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14 **UNITED STATES DISTRICT COURT**  
15 **NORTHERN DISTRICT OF CALIFORNIA**

16 VDPP LLC,

17 Plaintiff,

18 v.

19 ASUSTEK COMPUTER INC. and  
20 ASUS COMPUTER  
INTERNATIONAL,

21 Defendants.

Case No. 5:21-cv-04649-BLF

**AMENDED COMPLAINT FOR  
PATENT INFRINGEMENT**

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**JURY TRIAL DEMANDED**

1 **Jurisdiction and Venue**

2 1. This action arises under the patent laws of the United States, 35 U.S.C.  
3 §§ 101 et seq. This Court has subject matter jurisdiction over this action under 28  
4 U.S.C. §§ 1331 and 1338(a). This Court may exercise personal jurisdiction over  
5 ASUSTeK Computer Inc. and ASUS Computer International (“ASUS” or  
6 “defendants”), which conduct continuous and systematic business in California and  
7 in this District. ASUS has a regular and established place of business located in this  
8 District. These patent-infringement claims arise directly from ASUS’s continuous  
9 and systematic activity in this District. In short, this Court’s exercise of jurisdiction  
10 over ASUS would be consistent with the California long-arm statute and traditional  
11 notions of fair play and substantial justice. Venue is proper in this District pursuant  
12 to 28 U.S.C. § 1400(b).

13 **Parties**

14 2. Plaintiff VDPP LLC (“VDPP”) is a limited liability company organized  
15 under the laws of Oregon with a principal place of business located in Corvallis,  
16 Oregon.

17 3. ASUSTeK Computer Inc. is a corporation organized under the laws of  
18 Taiwan with a regular and established place of business located at 15, Li-De Road,  
19 Beitou District, Taipei 112, Taiwan.

20 4. ASUS Computer International is a California corporation with its  
21 principal place of business located at 800 Corporate Way, Fremont, California 94539.

22 **COUNT 1: Infringement of U.S. Patent No. 11,039,123**

23 5. VDPP is the exclusive owner of United States Patent No. 11,039,123  
24 (the “‘123 patent”), which is attached hereto as “Exhibit 1.”

25 6. The ‘123 patent is valid and enforceable.

26 7. ASUS has been and is directly infringing the claims of the ‘123 patent.  
27 ASUS has made and sold and is making and selling the following models. The  
28 AsusTek monitor PA32UCG-K (the “Monitor”) infringes Claim 1 of U.S. Patent

1 11,039,123 (the “’123 Patent”). The Monitor includes (1) multiple video inputs that  
2 are stitched and displayed; (2) a red-green-blue subpixel arrangement for each pixel,  
3 and; (3) a transparent (non-solid color) on-screen display (OSD) or bridge frame that  
4 is blended with the picture and displayed. ASUS makes other products that infringe  
5 the ’123 Patent. The infringing products include: laptops; tablets; all-in-one  
6 computers; notebooks, and smartphones (all models referenced in this paragraph 7  
7 are the “Accused Models”).

8 8. The Accused Models embody claims of the ‘123 Patent, performing  
9 routines and functionality described in the field of invention as “local dimming.”  
10 Without limiting the claims that will be asserted or the products that will be accused  
11 of infringement in this action, ASUS infringes Claim 1 of the ‘123 Patent by making  
12 and selling the Accused Models, which are designed to perform local dimming.

13 9. Claim 1 of the ’123 Patent provides as follows: “An apparatus adapted  
14 to: obtain a first image from a first video stream; obtain a second image from a second  
15 video stream, wherein the first image is different from the second image; stitch  
16 together the first image and the second image to generate a stitched image frame;  
17 generate a first modified image frame by removing a first portion of the stitched  
18 image frame; generate a second modified image frame by removing a second portion  
19 of the stitched image frame; generate a third modified image frame by removing a  
20 third portion of the stitched image frame; wherein the first modified image frame, the  
21 second modified image frame, and the third modified image frame are different from  
22 each other; identify a bridge frame that is a non-solid color; blend the first modified  
23 image frame with the bridge frame to generate a first blended frame; blend the second  
24 modified image frame with the bridge frame to generate a second blended frame;  
25 blend the third modified image frame with the bridge frame to generate a third  
26 blended frame; display the first blended frame, the second blended frame, and the  
27 third blended frame.” (Ex. 1 at 112:53-113:5.)

28 10. The Monitor includes Picture-by-Picture (“PbP”). This means the

1 Monitor can obtain a first image from a first video stream from an input port to the  
2 monitor.

3 11. The Monitor's PbP allows the Monitor to also obtain a second image  
4 from a second video stream from an input port to the monitor. Since the two video  
5 streams can be different, the first image is different from the second image. The  
6 Monitor can stitch together the first image and the second image. This generates a  
7 stitched image. That is precisely the definition of the PbP function.

8 12. The Monitor removes the Green and Blue color from the stitched image  
9 frame (leaving just Red) to generate a first modified image frame.

10 13. The Monitor removes the Red and Blue color from the stitched image  
11 frame (leaving just the Green) to generate a second modified image frame.

12 14. The Monitor removes the Red and Green color from the stitched image  
13 frame (leaving just the Blue to generate a third modified image frame; the first  
14 modified image frame, the second modified image frame, and the third modified  
15 image frame are different from each other.

16 15. The Monitor has a transparent menu that is a non-solid color.

17 16. The Monitor blends the first modified image frame with the bridge  
18 frame to generate a first blended frame.

19 17. The Monitor blends the second modified image frame with the bridge  
20 frame to generate a second blended frame.

21 18. The Monitor blends the third modified image frame with the bridge  
22 frame to generate a third blended frame.

23 19. The Monitor displays the first blended frame, the second blended frame,  
24 and the third blended frame. The transparent menu blended with each of the  
25 underlying subpixel blended frames is displayed.

26 **Count 2: Infringement of U.S. Patent No. 9,699,444**

27 20. VDPP is the exclusive owner of U.S. Patent No. 9,699,444 (the "444  
28 Patent"), which is attached hereto as "Exhibit 2."

1           21. The '444 patent is valid and enforceable.

2           22. ASUS has been and is directly infringing at least one of the 27 claims  
3 of the '444 patent. ASUS has made and sold and is making and selling the following  
4 models: ProArt PA32UCX, PA329C; ROG Swift PG27UQ, PG35UQ, PG65UQ;  
5 CG32UQ (the "Accused Models"). The Accused Models embody claims of the '444  
6 patent, performing routines and functionality described in the field of invention as,  
7 "local dimming." Without limiting the claims that will be asserted or the products  
8 that will be accused of infringement in this action, ASUS infringes Claim 1 of the  
9 '444 patent by making and selling the Accused Models, which are designed to  
10 perform local dimming.

11           23. Claim 1 of the '444 Patent claims an "apparatus comprising: a storage  
12 adapted to: store one or more image frames[.]" (Ex. 2 at 47:40-42.) The Accused  
13 Models each constitute an apparatus with storage to store a sequence of image frames.

14           24. The Claim 1 apparatus comprises "a processor adapted to: obtain a first  
15 image frame from a first video stream; [and] expand the first image frame to generate  
16 a modified image frame, wherein the modified image frame is different from the first  
17 image frame[.]" (Ex. 2 at 47:43-47.) The Accused Models each uses over 1,000 local  
18 dimming zones. The Accused Models contain a processor adapted to upscale lower  
19 resolutions to match the Accused Models' native resolution.

20           25. The processor of Claim 1 is adapted to "generate a bridge frame,  
21 wherein the bridge frame is a non-solid color, wherein the bridge frame is different  
22 from the first image frame and different from the modified image frame[.]" (Ex. 2 at  
23 47:48-51.) Each Accused Models is a direct-backlight LED LCD TV, which means  
24 that each of the Accused Models displays video using two separate layers. The front  
25 layer is liquid crystal layer (the "LCM Layer") containing millions of pixels, each of  
26 which is split into subpixels of the primary colors: red, green, and blue. The back  
27 layer is a backlight unit of LED lights (the "BLU") that illuminates the LCM Layer.  
28 In order to achieve deeper black levels and higher contrast levels, the Accused

1 Models will dynamically turn off localized areas of the BLU—areas where the image  
2 should be black, resulting in a bridge frame that is non-solid, i.e., parts of the frame  
3 are black, parts of the frame are white, and parts of the frame are a gradient thereof.

4       26. In Claim 1, the processor is adapted to “blend the modified image frame  
5 with the bridge frame to generate a blended modified image frame; and display the  
6 blended modified image frame.” (Ex. 2 at 47:52-54.) Each of the Accused Models  
7 blends the bridge frame (the locally-dimmed BLU image) with the modified image  
8 frame (the upscaled RGB image of the LCM) to create and display the blended  
9 modified image frame.

10       27. Further, the Accused Models infringe Claim 27 of the ‘444 Patent by  
11 performing “black frame insertion” in a manner that infringes the ‘444 Patent.  
12 Without limiting the claims that will be asserted or the products that will be accused  
13 of infringement in this action, the Accused Models infringe Claim 27 as follows:

14       28. Claim 27, which is dependent on claim 26, claims an “apparatus  
15 comprising: a storage adapted to: store one or more image frames[.]” (Ex. 2 at 50:37-  
16 39.) An Accused Model is an apparatus with storage to store a sequence of image  
17 frames.

18       29. The Claim 27 apparatus comprises “a processor adapted to: obtain a first  
19 image from a first video stream [.]” (Ex. 2 at 50:40-41.) An Accused Model is  
20 equipped with a graphics-processing unit adapted to obtain images that together make  
21 a video stream.

22       30. The Claim 27 processor is adapted to “generate a modified image frame  
23 by . . . expanding the first image frame . . . wherein the modified image frame is  
24 different from the first image frame[.]” (Ex. 2 at 50:42-49.) The Accused Models  
25 each uses over 1,000 local dimming zones. The Accused Models contain a processor  
26 adapted to upscale lower resolutions to match the Accused Models’ native resolution.

27       31. The Claim 27 processor is further adapted to “generate a bridge frame,  
28

1 wherein the bridge frame is a solid color, wherein the bridge frame is different from  
2 the first image frame and different from the modified image frame[.]” (Ex. 2 at  
3 50:50-53.) The bridge frame is black. (*Id.* at 50:56-57.) All televisions display video  
4 as a series of still images. These images change quickly enough to produce the  
5 illusion of motion—much like a flip book. Because televisions are unable to produce  
6 truly moving images, the human eye perceives the “moving” object as blurred. To  
7 reduce this perceived motion blur, the Accused Model practices the invention of  
8 Claim 27 by generating a solid black bridge frame and inserting the bridge frame  
9 between the modified image frames.

10 32. The Claim 27 apparatus then will “display the modified image frame;  
11 and display the bridge frame.” (Ex. 2 at 50:54-55.) An Accused Model displays the  
12 modified image frame, and then displays the solid black bridge frame.

### 13 **Count 3: Infringement of U.S. Patent No. 9,948,922**

14 33. VDPP is the exclusive owner of U.S. Patent No. 9,948,922 (the “‘922  
15 patent”), which is attached hereto as “Exhibit 3.”

16 34. The ‘922 patent is valid and enforceable.

17 35. ASUS infringes at least one of the 12 claims of the ‘922 patent. ASUS  
18 has made and sold and is making and selling the monitor VG248QE, which embodies  
19 claims of the ‘922 patent. Without limiting the claims that will be asserted or the  
20 products that will be accused of infringement in this action, ASUS infringes Claim 2  
21 of the ‘922 patent by making and selling the VG248QE, which is designed to perform  
22 “black frame insertion” in a manner that infringes the ‘922 patent.

23 36. Claim 2 of the ‘922 patent, which is dependent on claim 1, claims an  
24 “apparatus comprising: a storage adapted to: store one or more image frames[.]” (Ex.  
25 3 at 113:27-29.) The VG248QE is an apparatus with storage to store a sequence of  
26 image frames.

27 37. The Claim 2 apparatus includes “a processor adapted to: obtain a first  
28

1 image frame and a second image frame from a first video stream[.]” (Ex. 3 at 113:30-  
2 32.) The VG248QE has a processor adapted to acquire a sequence of images that  
3 make a video stream.

4 38. The processor of Claim 2 is adapted to “generate a first modified image  
5 frame by expanding the first image frame, wherein the first modified image frame is  
6 different from the first image frame; [and] generate a second modified image frame  
7 by expanding the second image frame, wherein the second modified image frame is  
8 different from the second image frame[.]” (Ex. 3 at 113:33-39.) The VG248QE is  
9 adapted to upscale lower resolutions to match its native resolution.

10 39. The Claim 2 apparatus’ processor is adapted to “generate a bridge frame,  
11 wherein the bridge frame is a solid color, wherein the bridge frame is different from  
12 the first image frame and different from the second image frame[.]” (Ex. 3 at 113:40-  
13 43.) “[T]he bridge frame is black.” (*Id.* at 113:47-48.) All televisions display video  
14 as a series of still images. These images change quickly enough to produce the  
15 illusion of motion—much like a flip book. Because televisions are unable to produce  
16 truly moving images, the human eye perceives the “moving” object as blurred. To  
17 reduce this perceived motion blur, the VG248QE practices the invention of Claim 2  
18 by generating a solid black bridge frame and inserting the bridge frame between the  
19 modified image frames.

20 40. The processor of Claim 2 is adapted to “display the first modified image  
21 frame; display the bridge frame; and display the second modified image frame.” (Ex.  
22 3 at 113:44-46.) The VG248QE displays the first modified image frame, then  
23 displays the solid black bridge frame, then displays the second modified image frame.

24 **Count 4: Infringement of U.S. Patent No. 10,021,380**

25 41. VDPP is the exclusive owner of U.S. Patent No. 10,021,380 (the “‘380  
26 patent”), which is attached hereto as “Exhibit 4.”

27 42. The ‘380 patent is valid and enforceable.  
28



1           43. ASUS infringes at least one of the 30 claims of the ‘380 patent. ASUS  
2 has made and sold and is making and selling the monitor VG248QE, which embodies  
3 claims of the ‘380 patent. Without limiting the claims that will be asserted or the  
4 products that will be accused of infringement in this action, ASUS infringes Claim 6  
5 of the ‘380 patent by making and selling the VG248QE.

6           44. Claim 6 of the ‘380 patent provides, “An apparatus comprising: a  
7 storage adapted to: store a sequence of image frames; and a processor communicably  
8 coupled to the storage and adapted to: obtain from said storage a first image frame  
9 associated with a first chronological position in the sequence image frames and a  
10 second image frame associated with a second chronological position in the sequence  
11 of image frames; expand the first image frame to generate a modified first image  
12 frame, wherein the modified first image frame is different from the first image frame;  
13 expand the second image frame to generate a modified second image frame, wherein  
14 the modified second image frame is different from the second image frame; combine  
15 the modified first image frame and the modified second image frame to generate a  
16 modified combined image frame, the modified combined image frame having first  
17 and second opposing sides defining a first dimension and third and fourth opposing  
18 sides defining a second dimension; and display the modified combined image frame.  
19 The VG248QE has a processor adapted to acquire a sequence of images that make a  
20 video stream.

21           45. The VG248QE is adapted to upscale lower resolutions to match its  
22 native resolution. All televisions display video as a series of still images. These  
23 images change quickly enough to produce the illusion of motion—much like a flip  
24 book. Because televisions are unable to produce truly moving images, the human  
25 eye perceives the “moving” object as blurred. To reduce this perceived motion blur,  
26 the VG248QE practices the invention of Claim 6 by expanding image frames and  
27 combining modified image frames. The VG248QE displays the first and second  
28

1 modified image frame, as combined.

2 **Prayer for Relief**

3  
4 WHEREFORE, VDPP prays for the following relief against ASUS:

- 5 (a) Judgment that ASUS has directly infringed the '123 patent; the '444  
6 patent; the '922 patent; and the '380 patent;  
7  
8 (b) A fair and reasonable royalty;  
9  
10 (c) Pre-judgment interest and post-judgment interest at the maximum rate  
11 allowed by law;  
12  
13 (d) A post-judgment injunction; and  
14  
15 (e) Such other and further relief as the Court may deem just and proper.

16 **Demand for Jury Trial**

17 VDPP demands a trial by jury on all matters and issues triable by jury.

18  
19 Date: April 19, 2022

*/s/ Matt Wawrzyn*

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