaltrends.com/photography/samsung-galaxy-s8-camera-tips/; and https://www.samsung.com/us/mobile/galaxy-note9/camera/.



https://www.samsung.com/in/support/mobile-devices/galaxy-note-9-how-to-take-portraits-using-live-focus/

The Galaxy S9's upgraded Multi-Frame Noise Reduction technology enhances low-light image quality even further by capturing and combining 12 pictures in quick succession to eliminate up to 30 percent[1] more noise and create a stunning shot.

https://news.samsung.com/global/in-depth-look-1-how-the-galaxy-s9-reimagines-the-smartphone-camera

With this technology, the camera takes three photos – instead of just one – then selects the clearest image and uses the other two to reduce the blur. By imposing the three images on top of one another, the resulting photograph is highly detailed with clearer contours. This even applies to images captured in less-than-ideal conditions, such as when zoomed-in in low light. Furthermore, the camera can capture and process the image so quickly that users cannot tell the difference between it and conventional smartphone cameras.

https://news.samsung.com/global/in-depth-look-fast-fun-and-in-focus-the-galaxy-s8-camera

69. As described above, Samsung has had actual knowledge of the '175 patent and actual knowledge that its activities constitute direct and/or indirect infringement of the '175 patent, yet they have not ceased their infringing activities. *See* Section III. Samsung's infringement of the '175 patent has been and continues to be willful and deliberate. Samsung also has knowledge of the '175 patent by way of this complaint and, to the extent they do not cease their infringing activities, their infringement is and continues to be willful and deliberate.

70. Samsung actively, knowingly, and intentionally induces infringement of one or more claims of the '175 patent under 35 U.S.C. § 271(b) by actively encouraging others to make, use, offer to sell, sell, and/or import '175 accused products in this judicial district and elsewhere in the United States. For example, Samsung actively instructs, promotes, and encourages the use of the infringing features in marketing materials, technical specifications, data sheets, web pages on its website (*e.g.*, www.samsung.com), press releases, and user manuals, as well as at trade shows (*e.g.*, CES and Mobile World Congress) and through its sales and distribution channels that encourage infringing use, sales, offers to sell, and importation of the '175 accused products, as evidenced at least in part by the Samsung statements and documents cited in this complaint. Samsung user manuals for the '175 accused products instruct, promote, and encourage the use the camera capability in an infringing manner. *See supra* fn. 8. In addition, Samsung documents and materials for the '175 accused products instruct, promote, and encourage use of "multi-frame image processing," "multi-frame noise reduction," "selective focus," and/or "live focus." *See supra* fn. 8 and 9. Samsung also contributorily infringes the '175 patent under 35 U.S.C. § 271(c) because there is no substantial non-infringing use of the infringing features of the '175 accused products. The software and hardware components are installed and configured by Samsung to practice the patented operations and those structures do not constitute a staple article or commodity of commerce suitable for substantial non-infringing use, and Samsung's providing of the same results in direct infringement by others.

71. Plaintiff has no adequate remedy at law against Samsung's acts of infringement, and, unless Samsung is enjoined from its infringement of the '175 patent, Plaintiff will suffer irreparable harm.

72. Samsung, by way of its infringing activities, has caused and continues to cause Plaintiff to suffer damages, the exact amount to be determined at trial.

COUNT IV: PATENT INFRINGEMENT OF THE '450 PATENT

73. Clear Imaging incorporates by reference the preceding paragraphs as if fully stated herein.

74. Samsung has been and is now directly infringing and/or indirectly infringing the '450 patent by way of inducement and/or contributory infringement, literally and/or under the Doctrine of Equivalents, in violation of 35 U.S.C. § 271, including by making, using, selling, and/or offering for sale in the United States or importing into the United States infringing products, including at least the "'450 accused products." Samsung derives revenue from the activities relating to the '450 accused products. As explained below, these products are covered by at least one or more of the '450 patent asserted claims, including, but not limited to, claim 14.

75. Claim 14 of the '450 patent recites an "imaging device" comprising "an image sensor configured to capture a sequence of images, wherein the sequence of images comprise a video, and store the images in a memory." The '450 accused products include an image sensor configured to capture a sequence of images, wherein the sequence of images comprise a video, and store the images in a memory. For example, Samsung's website and industry websites show that Samsung's products are configured to capture a sequence of images comprising a video and store the images in a memory.

Record videos

Record high-quality videos using your device.

1. From a Home screen, swipe up to access **Apps**.
2. Tap **Camera**, and aim the camera at your subject.
3. Tap **Record** to begin recording a video.
   - To take a picture while recording, tap **Capture**.
   - To temporarily stop recording, tap **Pause**. To continue recording, tap **Resume**.
4. Tap **Stop** when you are finished recording.

http://downloadcenter.samsung.com/content/UM/201803/20180320052236753/GEN_G960U1_G965U1_EN_UM_O_8.0_022718_FINAL_AC.pdf

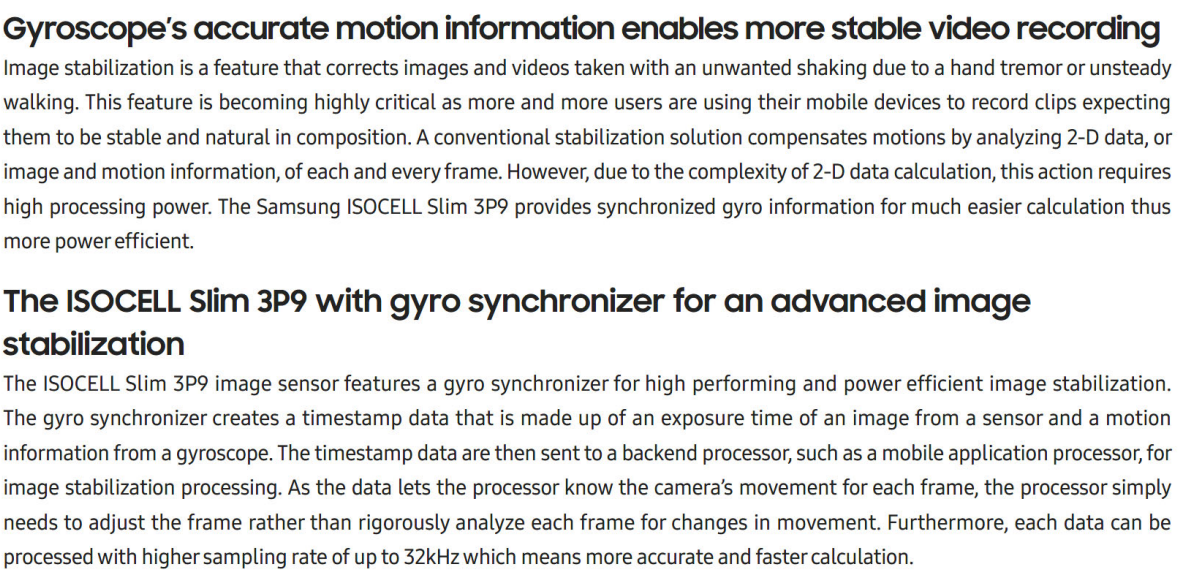
One of the many interesting features that Samsung has thrown on its Galaxy S7 and Galaxy S7 edge is Hyperlapse, a feature that allows users to create intriguing videos with moving the camera around. It snaps photos in very quick succession and afterwards stitches them together in a video. The best way to describe a hyperlapse video to a person who has never seen one is to imagine a timelapse done with a camera that quickly changes its position, which gives the impression of an accelerated action speeds up the action in a creative kind of way.

The best part of hyperlapse videos is that they almost always turn out shake-free, even if the phone has been subjected to shaky external forces. It will take a bit before you get the hang of this hyperlapse ordeal, but once you master the technique of creating such videos, it will certainly be a rewarding experience.
https://www.phonearena.com/news/Showcase-Hyperlapse-on-the-Samsung-Galaxy-S7-and-S7-edge-is-awesome_id79361

76. Claim 14 of the ’450 patent recites an “imaging device” comprising “one or more motion sensors configured to detect motion information for one or more images of the sequence of images, wherein the motion information represents motion of the imaging device during capturing of the one or more images of the sequence of images, and store the motion information in the memory synchronously with the storing of the one or more images.” The ’450 accused products include one or more motion sensors configured to detect motion information for one or

more images of the sequence of images, wherein the motion information represents motion of the imaging device during capturing of the one or more images of the sequence of images, and store the motion information in the memory synchronously with the storing of the one or more images. For example, Samsung's website and industry websites indicate that Samsung's devices, including those equipped with "video stabilization," "video digital image stabilization" (vDIS), "gyro-based electronic image stabilization," and/or "hyperlapse" technology, include motion sensors configured to detect motion information for one or more images of the sequence of images and further that Samsung's devices are configured to store the motion information synchronously with the storing of the one or more images.

https://www.samsung.com/us/smartphones/galaxy-s9/specs/



https://www.samsung.com/semiconductor/global.semi/file/resource/2018/05/Brochure_EIS_Solution_180503.pdf

Samsung Electronics, a world leader in advanced semiconductor technology, today introduced two new 0.8-micrometer (μm) pixel image sensors – the 48-megapixel (Mp) Samsung ISOCELL Bright GM1 and the 32Mp ISOCELL Bright GD1.

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The GM1 and the GD1 sensors are based on the company's latest pixel isolation technology – the ISOCELL Plus* – which optimizes performance especially for smaller-dimension pixels, making them the ideal solution for today's super-resolution cameras. In addition, thanks to Tetracell technology, where four pixels are merged to work as one to increase light sensitivity, the GM1 and GD1 can deliver light sensitivity equivalent to that of a 1.6μm-pixel image sensor at 12Mp and 8Mp resolution, respectively. The sensors also support Gyro-based electronic image stabilization (EIS) for fast and accurate image capture.

https://news.samsung.com/global/samsung-introduces-two-new-0-8%ce%bcm-isocell-image-sensors-to-the-smartphone-market

The South Korean tech giant launched the 48MP Isocell Bright GM1 and 32MP Isocell Bright GD1 back in October last year, which are used in the Galaxy S10 series smartphones.

https://www.zdnet.com/article/samsung-launches-first-64mp-image-sensor-for-smartphones/

Hyperlapse

New to the Galaxy S7 is Hyperlapse that allows users to compress hours of video footage into seconds to illustrate subject movement and the time passing. The Galaxy S7 will automatically pick soft and stable frames, combined with Video Digital Image Stabilization, to create a stable time lapse (Hyperlapse) video.

https://siliconangle.com/2016/02/22/samsung-galaxy-s7-camera-what-has-changed-and-what-is-new-mwc16/

Hyperlapse

Capture the energy of your city in professional-grade time-lapse. Shaky hands are compensated for by new vDIS technology and only the clearest frames are stitched together to deliver quality footage every time.

*vDIS: Video Digital Image Stabilization

https://www.samsung.com/ca/smartphones/galaxy-s7/camera/

77. Claim 14 of the '450 patent recites an "imaging device" comprising "a processor configured to determine a vertical shift value and a horizontal shift value for one or more images

of the sequence of images based at least in part on the motion information" and "modify one or more images of the sequence of images based at least in part on the vertical and the horizontal shift values." The '450 accused products include a processor configured to determine a vertical shift value and a horizontal shift value for one or more images of the sequence of images based at least in part on the motion information and modify one or more images of the sequence of images based at least in part on the vertical and horizontal shift values. For example, Samsung's website and industry websites indicate that Samsung's devices, including those equipped with "video stabilization," "video digital image stabilization" (vDIS), "gyro-based electronic image stabilization," and/or "hyperlapse" technology, are configured to compensate for vertical shift and horizontal shift detected by motion sensors using motion information stored synchronously with the storing of one or more images.

Gyroscope's accurate motion information enables more stable video recording

Image stabilization is a feature that corrects images and videos taken with an unwanted shaking due to a hand tremor or unsteady walking. This feature is becoming highly critical as more and more users are using their mobile devices to record clips expecting them to be stable and natural in composition. A conventional stabilization solution compensates motions by analyzing 2-D data, or image and motion information, of each and every frame. However, due to the complexity of 2-D data calculation, this action requires high processing power. The Samsung ISOCELL Slim 3P9 provides synchronized gyro information for much easier calculation thus more power efficient.

The ISOCELL Slim 3P9 with gyro synchronizer for an advanced image stabilization

The ISOCELL Slim 3P9 image sensor features a gyro synchronizer for high performing and power efficient image stabilization. The gyro synchronizer creates a timestamp data that is made up of an exposure time of an image from a sensor and a motion information from a gyroscope. The timestamp data are then sent to a backend processor, such as a mobile application processor, for image stabilization processing. As the data lets the processor know the camera's movement for each frame, the processor simply needs to adjust the frame rather than rigorously analyze each frame for changes in movement. Furthermore, each data can be processed with higher sampling rate of up to 32kHz which means more accurate and faster calculation.

https://www.samsung.com/semiconductor/global.semi/file/resource/2018/05/Brochure_EIS_Solution_180503.pdf

For faster auto-focusing, the 3P9 adopted an advanced phase detection auto-focus (PDAF) with doubled auto-focus agent density than that of conventional PDAF sensors. In addition, the sensor significantly stabilizes pictures and videos taken while in motion with a gyro-synchronizer that syncs frame exposure time from the sensor with movement data from the device's gyroscope. Once the data is synced, the mobile processor can simply adjust the frames based on movement rather than rigorously analyzing each frame to detect and compensate for angular movement.

https://www.samsung.com/semiconductor/image-sensor/isocell-plug-and-play/ISOCELL-SLIM-3P9/

Samsung Electronics, a world leader in advanced semiconductor technology, today introduced two new 0.8-micrometer (μm) pixel image sensors – the 48-megapixel (Mp) Samsung ISOCELL Bright GM1 and the 32Mp ISOCELL Bright GD1.

***

The GM1 and the GD1 sensors are based on the company's latest pixel isolation technology – the ISOCELL Plus* – which optimizes performance especially for smaller-dimension pixels, making them the ideal solution for today's super-resolution cameras. In addition, thanks to Tetracell technology, where four pixels are merged to work as one to increase light sensitivity, the GM1 and GD1 can deliver light sensitivity equivalent to that of a 1.6μm-pixel image sensor at 12Mp and 8Mp resolution, respectively. The sensors also support Gyro-based electronic image stabilization (EIS) for fast and accurate image capture.

https://news.samsung.com/global/samsung-introduces-two-new-0-8%ce%bcm-isocell-image-sensors-to-the-smartphone-market

The South Korean tech giant launched the 48MP Isocell Bright GM1 and 32MP Isocell Bright GD1 back in October last year, which are used in the Galaxy S10 series smartphones.

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New to the Galaxy S7 is Hyperlapse that allows users to compress hours of video footage into seconds to illustrate subject movement and the time passing. The Galaxy S7 will automatically pick soft and stable frames, combined with Video Digital Image Stabilization, to create a stable time lapse (Hyperlapse) video.

https://siliconangle.com/2016/02/22/samsung-galaxy-s7-camera-what-has-changed-and-what-is-new-mwc16/

78. Claim 14 of the '450 patent recites an "imaging device" comprising a processor configured to "combine the modified images to obtain a final video" and "wherein the memory is further configured to store the final video." The '450 accused products include a processor configured to combine the modified images to obtain a final video. For example, Samsung's website and industry websites explain that Samsung's devices include a processor configured to combine the modified images to obtain a final video and a memory to store the final video, as shown by the evidence cited in the preceding paragraph and the evidence below.

Record videos

Record high-quality videos using your device.

1. From a Home screen, swipe up to access **Apps**.
2. Tap **Camera**, and aim the camera at your subject.
3. Tap **Record** to begin recording a video.
   - To take a picture while recording, tap **Capture**.
   - To temporarily stop recording, tap **Pause**. To continue recording, tap **Resume**.
4. Tap **Stop** when you are finished recording.

http://downloadcenter.samsung.com/content/UM/201803/20180320052236753/GEN_G960U1_G965U1_EN_UM_O_8.0_022718_FINAL_AC.pdf

Hyperlapse

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Hyperlapse

Capture the energy of your city in professional-grade time-lapse. Shaky hands are compensated for by new vDIS technology and only the clearest frames are stitched together to deliver quality footage every time.

*vDIS: Video Digital Image Stabilization

https://www.samsung.com/ca/smartphones/galaxy-s7/camera/

79. As described above, Samsung has had actual knowledge of the ’450 patent (or at the very least actual knowledge of the specification of the ’450 patent) and actual knowledge that its activities constitute direct and/or indirect infringement of the ’450 patent (at the very least by the filing of this complaint), yet they have not ceased their infringing activities. *See* Section III. Samsung’s infringement of the ’450 patent has been and continues to be willful and deliberate.

Samsung also has knowledge of the '450 patent by way of this complaint and, to the extent they do not cease their infringing activities, their infringement is and continues to be willful and deliberate.

80. Samsung actively, knowingly, and intentionally induces infringement of one or more claims of the '450 patent under 35 U.S.C. § 271(b) by actively encouraging others to make, use, offer to sell, sell, and/or import '450 accused products in this judicial district and elsewhere in the United States. For example, Samsung actively instructs, promotes, and encourages the use of the infringing features in marketing materials, technical specifications, data sheets, web pages on its website (e.g., www.samsung.com), press releases, and user manuals, as well as at trade shows (e.g., CES and Mobile World Congress) and through its sales and distribution channels that encourage infringing use, sales, offers to sell, and importation of the '450 accused products, as evidenced at least in part by the Samsung statements and documents cited in this complaint. Samsung user manuals for the '450 accused products instruct, promote, and encourage the use of the camera capability in an infringing manner. *See, e.g.,* fn. 8.[13] In addition, Samsung documents and materials for the '450 accused products instruct, promote, and encourage use of "video stabilization," "video digital image stabilization," "gyro-based electronic image stabilization," and "hyperlapse."[14] Samsung also contributorily infringes the '450 patent under 35 U.S.C. § 271(c) because there is no substantial non-infringing use of the infringing features of the '450 accused products. The software and hardware components are installed and configured

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[13] *See also* http://downloadcenter.samsung.com/content/UM/201602/20160222104408745/SM-G930_UM_EU_Marshmallow_Eng_Rev.1.0_160219.pdf (S7 user manual) at pages 74-94; https://www.samsung.com/levant/support/model/SM-N930FZDAMID/ (Galaxy Note 7 user manual) at pages 123-145.

[14] *See, e.g.*, https://www.samsung.com/global/galaxy/what-is/hyperlapse/; https://www.samsung.com/us/smartphones/galaxy-s9/specs/; https://www.samsung.com/ca/smartphones/galaxy-s7/camera/.

by Samsung to practice the patented operations and those structures do not constitute a staple article or commodity of commerce suitable for substantial non-infringing use, and Samsung's providing of the same results in direct infringement by others.

81. Plaintiff has no adequate remedy at law against Samsung's acts of infringement, and, unless Samsung is enjoined from its infringement of the '450 patent, Plaintiff will suffer irreparable harm.

82. Samsung, by way of its infringing activities, has caused and continues to cause Plaintiff to suffer damages, the exact amount to be determined at trial.

COUNT V: PATENT INFRINGEMENT OF THE '740 PATENT

83. Clear Imaging incorporates by reference the preceding paragraphs as if fully stated herein.

84. Samsung has been and is now directly infringing and/or indirectly infringing the '740 patent by way of inducement and/or contributory infringement, literally and/or under the Doctrine of Equivalents, in violation of 35 U.S.C. § 271, including by making, using, selling, and/or offering for sale in the United States or importing into the United States the '740 accused products. Samsung derives revenue from the activities relating to the '740 accused products. As explained below, these products are covered by at least one or more of the '740 patent asserted claims, including, but not limited to, claim 20.

85. Claim 20 of the '740 patent recites an "imaging device for capturing and processing images" comprising "a user interface configured to display an image, wherein the image is a preview of the field of view of the device, and wherein the image includes a first subject and a second subject" and "a processor configured to receive user input designating the first subject in the image to be kept blur free." The '740 accused products include a user

interface configured to display an image, wherein the image is a preview of the field of view of the device, and wherein the image includes a first and second subject. For example, Samsung's website shows that the display screen is used as a user interface configured to display an image and to receive a user input that designates a first subject in the image to be kept blur free, as shown in the examples below. The image may also have a second subject as shown below.

Use Selective Focus for a blur effect

The Galaxy S5's Selective Focus mode allows you to blur out the foreground or background of a photo for an artistic effect To activate Selective Focus, simply tap the icon of two silhouettes on the top right of the camera app's interface. Make sure your foreground subject is within 1.5 feet of your camera, and that part of the background is at least 5 feet behind your subject.

With Selective Focus activated, you can choose your subject by simply tapping it on the display. After your shot is taken, tap the edit icon to the top left of the image, which will pull up your focus options.

Credit: Michael Andronico/Tom's Guide

Select the Near Focus icon to highlight the foreground, the Far Focus icon for the background or the Pan Focus icon to spread the focus evenly. This mode is a great way to put the focus on a friend standing in a crowded city, for example.

https://www.tomsguide.com/us/galaxy-s5-camera-tips,news-19244.html

Take Pictures

Take pictures with your device's front or rear camera or combine shots with Dual camera.

Note: Prior to using the camera, remove the plastic protective covering from the camera lens.

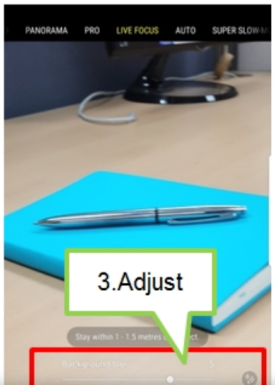
1. From a Home screen, tap **Apps** > **Camera**.
2. Using the display screen as a viewfinder, compose your shot by aiming the camera at the subject. While composing your picture, use the available options or these gestures:
   - Touch the screen with two fingers and pinch or spread them on the screen to zoom in or out.
   - Tap the screen to focus on the area you touched.
3. Before taking the photo, you can tap the icons to access various camera options and settings.
4. Tap **Take a picture** to take the picture.

http://downloadcenter.samsung.com/content/UM/201608/20160825002229338/ATT_SM-G900A_GS5_EN_UM_MM_6.0_FINAL_WAC.pdf

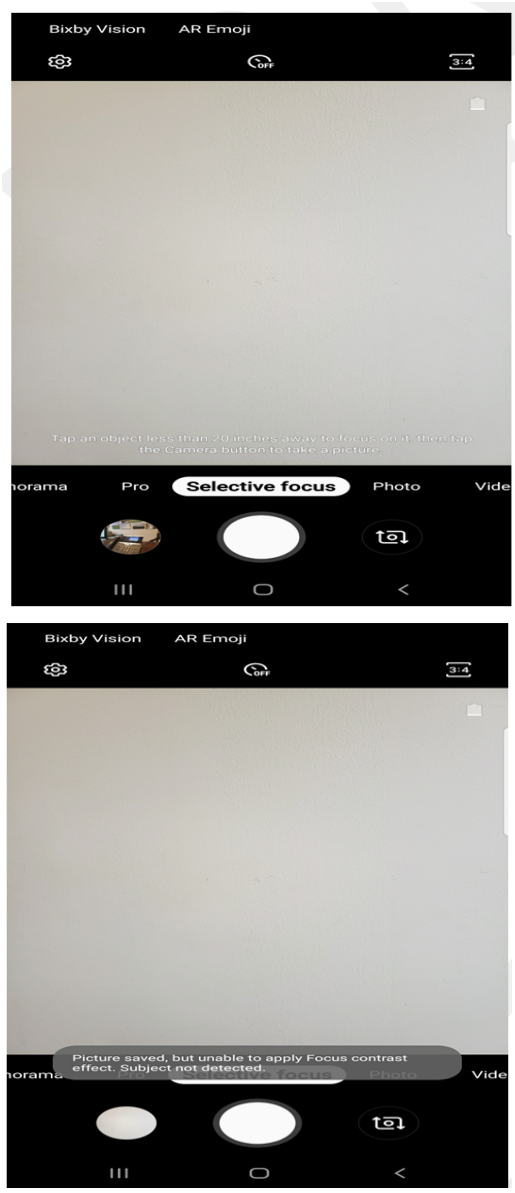
5 Select a location on the screen where you would like your camera to focus.

https://www.samsung.com/my/support/mobile-devices/galaxy-s7-edge-how-do-i-use-the-selective-focus-mode-on-the-camera/

3 Focus on a particular subject by dragging the background blur adjustment bar to the left or right to adjust the blur level.



https://www.samsung.com/hk_en/support/mobile-devices/galaxy-s9-plus-only-how-do-i-take-portraits-using-live-focus-feature/



86. Claim 20 of the ’740 patent recites an “imaging device” comprising “a memory configured to store a plurality of images captured by the device, wherein the plurality of images include the first subject and the second subject.” The ’740 accused products include a memory configured to store a plurality of images captured by the device, wherein the plurality of images include the first subject and the second subject. For example, Samsung’s website and industry websites explain that Samsung’s accused products capture a plurality of images including a first subject and a second subject, including through the use of “selective focus” and/or “live focus,”

as shown in the examples below.

Use Selective Focus for a blur effect

The Galaxy S5's Selective Focus mode allows you to blur out the foreground or background of a photo for an artistic effect To activate Selective Focus, simply tap the icon of two silhouettes on the top right of the camera app's interface. Make sure your foreground subject is within 1.5 feet of your camera, and that part of the background is at least 5 feet behind your subject.

With Selective Focus activated, you can choose your subject by simply tapping it on the display. After your shot is taken, tap the edit icon to the top left of the image, which will pull up your focus options.

Credit: Michael Andronico/Tom's Guide

Select the Near Focus icon to highlight the foreground, the Far Focus icon for the background or the Pan Focus icon to spread the focus evenly. This mode is a great way to put the focus on a friend standing in a crowded city, for example.

https://www.tomsguide.com/us/galaxy-s5-camera-tips,news-19244.html

Selective focus mode

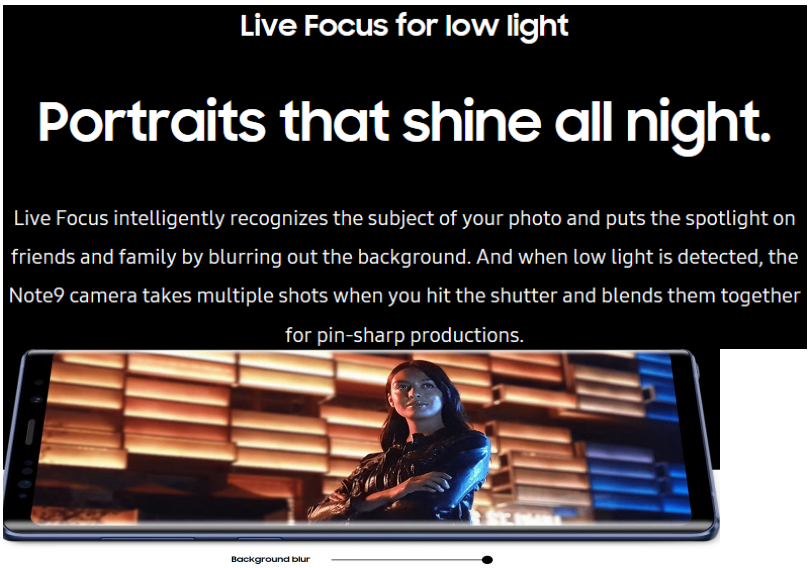
The selective focus mode works by taking multiple photos of your subject at varying focus levels then allowing you to change the focus of your photo after it's been saved to your gallery. A pretty good way of avoiding those annoying blurry images, though you do have to allow a fraction more time for the camera to snap multiple shots.

https://www.mobilefun.co.uk/blog/2016/03/how-to-take-better-photos-with-the-galaxy-s7-galaxy-s7-edge/

Selective focus:

Selective focus, a feature introduced on the Galaxy S5, snaps multiple photos consecutively with varying focus. The end result is a photo with an adjustable focus level; you can swap focus between objects in the foreground or background.

https://www.digitaltrends.com/photography/samsung-galaxy-s8-camera-tips/



https://www.samsung.com/us/mobile/galaxy-note9/camera/

87. Claim 20 of the '740 patent recites an "imaging device" comprising a "processor further configured to combine the plurality of images to obtain a combined image, such that: the combined image includes the first subject and the second subject, the first subject in the combined image is blur free, and the second subject in the combined image is blurred compared to the first subject." The '740 accused products include a processor configured to combine the plurality of images to obtain a combined image. For example, Samsung's website and industry websites explain that the accused products, including through "selective focus" and/or "live focus," create a combined image where a first subject in the combined image is blur free and a second subject in the combined image is blurred compared to the first subject, as shown in the examples below.

Use Selective Focus for a blur effect

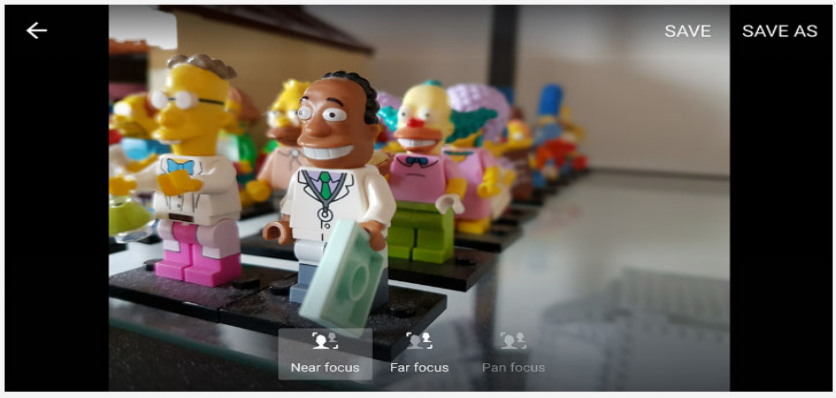
The Galaxy S5's Selective Focus mode allows you to blur out the foreground or background of a photo for an artistic effect To activate Selective Focus, simply tap the icon of two silhouettes on the top right of the camera app's interface. Make sure your foreground subject is within 1.5 feet of your camera, and that part of the background is at least 5 feet behind your subject.

With Selective Focus activated, you can choose your subject by simply tapping it on the display. After your shot is taken, tap the edit icon to the top left of the image, which will pull up your focus options.

Credit: Michael Andronico/Tom's Guide

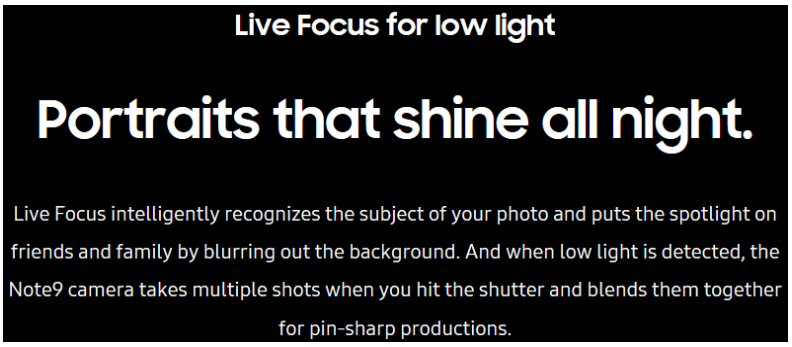
Select the Near Focus icon to highlight the foreground, the Far Focus icon for the background or the Pan Focus icon to spread the focus evenly. This mode is a great way to put the focus on a friend standing in a crowded city, for example.

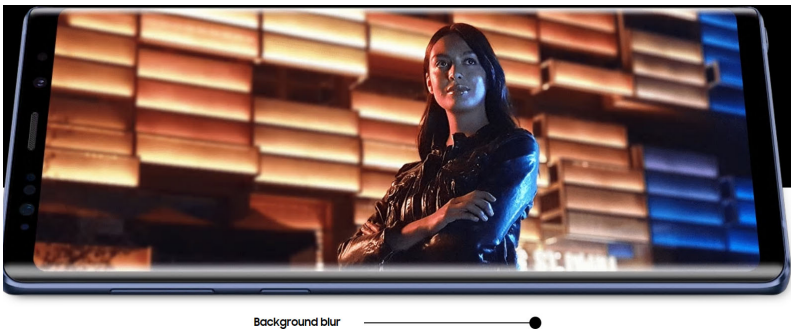
https://www.tomsguide.com/us/galaxy-s5-camera-tips,news-19244.html



Selective Focus is a feature we've seen before that takes and combines multiple images, allowing you to adjust the focus after the image is taken. This mode seems refined on the Galaxy S7 Edge, and worked well throughout my testing. There's also a food mode, which highlights dishes in the center of frame, a standard panorama mode, and the ability to download more modes, including one that makes GIFs, via Samsung Apps.

https://www.techspot.com/review/1147-samsung-galaxy-s7-edge/page7.html





https://www.samsung.com/us/mobile/galaxy-note9/camera/

Remember the Note 8 uses software and hardware to add depth, or blur, to a photo. Because of this it can, and often does, get the exact edges of your subjects wrong leading to blurred hands, hair or clothes. Try and pick backgrounds that are far away from the subject, and don't match too closely in color for the best result.

https://www.cnet.com/news/best-chromebooks-for-2019/

88. Claim 20 of the '740 patent recites an "imaging device" comprising a "user interface further configured to display the combined image." The '740 accused products include a user interface further configured to display the combined image. For example, Samsung's website and industry websites explain that Samsung's devices include a user interface configured to display the combined image, as shown in the examples below.

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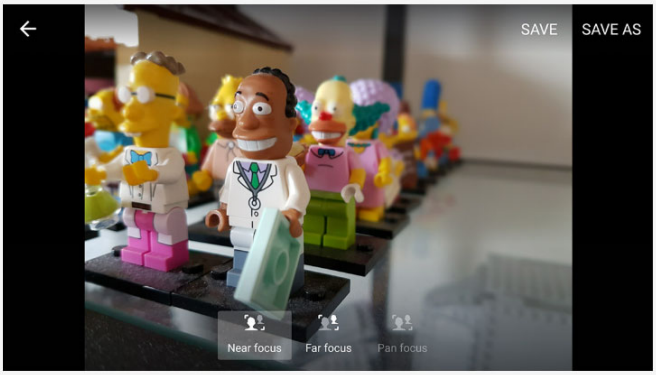
With Selective Focus activated, you can choose your subject by simply tapping it on the display. After your shot is taken, tap the edit icon to the top left of the image, which will pull up your focus options.

Credit: Michael Andronico/Tom's Guide

Select the Near Focus icon to highlight the foreground, the Far Focus icon for the background or the Pan Focus icon to spread the focus evenly. This mode is a great way to put the focus on a friend standing in a crowded city, for example.

https://www.tomsguide.com/us/galaxy-s5-camera-tips,news-19244.html



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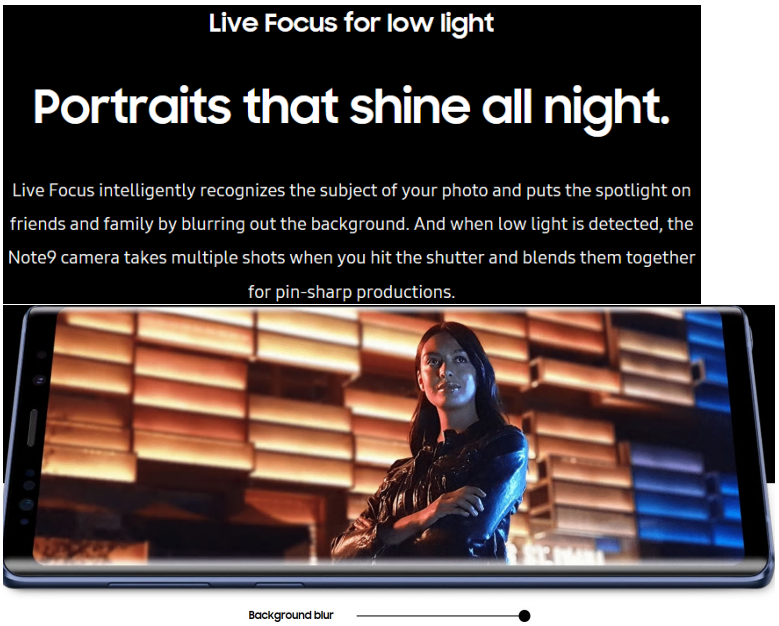
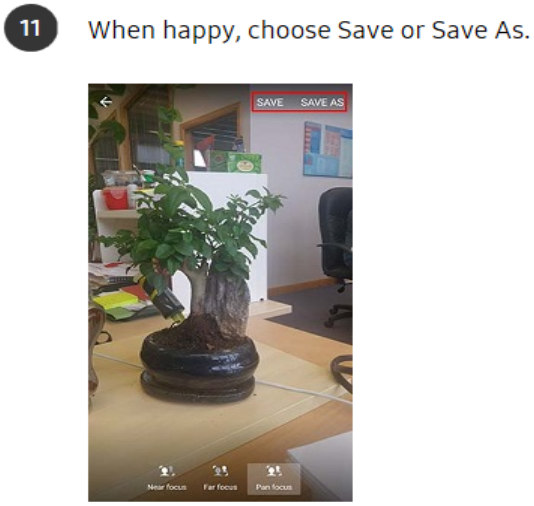
https://www.techspot.com/review/1147-samsung-galaxy-s7-edge/page7.html



https://www.samsung.com/us/mobile/galaxy-note9/camera/



https://www.samsung.com/my/support/mobile-devices/galaxy-s7-edge-how-do-i-use-the-selective-focus-mode-on-the-camera/

89. Claim 20 of the '740 patent recites an "imaging device" comprising "a memory configured to store the combined image." The '740 accused products include a memory configured to store the combined image. For example, Samsung's website shows that the combined image can be saved to memory, as shown in the examples below.

11 When happy, choose Save or Save As.

https://www.samsung.com/my/support/mobile-devices/galaxy-s7-edge-how-do-i-use-the-selective-focus-mode-on-the-camera/

6 Drag the background blur adjustment bar to the left or right to adjust the blur level, and then Tap to save a photo.

https://www.samsung.com/in/support/mobile-devices/galaxy-note-9-how-to-take-portraits-using-live-focus/

90. As described above, Samsung has had actual knowledge of the '740 patent (or at the very least actual knowledge of the specification of the '740 patent) and actual knowledge that its activities constitute direct and/or indirect infringement of the '740 patent (at the very least from the filing of this complaint), yet they have not ceased their infringing activities. *See* Section III. Samsung's infringement of the '740 patent has been and continues to be willful and

deliberate. Samsung also has knowledge of the '740 patent by way of this complaint and, to the extent they do not cease their infringing activities, their infringement is and continues to be willful and deliberate.

91. Samsung actively, knowingly, and intentionally induces infringement of one or more claims of the '740 patent under 35 U.S.C. § 271(b) by actively encouraging others to make, use, offer to sell, sell, and/or import '740 accused products in this judicial district and elsewhere in the United States. For example, Samsung actively instructs, promotes, and encourages the use of the infringing features in marketing materials, technical specifications, data sheets, web pages on its website (e.g., www.samsung.com), press releases, and user manuals, as well as at trade shows (e.g., CES and Mobile World Congress) and through its sales and distribution channels that encourage infringing use, sales, offers to sell, and importation of the '740 accused products, as evidenced at least in part by the Samsung statements and documents cited in this complaint. Samsung user manuals for the '740 accused products instruct, promote, and encourage the use of the camera capability in an infringing manner. *See supra* fn. 8. In addition, Samsung documents and materials for the '740 accused products instruct, promote, and encourage use of "selective focus mode" and "live focus mode." *See supra* fn. 8 and 9. Samsung also contributorily infringes the '740 patent under 35 U.S.C. § 271(c) because there is no substantial non-infringing use of the infringing features of the '740 accused products. The software and hardware components are installed and configured by Samsung to practice the patented operations and those structures do not constitute a staple article or commodity of commerce suitable for substantial non-infringing use, and Samsung's providing of the same results in direct infringement by others.

92. Plaintiff has no adequate remedy at law against Samsung's acts of infringement,

and, unless Samsung is enjoined from its infringement of the '740 patent, Plaintiff will suffer irreparable harm.

93. Samsung, by way of its infringing activities, has caused and continues to cause Plaintiff to suffer damages, the exact amount to be determined at trial.

COUNT VI: PATENT INFRINGEMENT OF THE '944 PATENT

94. Clear Imaging incorporates by reference the preceding paragraphs as if fully stated herein.

95. Samsung has been and is now directly infringing and/or indirectly infringing the '944 patent by way of inducement and/or contributory infringement, literally and/or under the Doctrine of Equivalents, in violation of 35 U.S.C. § 271, including by making, using, selling, and/or offering for sale in the United States or importing into the United States the "'944 accused products." Samsung derives revenue from the activities relating to the '944 accused products. As explained below, these products are covered by one or more claims of the '944 patent, including but not limited to, Claim 6.

96. Claim 6 of the '944 patent recites an "imaging device for capturing digital images, comprising." To the extent the preamble is limiting, the '944 accused products satisfy an imaging device for capturing digital images, as shown in the exemplary documentation below.

Dual camera

The Galaxy S9+ is equipped with a rear dual camera. The dual optical zoom feature and Live focus shooting mode utilize both cameras.

For more information, see "Camera and video" on page 67.

http://downloadcenter.samsung.com/content/UM/201804/20180427012557108/GEN_SM-G960U1_SM-G965U1_EN_UM_O_8.0_042518_FINAL.pdf

Take pictures

Take pictures with your device's front or rear camera.

1. From a Home screen, swipe up to access **Apps**.
2. Tap **Camera**.
3. Use the display screen as a viewfinder.
   - To focus the shot, tap the screen. When you tap the screen, a brightness scale is displayed Slide the light bulb to adjust the brightness.
   - To add an effects filter, swipe to the left and tap a preview filter to apply it to the screen.
   - To change the shooting mode, swipe to the right and select a mode.
   - To quickly switch between the front and rear cameras, swipe the screen up or down.
   - To change a camera setting, tap **Settings**.
4. Tap **Take a picture**.

http://downloadcenter.samsung.com/content/UM/201804/20180427012557108/GEN_SM-G960U1_SM-G965U1_EN_UM_O_8.0_042518_FINAL.pdf

97. Claim 6 of the '944 patent recites "a user interface configured to display an image and to receive a user input, wherein the displayed image is a preview of the scene to be captured, and wherein the user input designates a first subject in the displayed image." The '944 accused products include a user interface configured to display an image and to receive a user input, wherein the user input designates a first subject in the displayed image. For example, Samsung's website shows that the display screen is used as a user interface configured to display an image and to receive a user input that designates a first subject in the image, as shown below.

Take pictures

Take pictures with your device's front or rear camera.

1. From a Home screen, swipe up to access **Apps**.
2. Tap **Camera**.
3. Use the display screen as a viewfinder.
   - To focus the shot, tap the screen. When you tap the screen, a brightness scale is displayed Slide the light bulb to adjust the brightness.
   - To add an effects filter, swipe to the left and tap a preview filter to apply it to the screen.
   - To change the shooting mode, swipe to the right and select a mode.
   - To quickly switch between the front and rear cameras, swipe the screen up or down.
   - To change a camera setting, tap **Settings**.
4. Tap **Take a picture**.

http://downloadcenter.samsung.com/content/UM/201804/20180427012557108/GEN_SM-G960U1_SM-G965U1_EN_UM_O_8.0_042518_FINAL.pdf

I've loved **having 2x zoom capability on Samsung's flagship phones**. But I've never liked the fact that in Live Focus mode, the camera zooms in on the subject. With dual camera setups that include a telephoto lens, the telephoto lens is the one used when you switch to Live Focus mode. The primary camera is tasked to capturing the background and the telephoto lens captures the subject in focus. Well, at least that's my understanding of how dual cameras enable bokeh pictures, and it forces you to move back to maintain proper distance with the subject that you're trying to capture more often than not.

https://www.sammobile.com/2019/02/26/galaxy-s10-brings-important-live-focus-improvement

https://www.sammobile.com/2019/02/26/galaxy-s10-brings-important-live-focus-improvement

3 Focus on a particular subject by dragging the background blur adjustment bar to the left or right to Adjust the blur level.

https://www.samsung.com/in/support/mobile-devices/galaxy-note-9-how-to-take-portraits-using-live-focus/

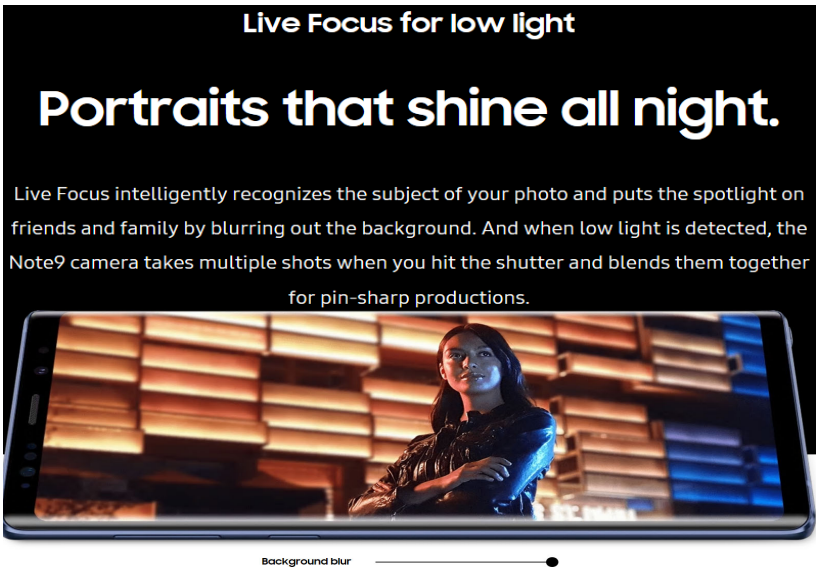
Galaxy Note 9: How to take portraits using Live focus ?

Last Update Date : Aug 23. 2018

The Live focus feature allows the camera to capture the subject and the background separately so that you can get an out-of-focus photo with the focus on the subject. Adjust the background blur effect on the preview screen and take a photo that highlights the subject. This feature is recommended that you position subjects about 1 ~ 1.5 m away from the camera lens. Position the subject that you want to focus on close to the device. Also, use this feature in a place that has sufficient light.

https://www.samsung.com/in/support/mobile-devices/galaxy-note-9-how-to-take-portraits-using-live-focus/

98. Claim 6 of the '944 patent recites an "imaging device" comprising "an image sensor, configured to capture a plurality of images, wherein the plurality of images include the first subject and the second subject." The '944 accused products include an image sensor, configured to capture a plurality of images, wherein the plurality of images include the first subject and a second subject. For example, Samsung's website and industry websites explain that Samsung's accused products capture a plurality of images, including but not limited to "live focus," as shown in the evidence below and the evidence in the preceding paragraph which is incorporated here by reference.



https://www.samsung.com/us/mobile/galaxy-note9/camera/

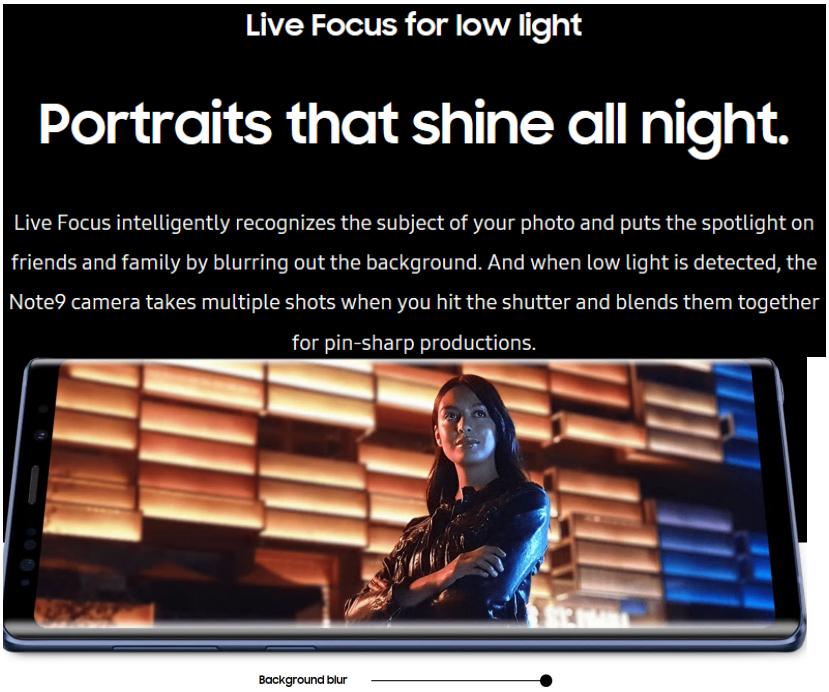
Galaxy Note 9: How to take portraits using Live focus ?

Last Update Date : Aug 23. 2018

The Live focus feature allows the camera to capture the subject and the background separately so that you can get an out-of-focus photo with the focus on the subject. Adjust the background blur effect on the preview screen and take a photo that highlights the subject. This feature is recommended that you position subjects about 1 ~ 1.5 m away from the camera lens. Position the subject that you want to focus on close to the device. Also, use this feature in a place that has sufficient light.

https://www.samsung.com/in/support/mobile-devices/galaxy-note-9-how-to-take-portraits-using-live-focus/

99. Claim 6 of the '944 patent recites an "imaging device" comprising "a processor configured to combine the plurality of images to obtain a combined image." The '944 accused products include a processor configured to process the plurality of images to obtain a combined image. For example, Samsung's website and industry websites explain that Samsung's accused products, including but not limited to "live focus," create a combined image, as shown below.



https://www.samsung.com/us/mobile/galaxy-note9/camera/

Galaxy Note 9: How to take portraits using Live focus ?

Last Update Date : Aug 23. 2018

The Live focus feature allows the camera to capture the subject and the background separately so that you can get an out-of-focus photo with the focus on the subject. Adjust the background blur effect on the preview screen and take a photo that highlights the subject. This feature is recommended that you position subjects about 1 ~ 1.5 m away from the camera lens. Position the subject that you want to focus on close to the device. Also, use this feature in a place that has sufficient light.

https://www.samsung.com/in/support/mobile-devices/galaxy-note-9-how-to-take-portraits-using-live-focus/

100. Claim 6 of the '944 patent recites an "imaging device" comprising a processor such that "the processing of the images takes into account at least one of a focal length of a lens of the imaging device and the zoom level of a lens of the imaging device." The '944 accused products include a processor configured to combine the plurality of images to obtain a combined image such that the processing of the images takes into account at least one of a focal length of a lens of the imaging device and the zoom level of a lens of the imaging device. For example, Samsung's website and industry websites explain that Samsung's accused products, including but not limited to "live focus," create a combined image such that the processing of the image takes into account at least one of a focal length of a lens of the imaging device and the zoom level of a lens of the imaging device, as shown in the examples below.

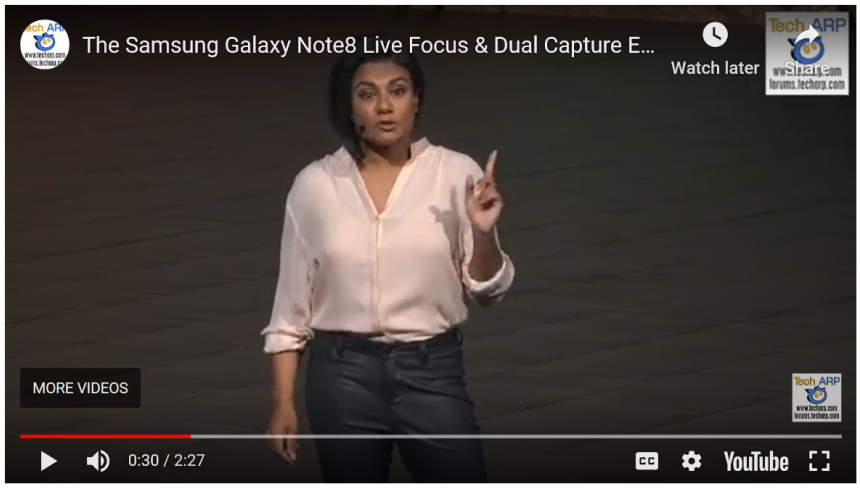
Samsung's Galaxy Note 8 is a giant phone with a ton of features, but one of its most prominent ones is its new dual-camera setup. This system, which includes two 12-megapixel cameras with different focal length lenses, lets you take either wide-angle or zoomed-in pictures.

TheNote 8's camera also lets you mimic the blurred background that you can get with a larger, DSLR camera. This can be cool for portraits, close-ups, or anything else where you want your subject to stand out from the background as much as possible.

…

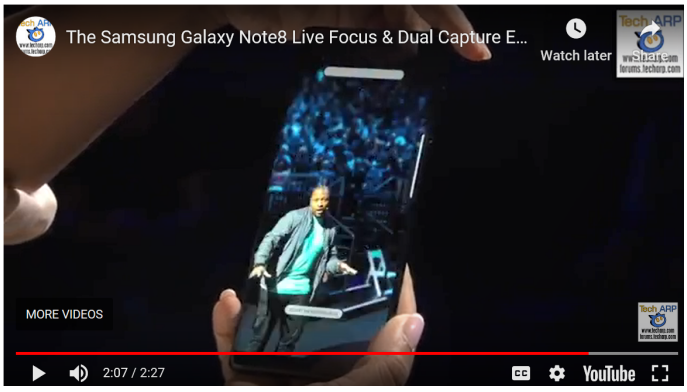
Live Focus is what Samsung calls the Note 8's ability to blur the background of your image. To access it, tap the Live Focus button right above the shutter. The camera will zoom in, just like if you were using the tele camera, and then prompt you to be at least four feet away from your subject.

One of the unique tricks the Note 8 offers is the ability to adjust how much blur is applied to the background, which you can control with a slider just above the shutter button. It's also possible to adjust the blur after a picture is taken, using Samsung's Gallery app.
https://www.theverge.com/2017/9/8/16270064/how-to-samsung-galaxy-note-8-camera-live-focus



Conceptually, the **Samsung Live Focus** technology is simple – take two photos, one from each camera, and use them to create a composite image.
https://www.techarp.com/articles/samsung-live-focus-dual-capture/

"You know those beautiful professional photos where the background is soft and dreamy and the foreground is in perfect focus, those are the kinds of pictures Live Focus will help you take. Live Focus gives you the freedom to decide how much your subject stands out by adjusting the blur and the focus of the background in real time . . . In live focus mode the cameras simultaneously take two pictures so not only do you have Kelly's new portrait but you have all the beautiful detail behind it which includes all of you."
https://www.techarp.com/articles/samsung-live-focus-dual-capture/



https://www.techarp.com/articles/samsung-live-focus-dual-capture/

X1 or X2

When your first launch the Camera app on the Note 8, you'll notice a new button with the label of X2. This button will activate either respective camera, depending on which camera you're currently using.

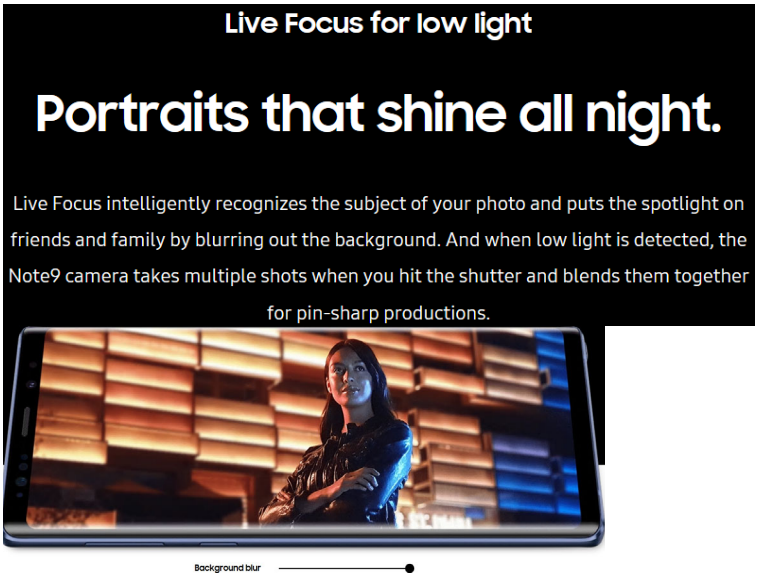
By default, the Camera app launches in X1 mode, thus the X2 button. Tap the button, however, and the button changes to X1 as the camera switches to the telephoto lens.

Of course, X1 is the standard wide angle camera setup you have on all phones. The X2 setting changes to the new telephoto lens on the Note 8. Zoom up to 10x is possible, but after 2x it's done digitally and photo quality will take a hit.

https://www.cnet.com/news/best-chromebooks-for-2019/

101. Claim 6 of the '944 patent recites an "imaging device" such that "the combined image includes the first subject and the second subject, the first subject in the combined image is substantially blur free, and the second subject in the combined image is blurred compared to the first subject." The '944 accused products include a processor configured to combine the plurality of images such that the combined image includes the first subject and the second subject, the first subject in the combined image is substantially blur free, and the second subject in the combined image is blurred compared to the first subject. For example, Samsung's website and industry websites explain that Samsung's accused products, including but not limited to "live focus," create a combined image where the first subject in the combined image is substantially

blur free, and the second subject in the combined image is blurred compared to the first subject, as shown in the examples below.



https://www.samsung.com/us/mobile/galaxy-note9/camera/

Galaxy Note 9: How to take portraits using Live focus ?

Last Update Date : Aug 23. 2018

The Live focus feature allows the camera to capture the subject and the background separately so that you can get an out-of-focus photo with the focus on the subject. Adjust the background blur effect on the preview screen and take a photo that highlights the subject. This feature is recommended that you position subjects about 1 ~ 1.5 m away from the camera lens. Position the subject that you want to focus on close to the device. Also, use this feature in a place that has sufficient light.

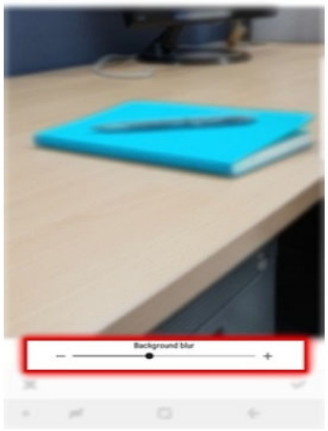
https://www.samsung.com/in/support/mobile-devices/galaxy-note-9-how-to-take-portraits-using-live-focus/

Remember the Note 8 uses software and hardware to add depth, or blur, to a photo. Because of this it can, and often does, get the exact edges of your subjects wrong leading to blurred hands, hair or clothes. Try and pick backgrounds that are far away from the subject, and don't match too closely in color for the best result.

https://www.cnet.com/news/best-chromebooks-for-2019/

102. Claim 6 of the '944 patent recites an "imaging device" comprising "a memory configured to store the combined image." The '944 accused products include a memory configured to store the combined image. For example, Samsung's website shows that the combined image can be saved to memory, as shown in the examples below.

6 Drag the background blur adjustment bar to the left or right to adjust the blur level, and then Tap to save a photo.



https://www.samsung.com/in/support/mobile-devices/galaxy-note-9-how-to-take-portraits-using-live-focus/

103. As described above, Samsung has had actual knowledge of the '944 patent (or at the very least actual knowledge of the specification of the '944 patent) and actual knowledge that its activities constitute direct and/or indirect infringement of the '944 patent (at the very least by the filing of this complaint), yet they have not ceased their infringing activities. *See* Section III. Samsung's infringement of the '944 patent has been and continues to be willful and deliberate. Samsung also has knowledge of the '944 patent by way of this complaint and, to the extent they do not cease their infringing activities, their infringement is and continues to be willful and deliberate.

104. Samsung actively, knowingly, and intentionally induces infringement of one or more claims of the '944 patent under 35 U.S.C. § 271(b) by actively encouraging others to make, use, offer to sell, sell, and/or import '944 accused products in this judicial district and elsewhere

in the United States. For example, Samsung actively instructs, promotes, and encourages the use of the infringing features in marketing materials, technical specifications, data sheets, web pages on its website (*e.g.*, www.samsung.com), press releases, and user manuals, as well as at trade shows (e.g., CES and Mobile World Congress) and through its sales and distribution channels that encourage infringing use, sales, offers to sell, and importation of the '944 accused products, as evidenced at least in part by the Samsung statements and documents cited in this complaint. Samsung user manuals for the '944 accused products instruct, promote, and encourage the use of the camera capability in an infringing manner. *See supra* fn. 8 and 9. In addition, Samsung documents and materials for the '944 accused products instruct, promote, and encourage use of "live focus mode." *See supra* fns. 8 and 9. Samsung also contributorily infringes the '944 patent under 35 U.S.C. § 271(c) because there is no substantial non-infringing use of the infringing features of the '944 accused products. The software and hardware components are installed and configured by Samsung to practice the patented operations and those structures do not constitute a staple article or commodity of commerce suitable for substantial non-infringing use, and Samsung's providing of the same results in direct infringement by others.

105. Plaintiff has no adequate remedy at law against Samsung's acts of infringement, and, unless Samsung is enjoined from its infringement of the '944 patent, Plaintiff will suffer irreparable harm.

106. Samsung, by way of its infringing activities, has caused and continues to cause Plaintiff to suffer damages, the exact amount to be determined at trial.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for the following relief:

107. A judgment in favor of Plaintiff that Samsung, has infringed, directly and

indirectly, by way of inducement and/or contributory infringement, literally and/or under the doctrine of equivalents, the patents-in-suit;

108. An award of damages to which Plaintiff is entitled under 35 U.S.C. § 284 and 35 U.S.C. § 154(d) for Samsung's past infringement and any continuing or infringement post-trial up until the date a final judgment is entered, including both compensatory damages and treble damages for willful infringement;

109. Plaintiff's actual damages in an amount sufficient to compensate Plaintiff for Samsung's infringement of the patents-in-suit until such time as Samsung ceases its infringing conduct, including supplemental damages post-verdict.

110. A judgment and order against Samsung for exemplary damages as determined by the trier of fact;

111. A judgment that Samsung's infringement has been willful;

112. Pre- and post-judgment interest as allowed by law on any damages awarded to Plaintiff;

113. A judgment and order requiring Samsung to pay the costs of this action (including all disbursements), as well as attorneys' fees as provided by 35 U.S.C. § 285;

114. A judgment and order requiring Samsung pay to Plaintiff compulsory ongoing licensing fees, as determined by the Court in equity; and

115. Such other and further relief in law or in equity to which Plaintiff may be justly entitled.

DEMAND FOR JURY TRIAL

Plaintiff demands a trial by jury of any and all issues triable of right before a jury, except for future patent infringement, which is an issue in equity to be determined by the Court.

Dated: October 1, 2019

MCKOOL SMITH, P.C.

/s/ *Samuel F. Baxter*

Samuel F. Baxter
(Lead Counsel)
Texas State Bar No. 01938000
sbaxter@mckoolsmith.com
Jennifer Truelove
Texas State Bar No. 24012906
jtruelove@mckoolsmith.com
MCKOOL SMITH, P.C.
104 East Houston, Suite 300
Marshall, Texas 75670
Telephone: (903) 923-9000
Facsimile: (903) 923-9099

Brett Cooper
bcooper@mckoolsmith.com
Kevin Schubert
kschubert@mckoolsmith.com
MCKOOL SMITH, P.C.
One Bryant Park, 47th Floor
New York, NY 10036
Telephone: (212) 402-9400
Facsimile: (212) 402-9444

Seth R. Hasenour
Texas State Bar No. 24059910
shasenour@mckoolsmith.com
MCKOOL SMITH, P.C.
300 W. 6th Street, Suite 1700
Austin, Texas 78701
Telephone: (512) 692-8704
Facsimile: (512) 692-8744

ATTORNEYS FOR PLAINTIFF CLEAR IMAGING RESEARCH, LLC