UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

TECHNO VIEW IP, INC., Plaintiff, vs. **SONY INTERACTIVE ENTERTAINMENT LLC, and** **SONY INTERACTIVE ENTERTAINMENT AMERICA LLC,** Defendants.	Case No.: 8:17-CV-01268-CJC *Assigned to Judge Cormac J. Carney; Referred to Magistrate Judge Jay C. Gandhi* **FIFTH AMENDED COMPLAINT FOR PATENT INFRINGEMENT** **JURY TRIAL DEMANDED**

TECHNO VIEW IP, INC.'S FIFTH AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Techno View IP, Inc. brings this action against Defendants Sony Interactive Entertainment LLC, and Sony Interactive Entertainment America LLC,[1] and alleges the following:

THE PARTIES

1. Plaintiff Techno View IP, Inc. ("Techno View," and also

[1] This Fifth Amended Complaint removes from the Fourth Amended Complaint all references to U.S. Patent No. 9,503,742, pursuant to an agreement among the Parties as detailed in the Motion for Leave to Amend.

known as "TVIP") is a corporation organized and doing business under the laws of the State of California.

2. Plaintiff Techno View is the exclusive licensee of U.S. Patents Nos. 7,666,096 (See Exhibit A) and 8,206,218 (See Exhibit B) (collectively, the "Asserted Patents") and holds all substantial rights and interest to pursue this lawsuit based on infringement of the Asserted Patents.

3. Defendant Sony Interactive Entertainment LLC ("Sony Interactive Entertainment" or "SIE") is a limited liability company organized and doing business under the laws of the State of California.

4. Defendant Sony Interactive Entertainment may be served with process by service upon its registered agent: CSC-Lawyers Incorporating Service, 2710 Gateway Oaks Drive, Suite 150N, Sacramento, CA 95833.

5. Upon information and belief, Defendant Sony Interactive Entertainment has its principal place of business located at 2207 Bridgepointe Pkwy, San Mateo, CA 94404.

6. Defendant Sony Interactive Entertainment is a wholly owned subsidiary of Sony Corporation, a Japanese corporation with its principal place of business located at 1-7-1 Konan, Minato-Ku, 108-0075, Japan ("Sony Corporation (Japan)"), upon Plaintiff's information and belief.

7. Sony Corporation (Japan) is not a named Defendant in this

action, but Plaintiff reserves the right to add it and other related entities as parties, should further evidence so indicate it to be proper.

8. Defendant Sony Interactive Entertainment America LLC ("Sony Interactive Entertainment America" or "SIEA") is a limited liability company organized and doing business under the laws of the State of California.

9. Defendant Sony Interactive Entertainment America may be served with process by service upon its registered agent: CSC-Lawyers Incorporating Service, 2710 Gateway Oaks Drive, Suite 150N, Sacramento, CA 95833.

10. Defendant Sony Interactive Entertainment America was formerly known as Sony Computer Entertainment America LLC and changed its name to Sony Interactive Entertainment America LLC effective April 1, 2016, upon Plaintiff's information and belief.

11. Plaintiff notes that there also exists a "Sony Interactive Entertainment Inc.," which is a Japanese corporation and a different business entity from Defendant Sony Entertainment LLC. Sony Interactive Entertainment Inc. (Japan) is not a named Defendant in this action, but Plaintiff reserves the right to add it to the suit if further discovery so indicates it to be proper.

12. Defendant Sony Interactive Entertainment America LLC is a

wholly-owned subsidiary of Defendant Sony Interactive Entertainment LLC, upon Plaintiff's information and belief.

JURISDICTION AND VENUE

13. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 271, *et seq*.

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

15. Defendant Sony Interactive Entertainment is responsible for the PlayStation brand and family of products, including PlayStation 4, PlayStation 4 Pro, PlayStation VR, PlayStation Store, PlayStation Now, and PlayStation Vue, and also oversees the development of games for PlayStation, upon Plaintiff's information and belief. Defendant Sony Interactive Entertainment is responsible for keeping PlayStation growing and thriving in the United States, Canada, and Latin America.

16. Defendant Sony Interactive Entertainment maintains a physical place in this Judicial District, which is a regular and established place of business.

17. Defendant Sony Interactive Entertainment routinely and regularly imports Sony infringing devices through the Port of Los Angeles and the Port of Long Beach, within this Judicial District.

18. Upon arrival through the Ports of Los Angeles and Long Beach, Defendant Sony Interactive Entertainment then regularly and routinely transfers the imported infringing products from the Ports of Los Angeles and Long Beach to space leased by Defendant in a commercial warehouse for storage and to await and facilitate further distribution of the infringing products around the United States, upon Plaintiff's information and belief. The building at 2201 East Carson St., Carson CA 90810 has the name "Sony" prominently displayed on its side and, in the recent past, has been registered with the Los County Fire Department as "Sony Electronics Inc.".

19. The commercial warehouse within which Defendant Sony Interactive Entertainment leases space to store and distribute the infringing products ("the Sony Warehouse") is operated by Sony Electronics, Inc.

20. "Sony Electronics, Inc." is a Delaware corporation, and is a wholly-owned subsidiary of Sony Corporation (Japan), upon Plaintiff's information and belief. Sony Electronics Inc. is not a named Defendant in this action, but Plaintiff reserves the right to add it and other related entities as parties, should further evidence so indicate it to be proper.

21. The Sony Warehouse is physically located at 2201 East Carson St., Carson, CA 90810, which is within this Judicial District.

22. Defendant Sony Interactive Entertainment uses its space

leased within the Sony Warehouse as its regular and established place of business to receive infringing product imports from the Ports of Los Angeles and Long Beach, and to store and distribute those products within the United States.

23. Defendant Sony Interactive Entertainment has imported and processed infringing products through spaced leased by it within the Sony Warehouse routinely and regularly. Upon Plaintiff's information and belief, Defendant Sony Interactive Entertainment used the Sony Warehouse for storage and distribution of at least nine shipments containing infringing products in the month of September 2017 alone.

24. The Sony Warehouse is a warehouse and product staging place of Defendant Sony Interactive Entertainment, upon Plaintiff's information and belief. The Bills of Lading of shipments of infringing products into the Ports of Los Angeles and Long Beach identify the importer and consignee as Defendant Sony Interactive Entertainment, and the Bills of Lading direct that the products are to go to the Sony Warehouse.

25. Upon Plaintiff's information and belief, Defendant Sony Interactive Entertainment leases at least a part of the Sony Warehouse, and Defendant uses the Sony Warehouse for the regular and routine storage and distribution of the infringing products.

26. In addition to regularly and routinely using the Sony

Warehouse, which is located within this Judicial District, for its storage and distribution of infringing products, Defendant Sony Interactive Entertainment also operates an established business facility located in Aliso Viejo, CA, which is within this Judicial District and this Division.

27. As of approximately the time of filing of this Fifth Amended Complaint, Defendant Sony Interactive Entertainment listed on its website thirteen job openings at its Aliso Viejo business location. See https://www.playstation.com/en-us/corporate/about/careers/.

28. The venue of this action against Defendant Sony Interactive Entertainment is proper before this Court at least because the Defendant has at least two physical locations within this Judicial District and Division, where such physical locations are physical locations of the Defendant, and physical locations from which Defendant conducts its regular and established business.

29. Defendant Sony Interactive Entertainment *America*, LLC is responsible for the PlayStation brand and family products and services. The PlayStation family of products and services include PlayStation 4, PlayStation 4 Pro, PlayStation VR, PlayStation Vita, PlayStation 3, PlayStation Store, PlayStation Plus, PlayStation Video, PlayStation Music, PlayStation Now, PlayStation Vie, PlayStation Original and PlayStation software titles from SIE Worldwide Studios.

30. Upon Plaintiff's information and belief, Defendant Sony Interactive Entertainment America develops, imports, markets, and distributes Sony infringing products in the United States, including games, computer entertainment systems, PlayStation4, PlayStation Pro, PlayStation VR and other software and entertainment systems. In an opaque, public financial disclosure to the US Securities and Exchange Commission ("SEC") and similar regulators in Japan for its 2017 2nd Quarter earnings, the manufacture, sale, importation and use of the various PlayStation products, as well as the on-line network controlling such devices, was assigned to the Game & Network Services ("G&NS") segment of Defendants' parent company, Sony (Japan). Upon information and belief, the entire global on-line PlayStation Network is believed to be controlled by the US-based Defendants. Defendant Sony Interactive Entertainment America describes itself in on-line employment listings as follows: "... Sony Interactive Entertainment America LLC (SIEA) – the creator of PlayStation – is a wholly owned subsidiary of Sony Interactive Entertainment LLC, with oversight for operations in the United States, Canada and Latin America." Upon information and belief, Sony Interactive Entertainment America LLC (SIEA) controls the manufacture, sale, importation and use of the various PlayStation products in the United States. From its offices in the United States, including in this Judicial District, Defendant Sony Interactive

Entertainment LLC (SIE) *owns and controls* SIEA and other Sony entities globally including, but not limited to, other subsidiaries in Europe, Asia, and Japan. According to a press release from Defendant SIE on December 7, 2017 (https://www.playstation.com/en-us/corporate/press-releases/2017/playstation-4-sales-surpass-70-million-units-worldwide/), the number of PS4 devices that are sold by the Defendants is "… more than 70.6 [Million] units to consumers worldwide as of December 3, 2017". Further, the number of PlayStation VR ("PSVR") headsets sold by the Defendants *exceeds two million units*. Still further, the number of games for such PSVR headsets sold by the Defendants is believed to exceed "…150 titles … released for PSVR, achieving more than 12.2 million copies sold at retail stores globally and through digital downloads on the PlayStation Store as of December 3, 2017" (referencing the same 12-07-2017 press release).

31. Defendant Sony Interactive Entertainment America maintains a physical location in this Judicial District, and which is a regular and established place of business of the Defendant.

32. Defendant Sony Interactive Entertainment America routinely and regularly imports Sony infringing devices through the Port of Los Angeles and the Port of Long Beach within this Judicial District.

33. Upon arrival through the Ports of Los Angeles and Long

Beach, Defendant Sony Interactive Entertainment America then regularly and routinely transfers the imported infringing products from the Ports of Los Angeles and Long Beach to space leased by Defendant in the Sony Warehouse to await, and further facilitate, distribution of the infringing products around the United States, upon Plaintiff's information and belief.

34. Defendant Sony Interactive Entertainment America uses space leased in the Sony Warehouse as its regular and established place of business to receive infringing product buys and imports from the Ports of Los Angeles and Long Beach, and to store and distribute those products within the United States.

35. Defendant Sony Interactive Entertainment America has imported and processed infringing products through space leased by it within the Sony Warehouse routinely and regularly. Upon Plaintiff's information and belief, Defendant Sony Interactive Entertainment America used the Sony Warehouse within this Judicial District for storage and distribution of at least nine such shipments containing infringing products in the month of September 2017 alone.

36. The Sony Warehouse is the place of Defendant Sony Interactive Entertainment America, at least in that bills of lading of shipments of infringing products into the Ports of Los Angeles and Long Beach identify the buyer as Defendant Sony Interactive Entertainment America and the products

are directed to the Sony Warehouse.

37. Upon Plaintiff's information and belief, Defendant Sony Interactive Entertainment America leases at least a part of the Sony Warehouse, and Defendant uses the Sony Warehouse for the regular and routine storage and distribution of the infringing products.

38. In addition to regularly and routinely using the Sony Warehouse, *which is located within this Judicial District*, for its storage and distribution of infringing products, Defendant Sony Interactive Entertainment America also operates another established business facility located in Aliso Viejo, CA, *which is within this Judicial District and Division*.

39. Moreover, in a job listing site, Defendant Sony Interactive Entertainment America describes itself and identifies its office in this Judicial District as follows: "... Sony Interactive Entertainment America LLC (SIEA) – the creator of PlayStation – is a wholly owned subsidiary of Sony Interactive Entertainment LLC, with oversight for operations in the United States, Canada and Latin America. *** SIEA has offices and creative studios in ... Aliso Viejo ...." Downloaded on November 12, 2017 from: https://www.indeed.com/jobs?q=Sony%20Interactive%20Entertainment%20America&vjk=2f65bf6521297d0c.

40. The venue of this action against Defendant Sony Interactive

Entertainment America LLC is proper before this Court at least because the Defendant has at least one physical location within this Judicial District and Division, which is the place of the Defendant, and from which place it conducts regular and established business.

41. Venue in this district is proper pursuant to 28 U.S.C. § 1400(b).

BACKGROUND

42. This suit alleges infringement by Defendants of Plaintiff TVIP's exclusive license and ownership of all substantial rights to U.S. Patent No. 7,666,096 ("the '096 Patent") and U.S. Patent No. 8,206,218 ("the '218 Patent"), jointly "the Asserted Patents."

43. The '096 Patent is entitled "METHOD FOR GENERATING THE LEFT AND RIGHT PERSPECTIVES IN A 3D VIDEOGAME." The '096 Patent describes systems and methods to dynamically process left and right video images in a stereoscopic videogame environment.

44. The '218 is entitled "3D VIDEOGAME SYSTEM." The '218 Patent describes methods and systems for displaying three-dimensional images in a videogame system.

45. Patent '096 is a continuation of an application originally filed in Mexico as Patent Cooperation Treaty ("PCT") PCT/MX2003/00112 on Dec.

19, 2003.

46. The '218 Patent is a continuation of the '096 Patent.

47. Manuel Rafael Gutierrez Novelo is the inventor of the technology and CEO of TDVision Systems, Inc. (Irvine, CA), hereinafter "TDVision." ImmersiON-VRelia USA (Redwood City, CA) operates as a subsidiary of TDVision, hereinafter "ImmersiON-VRelia." Products incorporating the patented technologies are manufactured by ImmersiON-VRelia through subsidiaries and contract manufacturers in USA, Europe, Mexico, and China. These products include different types of head-mounted displays for consumers. One product even received a "2016 Best of CES Award" as the best designed virtual reality ("VR") headset.

48. Mr. Novelo, the inventor of the technology and the sole inventor listed on the '096 and '218 Patents, is CEO of both TDVision and ImmersiON-VRelia, as well as CEO of the various subsidiaries in Europe, Mexico and China responsible for manufacturing the products. Mr. Novelo also invented and patented a related technology known as the "2D plus Delta Codec." In 2008, *prior to the issuance* of his patents, Mr. Novelo voluntarily declared the pending patent applications as essential to the *proposed 3D encoding section of the H.264 Standard* promulgated by the International Telecommunications Union ("ITU"), the International Standards Organization (ISO), and the

International Electrotechnical Commission ("IEC"). His declaration, made public at http://www.itu.int/net4/ipr/details_ps.aspx?sector=ITU-T&id=J180-01, stated that TDVision "… is prepared to grant a license to an unrestricted number of applicants on a worldwide, non-discriminatory basis and on reasonable terms and conditions…." Mr. Novelo did not insist on reciprocal cross-licenses as a condition for a license.

49. The "2D plus Delta Codec" technology was subsequently adopted by the ITU, renamed the MultiView Codec ("MVC"), and incorporated into parts of ITU's H.264 and ISO/IEC 14496-10 specifications. Those skilled in the art recognize that the ITU had previously used the term "multiview" to describe different, but related, technologies. The 2010 dated release of the corresponding specification lists TDVision's voluntary declaration on page 410. In 2015, the same MVC technology was made an extension to the ITU's new High Efficiency Video Coding ("HEVC") specification, also known as H.265.

50. The MVC (or "2D+Delta Codec") functions by taking advantage of redundancies between multiple video frames or image views. In December 2009, the Blu-ray Disc Association (BDA) announced the incorporation of MVC into the standard specification for 3D Blu-ray movies and 3D Blu-ray players and recorders worldwide. This is significant because the industry wanted assurance that a new 3D disc would play a 2D version of the

movie, if inserted into an older 2D Blu-ray player or if used in a 3D player connected to a 2D display. The BDA conducted independent tests and determined that *TDVision had the only solution that maintained full Blu-ray resolution* while allowing 3D discs to function in a 2D player. It should be noted that Sony (Defendants' parent company) is a founding member of the BDA.

51. The prestigious 2013 Lumiere™ Award from the Advanced Imaging Society / International 3D Society was awarded to TDVision and Mr. Novelo for the development of the 2D + Delta Codec (or "MVC"). It should be noted that Sony (Defendants' parent company) is a founding member of the Advanced Imaging Society, according to the society website (http://www.advancedimagingsociety.com). One of the stated missions for the organization is to "Recognize impact and innovation in creative and technological achievement by a body of their peers." Discovery will help Plaintiff determine if Sony employees participated in, or had knowledge of, the technical rationale for granting the 2013 Lumiere™ Award to TDVision and Mr. Novelo.

52. TVIP has agreed to honor TDVision's declaration by licensing any claims that read on the H.264 and ISO/IEC 14496-10 specifications on fair, reasonable, and non-discriminatory ("FRAND") terms.

However, and as the Court in *In re Innovatio* has previously established, a defendant has the burden to prove which claims of a patent, if any, are essential to the relevant standard [see *In re Innovatio IP Ventures, LLC Patent Litigation* (MDL), 2013 WL 3874042 (N. D. Ill. July 26, 2013)], and claims not proven essential are not subject to FRAND terms. Previous to this Fourth Amended Complaint, Plaintiff did make a FRAND license offer to Defendants that, as of this date, has yet to be accepted.

53. As often happens in patent prosecution at the US Patent Office, prior to issuance claims are modified or amended to meet requirements from the patent examiners. With respect to TDVision's patents, TVIP performed an analysis of all the US patent claims (as well as the foreign patent claims). TVIP has also determined that various TDVision patents filed in foreign jurisdictions contain claims that read on the H.264 and ISO/IEC 14496-10 specifications, including issued patents in China, Korea, Japan, Singapore, and Hong Kong. This is significant because skilled patent examiners in multiple jurisdictions have reviewed the same (or very similar) patent applications and granted patents to Mr. Novelo. Also it should be noted that in 2002-2003 timeframe the terminology used by Mr. Novelo and other programmers skilled in the art was different than the common terminology used today. In 2002-2003, there were few 3D display devices available in the USA and even fewer in

Mexico, where the inventor lived. Some of these differences involve the term "display", which in 2002-2003 in Mexico, included the transfer of data to an actual display as well as the transfer of data to the display memory buffers within a videogame system. The reason for the lack of differentiation was that there were display buffers in both the limited number of 3D TVs as well as the display buffers in a videogame system. From the 2002-2003 programmers' perspective, the verb "display" included both the common meaning as well as the transfer of image data to a display buffer, irrespective of whether that buffer was located in the videogame system or the display viewing apparatus.

54. In terms of a broad overview, the '096 Patent describes and claims systems and methods for creating and controlling 3-dimensional images in a videogame system that may be used with a head-mounted display ("HMD"), such as the combination of Defendants' PlayStation 4 and PlayStation 4 Pro connected to PlayStation VR headset products, or to a 3D television or other device capable of displaying 3-dimensional images. (Defendants and their parent or affiliated Sony entities control a very large installed base of Sony 3D televisions that were sold to consumers.) The patented technologies perform many functions including, but not limited to, the conversion of 2-dimensional images to 3-dimensional images; native creation of 3-dimensional images; faster execution of gaming software through data compression of redundant images;

faster data transmission of virtual image data from a PC or other devices external to the HMD or other 3D display devices; more effective use of HMD-related imaging buffers that temporally hold frames of video data; display of the 3-dimensional images on a single 3D display device or multiple 2D display devices (typically, one display for each eye in an HMD); dynamic control of image convergence between left and right eye-view; and related processing. The patented technologies provide for systems and methods to facilitate the efficient application of the various camera angles necessary for the effective display of images in a manner that creates a realistic 3-dimensional perspective to the user while minimizing the potential for nausea, disorientation, and dizziness, which are common side-effects associated with the use of virtual reality headsets, including those manufactured and sold by the Defendants.

55. In terms of a broad overview, the '218 Patent describes and claims methods and systems for displaying 3-dimensional images generated by a videogame system, such as the Defendants' PlayStation 4 and PlayStation 4 Pro products, that may be used with a head-mounted display ("HMD"), such as the PlayStation VR headset, or with other devices capable of displaying 3-dimensional images, such as Defendants' 3D televisions. The '218 Patent's technologies perform many functions that are related to the '096 Patent above, including, but not limited to, calculating position coordinates of first and second

eye views within a videogame; calculating first and second eye views of virtual objects within a videogame; calculating coordinates of a camera view position in a videogame; and displaying first and second eye views to a user to provide a 3-dimensional image. The patented technologies have many applications including, but not limited to, reducing the nausea and dizziness experienced by some users of VR headsets.

56. Plaintiff respectfully asserts that, depending on each individual claim's limitations, the PlayStation 4 and PlayStation 4 Pro (together the "PS4/PS4 Pro") infringe the Asserted Patents, either singularly or in functionally operative combination with a three dimensional ("3D") display (generally described herein as a "3D Display Device"), including, but not limited to a Sony 3D headset such as the Sony PlayStation VR ("PSVR"), a Sony 3D television ("Sony 3D TV"), or an equivalent Sony 3D Display Device, or with any third-party 3D display, including but not limited to a third-party 3D headset or third-party 3D TV. The alleged infringing combination of Defendants' PS4/PS4 Pro and any 3D Display Device is collectively referred to herein as Defendants' "PS4/PS4 Pro Videogame System."

CAUSES OF ACTION

COUNT I

Direct Infringement of U.S. Patent 7,666,096 pursuant to

35 U.S.C. § 271(a)

57. On February 23, 2010, U.S. Patent No. 7,666,096 was issued to Manuel Rafael Gutierrez Novelo as the sole inventor thereof. A true and correct copy of the '096 Patent, which is entitled "Method for Generating the Left and Right Perspective in a 3D Videogame" is attached hereto as "Exhibit A."

58. Defendants have previously infringed, and do continue to infringe, the '096 patent in violation of 35 U.S.C. § 271(a), including Claims 1 through 19 either literally or under the Doctrine of Equivalents.

59. "Defendants" or "Defendants'," as used herein, refers both to each Defendant acting individually and independently, and alternatively to both Defendants acting jointly or in common.

60. Defendants infringe Claims 1 through 19 of the '096 Patent.

Exemplary Infringement of U.S. Patent 7,666,096 Claims

61. **Independent Claim 1:** For convenient reference, Independent Claim 1 reads as follows:

> A method of displaying images in a videogame system that supports two-dimensional and three-dimensional display of the images, said method comprising the computer implemented steps of:
>
> clearing left and right backbuffers in the videogame system;

storing an image into the left backbuffer;

determining if the image is in a two-dimensional format or a three dimensional format, wherein when the image is in a three-dimensional format, calculating the coordinates of a second view position of the image and storing a second view position image into the right backbuffer;

displaying the image stored in the left backbuffer onto one or more displays when the image is in a two-dimensional format; and

simultaneously displaying the images stored in the left and right backbuffers onto the one or more displays to create a three dimensional perspective of the image to a user when the image is in a three-dimensional format.

62. Independent Claim 1 is directed to "a method of displaying images in a videogame system that supports two-dimensional and three-dimensional display of the images, said method comprising the computer implemented steps" as specified. The PS4 and PS4 Pro (together "PS4/PS4 Pro") each comprise a videogame system in that they encompass within a single product package both hardware and software integrated to enable and support the playing of videogames; wherein such hardware includes printed circuit

boards, a central processing unit (CPU), a graphical processing unit (GPU), an optical drive, a power supply, and various electronic inputs and outputs designed to accommodate both Defendant and third-party components, such as displays, mass storage devices, and other compatible devices; and where such software includes instructions that operate on the CPU and/or GPU to accommodate and enable the playing of videogames (hereinafter "System"). Furthermore, according to Defendants' presentation at the Game Developers Conference in 2013, Defendants encourage programmers to use DirectX 11.2+ and OpenGL 4.4+ programming languages. Programmers may port their DirectX 11.2+ and OpenGL 4.4+ videogame programs to Defendants' proprietary PS4/PS4 Pro platform using Sony's PSSL compiler (see "http://twvideo01.ubm-us.net/o1/vault/gdceurope2013/Presentations/825424RichardStenson.pdf").

63. Pursuant to Claim 1, the Sony PS4/PS4 Pro comprises at least "a videogame system that supports two-dimensional and three-dimensional display of the [videogame] images, said method comprising the computer implemented steps" as specified in the Claim, in that the PS4/PS4 Pro products at least incorporate and use an AMD "Jaguar" core CPU that is configured to support such two-dimensional and three-dimensional display of the images and further, by providing instructions utilizing an AMD Radeon GPU. As an example, Defendants' PS4/PS4 Pro implements the steps of the method via

instructions that have been compiled according to Defendants' specifications from common programming languages, such as the open-source OpenGL language and/or the Microsoft "DirectX" programming language (including at least "DirectX 11.1" and later revisions and its subset "Direct3D"), or via substantially similar hardware and/or software implemented steps. Then the program is ported to the proprietary PlayStation 4 platform using Sony's PSSL compiler.

64. Pursuant to Claim 1, Defendants' PS4/PS4 Pro clears "left and right backbuffers in the videogame system" before the step of storing each subsequent image on each buffer, such as in the PS4/PS4 Pro Direct3D functions "ClearRenderTargetView()" and "ClearDepthStencilView()," or via substantially similar hardware and/or software implemented steps.

65. Defendants' PS4/PS4 Pro employs the computer implemented step of "storing an image into the left backbuffer" such as through its use of at least the AMD "Jaguar" core processor that is configured to support such two-dimensional and three-dimensional display of the images by instructions utilizing the AMD GPU. As an example, Defendants' PS4/PS4 Pro executes instructions that have been compiled according to Defendants' specifications from the Microsoft programming language "DirectX" (including at least "DirectX 11.1") and its subset "Direct3D", such as with a call to the

IDXGIResource1::CreateSubresourceSurface Application Programming Interface ("API") to render the left view, or via substantially similar hardware and/or software implemented steps.

66. Defendants' PS4/PS4 Pro employs the computer implemented step of "determining if the image is in a two-dimensional format or a three-dimensional format" such as via the Microsoft programming language "DirectX" (including at least "DirectX 11.1") and its subset "Direct3D" such as with calls to IDXGIFactory2::IsWindowedStereoEnabled to determine whether the system hardware supports stereo 3D and whether the image file contains header information indicative of 3D content such as #include <d3d11.h>, #include <d3dx11.h>, #pragma comment (lib, "d3d11.lib"), #pragma comment (lib, "d3dx11.lib"), or via substantially similar hardware and/or software implemented steps.

67. Defendants' PS4/PS4 Pro employs the computer implemented step of "when the image is in a three-dimensional format, calculating the coordinates of a second view position of the image and storing a second view position image into the right backbuffer," such as through its use of the buffer creation command "CD3D11_BUFFER_DESC constantBufferDescription(sizeof(ConstantBuffer) D3D11_BIND_CONSTANT_BUFFER)" and the matrix command "StereoParameters parameters =

CreateDefaultStereoParameters(m_widthInInches, m_heightInInches, m_worldScale, m_stereoExaggerationFactor)" along with the command "StereoProjectionFieldOfViewRightHand(parameters, m_nearZ, m_farZ, true)", which are used to create the stereo projection matrices, transpose the image and "calculate the coordinates," for the second view position, or via substantially similar hardware and/or software implemented steps.

68. Defendants' PS4/PS4 Pro employs the computer implemented step of "storing a second view position image into the right backbuffer", at least through the CreateSubresourceSurface method that renders the second view position image and stores it into the right backbuffer, or via substantially similar hardware and/or software implemented steps.

69. Defendants' PS4/PS4 Pro employs the computer implemented step of "displaying the image stored in the left backbuffer onto one or more displays when the image is in a two-dimensional format" such as when the IDXGIFactory2::IsWindowedStereoEnabled API determines that a stereo display is not enabled, whereupon the calculations for stereo are not performed, and the image is stored in the left backbuffer, and only the left eye view is processed for display, or via substantially similar hardware and/or software implemented steps.

70. Defendants' PS4/PS4 Pro employs computer instructions for

"simultaneously displaying the images stored in the left and right backbuffers onto the one or more displays to create a three dimensional perspective of the image to a user when the image is in a three-dimensional format," such as the creation of stereo projections matrices through the use of the "StereoProjectionFieldOfViewRightHand(parameters, m_nearZ, m_farZ, true)" command and analogous left hand view commands, or other similar commands for rendering the stereo content; left and right render-target views are generated; and the left and right images are stored in separate buffer locations for output from the PS4/PS4 Pro System to a display.

71. Defendants' PS4/PS4 Pro System creates "SwapChain" memory buffers to render stereo content for left and right eye views. For purposes of illustration only, typically the first frame of a video is displayed to the first eye only after it has been rendered (or created or stored) in a first memory location. While the first frame data is being transferred to the display device for the first eye to view, a second video frame is rendered to a second memory location. Then, while the first frame is being displayed, the second frame data from the second memory location is transmitted to the display device for the second eye to view. Finally, while the second frame data is being displayed to the second eye, the next frame is being queued up in the first memory location. The long string of image frames, as is typically found in any

virtual reality system, videogame or 3D movie, swaps back and forth between the first and second memory buffers for display to the left and right eyes. This buffering process and scheme is commonly referred to as a "SwapChain." Programmers often also use more sophisticated variations of this SwapChain process to create enhancements and improve system performance, such as through the use of front and back-buffers in combination with the left-right SwapChain configuration. As a result of a determination by the IDXGIFactory2::IsWindowedStereoEnabled and the file header contents, the PS4/PS4 Pro System prepares 3D images in the form of offset left and right eye images which are stored in a series of SwapChain buffers wherein the images are transferred to the display in rapid succession, such as through use of the Direct 3D "Present()" command, and thereby generating a three dimensional image perspective, or via substantially similar hardware and/or software implemented steps.

72. **Dependent Claim 2:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

73. Defendants infringe Claim 2: "The method according to claim 1, wherein the left backbuffer comprises at least 32 MB of memory," such as by use of the Pro AMD Radeon Graphics Processing Unit ("GPU") that is in each

PS4/PS4 Pro and has 8GB of double data rate type five synchronous graphics random-access memory ("GDDR5"), or via substantially similar hardware and/or software implemented steps.

74. **Dependent Claim 3:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

75. Defendants infringe Claim 3: "The method according to claim 1, wherein the right backbuffer comprises at least 32 MB of memory," such by use of the AMD Radeon Graphics Processing Unit ("GPU") that is in each PS4/PS4 Pro AMD Radeon Graphics Processing Unit ("GPU") and which has 8GB of double data rate type five synchronous graphics random-access memory ("GDDR5"), or via substantially similar hardware and/or software implemented steps.

76. **Dependent Claim 4:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

77. Defendants infringe Claim 4: "The method according to claim 1, wherein calculating the coordinates of the second view position comprises calculating the coordinates of a right eye camera view position," such as through the use of commands from the "Direct3D" API wherein the right eye camera

view is rendered in the back buffer of the SwapChain. The back buffer of the SwapChain is created as a DXGI resource using a "CreateSubresourceSurface" call that enables a "IDXGISwapChain" command to store rendered data for the right eye view. The coordinates are then calculated using the "D3DXMatrixPerspectiveRH" function call, or via substantially similar hardware and/or software implemented steps.

78. **Dependent Claim 5:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

79. Defendants infringe Claim 5: "The method according to claim 1, wherein calculating the coordinates of the second view position comprises obtaining spatial coordinates (x, y, z) by coordinate transformation equations given the location of a first virtual camera and the position of an object in the videogame," such as through initializing a stereo projection matrix with a mesh in a transformation hierarchy to describe the object. The object is encapsulated in the mesh using the "D3DXCreateMesh" and the "D3DXMESHCONTAINER" commands to form a representation of the object in the videogame. Then the coordinate transformation "ID3DXPatchMesh::GetDisplaceParam" command is used to obtain the x,y,z coordinates of the first camera position, or via substantially similar hardware

and/or software implemented steps.

80. **Dependent Claim 6:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

81. Defendants infringe Claim 6: "The method according to claim 1, wherein simultaneously displaying the images in the left and right backbuffers comprises generating left and right images on different video channels," such as in that the AMD Jaguar CPU and Radeon GPU performs the PS4/PS4 Pro instructions, such as the DirectX API, to enable the SwapChain to be extended to allow for separate left and right eye channels, or via substantially similar hardware and/or software implemented steps.

82. **Dependent Claim 7:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

83. Defendants infringe Claim 7: "The method according to claim 6, further comprising increasing the left and right backbuffer memory prior to generating the left and right images on different video channels," such as the DirectX API commands "IDXGISwapChain::ResizeTarget" and "IDXGISwapChain::ResizeBuffers" that enable the PS4/PS4 Pro to increase the SwapChain memory allocation to different video channels.

84. **Independent Claim 8:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above. For convenient reference, Independent Claim 8 reads as follows:

> A method in a videogame system for displaying videogame images to a user, comprising the computer implemented steps of:
>
> opening first and second buffers in a memory of the videogame system;
>
> storing a videogame image in the first buffer;
>
> determining when the videogame image is a two-dimensional image or a three-dimensional image, wherein when the videogame image is a two-dimensioned image, displaying the videogame image stored in the first buffer to a user, and
>
> wherein when the videogame image is a three-dimensional image, calculating a second camera position view image from the videogame system,
>
> storing the second camera position view image in the second buffer, and
>
> simultaneously displaying the images in the first and second buffers to create a three dimensional perspective of the image to the user.

85. Independent Claim 8 is directed to "a method in a videogame

system for displaying videogame images to a user, comprising the computer implemented steps" as specified.

86. Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

87. Pursuant to Claim 8, the Sony PS4/PS4 Pro comprises at least "a videogame system for displaying videogame images to a user, comprising the computer implemented steps," of said videogame System as described in ¶62 above and as specified in Claim 8. As an example, Defendants' PS4/PS4 Pro implements the steps of the method via instructions that have been compiled and ported according to Defendants' specifications from the Microsoft programming language "DirectX" (including at least "DirectX 11.1") and its subset "Direct3D," or via substantially similar hardware and/or software implemented steps.

88. Pursuant to Claim 8, Defendants' PS4/PS4 Pro uses the computer implemented step of "opening first and second buffers in a memory of the videogame system," such as when PS4/PS4 Pro creates a "SwapChain" to render stereo content for left and right eye views. As a result of a determination made by using the IDXGIFactory2::IsWindowedStereoEnabled API and the file header contents, a SwapChain is created. This SwapChain is a series of buffers

that may be configured as back/front, first/second, or left/right buffers, or via substantially similar hardware and/or software implemented steps wherein video images are stored.

89. Pursuant to Claim 8, Defendants' PS4/PS4 Pro uses the computer implemented step of "storing a videogame image in the first buffer," such as through its use of at least the AMD Jaguar CPU that is configured to support such two-dimensional and three-dimensional storage of images and may also utilize the AMD Radeon GPU. As an example, Defendants' PS4/PS4 Pro executes instructions that have been compiled and ported according to Defendants' specifications from the Microsoft programming language "DirectX" (including at least "DirectX 11.1") and its subset "Direct3D", such as with a call to D3D11CreateDeviceAndSwapChain to render the left view in a first buffer, or via substantially similar hardware and/or software implemented steps.

90. Pursuant to Claim 8, Defendants' PS4/PS4 Pro uses the computer implemented step of "determining when the videogame image is a two-dimensional image or a three-dimensional image,' such as via Defendants' specifications from the Microsoft programming language "DirectX" (including at least "DirectX 11.1") and its subset "Direct3D", such as with a call to IDXGIFactory2::IsWindowedStereoEnabled and reading the file header contents, or via substantially similar hardware and/or software implemented

steps.

91. Further, pursuant to Claim 8, "wherein when the videogame image is a two-dimensioned image," Defendants' PS4/PS4 Pro employs the computer implemented step of "displaying the videogame image stored in the first buffer to a user," such as via the IDXGISwapChain::Present command.

92. Still further, pursuant to Claim 8, "wherein when the videogame image is a three-dimensional image, calculating a second camera position view image from the videogame system, storing the second camera position view image in the second buffer, and simultaneously displaying the images in the first and second buffers to create a three dimensional perspective of the image to the user." If the earlier determination indicated 3D content, Defendants' PS4/PS4 Pro uses computer implemented steps such as XMMatrixLookAtLH to calculate the second camera position, and the D3DXMATRIX instruction to store the camera position, and IDXGISwapChain::Present instruction to transfer the image data in the first and second buffers to a display device.

93. Defendants' PS4/PS4 Pro supports numerous types of 2D and 3D display devices. One common 3D format places two images side-by-side on the display device, where the images are displayed simultaneously. The user wears active 3D glasses that alternately shutter the left and right eyes to create a

three-dimensional perspective from the simultaneous images. Sony has a large installed base of 3D TV's that support this 3D format, as well as many other 3D formats.

94. **Dependent Claim 9:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

95. Defendants' PS4/PS4 Pro uses the computer implemented "method of claim 8, wherein the image stored in the first buffer is displayed to a user's left eye and the image stored in the second buffer is displayed to a user's right eye," such as through the use of the IDXGISwapChain::Present instruction that allows transfer of the image data in the first and second buffers to a display device. The IDXGISwapChain::Present instruction supports additional parameters that direct the images stored in the first buffer to the left eye and images stored in the second buffer to the right eye, or via substantially similar hardware and/or software implemented steps. This format is commonly used in 3D head-mounted displays, such as Defendants' PSVR headset.

96. **Dependent Claim 10:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

97. Defendants' PS4/PS4 Pro employ the computer implemented

"method of claim 8, wherein simultaneously displaying the images stored in the first and second buffers comprises simultaneously displaying the images to a single display," such as when a PS4/PS4 Pro is in functional connection with a Sony 3D television, or alternatively when connected to Defendants' PSVR headset (which has a single display panel that is electronically controlled to simulate two separate half-sized panels) or an alternative display from Defendant or a third party.

98. **Dependent Claim 11:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

99. Defendants' PS4/PS4 Pro uses the computer implemented "method of claim 8, wherein simultaneously displaying the images stored in the first and second buffers comprises simultaneously displaying the images to a plurality of displays", such as when the PS4/PS4 Pro is in functional connection with a Sony PSVR headset, which simulates a separate display for each eye, wherein the panel resolution of the single display is divided into two halves (one-half per eye) such that images can be displayed simultaneously on each half of the display.

100. Defendants' PS4/PS4 Pro uses the computer implemented "method of claim 8, wherein simultaneously displaying the images stored in the

first and second buffers comprises simultaneously displaying the images to a plurality of displays", such as when the PS4/PS4 Pro is in functional connection with a Sony 3D TV, a third party 3D TV or "virtual reality" headset, wherein the headset has a separate display for each eye or, in the alternative, a single display panel that is configured to function as two separate half-sized panels.

101. **Dependent Claim 12:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

102. Defendants' PS4/PS4 Pro uses the computer implemented "method of claim 8, wherein calculating a second camera position view image comprises determining a first virtual camera position used to calculate the videogame image and then calculating the position of the second camera as a function of a position of the first virtual camera position and the position of an object in the videogame," such as when Sony's PS4/PS4 Pro is used to play a videogame that involves, for example, a target flying across the sky. In this example, the background sky may be the first virtual camera position image; the target flying across the sky is the object in the videogame; and the cross-hairs of the gun are the second camera position. The software code for this simple videogame is actually very lengthy and beyond the required scope of this Fifth Amended Complaint; however, the infringing steps are clear. Assume the target

is flying from left to right. The sky appears stationary. The cross-hairs of the gun are being moved back and forth by the user. As the cross-hairs approach the edge of the screen, the sky view is automatically adjusted to center the vector for the projectile. As the target approaches the edge of the screen, the entire view shifts to automatically center the target. Defendants manufacture over 150 video games, many of which involve shooters and targets that function as described when played on Defendants' PS4/PS4 Pro. A video demonstration for the Court is recommended to show details of Claim 12 infringement.

103. **Dependent Claim 13:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

104. Defendants' PS4/PS4 Pro uses the computer implement "method of claim 8, wherein the first and second buffers are backbuffers." Backbuffer is a term of art to describe the portion of computer memory that will store (or render), and eventually send its contents to a physical display device. In contrast, the frontbuffer is the portion of computer memory that holds an image that has not yet been processed. The use of SwapChains causes the front and back buffers to alternate. For example, one image is processed while the other is transferred to the physical display device. Typically, the newest image uses the memory from the back buffer that was just transferred to the display (now it's

called a front buffer). While the computer processes the front buffer image, the other buffer (now called a back buffer) transfers an image to the display device. In this manner, the SwapChains used by the PS4/PS4 Pro cause the first and second buffers to function as backbuffers.

105. **Dependent Claim 14:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

106. Defendants' PS4/PS4 Pro uses the computer implemented "method of claim 8, wherein simultaneously displaying the images in the first and second buffers comprises storing the images in the first and second buffers to first and second frontbuffers, and wherein the images in the first and second frontbuffers are simultaneously displayed to the user." Defendants' PS4/PS4 Pro is a sophisticated computer device that is able to implement numerous forms of SwapChains. The use of front and back-buffers often allows computers to function more quickly because the response of the various 3rd party display devices is unknown to the PS4 designers or PS4 programmers. The common implementation using first and second frontbuffers and backbuffers helps address the potential timing variations. The dual frontbuffers allows the computer to simultaneously process and display left and right images to the user. This format is used by the PS4/PS4 Pro when it is connected to the PSVR

headset because the PSVR has a single display panel that is configured as two separate half-panel displays with dual (left and right) video channels.

107. **Independent Claim 16:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above. For convenient reference, Independent Claim 16 reads as follows:

> A videogame system comprising a processor configured to run instructions that when executed perform a method comprising the steps of:
>
> opening first and second buffers in a memory of the videogame system;
>
> storing a videogame image in the first buffer;
>
> determining when the videogame image is a two-dimensional image or a three-dimensional image, wherein when the videogame image is a two-dimensional image, displaying the videogame image stored in the first buffer to a user, and
>
> wherein when the videogame image is a three-dimensional image, calculating a second camera position view image from the videogame system,
>
> storing the second camera position view image in the second buffer, and
>
> simultaneously displaying the images in the first and second buffers to create a three dimensional perspective of the image to the user.

108. Independent Claim 16 is directed to "a videogame system comprising a processor configured to run instructions that when executed perform a method comprising the steps" as specified.

109. Defendants' PS4/PS4 Pro comprises at least "a videogame system comprising a processor configured to run instructions that when executed perform a method comprising the steps of" Claim 16 in that the PS4/PS4 Pro product encompasses the System as described in ¶62 above. Defendants' PS4/PS4 Pro also executes instructions that have been compiled according to Defendants' specifications from the Microsoft programming language "DirectX" (including at least "DirectX 11.1") and its subset "Direct3D" or via substantially similar hardware and/or software.

110. Defendants' PS4/PS4 Pro is a videogame System comprising a processor configured to run instructions that when executed perform a method step of "opening first and second buffers in a memory of the videogame system," such as through use of relevant commands in Microsoft's DirectX and Direct 3D APIs, including at least the creation and use of a SwapChain that renders stereo content for left and right render-target views, or via substantially similar hardware and/or software.

111. For purposes of illustration only, creation of a 3-dimensional

perception may be envisioned as a series of 2-dimensional images or frames that are displayed to the viewer. In order to create a 3-dimensional effect, different frames may be shown to the left eye and the right eye. The frame images will usually have an offset to allow for stereo-vision (i.e., each eye sees the same image from a slightly different angle to create a 3-dimensional effect).

112. Defendants' PS4/PS4 Pro is a videogame system comprising a processor configured to run instructions that when executed perform a method step of "storing a videogame image in the first buffer," such as at least through the creation of a left, or first, eye view buffer using Microsoft's DirectX APIs, or via substantially similar hardware and/or software.

113. Defendants' PS4/PS4 Pro is a videogame system comprising a processor configured to run instructions that when executed perform a method step of "determining when the videogame image is a two-dimensional image or a three-dimensional image," such as through the use of Microsoft's Direct3D stereoscopic 3D commands that retrieve Boolean logic values indicating whether the videogame system is two-dimensional or stereo-enabled, including at least through the "GetStereoEnabledStatus()" function call to determine whether the image is two dimensional or three-dimensional, or via substantially similar hardware and/or software.

114. Plaintiff notes for clarity that the use of the term "stereo"

means 3-dimensional in a video or optical context; it should not be confused with the audio context of the term that refers to two-speaker sound systems.

115. Further, "when the videogame image is a two-dimensional image," Defendants' PS4/PS4 Pro is configured to run instructions that when executed perform a method step of "the videogame image stored in the first buffer to a user," such as through the application call "IsWindowedStatusEnabled," where Boolean logic is flagged to indicate whether the image is two-dimensional or three-dimensional, and if flagged as two-dimensional, such as by a "false" value, then the image in the left eye (monoscopic) view is displayed from the first, or left, SwapChain buffer, or via substantially similar hardware and/or software.

116. Defendants' PS4/PS4 Pro is a videogame system comprising a processor configured to run instructions that when executed perform a method step of "when the videogame image is a three-dimensional image, calculating a second camera position view image," such as when the PS4/PS4 Pro calculates the horizontal offset between left and right eyes that must be accommodated if the image is to look realistic in 3D, or via substantially similar hardware and/or software.

117. Defendants' PS4/PS4 Pro is a videogame System comprising a processor configured to run instructions that when executed perform a method

step of using Direct3D code, as well as other API instruction sets, to create stereo 3D supported SwapChains on which to render stereo content for the left and right eye views, and then calculating stereo projection matrices for rendering the stereo content using Direct3D, or via substantially similar hardware and/or software.

118. Defendants' PS4/PS4 Pro is a videogame system comprising a processor configured to run instructions that when executed perform a method step using DirectX APIs to "create and set stereo projection matrices," wherein the PS4/PS4 Pro establishes the camera parameters, and the stereo projection matrix is calculated, and the matrices are transposed to establish the right eye (stereo) view, or via substantially similar hardware and/or software.

119. Further, Defendants' PS4/PS4 Pro is a videogame system comprising a processor configured to run instructions that when executed perform a method step of when the videogame image is a three-dimensional image, "storing the second camera position view image in the second buffer," such as in the examples provided with the DirectX software libraries, or via substantially similar hardware and/or software.

120. Defendants' PS4/PS4 Pro processor is configured to run instruction that when executed perform a method step wherein the "second camera position image from the videogame system" is stored in the "second

buffer", or back buffer of a SwapChain, such as where the back buffer of the SwapChain is obtained as a DXGI resource or similar hardware resource, or via substantially similar hardware and/or software.

121. Defendants' PS4/PS4 Pro is a videogame system comprising a processor configured to run instructions that when executed perform a method step of when the videogame image is intended as a three-dimensional image, "simultaneously displaying the images in the first and second buffers to create a 3-dimensional perspective of the image to the user," such as where the DirectX software program uses a SwapChain to enable display of both the first (left) and second (right) images to the display at the same time, or via substantially similar hardware and/or software.

122. Defendants' PS4/PS4 Pro is a videogame system comprising a processor configured to run instructions that when executed perform a method step wherein the PS4/PS4 Pro, running the DirectX APIs, presents the rendered first and second buffered stereo images of a videogame to create a 3-dimensional synchronized user image, such as can be displayed to Defendants' PSVR, Defendants' 3D single display products, a compatible third-party display, or via substantially similar hardware and/or software.

123. **Dependent Claim 17:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the

preceding paragraphs, as set forth above.

124. Defendants' PS4/PS4 Pro is a videogame system comprising a processor configured to run instructions that when executed perform a method step of "the videogame system of claim 16, wherein the image stored in the first buffer is displayed to a user's left eye and the image stored in the second buffer is displayed to a user's right eye" such as through the use of the DirectX "RenderEye(0)" function call for left eye stereo content rendering and "RenderEye(1) for right eye stereo content rendering. Analogous instructions are employed in the OpenGL graphics API.

125. **Dependent Claim 18:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

126. Defendants' PS4/PS4 Pro is a videogame system comprising a processor configured to run instructions that when executed perform a method step of "the videogame system of claim 16, wherein simultaneously displaying the images stored in the first and second buffers comprises simultaneously displaying the images to a single display," such as when a PS4/PS4 Pro is in functional connection with a Sony 3D television, a compatible third-party display, or via substantially similar hardware and/or software.

127. **Dependent Claim 19:** Plaintiff repeats, re-alleges, and

incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

128. Defendants' PS4/PS4 Pro is a videogame system comprising a processor configured to run instructions that when executed perform a method step of "the videogame system of claim 16, wherein simultaneously displaying the images stored in the first and second buffers comprises simultaneously displaying the images to a plurality of displays," such as when the PS4/PS4 Pro is in functional connection with a Sony PSVR headset, wherein such headset has a separate display for each eye, in that the panel resolution of the single display is divided into two halves (one-half per eye), such that images can be displayed simultaneously on each half of the display, or via substantially similar hardware and/or software.

129. Defendants' PS4/PS4 Pro is a videogame system comprising a processor configured to run instructions that when executed perform a method step of "the videogame system of claim 16, wherein simultaneously displaying the images stored in the first and second buffers comprises simultaneously displaying the images to a plurality of displays," such as when the PS4/PS4 Pro is in functional connection with a third party 3D or "virtual reality" headset, wherein the headset has a separate display for each eye, or via substantially similar hardware and/or software.

COUNT II

Indirect Infringement of the '096 Patent pursuant to 35 U.S.C. § 271(b)

130. Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

131. Defendants have alternatively induced and continue to induce infringement of at least Claims 1-9, Claims 12-15, and Claim 17 of the '096 Patent under 35 U.S.C. § 271(b).

132. In addition to directly infringing the '096 Patent, Defendants indirectly infringe the '096 Patent pursuant to 35 U.S.C. § 271(b) by instructing, directing and/or requiring others, including customers, purchasers, users and developers, to perform steps of the method claims, either literally or under the doctrine of equivalents, of the '096 Patent, where all the steps of the method claims are performed by either Defendants or its customers, purchasers, users and developers, or some combination thereof. Defendants knew or were willfully blind to the fact that it was inducing others, including customers, purchasers, users and developers, to infringe by practicing either themselves or in conjunction with Defendants, one or more method claims of the '096 Patent, including Claims 1-9, Claims 12-15, and Claim 17.

133. Defendants have knowingly and actively aided and abetted the direct infringement of the '096 Patent by instructing and encouraging its customers, purchasers, users and developers to use the PS4/PS4 Pro and the PSVR. Such instructions and encouragement included, but are not limited to, advising third parties to use the PS4/PS4 Pro and the PSVR in an infringing manner, providing a mechanism through which third parties may infringe the '096 Patent, and by advertising and promoting the use of the PS4/PS4 Pro and the PSVR in an infringing manner, and distributing guidelines and instructions to third parties on how to use the PS4/PS4 Pro and the PSVR in an infringing manner.

134. Defendants update and maintain an HTTP site with Defendants' quick start guides, administration guides, user guides, and operating instructions, which cover in depth aspects of operating Defendants' offerings: https://www.playstation.com/en-us/support/manuals/ps4/ (checked on January 10, 2018).

135. At least by updating and maintaining the HTTP site Defendants have taken action that actually induced direct infringement by users of at least the PS4/PS4 Pro and PSVR.

136. Since at least on or about May 15, 2017, when Plaintiff Techno View filed a patent infringement suit against Sony Interactive

Entertainment LLC in the District of Delaware, Defendant Sony Interactive Entertainment LLC has been on actual notice of the '096 Patent and of its infringement of the '096 Patent.

137. Also, since at least on or about May 15, 2017, when Plaintiff Techno View filed a patent infringement suit against Sony Interactive Entertainment LLC in the District of Delaware, Defendant Sony Interactive Entertainment LLC has known that the acts it was causing would infringe the '096 Patent.

138. Since at least on or about July 23, 2017, when Plaintiff Techno View filed its initial patent infringement suit against Sony Interactive Entertainment America LLC in the Central District of California, Defendant Sony Interactive Entertainment America LLC has been on actual notice of the '096 Patent and of its infringement of the '096 Patent.

139. Also, since at least on or about July 23, 2017, when Plaintiff Techno View filed its initial patent infringement suit against Sony Interactive Entertainment LLC in the Central District of California, Defendant Sony Interactive Entertainment LLC has known that the acts it was causing would infringe the '096 Patent.

141. Defendants' infringement, therefore, is and has been willful, deliberate and intentional.

COUNT III

Direct Infringement of U.S. Patent 8,206,218 pursuant to 35 U.S.C. § 271(a)

140. Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

Exemplary Infringement of U.S. Patent 8,206,218

141. **Independent Claim 1:** For convenient reference, Independent Claim 1 reads as follows:

> A method in a videogame system for displaying three-dimensional images, comprising the computer implemented steps of
>
> providing left and right backbuffers;
>
> calculating first position coordinated of a first eye view;
>
> storing a first eye view image captured virtually from the calculated first position coordinated of the first eye view of an object in the videogame into the left backbuffer;
>
> calculating, with a processor of the videogame system, second position coordinates of a second eye view of the object in three dimensional space using the calculated first position coordinates of the first eye view;
>
> determining a second eye view image of the object captured virtually from

the calculated second position coordinates of the second eye view;

storing the second eye view image in the right backbuffer; and

displaying the first eye view image and the second eye view image to the user to provide a three dimensional perspective of the object from the videogame system to a user.

142. On June 26, 2012, U.S. Patent No. 8,206,218 was issued to Manuel Rafael Gutierrez Novelo as the sole inventor thereof. A true and correct copy of the '218 Patent, which is entitled "3D Videogame System" is attached hereto as "Exhibit B."

143. Defendants have previously infringed and do continue to infringe the '218 patent in violation of 35 U.S.C. § 271, including Claims 1 through 19.

144. Purely as an example to place Defendants on notice of at least one exemplary product that infringes at least one claim of the '218 Patent, and without limiting further allegations of additional claims infringed by additional products of Defendants, Plaintiff TVIP identifies Claim 1 of the '218 Patent as an exemplary claim that was and is infringed by Defendants. Claim 1 is directed towards a method of displaying three-dimensional images in a videogame system. The Sony PS System functions as a videogame system as described in

Claim 1 of the '218 Patent. Defendants' exemplary products, the PS4/PS4 Pro, infringe Claim 1 of the '218 Patent in at least the following exemplary manner:

a. The Sony PS4/PS4 Pro comprises at least "a videogame system for displaying three-dimensional images" in that the PS4/PS4 Pro products incorporate and use at least an AMD "Jaguar" CPU that is configured to run such instructions utilizing an AMD Radeon GPU and as defined as "System" in ¶62 above. The Sony PS4/PS4 Pro executes instructions from the Microsoft programming language "DirectX" and its subset API, "Direct3D." The AMD Radeon GPUs also support OpenGL APIs for the rendering and displaying of stereo videogame image frames. Defendant Sony creates and sells its own branded three-dimensional videogames specifically for use on its PS4/PS4 Pro products.

b. Defendants' PS4/PS4 Pro "provid[es] left and right backbuffers," as is required by Claim 1, such as through use of relevant commands in the supported Microsoft DirectX or OpenGL software libraries, which creates a first buffer identified as a "left eye buffer," and a second buffer identified as a "right eye buffer." These Microsoft [or OpenGL, or Sony specific API] commands are enabled at least by the PS4/PS4 Pro using the "Active Quad Buffer" feature of the

incorporated AMD Radeon graphics processor.

c. The Sony PS4/PS4 Pro "calculat[es] first position coordinates of a first eye view," as required by Claim 1, for example, through the adjustment of the amount and direction of horizontal offset of the left [vs. right] images in order to create a comfortable perception of depth for a user. The offset position is created using the PS4 software and stereo projection matrices utilizing Microsoft's DirectX APIs and other libraries including, but not limited to, the D3D or DirectX3D libraries that are subsets of the larger DirectX platform.

d. Defendants' PS4/PS4 Pro then stores the virtually created first eye view image of a videogame object into a left backbuffer by means of the SwapChain and using, for example, the Direct 3D "DXGI resource" to render the first, or left eye, view of the object intended as stereo content.

e. The Sony PS4/PS4 Pro then "calculates, with the processor of the videogame system, second position coordinates of a second eye view of the object in three dimensional space using the calculated first position coordinates of the first eye view", as required by Claim 1, such as through the Direct 3D API call:

"StereoProjectionFieldOfViewRightHand", wherein when the 'right

channel' parameter is set to true, the system calculates coordinates for the right "second" eye view, such as through use of matrix transposition calculations.

f. The Sony PS4/PS4 Pro then determines "a second eye view image of the object captured virtually from the calculated second position coordinates of the second eye view", such as through the use of Horizontal Image Translation, as when occurs with the offset of virtual object images by calculating the relative human eye separation, or horizontal offset, between the left and right images and generating a right eye view image therefrom.

g. The Sony PS4/PS4 Pro "stor[es] the second eye view object image in the right backbuffer," as required by Claim 1, such as through its use of the SwapChain and the "RenderEye" function in the DirectX API.

h. The Sony PS4/PS4 Pro then provides a method of "displaying the first eye view image and the second eye view image to the user", such as when a user is wearing the Sony PSVR headset, or an alternative 3-dimensional capable display device, to provide a 3-dimensional perspective of the object from the videogame system, as required by Claim 1. The animated sequences may be comprised of

image frames, generated via the backbuffer SwapChains, as used in the PS4/PS4 Pro. Defendants' PS4/PS4 Pro employs, as an example, the DirectX "Present( )" instruction to process the display of stereo images to its PlayStation VR headset, alternate head mounted display products, or other products capable of displaying 3-dimensional images. [*For purposes of illustration and clarity only, the Sony PS4/PS4 Pro displays left-eye and right-eye images on the PSVR with a series of 2-dimensional image frames that are displayed to the viewer. The display for each eye in the PSVR is a flat, 2-dimensional LCD panel. In order to create a 3-dimensional effect, different image frames are shown to the left eye and the right eye. The image frames will usually have an offset to allow for stereo-vision (i.e., each eye sees the same image but from a slightly different angle to create a 3-dimensional effect). Typically, the first frame of a video is displayed to the first eye after it has been rendered (or created) in a first memory location; while the first frame data is being transferred from the PS4 to the display in the PSVR for the first eye to view, a second video frame is rendered to a second memory location. After the first frame has been displayed, the second frame data from the second memory location is transmitted for display for the second eye to view. While the second frame data is*

being transferred for display to the second eye, the next frame is being queued up in the first memory location. The long string of frames, as is typically found in any virtual reality videogame or 3D movie, swaps back and forth between the first and second memory buffers for display to the left and right eyes by use of a SwapChain. There are many complex variations that may use additional memory buffers combined with timing delays or horizontal or vertical offsets between frame swaps. These enhancements are intended to improve user perception and game performance but employ the same fundamental process.]

145. **Dependent Claim 2:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

146. Defendants' PS4/PS4 Pro employs a "method in a videogame system for displaying three-dimensional images, comprising the computer implemented steps of" claim 1, wherein "the first eye view image corresponds to a first virtual object in the videogame," such as when different 3D objects are rendered by the System using different scales and horizontal offsets between two images to correspond to objects as seen from a left eye.

147. **Dependent Claim 3:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the

preceding paragraphs, as set forth above.

148. Defendants' PS4/PS4 Pro employs a "method in a videogame system for displaying three-dimensional images, comprising the computer implemented steps of" claim 1, wherein "calculating the second position coordinates comprises calculating the x and z coordinates of the second eye view only so that there is no deviation in the height of the second eye view in relation to the height of the first eye view," such as when the second eye view is assigned a horizontal displacement (offset) by the System only to perceive depth, such that there is no deviation in the height of the second eye view in relation to the height of the first eye view to create a comfortable depth perception to the user.

149. **Dependent Claim 4:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

150. Defendants' PS4/PS4 Pro employs a "method in a videogame system for displaying three-dimensional images, comprising the computer implemented steps of" claim 1, wherein "calculating the second position coordinates of the second view image comprises calculating the coordinates of a right eye camera view position," such as when the Horizontal Image Translation includes calculating the offset between two camera views, such that the right "second" view image corresponds to what a user sees from his right eye. This is

accomplished, for example, when the function call: *"StereoProjectionFieldOfViewRightHand"* is employed with 'right channel' parameter set to true, for calculating coordinates for the right, "second" eye view, and where the EyeIndex parameter is set to "1" for the right, or second, eye view.

151. **Dependent Claim 5:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

152. Defendants' PS4/PS4 Pro employs a "method in a videogame system for displaying three-dimensional images, comprising the computer implemented steps of" claim 1, wherein "calculating the second position coordinates of the second eye view comprises obtaining spatial coordinates by coordinate transformation equations given the location of a first virtual camera corresponding to the first eye view," such as when the function *"StereoProjectionFieldOfViewRightHand*" is called with 'right channel' parameter is set to true, for calculating coordinates for the right, or "second" eye view, using matrix transposition calculations.

153. **Independent Claim 7:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above. For convenient reference, Independent

Claim 7 reads as follows:

> A method in a videogame system for displaying three-dimensional images, comprising the computer implemented steps of:
>
> providing first and second buffers; calculating first position coordinates of a first eye view;
>
> storing a first eye view image captured virtually from the calculated first position of the first eye view of a virtual object in the videogame into the first buffer;
>
> calculating, with a processor of the videogame system, second spatial coordinates of a second eye view of the virtual object in the videogame in three dimensional space by coordinate transformation equations using the calculated first position coordinates of the first eye view and the position of the virtual object in the videogame;
>
> determining a second eye view image of the virtual object based on the calculated second spatial coordinates;
>
> storing the second eye view image in the second buffer; and
>
> outputting the first eye view image from the first buffer and the second eye view image from the second buffer to a display to provide a three dimensional perspective of the virtual object from the videogame system to a user.

154. The Sony PS4/PS4 Pro employs a "method in a videogame system for displaying three-dimensional images, comprising the computer implemented steps of:", where such System is defined in ¶62 above and through Defendants' support of DirectX (Direct 3D), OpenGL and proprietary graphics APIs.

155. The Sony PS4/PS4 Pro provides "first and second buffers", such as through its SwapChain configuration or the AMD supported "Active Quad Buffer Stereo" also referred to as the "3D Stereo Swap Chain."

156. The Sony PS4/PS4 Pro calculates "first position coordinates of a first eye view;" such as through the use of the API call: "*StereoProjectionFieldOfViewRightHand*", which when the 'right channel' parameter is set to false, the PS4/PS4 Pro then sets the coordinates for the left, or "first" eye view.

157. The Sony PS4/PS4 Pro "stor[es] a first eye view image captured virtually from the calculated first position of the first eye view of a virtual object in the videogame into the first buffer," such as when the calculated first eye view of the object is stored in the left backbuffer of the 3D Stereo Quad-buffer.

158. The Sony PS4/PS4 Pro "calcul[ates], with a processor of the

videogame system, second spatial coordinates of a second eye view of the virtual object in the videogame in three dimensional space by coordinate transformation equations using the calculated first position coordinates of the first eye view and the position of the virtual object in the videogame;" such as when the PS4/PS4 Pro uses the GPU to calculate Horizontal Image Translation between the first eye view and second eye view and employing vertex data (including image object position coordinates) from designated vertex buffers to adjust for comfortable user parallax.

159. The Sony PS4/PS4 Pro "determin[es] a second eye view image of the virtual object based on the calculated second spatial coordinates;" such as when the offset separation between the two view images is calculated pursuant to the Horizontal Image Translation (HIT), or separation of human eyes.

160. The Sony PS4/PS4 Pro "stor[es] the second eye view image in the second buffer;" such as when the "RenderEye" function is called to store a second eye view image (by passing EyeIndex as "1" for the right eye view), and storing the image into the 3D Stereo Swap Chain right eye buffer.

161. The Sony PS4/PS4 Pro then "output[s] the first eye view image from the first buffer and the second eye view image from the second buffer to a display to provide a three dimensional perspective of the virtual

object from the videogame system to a user," such as when the "Present()" API call is used to output the stored images to a display.

162. **Dependent Claim 8:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

163. The Sony PS4/PS4 Pro "method according to claim 7, further comprising increasing the first and second buffer memory size prior to generating the first eye view image and second eye view image in the videogame," such as when the Direct 3D API, as part of initialization setup, uses the "m_swapChain->ResizeBuffers" function call to adjust (increase) the buffer memory capacity.

164. **Dependent Claim 9:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

165. The Sony PS4/PS4 Pro uses the "method according to claim 7, wherein calculating the second spatial coordinates comprises calculating the x and z coordinates only so that there is no deviation in the height of the second eye view of the virtual object with respect to the first eye view of the virtual object," such as when the PS4/PS4 Pro adjusts the x-coordinate, or horizontal shift of a virtual image object, and the z-coordinate, or depth of a virtual image

object, such that there is no deviation in the height of the second eye view in relation to the height of the first eye view.

166. **Dependent Claim 10:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

167. The Sony PS4/PS4 Pro uses the "method according to claim 7, wherein calculating the second spatial coordinates of the second view image of the virtual object comprises calculating the spatial coordinates of a right eye camera view position," such as when the PS4/PS4 Pro uses Horizontal Image Translation and matrix transposition calculations to establish the spatial coordinates of the second virtual camera object image from the first virtual camera object image.

168. **Dependent Claim 11:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

169. The Sony PS4/PS4 Pro uses the "method according to claim 7, wherein the first and second buffers are located in the memory of a video graphics card," such as when the PS4/PS4 Pro uses left and right buffers from the AMD Active Quad Buffer Stereo (e.g., "Fast GDDR5 RAM").

170. **Dependent Claim 13:** Plaintiff repeats, re-alleges, and

incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

171. The Sony PS4/PS4 Pro uses the "method according to claim 7, further comprising: cleaning the first and second buffers; closing the first and second buffers; redrawing a scene comprising the virtual object; getting coordinates of a new perspective of the virtual object; and redisplaying the virtual object at the new perspective," such as when the PS4/PS4 Pro uses the Direct 3D API call "ClearRenderTargetView" to clean and close (using "void StereoSimpleD3d::RenderEye …") first and second buffers, followed by the "m_renderer->Update" call to redraw a virtual object, and finally through the use of the "Present()" call to synchronize and display the virtual object images to the user.

172. **Dependent Claim 14:** Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

173. The Sony PS4/PS4 Pro uses the "method of claim 7, wherein the calculation of the second spatial coordinates of the second eye view comprises placing the second eye view at a virtual position that is 6.5 to 7.0 cm apart from the calculated position coordinates of the first eye view," such as when the PS4/PS4 Pro calculates the Interocular distance, or inter-pupillary

distance (about 6.5mm), to generate a Stereopsis, or binocular, perspective for the user.

COUNT IV

Indirect Infringement of U.S. Patent 8,206,218 pursuant to 35 U.S.C. § 271(b)

174. Plaintiff repeats, re-alleges, and incorporates by reference, as if fully set forth herein, the allegations of the preceding paragraphs, as set forth above.

175. Defendants have alternatively induced and continue to induce infringement of at least Claims 1-5, Claims 7-11, and Claims 13-14 of the '218 Patent under 35 U.S.C. § 271(b).

176. In addition to directly infringing the '218 Patent, Defendants indirectly infringe the '218 Patent pursuant to 35 U.S.C. § 271(b) by instructing, directing and/or requiring others, including customers, purchasers, users and developers, to perform some of the steps of the method claims, either literally or under the doctrine of equivalents, of the '218 Patent, where all the steps of the method claims are performed by either Defendants or its customers, purchasers, users and developers, or some combination thereof. Defendants knew or were willfully blind to the fact that it was inducing others, including customers, purchasers, users and developers, to infringe by practicing, either themselves or

in conjunction with Defendants, one or more method claims of the '218 Patent, including Claims 1-5, Claims 7-11, and Claims 13-14.

177. Defendants have knowingly and actively aided and abetted the direct infringement of the '218 Patent by instructing and encouraging its customers, purchasers, users and developers to use the PS4/PS4 Pro and PSVR. Such instructions and encouragement included, but are not limited to, advising third parties to use the PS4/PS4 Pro and PSVR in an infringing manner, providing a mechanism through which third parties may infringe the '218 Patent, and by advertising and promoting the use of the PS4/PS4 Pro and PSVR in an infringing manner, and distributing guidelines and instructions to third parties on how to use the PS4/PS4 Pro and PSVR in an infringing manner.

178. Globally, there were over 73.6 million PS4/PS4 Pro devices sold as of December 31, 2017 and over 31.5 million subscribers on the PlayStation Network ("PSN"). Source: http://www.sie.com/en/corporate/release/2018/180109.html.

179. On information and belief, the Defendants located in the USA maintain control of the entire global PSN subscriber base plus the software updates for the entire base of PS4/PS4 Pro devices. Defendants have knowledge of the individual subscribers, their usage of the PS4/PS4 Pro devices and PSN, and the types of display devices connected to each PS4/PS4 Pro device. As a

result of prior data breaches in which the Defendants were victims, Defendants contacted as many as 70 million users – thereby demonstrating that Defendants maintain knowledge of who their customers are (source: http://www.telegraph.co.uk/technology/news/8475728/Millions-of-internet-users-hit-by-massive-Sony-PlayStation-data-theft.html).

180. Defendants update and maintain an HTTP site with Defendants' quick start guides, administration guides, user guides, and operating instructions which cover in depth aspects of operating Defendants' offerings: https://www.playstation.com/en-us/support/manuals/ps4/ (checked on January 10, 2018).

181. At least by updating and maintaining the HTTP site, Defendants have taken action that actually induced direct infringement by users of at least the PS4/PS4 Pro and the PSVR.

182. Since at least on or about May 15, 2017, when Plaintiff Techno View filed a patent infringement suit against Sony Interactive Entertainment LLC in the District of Delaware, Defendant Sony Interactive Entertainment LLC has been on actual notice of the '218 Patent and of its infringement of the '096 Patent.

183. Also, since at least on or about May 15, 2017, when Plaintiff Techno View filed a patent infringement suit against Sony Interactive

Entertainment LLC in the District of Delaware, Defendant Sony Interactive Entertainment LLC has known that the acts it was causing would infringe the '218 Patent.

184. Since at least on or about July 23, 2017, when Plaintiff Techno View filed its initial patent infringement suit against Sony Interactive Entertainment America LLC in the Central District of California, Defendant Sony Interactive Entertainment America LLC has been on actual notice of the '096 Patent and of its infringement of the '218 Patent.

185. Also, since at least on or about July 23, 2017, when Plaintiff Techno View filed its initial patent infringement suit against Sony Interactive Entertainment LLC in the Central District of California, Defendant Sony Interactive Entertainment LLC has known that the acts it was causing would infringe the '218 Patent.

186. Defendants' infringement, therefore, is and has been willful, deliberate and intentional.

187. Further, in accordance with SCA Hygiene Products v. First Quality Baby Products, (S.Ct. No. 15-972, March 21, 2017), Plaintiff TVIP alleges infringement by Defendants in the period of time preceding the filing of this lawsuit in which Defendants infringed the Asserted Patents in violation of 35 U.S.C. § 271(a) by infringement, either direct or indirect. Plaintiff TVIP is

entitled to recover from Defendants damages as a result of Defendants' acts of infringement of the Asserted Patents at least from the date of service of this Fifth Amended Complaint, with damages in amounts subject to proof at trial, and, with the consent of the Court, up to six years prior to the date of service of this Complaint.

REQUESTED RELIEF

WHEREFORE, Plaintiff Techno View IP, Inc. prays for judgment against Defendants, jointly and severally, for the following relief:

A. A judgment declaring that Defendants infringed any one or more claims of U.S. Patents Nos. 7,666,096 and/or the 8,206,218;

B. an accounting for damages under 35 U.S.C. § 284 from Defendants for infringement of any one or more claims of U.S. Patents Nos. 7,666,096 and/or the 8,206,218;

C. a judgment awarding Plaintiff compensatory damages as a result of Defendants' infringement of any one or more claims of U.S. Patents Nos. 7,666,096 and/or the 8,206,218, together with interest and costs, and in no event less than a reasonable royalty;

D. a judgment declaring that Defendants' infringement of any one or more claims of U.S. Patents Nos. 7,666,096 and/or the 8,206,218 has been willful and deliberate;

E. a judgment awarding Plaintiff treble damages and pre-judgment interest under 35 U.S.C. § 284 as a result of Defendants' willful and deliberate infringement of any one or more claims of U.S. Patents Nos. 7,666,096 and/or the 8,206,218;

F. a judgment declaring that this case is exceptional and awarding Plaintiff its expenses, costs, and attorneys' fees in accordance with 35 U.S.C. §§ 284 and 285 and Federal Rule of Civil Procedure 54(d);

G. an accounting for damages under 35 U.S.C. § 271(a) and/or 35 U.S.C. § 271(b) from Defendants for intentional active inducement of infringement of any one or more claims of U.S. Patents Nos. 7,666,096 and/or the 8,206,218, and with the Court's consent from the period including six years prior to the date of actual notice, if any patent expires during the pendency of this Lawsuit, and an award of damages ascertained against Defendants in favor of Plaintiff, together with interest and costs thereon; and,

H. such other and further relief to Plaintiff and against Defendants as the Court may deem just and proper.

JURY DEMAND

Plaintiff Techno View IP, Inc. demands a trial by jury of all issues properly triable by jury in this action.

Dated: December 4, 2018

Respectfully submitted,

VertexLex

By:_____

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