IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

DYNAMIC DATA TECHNOLOGIES, LLC, Plaintiff, v. AMLOGIC HOLDINGS LTD. Defendant.	Civil Action No._____ **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Dynamic Data Technologies, LLC ("Dynamic Data") brings this action and makes the following allegations of patent infringement relating to U.S. Patent Nos.: 8,073,054 (the "'3054 patent"); 8,135,073 (the "'073 patent"); 6,996,175 (the "'175 patent"); 6,996,177 (the "'177 patent"); 7,010,039 (the "'039 patent"); 8,311,112 (the "'112 patent"); 7,894,529 (the "'529 patent"); 7,519,230 (the "'230 patent"); 7,542,041 (the "'041 patent"); 7,750,979 (the "'979 patent"); 7,058,227 (the "'227 patent"); 6,639,944 (the "'944 patent"); 6,782,054 (the "'2054 patent"); 7,982,799 (the "'799 patent"); 8,442,118 (the "'118 patent"); and 8,184,689 (the "'689 patent") (collectively, the "patents-in-suit"). Defendant Amlogic Holdings Ltd. ("Amlogic") infringes each of the patents-in-suit in violation of the patent laws of the United States of America, 35 U.S.C. § 1 *et seq*.

INTRODUCTION

1. Dynamic Data's portfolio of over 1,200 patent assets encompasses core technologies in the field of image and video processing. Dynamic Data's patents arose from the research and development efforts of Koninklijke Philips N.V. ("Philips"). Founded in 1891, for well over a century, Philips pioneered groundbreaking technologies, including compact audio cassettes, magnetic resonance imaging (MRI) machines, and compact discs.

2. In an effort to facilitate the licensing of Philips' foundational technology, Dynamic Data is pursuing remedies for infringement of its patents in venues throughout the world. Dynamic Data has filed complaints against other companies selling the technologies claimed by Dynamic Data's patent portfolio. Dynamic Data filed patent enforcement actions against Advanced Micro Devices, Inc.,[1] Microsoft Corporation,[2] and Apple Corporation[3] in the Peoples Republic of China before the Specialized Intellectual Property Tribunals in Nanjing and Beijing. In addition, Dynamic Data has filed a patent enforcement action against Apple, Inc. in Düsseldorf, Germany.[4]

3. In its People's Republic of China enforcement action against Apple Corporation, Dynamic Data is represented by Bisheng Shi and Cliff Yang of the Zhong Lun law firm. Dynamic Data is represented by the law firms East & Concord Partners in its Chinese enforcement actions against Advanced Micro Devices, Inc. and Microsoft Corporation.

DYNAMIC DATA'S LANDMARK INVENTIONS

4. The groundbreaking inventions in image and video processing taught in the patents-in-suit were pioneered by Philips. Video and image processing were at the heart of Philips' business for over fifty years. In 1891, Philips, then known as Philips & Company, was founded in Eindhoven, Netherlands to manufacture carbon-filament lamps.[5] In the 1920s, Philips began to produce vacuum tubes and small radios, which would augur Philips' later entry into video and audio processing.

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[1] Asserting Patent No. CN1266944C (案号: (2019) 京73民初175号) (Case No. (2019) Jing 73 Minchu 175).

[2] Asserting Patent Nos. CN1266944C, CN1329870C, and CN1333373C (案号: (2018) 苏01民初3500号, (2018) 苏01民初3501号, (2018) 苏01民初3502号) (Case Nos. (2018) Su 01 Minchu 3500, (2018) Su 01 Minchu 3501, and (2018) Su 01 Minchu 3502).

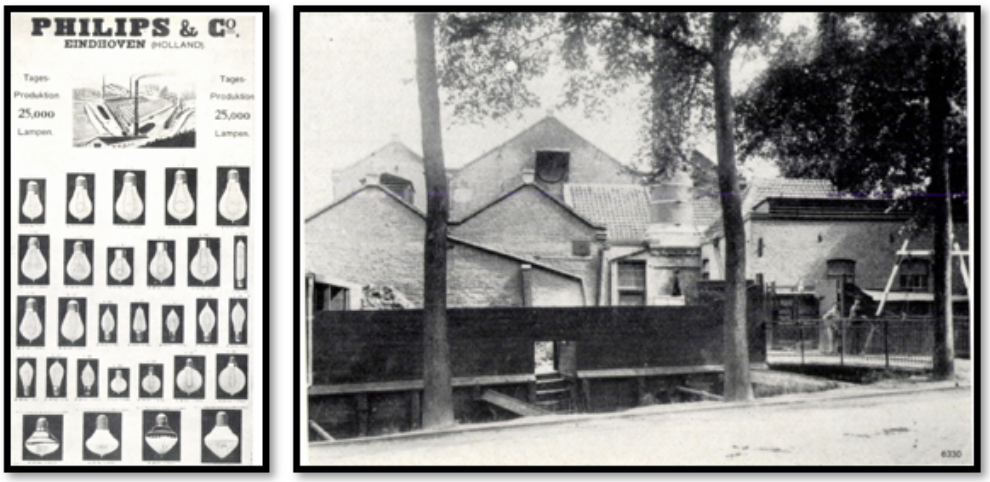
[3] Asserting Patent Nos. CN1303818C and CN102027489B (案号: (2019) 京73 民初234/235号) (Case Nos. (2019) Jing 73 Min Chu No. 234 and (2019) Jing 73 Min Chu No. 235).

[4] Asserting Patent No. EP1520409 (Landgericht Düsseldorf).

[5] Gerard O'Regan, A BRIEF HISTORY OF COMPUTING at 99 (2012).

N.A. Halbertsma, *The Birth of a Lamp Factory In 1891*, PHILIPS TECHNICAL REVIEW, Vol. 23 at 230, 234 (1961).

5. In 1962, Philips introduced the first audio cassette tape.[6] A year later, Philips launched a small battery-powered audio tape recorder that used a cassette instead of a loose spool.[7] Philips C-cassette was later used as the first mass storage device for early personal computers in the 1970s and 1980s.



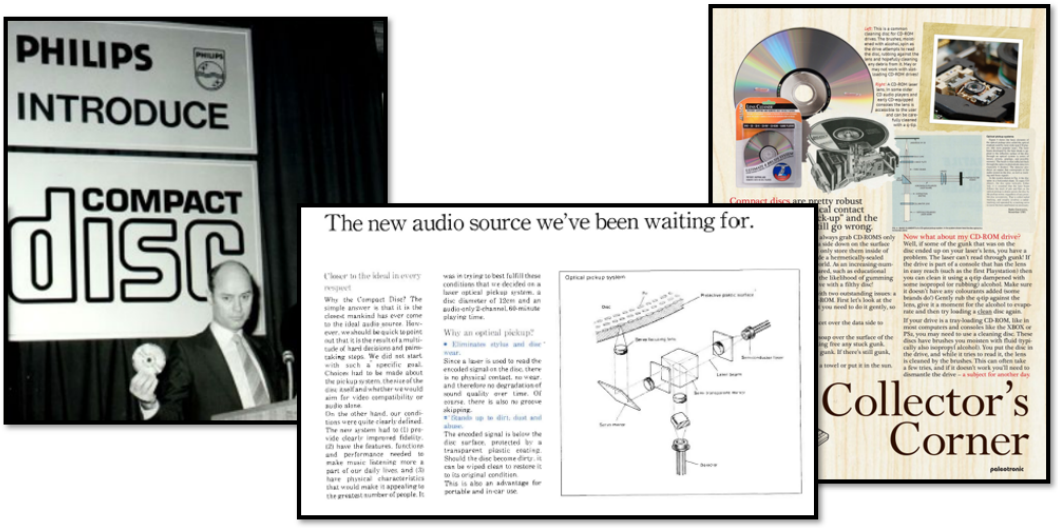
THE ROTARIAN MAGAZINE, Vol. 101 No. 6 at 70 (December 1962) (advertisement showing Philips Norelco device which used cassettes for recording audio for transcription); Fred Chandler,

[6] Gerard O'Regan, PILLARS OF COMPUTING: A COMPENDIUM OF SELECT, PIVOTAL TECHNOLOGY FIRMS at 172 (2015) ("Philips invented the compact cassette for audio storage in 1962.")

[7] Anthony Pollard, GRAMOPHONE: THE FIRST 75 YEARS at 231 (1998).

European Mfrs. Bid For Market Share, BILLBOARD MAGAZINE AT P-6 (April 8, 1967) (image of the Philips EL 3300 battery-operated tape recorder which was released in 1963); Jan Syrjala, *Car Stereo: How Does The Music Sound?,* N.Y. TIMES at 2-M (September 25, 1966) (showing Philips's Norelco Cassette "the Philips device has two tiny reels inside it, with the tape traveling from one to the other").

6. In 1971, Philips demonstrated the world's first videocassette records (VCR). A year later, Philips launched the world's first home video cassette recorder, the N1500. In 1982, Philips teamed with Sony to launch the Compact Disc; this format evolved into the DVD and later Blu-ray, which Philips launched with Sony in 1997 and 2006 respectively.



Hans Peek, Jan Bergmans, Jos Van Haaren, Frank Toolenaar, and Sorin Stan, ORIGINS AND SUCCESSORS OF THE COMPACT DISC: CONTRIBUTIONS OF PHILIPS TO OPTICAL STORAGE at 15 (2009) (showing image of Joop Sinjou of Philips introducing the compact disc in March 1979); Advertisements for Philip's Compact Disc Products (1982).

7. In the late 1990s and early 2000s, Philips pioneered the development of technologies for encoding and decoding of video and audio content. At the time most of the technologies claimed by the patents in Dynamic Data's portfolio were invented, Philips' subsidiary primarily responsible for Philips' work in this field, Philips Semiconductor was the world's sixth

largest semiconductor company.[8] The video encoding technologies developed by Philips Semiconductor enable video streaming on set-top boxes, smartphones, popular gaming consoles, Internet-connected computers, and numerous other types of media streaming devices.

8. Philips Semiconductor dedicated significant research and development resources to advancing the technology of video compression and transmission by reducing file sizes and decreasing the processing resources required to transmit the data.[9] Philips Semiconductor was among the first companies aggressively driving innovation in the field of video processing:

> The late 1980s and early 1990s saw the announcement of several complex, programmable VSPs. Important examples include chips from Matsushita, NTT, Philips [Semiconductors], and NEC. All of these processors were high-performance parallel processors architected from the ground up for real-time video signal processing. . . . The Philips VSP-1 and NEC processor were probably the most heavily used of these chips.[10]

9. Starting in the 1960s Philips pioneered the development of audio and video technologies that would establish itself as a leader in the field that would later develop into the audio and video encoding fields. Continuing Philips' pioneering history in these fields, the patents-in-suit disclose cutting-edge video compression and transmission technologies.

DYNAMIC DATA'S PATENT PORTFOLIO

10. Dynamic Data's patent portfolio includes over 1,200 patent assets, with over 470 issued patents granted by patent offices around the world. Dynamic Data owns numerous patents

[8] *Company News; Philips in $1 Billion Deal for VLSI Technology*, THE NEW YORK TIMES (May 4, 1999), *available at*: https://www.nytimes.com/1999/05/04/business/company-news-philips-in-1-billion-deal-for-vlsi-technology.html.

[9] HU, YU HEN, PROGRAMMABLE DIGITAL SIGNAL PROCESSORS: ARCHITECTURE, PROGRAMMING, AND APPLICATIONS, at 190 (Dec. 6, 2001) ("Philips Semiconductors developed early dedicated video chips for specialized video processors.").

[10] *Id.* at 191.

issued by the United States Patent and Trademark Office, including each of the patents-in-suit, The State Intellectual Property Office of the People's Republic of China,[11] the European Patent Office,[12] the German Patent and Trademark Office,[13] the Japan Patent Office,[14] and many other national patent offices.

11. Philips Semiconductor's pioneering work in the area of video processing and encoding has resulted in various inventions that are fundamental to today's video processing technologies. Dynamic Data is the owner by assignment of over 1,200 of these patent assets, which include over 470 patents issued by patent offices around the world.

12. Highlighting the importance of the patents-in-suit is the fact that the patents-in-suit have been cited by over 225 U.S. and international patents and patent applications assigned to a wide variety of the largest companies operating in the field. The patent families of the patents-in-suit have been cited by over 535 U.S. and international patents and patent applications. Dynamic Data's broad portfolio of 1,200 patent asserts have been cited by over 3370 U.S. and international patents and patent applications. The patents-in-suit have been cited by companies such as:

- Samsung Electronics Co., Ltd.[15]
- Qualcomm Inc.[16]

[11] *See, e.g.*, CN100504925C; CN100438609C; CN1679052B; CN1333373C; CN1329870C; CN1303818C.

[12] *See, e.g.*, European Patent Nos. EP1032921B1; EP1650978B1; EP1213700B1; EP1520409B1.

[13] *See, e.g.*, German Patent Nos. DE60120762; DE50110537; DE60126151; DE60348978; DE602004049357.

[14] *See, e.g.*, Japanese Patent Nos. JP4583924B2; JP5059855B2; JP5153336B2; JP4637585B2.

[15] *See, e.g.*, U.S. Patent Nos. 7,532,764; 7,990,476; 8,295,551; 8,542,883; 8,559,518; 8,605,790; and 10,091,527.

[16] *See, e.g.*, U.S. Patent Nos. 8,265,158; 8,537,283; 8,649,437; 8,806,050; 8,887,020; 8,918,533; 8,958,375; 9,136,878; 9,136,983; 9,178,535; 9,185,439; 9,191,151; 9,209,934; 9,236,885; 9,236,887; 9,236,976; 9,237,101; 9,240,810; 9,246,633; 9,253,233; 9,264,069; 9,270,299; 9,270,414; 9,281,847; 9,288,010; 9,294,226; 9,319,448; 9,380,096; 9,386,064; 9,419,749; 9,432,433; 9,456,015; 9,485,546; 9,596,447; 9,602,802; 9,628,536; 9,660,763; 9,843,844; 9,876,607; 9,917,874; and 9,992,555.

- Google LLC[17]
- Intel Corporation[18]
- International Business Machines Corporation[19]
- Microsoft Corporation[20]
- Sony Corporation[21]
- Marvell International Ltd.[22]
- Mediatek Inc.[23]
- Cisco[24]

THE PARTIES

DYNAMIC DATA TECHNOLOGIES, LLC

13. Dynamic Data Technologies, LLC ("Dynamic Data" or "Plaintiff") is a limited liability company organized under the laws of Delaware.

14. In an effort to obtain compensation for Philips' pioneering work in the fields of video data encoding, decoding, and transmission, Dynamic Data acquired the patents-in-suit along with the several hundred additional issued United States and international Patents.

15. Dynamic Data pursues the reasonable royalties owed for Amlogic's use of the inventions claimed in Dynamic Data's patent portfolio, which primarily arise from Philips' groundbreaking technology, both here in the United States and throughout the world.

[17] *See, e.g.*, U.S. Patent Nos. 9,208,573 and 8,050,324.

[18] *See, e.g.*, U.S. Patent No. 8,405,769.

[19] *See, e.g.*, U.S. Patent Nos. 8,249,371 and 8,917,947.

[20] *See, e.g.*, U.S. Patent Nos. 7,408,986; 7,421,129; and 7,558,320.

[21] *See, e.g.*, U.S. Patent Nos. 7,596,243; 7,620,108; 7,885,335; 7,894,522; 7,894,527; 7,957,466; 8,005,308; 8,059,719; 8,085,986; 8,107,748; and 8,165,205.

[22] *See, e.g.*, U.S. Patent Nos. 8,520,771; 8,542,725; 8,565,325; 8,681,893; 8,817,771; 8,897,393; 8,902,726; 8,908,754; 8,942,312; 8,948,216; and 8,953,661.

[23] *See, e.g.*, U.S. Patent Nos. 8,447,126; 9,563,960; and 9,917,988.

[24] *See, e.g.*, U.S. Patent No. 7,660,471.

AMLOGIC HOLDINGS LTD.

16. Defendant Amlogic Holdings Ltd. is a Cayman Islands Company (Registration No. 282717) with its registered office at Collas Crill Corporate Services Limited, P.O. Box 709 Floor 2, Willow House, Cricket Square, Grand Cayman KY1-1107, Cayman Islands.

17. Amlogic Holdings Ltd. is domesticated in the State of Delaware pursuant to Section 388 of the Delaware General Corporation Law and Section 18-212 of the Delaware Limited Liability Company Act. Amlogic Holdings Ltd. may be served with process through its registered agent for service Naiyu Pai, 1413 Grant Road, Mountain View, California 94040.

18. Amlogic Holdings Ltd. and its predecessor entities have longstanding and continued ties to the District of Delaware. Amlogic, Inc. (which was later merged into Amlogic Holdings Ltd.) was incorporated in the state of Delaware on April 4, 2006. *See* Amlogic (Shanghai) Co., Ltd. Offering Prospectus at 1-1-556 (June 19, 2019).

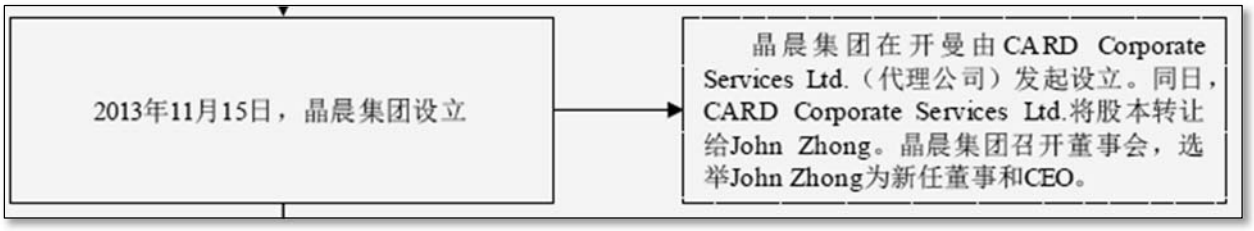
2、晶晨 DE

（1）晶晨 DE 的设立

2006 年 4 月 4 日，Amlogic Inc.（Delaware）在美国 Delaware 设立，John Zhong 认购 1 股并担任公司董事。2007 年 4 月 23 日，晶晨 DE 制定了 2007 年期权计划正式生效，期权计划行权的有效期不超过 10 年。

AMLOGIC (SHANGHAI) CO., LTD. OFFERING PROSPECTUS at 1-1-556 (June 19, 2019) (Translation: "(1) Establishment of Amlogic DE (晶晨DE) On April 4, 2006, Amlogic Inc. (Delaware) was established in Delaware, USA, with John Zhong as a company director.").

19. On November 30, 2006, Amlogic's California subsidiary was merged into Amlogic, Inc. (a Delaware Company). After the merger, Amlogic's California subsidiary was cancelled. This structure is shown in the following diagram from Amlogic (Shanghai) Co., Ltd.'s offering prospectus.



AMLOGIC (SHANGHAI) CO., LTD. OFFERING PROSPECTUS at 1-1-63 (June 19, 2019) (Translation: "Amlogic CA, Amlogic DE, and subsidiary AmCal, Inc. signed the 'Consolidation Agreement and Plan' wherein AmCal, Inc. was merged into Amlogic CA. After the merger was completed AmCal, Inc. was cancelled and Amlogic CA became a subsidiary of Amlogic DE.").

20. On November 15, 2013, Amlogic Holding, Ltd. ("晶晨集团") was established in the Cayman Islands. According to Amlogic's corporate filings, in January of 2014, Amlogic DE was merged into Amlogic Holding Ltd. *See* AMLOGIC (SHANGHAI) CO., LTD. OFFERING PROSPECTUS AT 1-1-63 (June 19, 2019) ("晶晨DE的股东成为晶晨集团的股东，晶晨集团的董事由晶晨DE的董事担任." Translated: "The shareholders of Amlogic DE became the shareholders of Amlogic Holding, Ltd.").

21. Three days after Amlogic Holding, Ltd., on November 18, 2013, Amlogic Holdings Ltd. filed a certificate of domestication, accompanied by a certificate of incorporation, with the Delaware Secretary of State.

22. Amlogic Holdings Ltd. resides in this District based on its filing of a certificate of deomestication. Under Delaware law, "the corporation and such non-United States entity shall, for all purposes of the laws of the State of Delaware, constitute a single entity formed, incorporated, created or otherwise having come into being, as applicable, and existing under the laws of the State of Delaware and the laws of such foreign jurisdiction." 8 *Del. C.* § 388(j) (emphasis added). Further, Amlogic offers is products and/or services, including those accused herein of infringement, to customers and potential customers located in the State of Delaware.

JURISDICTION AND VENUE

23. This action arises under the patent laws of the United States, Title 35 of the United States Code. Accordingly, this Court has exclusive subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338(a).

24. This Court has personal jurisdiction over Amlogic in this action because Amlogic resides in this District based on its filing of a certificate of domestication with the Delaware Secretary of State. Under Delaware law "the corporation and such non-United States entity shall, for all purposes of the laws of the State of Delaware, constitute a single entity formed, incorporated, created or otherwise having come into being, as applicable, and existing under the laws of the State of Delaware and the laws of such foreign jurisdiction." 8 Del. C. § 388(j) (emphasis added). Further, Amlogic offers its products and/or services, including those accused herein of infringement, to customers and potential customers located in the State of Delaware.

25. Amlogic is subject to jurisdiction in this District based on its domestication in Delaware. *See Acorda Therapeutics, Inc. v. Mylan Pharms. Inc.*, 78 F. Supp. 3d 572, 584 (D. Del. 2015), *aff'd* 817 F.3d 755 (3d Cir. 2016), *cert. denied* 137 S. Ct. 625, 196 L. Ed. 2d 580 (2017) ("One manner in which a corporation may be deemed to have consented to the jurisdiction of the courts in a particular state is by complying with the requirements imposed by that state for registering or qualifying to do business there.").

26. Amlogic has committed acts within the State of Delaware giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over Amlogic would not offend traditional notions of fair play and substantial justice. Amlogic, directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others), has committed and continues to commit acts of infringement in this District by, among other things, offering to sell and selling products and/or services that infringe the patents-in-suit.

27. Venue is proper in this District under 28 U.S.C. §§ 1391(b)-(d) and 1400(b). Amlogic Holdings Ltd.'s domestication in the State of Delaware renders Amlogic Holdings Ltd. a resident of Delware. Delaware Corporate Law provides that a foreign corporation domesticated in Delaware is considered to be incorporated in Delaware.

28. Venue is proper in this District based on Amlogic Holdings Ltd.'s incorporation in the Cayman Islands, "as a foreign corporation, is subject to suit in any judicial district." *In re HTC Corp.*, 889 F.3d 1349, 1354 (Fed. Cir. 2018).

THE ASSERTED PATENTS

U.S. PATENT NO. 8,073,054

29. U.S. Patent No. 8,073,054 (the "'3054 patent") entitled, *Unit For And Method Of Estimating A Current Motion Vector*, was filed on December 12, 2002, and claims priority to January 17, 2002. The '3054 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,162 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '3054 patent. A true and correct copy of the '3054 patent is attached hereto as Exhibit 1.

30. The '3054 patent discloses novel methods and apparatuses for estimating a current motion vector for a group of pixels of an image.

31. The inventions disclosed in the '3054 patent enable motion estimation with a relatively fast convergence in finding the appropriate motion vectors of the motion vector fields by adding a further candidate motion vector to the set of candidate motion vectors.

32. The '3054 patent discloses a motion estimation unit comprising a generating unit for generating a set of candidate motion vectors for the group of pixels, with the candidate motion vectors being extracted from a set of previously estimated motion vectors.

33. The '3054 patent discloses a motion estimation unit comprising a match error unit for calculating match errors of respective candidate motion vectors.

34. The ‘3054 patent discloses a motion estimation unit comprising a selector for selecting the current motion vector from the candidate motion vectors by means of comparing the match errors of the respective candidate motion vectors, characterized in that the motion estimation unit is arranged to add a further candidate motion vector to the set of candidate motion vectors by calculating the further candidate motion vector on basis of a first motion vector and a second motion vector, both belonging to the set of previously estimated motion vectors.

35. The ‘3054 patent discloses a motion estimation unit that calculates the further candidate motion vector on basis of the first motion vector and the second motion vector, with the first motion vector belonging to a first forward motion vector field and the second motion vector belonging to a second forward motion vector field, with the first forward motion vector field and the second forward motion vector field being different.

36. The ‘3054 patent discloses a motion estimation unit that arranges to calculate the further candidate motion vector by means of calculating a difference between the second motion vector and the first motion vector.

37. The ‘3054 patent family has been cited by 24 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘3054 patent family as relevant prior art:

- Canon Inc.
- Huawei Technologies, Ltd.
- Imagination Technologies Ltd.
- MediaTek Inc.
- Panasonic Corp.
- Samsung Electronics Co., Ltd.
- Siemens Healthcare GmbH
- Tencent Technology (Shenzhen) Co., Ltd.

U.S. PATENT NO. 8,135,073

38. U.S. Patent No. 8,135,073 (the "'073 patent") entitled, *Enhancing Video Images Depending On Prior Image Enhancements*, was filed on December 12, 2003, and claims priority to December 19, 2002. The '073 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,799 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '073 patent. A true and correct copy of the '073 patent is attached hereto as Exhibit 2.

39. The '073 patent discloses novel methods and systems for enhancing subsequent images of a video stream in which frames are encoded based on previous frames using prediction and motion estimation.

40. The inventions disclosed in the '073 patent reduce the processing capacity required for providing video enhancements to video processing through re-mapping of previous frames for subsequent frames.

41. Accordingly, the technologies disclosed in the '073 patent enable the provision of enhanced video pictures with minimal additional hardware costs for the components required to successfully process the video data.

42. The '073 patent discloses a video decoder comprising an input for receiving a video stream containing encoded frame based video information including an encoded first frame and an encoded second frame.

43. The '073 patent discloses a video decoder comprising an input for receiving video information wherein the encoding of the second frame depends on the encoding of the first frame, the encoding of the second frame includes motion vectors indicating differences in positions between regions of the second frame and corresponding regions of the first frame, the motion vectors define correspondence between regions of the second frame and corresponding regions of the first frame.

44. The ‘073 patent discloses a video decoder comprising a decoding unit for decoding the frames, wherein the decoding unit recovers the motion vectors for the second frame.

45. The ‘073 patent discloses a video decoder comprising a processing component configured to determine a re-mapping strategy for video enhancement of the decoded first frame using a region-based analysis, re-map the first frame using the re-mapping strategy, and re-map one or more regions of the second frame depending on the re-mapping strategy for corresponding regions of the first frame.

46. The ‘073 patent family has been cited by 66 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘073 patent family as relevant prior art:

- Canon Inc.
- Microsoft Corporation
- International Business Machines Corporation
- Qualcomm Inc.
- Digital Fountain Incorporated
- Samsung Electronics Co., Ltd.
- SK Planet Co. Ltd.

U.S. PATENT NO. 6,996,175

47. U.S. Patent No. 6,996,175 entitled, *Motion Vector Estimation*, was filed on December 7, 1999. The ‘175 Patent claims priority pursuant to 35 U.S.C. § 119(a)-(d) to European Patent Applications 99201556.0 and 98204149.3. *See Notice of Allowance* at 1, U.S. PATENT APPL. SER. NO. 09/455,662 (June 3, 2005) (identifying the claim or priority under 35 U.S.C. § 119(a)-(d)). The ‘175 Patent has a term which ends “twenty years from the filing date of the application in the United States [December 7, 1999].” MANUAL OF PATENT EXAMINING PROCEDURE ("MPEP") § 2701.III.

48. Dynamic Data is the owner by assignment of all right, title, and interest in the ‘175 patent. A true and correct copy of the ‘175 Patent is attached hereto as Exhibit 3.

49. The ‘175 Patent discloses novel methods and systems for recursive motion vector estimation. The inventions disclosed in the ‘175 Patent enable methods and systems where candidate vectors are generated from stored vectors and one of the candidate vectors is selected (the selected vector). The selected vector is then used to generate several test vectors. Finally, one of the test vectors is used to generate an output vector.

50. The inventions disclosed in the ‘175 Patent teach a device that performs motion estimation to significantly improve the performance of the device with respect to (1) coding efficiency, and (2) the perceptual quality of the coded pictures. Further, the ‘175 Patent discloses a system wherein recursive motion vector estimation keeps the computation load in a reasonably low range.

51. In one embodiment of the ‘175 Patent, an improvement to motion estimation is performed wherein a difference between the output and the input of the enhancement module gives a local information on the trend of the motion.

52. The inventions disclosed in the ‘175 Patent enable post processing to be done inside the recursion loop of any recursive motion estimation algorithm instead of outside the recursion loop, the convergence of the recursive motion estimation algorithm is speeded up.

53. The ‘175 Patent, in one embodiment, discloses a method of displaying information on a display device wherein being switched from the first one of the services to the second one of the services, with the data-element and the second data-element being mutually semantically related and a second step of rendering to calculate the output image to be displayed on the display device, on the basis of the second data-element selected by the filter is performed.

54. The ‘175 patent family has been cited by 21 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘175 patent family as relevant prior art.

- Sony Corporation
- Samsung Electronics Co., Ltd.
- International Business Machines Corp.
- Realtek Semiconductor Corp.
- Primax Electronics Limited

U.S. PATENT NO. 6,996,177

55. U.S. Patent No. 6,996,177 (the “‘177 patent”) entitled, *Motion Estimation*, was filed on July 24, 2000, and claims priority to August 22, 1999. The ‘177 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,103 days. Dynamic Data is the owner by assignment of all right, title, and interest in the ‘177 patent. A true and correct copy of the ‘177 patent is attached hereto as Exhibit 4.

56. The ‘177 patent claims specific methods and devices for motion estimation and motion-compensated picture signal processing.

57. The ‘177 patent discloses a motion vector estimation method and device that carries out a block-based motion vector estimation process that involves comparing a plurality of candidate vectors to determine block-based motion vectors.

58. The ‘177 patent discloses a motion vector estimation method and device that determines at least a most frequently occurring block-based motion vector.

59. The ‘177 patent discloses a motion vector estimation method and device that carries out a global motion vector estimation process using at least the most frequently occurring block-based motion vector to obtain a global motion vector.

60. The ‘177 patent discloses a motion vector estimation method and device that applies the global motion vector as a candidate vector to the block-based motion vector estimation process.

61. The inventions disclosed in the ‘177 patent improve the operation of the computer components necessary to the performance of picture signal processing by reducing the load on the central processing unit.

62. The ‘177 patent family has been cited by 64 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘177 patent family as relevant prior art:

- Qualcomm Incorporated
- LG Electronics
- Microsoft Corporation
- Samsung Electronics Co., Ltd.
- VIXS Systems Incorporated
- General Instrument Corporation
- Alphabet, Inc.
- Pixelworks, Inc.
- Himax technologies, Inc.

U.S. PATENT NO. 7,010,039

63. U.S. Patent No. 7,010,039 (the “‘039 patent”) entitled, *Motion Estimator for Reduced Halos in MC Up-Conversion*, was filed on May 15, 2001, and claims priority to May 18, 2000. The ‘039 patent is subject to a 35 U.S.C. § 154(b) term extension of 768 days. Dynamic Data is the owner by assignment of all right, title, and interest in the ‘039 patent. A true and correct copy of the ‘039 patent is attached hereto as Exhibit 5.

64. The ‘039 patent claims specific methods and apparatuses detecting motion at a temporal intermediate position between previous and next images. The inventions disclosed in the

‘039 patent solve a problem wherein an estimator estimating motion between two successive pictures from a video sequence cannot perform well in areas where covering or uncovering occurs.

65. The ‘039 patent solves this problem by carrying out the optimization at the temporal position of the next image in covering areas and at the temporal position of the previous image in uncovering areas.

66. The ‘039 patent discloses a method and apparatus for detecting motion at a temporal intermediate position between previous and next images.

67. The ‘039 patent discloses the use of a criterion function for selecting and optimizing candidate vectors.

68. The ‘039 patent further discloses a criterion function that depends on data from both previous and next images and in which the optimizing is carried out at the temporal intermediate position in non-covering and non-uncovering areas, characterized in that the optimizing is carried out at the temporal position of the next image in covering areas and at the temporal position of the previous image in uncovering areas.

69. The ‘039 patent family has been cited by 56 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘039 patent family as relevant prior art:

- Qualcomm Incorporated
- Panasonic Corporation
- Samsung Electronics Co., Ltd.
- Matsushita Electric Industrial Co., Ltd.
- Sharp Kabushiki Kaisha
- Integrated Device Technology, Inc.
- Zoran Corporation
- Sony Corporation

U.S. PATENT NO. 8,311,112

70. U.S. Patent No. 8,311,112 (the "'112 patent") entitled, *System And Method For Video Compression Using Predictive Coding*, was filed on December 31, 2008. The '112 patent is subject to a 35 U.S.C. § 154(b) term extension of 847 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '112 patent. A true and correct copy of the '112 patent is attached hereto as Exhibit 6.

71. The '112 patent discloses novel methods and systems for video compression.

72. The '112 patent discloses novel technologies for video compression that perform predictive coding on a macroblock of a video frame such that a set of pixels of the macroblock is coded using some of the pixels from the same video frame as reference pixels and the rest of the macroblock is coded using reference pixels from at least one other video frame.

73. The '112 patent discloses a system for video compression comprising an intra-frame coding unit configured to perform predictive coding on a set of pixels of a macroblock of pixels using a first group of reference pixels, the macroblock of pixels and the first group of reference pixels being from a video frame.

74. The '112 patent discloses a system for video compression comprising an inter-frame coding unit configured to perform predictive coding on the rest of the macroblock of pixels using a second group of reference pixels, the second group of reference pixels being from at least one other video frame.

75. The '112 patent family has been cited by 29 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '112 patent family as relevant prior art:

- British Broadcasting Corporation
- Google LLC

- Megachips Corp.
- Olympus Corp.
- Samsung Electronics Co., Ltd.
- Sony Corporation
- Toshiba Corporation

U.S. PATENT NO. 7,894,529

76. U.S. Patent No. 7,894,529 (the "'529 patent") entitled, *Method And Device For Determining Motion Vectors*, was filed on June 1, 2006, and claims priority to June 3, 2005. The '529 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,301 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '529 patent. A true and correct copy of the '529 patent is attached hereto as Exhibit 7.

77. The '529 patent discloses novel methods and apparatuses for determining motion vectors that are each assigned to individual image regions.

78. The inventions disclosed in the '529 patent enable an increase in the resolution of video and image signals during the motion estimation process.

79. The '529 patent discloses a method for determining motion vectors which are assigned to individual image regions of an image.

80. The '529 patent discloses a method wherein an image is subdivided into a number of image blocks, and a motion estimation technique is implemented to assign at least one motion vector to each of the image blocks where a modified motion vector is generated for at least a first image block.

81. The '529 patent discloses a method that determines at least a second image block through which the motion vector assigned to the first image block at least partially passes.

82. The '529 patent discloses a method that generates the modified motion vector as a function of a motion vector assigned to at least the second image block.

83. The ‘529 patent discloses a method that assigns the modified motion vector as the motion vector to the first image block.

84. The ‘529 patent family has been cited by 11 patents and patent applications as relevant prior art. Specifically, patents issued to Fujifilm Corp., Socionext Inc., and Samsung Electronics Co., Ltd. have cited the ‘529 patent family as relevant prior art.

U.S. PATENT NO. 7,519,230

85. U.S. Patent No. 7,519,230 (the “‘230 patent”) entitled, *Background Motion Vector Detection*, was filed on December 16, 2003, and claims priority to January 23, 2003. The ‘230 patent is subject to a 35 U.S.C. § 154(b) term extension of 685 days. Dynamic Data is the owner of all right, title, and interest in the ‘230 patent. A true and correct copy of the ‘230 patent is attached hereto as Exhibit 8.

86. The ‘230 patent claims specific methods and systems to select a background motion vector for a pixel in an occlusion region of an image.

87. The ‘230 patent discloses systems and methods determine the correct motion vector in occlusion regions, thereby reducing or eliminating artifacts of motion compensated image rate converters, which are referred to as “halos” in the display of video images.

88. The ‘230 patent claims a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising computing a model-based motion vector for the pixel on basis of a motion model being determined on basis of a part of a motion vector field of the image.

89. The ‘230 patent claims a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising comparing the model-based motion vector with each of the motion vectors of the set of motion vectors.

90. The ‘230 patent claims a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising selecting a particular motion vector of the set of motion vectors on basis of the comparing and for assigning the particular motion vector as the background motion vector.

91. The ‘230 patent family has been cited by 56 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘230 patent family as relevant prior art:

- Sony Corporation
- Fujitsu Ltd.
- Motorola Solutions Inc.
- Nokia Oyj
- Qualcomm Inc.
- Samsung Electronics Co., Ltd.
- Toshiba Corporation
- JVC Kenwood Corporation
- Mediatek, Inc.

U.S. PATENT NO. 7,542,041

92. U.S. Patent No. 7,542,041 (the “041 patent”) entitled, *Runtime Configurable Virtual Video Pipeline*, was filed on April 2, 2004, and claims priority to April 3, 2003. The ‘041 patent is subject to a 35 U.S.C. § 154(b) term extension of 288 days. Dynamic Data is the owner by assignment of all right, title, and interest in the ‘041 patent. A true and correct copy of the ‘041 patent is attached hereto as Exhibit 9.

93. The ‘041 patent discloses novel systems for dynamically configuring a multi-pipe pipeline system.

94. The inventions disclosed in the ‘041 patent enable a multiple-pipeline system that is dynamically configurable to effect various combinations of functions for each pipeline.

95. The inventions disclosed in the ‘041 patent teach a multiple pipeline system that includes a pool of auxiliary function blocks that are provided as required to select pipelines.

96. In one embodiment of the ‘041 patent, each pipeline of the multiple-pipeline system is configured to include a homogenous set of core functions. A pool of auxiliary functions is provided for selective insertion of auxiliary functions between core functions of select pipelines.

97. In one embodiment of the ‘041 patent, each auxiliary function includes a multiplexer that allows it to be selectively coupled within each pipeline.

98. The ‘041 patent discloses, in one embodiment, a processing system that includes a plurality of pipelines, with each pipeline of the plurality including a plurality of core pipeline elements that are configured to sequentially process data as it traverses the pipeline.

99. The ‘041 patent discloses, in one embodiment, a processing system that includes a plurality of auxiliary elements, each auxiliary element of the plurality of auxiliary elements being configured to be selectively coupled to multiple pipelines of the plurality of pipelines.

100. The ‘041 patent discloses, in one embodiment, a processing system wherein the auxiliary elements are responsive to external coupling-select signals.

101. The ‘041 patent discloses, in one embodiment, a processing system wherein a plurality of auxiliary elements are within a selected pipeline of the multiple pipelines, between a pair of core pipeline elements of the plurality of core pipeline elements to process the data as it traverses between the pair of core elements.

102. The ‘041 patent family has been cited by ten United States and international patents and patent applications as relevant prior art. Specifically, patents and patent applications issued to the following companies have cited the ‘041 patent family as relevant prior art:

- Microsoft Corporation
- Xilinx Inc.

- Intel Corporation
- Nokia Oyj
- Canon Inc.
- Infineon Technologies Ag

U.S. PATENT NO. 7,750,979

103. U.S. Patent No. 7,750,979 (the "'979 patent") entitled, *Pixel-Data Line Buffer Approach Having Variable Sampling Patterns*, was filed on October 26, 2001. The '979 patent is subject to a 35 U.S.C. § 154(b) term extension of 2,749 days. Dynamic Data is the owner by assignment of all right, title, and interest in the '979 patent. A true and correct copy of the '979 patent is attached hereto as Exhibit 10.

104. The '979 patent discloses novel methods and systems for motion compensation in video signal processing.

105. The '979 patent discloses methods and systems that use line buffers that are decoupled and that can deliver a fixed number of pixels, as may be required by a video processing stage, using a sampling pattern that is defined as one among several selectable sampling windows.

106. The '979 patent discloses a video processing circuit having an input stream of pixels corresponding to an array of video pixels.

107. The '979 patent further discloses having a variable window size for sampling subsets of the array as a two-dimensional window that spans the pixels in the array.

108. The '979 patent further discloses having a video processing stage that inputs pixels using a fixed number of pixels.

109. The '979 patent further discloses a method for delivering the input stream of pixels to the video processing stage.

110. The ‘979 patent further discloses a method comprising establishing a window size and a sampling-window size, such that the window size is a multiple of the sampling-window size and the sampling-window size defines the fixed number of pixels.

111. The ‘979 patent further discloses a method comprising storing pixels from the input stream into a first set of line butters, the pixels stored in the first set of line butters including pixels for the established window size.

112. The ‘979 patent further discloses a method comprising prefetching the stored pixels from the first set of line butters into a second set of line buffers, the second set of line buffers being sufficiently long to store at least the pixels corresponding to the established sampling-window size.

113. The ‘979 patent further discloses a method comprising fetching the fixed number of pixels from the second set of line buffers for the video processing stage.

114. The ‘979 patent family has been cited as relevant prior art by Apple, Inc. and Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. in patent applications and issued patents.

U.S. PATENT NO. 7,058,227

115. U.S. Patent No. 7,058,227 (the “’227 patent”) entitled, *Problem Area Location In An Image Signal*, was filed on July 17, 2002, and claims priority to August 21, 1998. The ‘227 patent is subject to a 35 U.S.C. § 154(b) term extension of 723 days. Dynamic Data is the owner by assignment of all right, title, and interest in the ‘227 patent. A true and correct copy of the ‘227 patent is attached hereto as Exhibit 11.

116. The ‘227 patent discloses novel methods and systems for detecting occlusion and reducing halo effects in motion compensated pictures.

117. The ’227 patent further discloses a method and device for interpolating images between existing images.

118. The ‘227 patent discloses technologies capable of adapting the interpolation strategy depending on a segmentation of the image in various areas.

119. The ‘227 patent discloses a method of locating problem areas in an image signal that includes estimating a motion vector field for the image signal.

120. The ‘227 patent discloses a method of locating problem areas in an image signal that includes detecting edges in the motion vectors field.

121. The ‘227 patent discloses a method of locating problem areas in an image signal that includes comparing edge locations in successive field periods to identify both foreground and background.

122. The ‘227 patent family has been cited by 70 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘227 patent family as relevant prior art:

- Integrated Device Technology, Inc.
- Qualcomm Inc.
- MediaTek Inc.
- Mitsubishi Denki Kabushiki Kaisha
- Panasonic Corporation
- Samsung Electronics Co., Ltd.
- Sony Corporation
- Toshiba Corporation
- Pixelworks, Inc.
- Google, LLC
- Avid Technology, Inc.

U.S. PATENT NO. 6,639,944

123. U.S. Patent No. 6,639,944 (the “’944 patent”) entitled, *Sub-Pixel Accurate Motion Vector Estimation And Compensated Interpolation*, was filed on April 26, 2000, and claims

priority to April 26, 1999. Dynamic Data is the owner by assignment of all right, title, and interest in the '944 patent. A true and correct copy of the '944 patent is attached hereto as Exhibit 12.

124. The '944 patent discloses novel methods and systems for sub-pixel accurate motion vector estimation and motion-compensated interpolation or prediction.

125. The inventions disclosed in the '944 patent enable higher accuracy motion estimation at a lower cost through improvements in motion vector estimation and motion-compensated interpolation.

126. The '944 patent discloses a method of generating an intermediate image using sub-pixel accurate motion vectors having vector components that may have non-integer values, from first and second images having a given mutual temporal distance, the intermediate image being at a fractional distance from said first image, said fractional distance being a fraction of said given mutual temporal distance.

127. The '944 patent discloses a method that includes deriving first and second vectors from said sub-pixel accurate motion vectors.

128. The '944 patent discloses a method that includes generating an intermediate image by combining first positions in a first image shifted over first vectors and second positions in said second image shifted over second vectors.

129. The '944 patent discloses a method that includes deriving first and second vectors from sub-pixel accurate motion vectors by multiplying the vector components of the sub-pixel accurate motion vectors by a fraction to obtain fractional vector components.

130. The '944 patent discloses a method that includes deriving first and second vectors from sub-pixel accurate motion vectors by rounding the fractional vector components to obtain vector components of the first vectors, which have only integer vector components.

131. The ‘944 patent discloses a method that includes deriving first and second vectors from sub-pixel accurate motion vectors by subtracting the first vector from the candidate vector to obtain the second vector, whereby the second vectors have vector components that, depending on the candidate vector and the fraction, may have non-integer values.

132. The ‘944 patent family has been cited by 23 patents and patent applications as relevant prior art. Specifically, patents and patent applications issued to the following companies have cited the ‘944 patent family as relevant prior art: Himax Media Solutions, Inc.; Cyberlink Corp.; and Marvell International Ltd.

U.S. PATENT NO. 6,782,054

133. U.S. Patent No. 6,782,054 (the “’2054 patent”) entitled, *Method And Apparatus For Motion Vector Estimation*, was filed on April 20, 2001. The ‘2054 patent is subject to a 35 U.S.C. § 154(b) term extension of 485 days. Dynamic Data is the owner by assignment of all right, title, and interest in the ‘2054 patent. A true and correct copy of the ‘2054 patent is attached hereto as Exhibit 13.

134. The ‘2054 patent discloses novel methods and systems for motion estimation in a sequence of moving video pictures.

135. The inventions disclosed in the ‘2054 patent increase the speed of convergence of motion vectors to improve the convergence process.

136. The ‘2054 patent discloses a method to enhance motion estimation that includes selecting a displacement vector as a best motion vector for a region in a field from a plurality of at least two candidate motion vectors by applying an error function to each of said plural candidate motion vectors, wherein the candidate motion vector with the least error is selected as the displacement vector for the region in the field.

137. The ‘2054 patent discloses a method to enhance motion estimation that includes an error function comprising a first penalty term that depends on a type of the candidate motion vector and a second penalty term that depends on the position and size of the candidate motion vector.

138. The ‘2054 patent family has been cited by 113 patents and patent applications as relevant prior art. Specifically, patents and patent applications issued to the following companies have cited the ‘2054 patent family as relevant prior art:

- Samsung Electronics Co., Ltd.
- Sony Corporation
- MediaTek Inc.
- Qualcomm Incorporated
- Micronas GmbH
- Google Inc.
- Thomson Licensing
- Brightscale, Inc.
- Genesis Microchip Inc.
- STMicroelectronics SA
- Toshiba Corp.
- Micron Technology, Inc.
- Realtek Semiconductor Corp.
- Intel Corporation

U.S. PATENT NO. 7,982,799

139. U.S. Patent No. 7,982,799 (the “’799 patent”) entitled, *Method And Device For Interpolation Of An Image Information Value For Pixel Of An Interline*, was filed on December 29, 2006, and claims priority to December 30, 2005. The ‘799 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,233 days. Dynamic Data is the owner by assignment of all right, title, and interest in the ‘799 patent. A true and correct copy of the ‘799 patent is attached hereto as Exhibit 14.

140. The ‘799 patent discloses novel methods and systems for interpolating an image information value for a pixel of an interline situated between two original image lines in an image.

141. The inventions disclosed in the ‘799 patent reduce or prevent ambiguities in the determination of an optimal image direction by adding a single direction values of several adjacent pixels.

142. The ‘799 patent discloses a method for interpolation of an image information value for a pixel of an interline that includes selecting from a number of image directions, to each of which a direction quality value is assigned, a direction of interpolation by comparing the direction quality values.

143. The ‘799 patent discloses a method for interpolation of an image information value for a pixel of an interline that includes determining the image information value being interpolated in dependence on image information values assigned to pixels lying adjacent to the pixel being interpolated in the direction of interpolation.

144. The ‘799 patent discloses a method for interpolation of an image information value for a pixel of an interline that includes ascertaining a direction quality value for an image direction by selecting a pixel group having at least two pixels.

145. The ‘799 patent discloses a method for interpolation of an image information value for a pixel of an interline that includes ascertaining a direction quality value for an image direction by determining a single direction quality value for each pixel of the pixel group, the single direction quality value being dependent on image information values assigned to image regions lying adjacent to the particular pixel of the group in the image direction.

146. The ‘799 patent discloses a method for interpolation of an image information value for a pixel of an interline that includes ascertaining a direction quality value for an image direction by creating the direction quality value as a function of the single direction quality values of the pixel group.

147. The ‘799 patent family has been cited by multiple patents and patent applications as relevant prior art. Specifically, patents and patent applications issued to the following companies have cited the ‘799 patent family as relevant prior art:

- NEC Corporation
- Intel Corporation
- Qualcomm, Inc.
- MediaTek, Inc.

U.S. PATENT NO. 8,442,118

148. U.S. Patent No. 8,442,118 (the “’118 patent”) entitled, *Calculating Transformation Parameters For Image Processing*, was filed on May 19, 2006, and claims priority to May 31, 2005. The ‘118 patent is subject to a 35 U.S.C. § 154(b) term extension of 1,297 days. Dynamic Data is the owner by assignment of all right, title, and interest in the ‘118 patent. A true and correct copy of the ‘118 patent is attached hereto as Exhibit 15.

149. The ‘118 patent discloses novel methods and systems for obtaining transformation parameters.

150. The inventions disclosed in the ‘118 patent reduce the processing capacity associated with obtaining transformation parameters from a vector field.

151. The ‘118 patent discloses a method of obtaining transformation parameters from a vector field with an image processing device that includes receiving a video image from a video source, the video image having consecutive video frames.

152. The ‘118 patent discloses a method of obtaining transformation parameters from a vector field with an image processing device that includes obtaining, with a processor, the vector field from the video image.

153. The ‘118 patent discloses a method of obtaining transformation parameters from a vector field with an image processing device that includes projecting, with the processor, the vector field on at least one axis.

154. The ‘118 patent discloses a method of obtaining transformation parameters from a vector field with an image processing device that includes deriving, with the processor, the transformation parameters from the projection of the vector field.

155. The ‘118 patent discloses a method of obtaining transformation parameters from a vector field with an image processing device that includes compressing, with the processor, the video image using the transformation parameters.

156. The ‘118 patent discloses a method of obtaining transformation parameters from a vector field with an image processing device that includes storing the compressed video image on a non-transitory computer-readable medium.

157. The ‘118 patent family has been cited by several patents and patent applications as relevant prior art. Specifically, patents and patent applications issued to the Samsung Electronics Co., Ltd. and Spreadtrum Communications (Shanghai) Co., Ltd. have cited the ‘118 patent family as relevant prior art.

U.S. PATENT NO. 8,184,689

158. U.S. Patent No. 8,184,689 (the “’689 patent”) entitled, *Method Video Encoding And Decoding Preserving Cache Localities*, was filed on August 7, 2006, and claims priority to August 17, 2005. The ‘689 patent is subject to a 35 U.S.C. § 154(b) term extension of 948 days. Dynamic Data is the owner by assignment of all right, title, and interest in the ‘689 patent. A true and correct copy of the ‘689 patent is attached hereto as Exhibit 16.

159. The ‘689 patent discloses novel methods and apparatuses for encoding and decoding video data.

160. The inventions disclosed in the ‘689 patent processing time and power consumption associated with encoding and decoding video stream data is reduced by reducing off-chip memory accesses through using simultaneous encoded/decoded images as a reference image for encoding/decoding at least one of the other simultaneously encoded/decoded images.

161. The ‘689 patent discloses a method for encoding and decoding a video stream, including a plurality of images in a video processing apparatus having a processing unit coupled to a first memory, further comprising a second memory.

162. The ‘689 patent discloses a method for encoding and decoding a video stream comprising providing a subset of image data stored in the second memory in the first memory.

163. The ‘689 patent discloses a method for encoding and decoding a video stream comprising simultaneous encoding/decoding of more than one image of the video stream, by accessing said subset, wherein the simultaneously encoding/decoding is performed by access sharing to at least one image.

164. The ‘689 patent family has been cited by 15 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have all cited the ‘609 patent as relevant prior art:

- Mediatek, Inc.
- Sony Corporation
- Qualcomm, Inc.
- Panasonic Corporation
- Fujitsu Limited
- Pixelworks, inc.

COUNT I
INFRINGEMENT OF U.S. PATENT NO. 8,073,054

165. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

166. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for estimating a current motion vector for a group of pixels of an image.

167. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that encode content in compliance with the H.265 standard including at least the following processor models: Amlogic A311D; Amlogic A311X; Amlogic S905D2; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; and Amlogic S922X (collectively, the "Amlogic '3054 Product(s)").

168. One or more Amlogic subsidiaries and/or affiliates use the Amlogic '3054 Products in regular business operations.

169. One or more of the Amlogic '3054 Products include technology for estimating a current motion vector for a group of pixels of an image.

170. Amlogic has directly infringed and continues to directly infringe the '3054 patent by, among other things, making, using, offering for sale, and/or selling technology for estimating a current motion vector for a group of pixels of an image, including but not limited to the Amlogic '3054 Products.

171. One or more of the Amlogic '3054 Products enable motion estimation with a relatively fast convergence in finding the appropriate motion vectors of the motion vector fields by adding a further candidate motion vector to the set of candidate motion vectors.

172. One or more of the Amlogic '3054 Products include a motion estimation unit comprising a generating unit for generating a set of candidate motion vectors for the group of

pixels, with the candidate motion vectors being extracted from a set of previously estimated motion vectors.

173. One or more of the Amlogic ‘3054 Products include a motion estimation unit comprising a match error unit for calculating match errors of respective candidate motion vectors.

174. One or more of the Amlogic ‘3054 Products include a motion estimation unit comprising a selector for selecting the current motion vector from the candidate motion vectors by means of comparing the match errors of the respective candidate motion vectors, characterized in that the motion estimation unit is arranged to add a further candidate motion vector to the set of candidate motion vectors by calculating the further candidate motion vector on basis of a first motion vector and a second motion vector, both belonging to the set of previously estimated motion vectors.

175. One or more of the Amlogic ‘3054 Products include a motion estimation unit that calculates the further candidate motion vector on basis of the first motion vector and the second motion vector, with the first motion vector belonging to a first forward motion vector field and the second motion vector belonging to a second forward motion vector field, with the first forward motion vector field and the second forward motion vector field being different.

176. One or more of the Amlogic ‘3054 Products include a motion estimation unit that arranges to calculate the further candidate motion vector by means of calculating a difference between the second motion vector and the first motion vector.

177. The Amlogic ‘3054 Products are available to businesses and individuals throughout the United States.

178. The Amlogic ‘3054 Products are provided to businesses and individuals located in Delaware.

179. By making, using, testing, offering for sale, and/or selling products and services for estimating a current motion vector for a group of pixels of an image, including but not limited to the Amlogic '3054 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '3054 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

180. Amlogic also indirectly infringes the '3054 patent by actively inducing infringement under 35 USC § 271(b).

181. Amlogic has had knowledge of the '3054 patent since at least service of this Complaint or shortly thereafter, and Amlogic knew of the '3054 patent and knew of its infringement, including by way of this lawsuit.

182. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic '3054 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '3054 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '3054 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic '3054 Products that have the capability of operating in a manner that infringe one or more of the claims of the '3054 patent, including at least claim 1, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '3054 Products to utilize the products in a manner that directly infringe one or more claims of the '3054 patent.[25] By

[25] *See e.g., Amlogic A311D Datasheet Revision No. 1*, AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note*, AMLOGIC DOCUMENTATION

providing instruction and training to customers and end-users on how to use the Amlogic '3054 Products in a manner that directly infringes one or more claims of the '3054 patent, including at least claim 1, Amlogic specifically intended to induce infringement of the '3054 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '3054 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '3054 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '3054 patent, knowing that such use constitutes infringement of the '3054 patent.

183. The '3054 patent is well-known within the industry as demonstrated by multiple citations to the '3054 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the '3054 patent without paying a reasonable royalty. Amlogic is infringing the '3054 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

184. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '3054 patent.

185. As a result of Amlogic's infringement of the '3054 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for

(2018); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S912 Datasheet Revision No. 0.1*, AMLOGIC DOCUMENTATION (March 14, 2017); and *Amlogic S922X Datasheet Revision No. 0.2,* Amlogic Documentation (March 10, 2019).

Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

COUNT II
INFRINGEMENT OF U.S. PATENT NO. 8,135,073

186. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

187. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for enhancing subsequent images of a video stream in which frames are encoded based on previous frames using prediction and motion estimation.

188. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that decode content in compliance with the H.265 standard including at least the following processor models: Amlogic A311D; Amlogic A311X; Amlogic S802; Amlogic S805; Amlogic S805X; Amlogic S812; Amlogic S905; Amlogic S905D; Amlogic S905D2; Amlogic S905L; Amlogic S905L2; Amlogic S905L3; Amlogic S905X; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; Amlogic S922X; Amlogic T826; Amlogic T866; Amlogic T868; Amlogic T962; Amlogic T962E; Amlogic T962X; Amlogic T962X2; Amlogic T966; and Amlogic T968 (collectively, the "Amlogic '073 Product(s)").

189. On information and belief, one or more Amlogic subsidiaries and/or affiliates use the Amlogic '073 Products in regular business operations.

190. On information and belief, one or more of the Amlogic '073 Products include technology for enhancing subsequent images of a video stream in which frames are encoded based on previous frames using prediction and motion estimation.

191. On information and belief, Amlogic has directly infringed and continues to directly infringe the '073 patent by, among other things, making, using, offering for sale, and/or selling

technology for enhancing subsequent images of a video stream in which frames are encoded based on previous frames using prediction and motion estimation, including but not limited to the Amlogic ‘073 Products.

192. On information and belief, one or more of the Amlogic ‘073 Products reduce the processing capacity required for providing video enhancements to video processing through re-mapping of previous frames for subsequent frames.

193. On information and belief, one or more of the Amlogic ‘073 Products enable the provision of enhanced video pictures with minimal additional hardware costs for the components required to successfully process the video data.

194. On information and belief, one or more of the Amlogic ‘073 Products include an input for receiving a video stream containing encoded frame-based video information including an encoded first frame and an encoded second frame.

195. On information and belief, one or more of the Amlogic ‘073 Products include a video decoder comprising an input for receiving video information wherein the encoding of the second frame depends on the encoding of the first frame, the encoding of the second frame includes motion vectors indicating differences in positions between regions of the second frame and corresponding regions of the first frame, the motion vectors define correspondence between regions of the second frame and corresponding regions of the first frame.

196. On information and belief, one or more of the Amlogic ‘073 Products include a video decoder comprising a decoding unit for decoding the frames, wherein the decoding unit recovers the motion vectors for the second frame.

197. On information and belief, one or more of the Amlogic ‘073 Products include a video decoder comprising a processing component configured to determine a re-mapping strategy

for video enhancement of the decoded first frame using a region-based analysis, re-map the first frame using the re-mapping strategy, and re-map one or more regions of the second frame depending on the re-mapping strategy for corresponding regions of the first frame.

198. On information and belief, the Amlogic ‘073 Products are available to businesses and individuals throughout the United States.

199. On information and belief, the Amlogic ‘073 Products are provided to businesses and individuals located in the District of Delaware

200. By making, using, testing, offering for sale, and/or selling products and services for enhancing subsequent images of a video stream in which frames are encoded based on previous frames using prediction and motion estimation, including but not limited to the Amlogic ‘073 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the ‘073 patent, including at least claim 14 pursuant to 35 U.S.C. § 271(a).

201. On information and belief, Amlogic also indirectly infringes the ‘073 patent by actively inducing infringement under 35 USC § 271(b).

202. Amlogic has had knowledge of the ‘073 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Amlogic knew of the ‘073 patent and knew of its infringement, including by way of this lawsuit.

203. On information and belief, Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic ‘073 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the ‘073 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the

‘073 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic ‘073 Products that have the capability of operating in a manner that infringe one or more of the claims of the ‘073 patent, including at least claim 14, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic ‘073 Products to utilize the products in a manner that directly infringe one or more claims of the ‘073 patent.[26] By providing instruction and training to customers and end-users on how to use the Amlogic ‘073 Products in a manner that directly infringes one or more claims of the ‘073 patent, including at least claim 14, Amlogic specifically intended to induce infringement of the ‘073 patent. On information and belief, Amlogic engaged in such inducement to promote the sales of the Amlogic ‘073 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the ‘073 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the ‘073 patent, knowing that such use constitutes infringement of the ‘073 patent.

[26] *See e.g., Amlogic S905 Quick Reference Manual Revision No. 0.6,* AMLOGIC DOCUMENTATION (2015); *Amlogic S812 Quick Reference Manual Revision No. 0.6,* AMLOGIC DOCUMENTATION (September 4, 2014); *Amlogic S802 Quick Reference Manual Revision No. 0.5,* AMLOGIC DOCUMENTATION (September 4, 2014); *Amlogic S805 Datasheet Reference Manual Revision No. 0.8,* AMLOGIC DOCUMENTATION (January 1, 2015); *Amlogic S905 Datasheet Revision No. 1.1.4,* AMLOGIC DOCUMENTATION (June 6, 2016); *Amlogic Smart Projector Solution Presentation Version 1.0,* AMLOGIC DOCUMENTATION (2015); *Amlogic S905X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 14, 2017); *Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S912 Datasheet Revision No. 0.1,* AMLOGIC DOCUMENTATION (March 14, 2017); and *Amlogic S922X Datasheet Revision No. 0.2,* Amlogic Documentation (March 10, 2019).

204. The ‘073 patent is well-known within the industry as demonstrated by multiple citations to the ‘073 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the ‘073 patent without paying a reasonable royalty. Amlogic is infringing the ‘073 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

205. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the ‘073 patent.

206. As a result of Amlogic’s infringement of the ‘073 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic’s infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

COUNT III
INFRINGEMENT OF U.S. PATENT NO. 6,996,175

207. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

208. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for recursive motion vector estimation.

209. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that encode content in compliance with the H.265 standard including at least the following processor models: Amlogic A311D; Amlogic A311X; Amlogic S905D2; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; and Amlogic S922X (collectively, the “Amlogic ‘175 Product(s)”).

210. One or more Amlogic subsidiaries and/or affiliates use the Amlogic '175 Products in regular business operations.

211. One or more of the Amlogic '175 Products include technology for generating for a block a plurality of candidate vectors from stored vectors.

212. One or more of the Amlogic '175 Products include technology for estimating a current motion vector for a group of pixels of an image.

213. By complying with the HEVC standard, Amlogic's devices – such as the Amlogic '175 Products - necessarily infringe the '175 patent. Mandatory sections of the HEVC standard require the elements required by certain claims of the '175 patent, including but not limited to claim 2. *High Efficiency Video Coding*, Series H: Audiovisual And Multimedia Systems: Infrastructure Of Audiovisual Services – Coding Of Moving Video Rec. ITU-T H.265 (February 2018) (The following sections of the HEVC Standard are relevant to Amlogic's infringement of the '175 patent: "3.110 Prediction Unit Definition;" "6.3.2 Block and quadtree structures;" "6.3.3 Spatial or component-wise partitioning;" "6.4.2 Derivation process for prediction block availability;" "7.3.4 Scaling list data syntax;" 7.3.6.1 General slice segment header syntax;" "7.3.6.3 Weighted prediction parameters syntax;" "7.3.8.14 Delta QP syntax;" "7.4.4 Profile, tier and level semantics;" and "7.4.7.3 Weighted prediction parameters semantics."

214. One or more of the Amlogic '175 Products include technology for selecting one of the test vectors to generate an output vector.

215. One or more of the Amlogic '175 Products comprise functionality wherein blocks in a picture are further divided into a plurality of blocks.

216. One or more of the Amlogic ‘175 Products comprises functionality wherein the vectors generate in the recursive estimation process are generated based on a difference between the output vector and the selected vector.

217. One or more of the Amlogic ‘175 Products include technology for storing the output vector as one of the stored vectors for possible use in a next block.

218. Amlogic has directly infringed and continues to directly infringe the ‘175 patent by, among other things, making, using, offering for sale, and/or selling technology for recursive motion vector estimation, including but not limited to the Amlogic ‘175 Products.

219. The Amlogic ‘175 Products are available to businesses and individuals throughout the United States.

220. The Amlogic ‘175 Products are provided to businesses and individuals located in Delaware.

221. By making, using, testing, offering for sale, and/or selling products and services for recursive motion vector estimation, including but not limited to the Amlogic ‘175 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the ‘175 patent, including at least claim 2 pursuant to 35 U.S.C. § 271(a).

222. Amlogic also indirectly infringes the ‘175 patent by actively inducing infringement under 35 U.S.C. § 271(b).

223. Amlogic has had knowledge of the ‘175 patent since at least service of this complaint or shortly thereafter, and Amlogic knew of the ‘175 patent and knew of its infringement, including by way of this lawsuit.

224. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic ‘175 Products and had knowledge that the inducing acts would cause infringement

or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '175 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '175 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic '175 Products that have the capability of operating in a manner that infringe one or more of the claims of the '175 patent, including at least claim 2, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '175 Products to utilize the products in a manner that directly infringe one or more claims of the '175 patent.[27] By providing instruction and training to customers and end-users on how to use the Amlogic '175 Products in a manner that directly infringes one or more claims of the '175 patent, including at least claim 2, Amlogic specifically intended to induce infringement of the '175 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '175 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '175 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '175 patent, knowing that such use constitutes infringement of the '175 patent.

[27] *See e.g., Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S912 Datasheet Revision No. 0.1*, AMLOGIC DOCUMENTATION (March 14, 2017); and *Amlogic S922X Datasheet Revision No. 0.2,* Amlogic Documentation (March 10, 2019).

225. The ‘175 patent is well-known within the industry as demonstrated by multiple citations to the ‘175 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the ‘175 patent without paying a reasonable royalty. Amlogic is infringing the ‘175 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

226. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the ‘175 patent.

227. As a result of Amlogic’s infringement of the ‘175 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic’s infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

COUNT IV
INFRINGEMENT OF U.S. PATENT NO. 6,996,177

228. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

229. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for motion estimation.

230. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that encode content in compliance with the H.265 standard including at least the following processor models: Amlogic A311D; Amlogic A311X; Amlogic S905D2; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; and Amlogic S922X (collectively, the “Amlogic ‘177 Product(s)”).

231. One or more Amlogic subsidiaries and/or affiliates use the Amlogic ‘177 Products in regular business operations.

232. One or more of the Amlogic ‘177 Products include technology for motion estimation and motion-compensated picture signal processing.

233. The Amlogic ‘177 Products are available to businesses and individuals throughout the United States.

234. The Amlogic ‘177 Products are provided to businesses and individuals located in Delaware.

235. Amlogic has directly infringed and continues to directly infringe the ‘177 patent by, among other things, making, using, offering for sale, and/or selling products and services for motion estimation and motion-compensated picture signal processing.

236. The Amlogic ‘177 Products comprise methods and devices for motion estimation and motion-compensated picture signal processing.

237. The Amlogic ‘177 Products incorporate a motion vector estimation method and device that carries out a block-based motion vector estimation process that involves comparing a plurality of candidate vectors to determine block-based motion vectors.

238. The Amlogic ‘177 Products determine at least a most frequently occurring block-based motion vector.

239. The Amlogic ‘177 Products carry out a global motion vector estimation process using at least the most frequently occurring block-based motion vector to obtain a global motion vector.

240. The Amlogic ‘177 Products applies the global motion vector as a candidate vector to the block-based motion vector estimation process.

241. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Amlogic '177 Products, Amlogic has injured Dynamic Data and is liable for directly infringing one or more claims of the '177 patent, including at least claim 1, pursuant to 35 U.S.C. § 271(a).

242. Amlogic also indirectly infringes the '177 patent by actively inducing infringement under 35 USC § 271(b).

243. Amlogic has had knowledge of the '177 patent since at least service of this Complaint or shortly thereafter, and Amlogic knew of the '177 patent and knew of its infringement, including by way of this lawsuit.

244. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic '177 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '177 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '177 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic '177 Products that have the capability of operating in a manner that infringe one or more of the claims of the '177 patent, including at least claim 1, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '177 Products to utilize the products in a manner that directly infringe one or more claims of the '177 patent.[28] By

[28] *See e.g., Amlogic A311D Datasheet Revision No. 1*, AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S912 Datasheet Revision No. 0.1*, AMLOGIC DOCUMENTATION

providing instruction and training to customers and end-users on how to use the Amlogic '177 Products in a manner that directly infringes one or more claims of the '177 patent, including at least claim 1, Amlogic specifically intended to induce infringement of the '177 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '177 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '177 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '177 patent, knowing that such use constitutes infringement of the '177 patent.

245. The '177 patent is well-known within the industry as demonstrated by multiple citations to the '177 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the '177 patent without paying a reasonable royalty. Amlogic is infringing the '177 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

246. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '177 patent.

247. As a result of Amlogic's infringement of the '177 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

(March 14, 2017); and *Amlogic S922X Datasheet Revision No. 0.2,* Amlogic Documentation (March 10, 2019).

COUNT V
INFRINGEMENT OF U.S. PATENT NO. 7,010,039

248. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

249. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for detecting motion.

250. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that encode content in compliance with the H.265 standard including at least the following processor models: Amlogic A311D; Amlogic A311X; Amlogic S905D2; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; and Amlogic S922X (collectively, the "Amlogic '039 Product(s)").

251. One or more Amlogic subsidiaries and/or affiliates use the Amlogic '039 Products in regular business operations.

252. One or more of the Amlogic '039 Products include technology for detecting motion.

253. The Amlogic '039 Products are available to businesses and individuals throughout the United States.

254. The Amlogic '039 Products are provided to businesses and individuals located in Delaware.

255. Amlogic has directly infringed and continues to directly infringe the '039 patent by, among other things, making, using, offering for sale, and/or selling technology for detecting motion, including but not limited to the Amlogic '039 Products.

256. The Amlogic '039 Products detect motion at a temporal intermediate position between previous and next images.

257. The Amlogic ‘039 Products carry out the optimization at the temporal position of the next image in covering areas and at the temporal position of the previous image in uncovering areas.

258. The Amlogic ‘039 Products detect motion at a temporal intermediate position between previous and next images.

259. The Amlogic ‘039 Products utilize a criterion function for candidate vectors that is optimized.

260. The Amlogic ‘039 Products utilize a criterion function that depends on data from both previous and next images and in which the optimizing is carried out at the temporal intermediate position in non-covering and non-uncovering areas, characterized in that the optimizing is carried out at the temporal position of the next image in covering areas and at the temporal position of the previous image in uncovering areas.

261. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Amlogic ‘039 Products, Amlogic has injured Dynamic Data and is liable for directly infringing one or more claims of the ‘039 patent, including at least claim 13, pursuant to 35 U.S.C. § 271(a).

262. Amlogic also indirectly infringes the ‘039 patent by actively inducing infringement under 35 USC § 271(b).

263. Amlogic has had knowledge of the ‘039 patent since at least service of this Complaint or shortly thereafter, and Amlogic knew of the ‘039 patent and knew of its infringement, including by way of this lawsuit.

264. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic ‘039 Products and had knowledge that the inducing acts would cause infringement

or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '039 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '039 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic '039 Products that have the capability of operating in a manner that infringe one or more of the claims of the '039 patent, including at least claim 13, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '039 Products to utilize the products in a manner that directly infringe one or more claims of the '039 patent.[29] By providing instruction and training to customers and end-users on how to use the Amlogic '039 Products in a manner that directly infringes one or more claims of the '039 patent, including at least claim 13, Amlogic specifically intended to induce infringement of the '039 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '039 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '039 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '039 patent, knowing that such use constitutes infringement of the '039 patent.

[29] *See e.g.*, *Amlogic A311D Datasheet Revision No. 1*, AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1*, AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note*, AMLOGIC DOCUMENTATION (2018); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note*, AMLOGIC DOCUMENTATION (2018); *Amlogic S912 Datasheet Revision No. 0.1*, AMLOGIC DOCUMENTATION (March 14, 2017); and *Amlogic S922X Datasheet Revision No. 0.2*, Amlogic Documentation (March 10, 2019).

265. The ‘039 patent is well-known within the industry as demonstrated by multiple citations to the ‘039 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the ‘039 patent without paying a reasonable royalty. Amlogic is infringing the ‘039 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

266. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the ‘039 patent.

267. As a result of Amlogic’s infringement of the ‘039 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic’s infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

COUNT VI
INFRINGEMENT OF U.S. PATENT NO. 8,311,112

268. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

269. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for video compression.

270. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that encode content in compliance with the H.265 standard including at least the following processor models: Amlogic A311D; Amlogic A311X; Amlogic S905D2; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; and Amlogic S922X (collectively, the “Amlogic ‘112 Product(s)”).

271. One or more Amlogic subsidiaries and/or affiliates use the Amlogic ‘112 Products in regular business operations.

272. One or more of the Amlogic ‘112 Products include technology for video compression.

273. Amlogic has directly infringed and continues to directly infringe the ‘112 patent by, among other things, making, using, offering for sale, and/or selling technology for video compression, including but not limited to the Amlogic ‘112 Products.

274. One or more of the Amlogic ‘112 Products perform predictive coding on a macroblock of a video frame such that a set of pixels of the macroblock is coded using some of the pixels from the same video frame as reference pixels and the rest of the macroblock is coded using reference pixels from at least one other video frame.

275. One or more of the Amlogic ‘112 Products include a system for video compression comprising an intra-frame coding unit configured to perform predictive coding on a set of pixels of a macroblock of pixels using a first group of reference pixels, the macroblock of pixels and the first group of reference pixels being from a video frame.

276. One or more of the Amlogic ‘112 Products include a system for video compression comprising an inter-frame coding unit configured to perform predictive coding on the rest of the macroblock of pixels using a second group of reference pixels, the second group of reference pixels being from at least one other video frame.

277. The Amlogic ‘112 Products are available to businesses and individuals throughout the United States.

278. The Amlogic ‘112 Products are provided to businesses and individuals located in Delaware.

279. By making, using, testing, offering for sale, and/or selling products and services for interpolating a pixel during the interlacing of a video signal, including but not limited to the Amlogic '112 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '112 patent, including at least claim 11 pursuant to 35 U.S.C. § 271(a).

280. Amlogic also indirectly infringes the '112 patent by actively inducing infringement under 35 USC § 271(b).

281. Amlogic has had knowledge of the '112 patent since at least service of this Complaint or shortly thereafter, and Amlogic knew of the '112 patent and knew of its infringement, including by way of this lawsuit.

282. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic '112 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '112 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '112 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic '112 Products that have the capability of operating in a manner that infringe one or more of the claims of the '112 patent, including at least claim 11, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '112 Products to utilize the products in a manner that directly infringe one or more claims of the '112 patent.[30] By

[30] *See e.g., Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,*

providing instruction and training to customers and end-users on how to use the Amlogic '112 Products in a manner that directly infringes one or more claims of the '112 patent, including at least claim 11, Amlogic specifically intended to induce infringement of the '112 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '112 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '112 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '112 patent, knowing that such use constitutes infringement of the '112 patent.

283. The '112 patent is well-known within the industry as demonstrated by multiple citations to the '112 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the '112 patent without paying a reasonable royalty. Amlogic is infringing the '112 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

284. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '112 patent.

285. As a result of Amlogic's infringement of the '112 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

AMLOGIC DOCUMENTATION (2018); *Amlogic S912 Datasheet Revision No. 0.1,* AMLOGIC DOCUMENTATION (March 14, 2017); and *Amlogic S922X Datasheet Revision No. 0.2,* Amlogic Documentation (March 10, 2019).

COUNT VII
INFRINGEMENT OF U.S. PATENT NO. 7,894,529

286. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

287. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for determining motion vectors that are each assigned to individual image regions.

288. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that decode content in compliance with the H.265 standard including at least the following processor models: Amlogic A311D; Amlogic A311X; Amlogic S802; Amlogic S805; Amlogic S805X; Amlogic S812; Amlogic S905; Amlogic S905D; Amlogic S905D2; Amlogic S905L; Amlogic S905L2; Amlogic S905L3; Amlogic S905X; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; Amlogic S922X; Amlogic T826; Amlogic T866; Amlogic T868; Amlogic T962; Amlogic T962E; Amlogic T962X; Amlogic T962X2; Amlogic T966; and Amlogic T968 (collectively, the "Amlogic '529 Product(s)").

289. One or more Amlogic subsidiaries and/or affiliates use the Amlogic '529 Products in regular business operations.

290. One or more of the Amlogic '529 Products include technology for determining motion vectors that are each assigned to individual image regions.

291. Amlogic has directly infringed and continues to directly infringe the '529 patent by, among other things, making, using, offering for sale, and/or selling technology for determining motion vectors that are each assigned to individual image regions, including but not limited to the Amlogic '529 Products.

292. One or more of the Amlogic ‘529 Products enable an increase in the resolution of video and image signals during the motion estimation process.

293. One or more of the Amlogic ‘529 Products perform a method for determining motion vectors which are assigned to individual image regions of an image.

294. One or more of the Amlogic ‘529 Products perform a method wherein an image is subdivided into a number of image blocks, and a motion estimation technique is implemented to assign at least one motion vector to each of the image blocks where a modified motion vector is generated for at least a first image block.

295. One or more of the Amlogic ‘529 Products perform a method that determines at least a second image block through which the motion vector assigned to the first image block at least partially passes.

296. One or more of the Amlogic ‘529 Products perform a method that generates the modified motion vector as a function of a motion vector assigned to at least the second image block.

297. One or more of the Amlogic ‘529 Products perform a method that assigns the modified motion vector as the motion vector to the first image block.

298. The Amlogic ‘529 Products are available to businesses and individuals throughout the United States.

299. The Amlogic ‘529 Products are provided to businesses and individuals located in Delaware.

300. By making, using, testing, offering for sale, and/or selling products and services for interpolating a pixel during the interlacing of a video signal, including but not limited to the Amlogic ‘529 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly

infringing one or more claims of the '529 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

301. Amlogic also indirectly infringes the '529 patent by actively inducing infringement under 35 USC § 271(b).

302. Amlogic has had knowledge of the '529 patent since at least service of this Complaint or shortly thereafter, and Amlogic knew of the '529 patent and knew of its infringement, including by way of this lawsuit.

303. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic '529 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '529 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '529 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic '529 Products that have the capability of operating in a manner that infringe one or more of the claims of the '529 patent, including at least claim 1, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '529 Products to utilize the products in a manner that directly infringe one or more claims of the '529 patent.[31] By

[31] *See e.g.*, *Amlogic S905 Quick Reference Manual Revision No. 0.6*, AMLOGIC DOCUMENTATION (2015); *Amlogic S812 Quick Reference Manual Revision No. 0.6*, AMLOGIC DOCUMENTATION (September 4, 2014); *Amlogic S802 Quick Reference Manual Revision No. 0.5*, AMLOGIC DOCUMENTATION (September 4, 2014); *Amlogic S805 Datasheet Reference Manual Revision No. 0.8,* AMLOGIC DOCUMENTATION (January 1, 2015); *Amlogic S905 Datasheet Revision No. 1.1.4,* AMLOGIC DOCUMENTATION (June 6, 2016); *Amlogic Smart Projector Solution Presentation Version 1.0,* AMLOGIC DOCUMENTATION (2015); *Amlogic S905X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 14, 2017); *Amlogic A311D Datasheet Revision No. 1*, AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision*

providing instruction and training to customers and end-users on how to use the Amlogic '529 Products in a manner that directly infringes one or more claims of the '529 patent, including at least claim 1, Amlogic specifically intended to induce infringement of the '529 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '529 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '529 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '529 patent, knowing that such use constitutes infringement of the '529 patent.

304. The '529 patent is well-known within the industry as demonstrated by multiple citations to the '529 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the '529 patent without paying a reasonable royalty. Amlogic is infringing the '529 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

305. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '529 patent.

306. As a result of Amlogic's infringement of the '529 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for

No. 1, AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S912 Datasheet Revision No. 0.1,* AMLOGIC DOCUMENTATION (March 14, 2017); and *Amlogic S922X Datasheet Revision No. 0.2,* Amlogic Documentation (March 10, 2019).

Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

COUNT VIII
INFRINGEMENT OF U.S. PATENT NO. 7,519,230

307. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

308. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for selecting a background motion vector for a pixel in an occlusion region of an image.

309. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that support content encoded using VP9 including at least the following processor models: Amlogic A311D; Amlogic A311X; Amlogic S805X; Amlogic S905D; Amlogic S905D2; Amlogic S905X; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; and Amlogic S922X (collectively, the "Amlogic '230 Product(s)").

310. One or more Amlogic subsidiaries and/or affiliates use the Amlogic '230 Products in regular business operations.

311. One or more of the Amlogic '230 Products include technology for selecting a background motion vector for a pixel in an occlusion region of an image.

312. The Amlogic '230 Products are available to businesses and individuals throughout the United States.

313. The Amlogic '230 Products are provided to businesses and individuals located in Delaware.

314. Amlogic has directly infringed and continues to directly infringe the ‘230 patent by, among other things, making, using, offering for sale, and/or selling technology for selecting a background motion vector for a pixel in an occlusion region of an image, including but not limited to the Amlogic ‘230 Products.

315. The Amlogic ‘230 Products comprise systems and methods for selecting a background motion vector for a pixel in an occlusion region of an image.

316. The Amlogic ‘230 Products determine the correct motion vector in occlusion regions, thereby reducing or eliminating artifacts of motion compensated image rate converters, which are referred to as “halos” in the display of video images.

317. The Amlogic ‘230 Products perform a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising computing a model-based motion vector for the pixel on basis of a motion model being determined on basis of a part of a motion vector field of the image.

318. The Amlogic ‘230 Products perform a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising comparing the model-based motion vector with each of the motion vectors of the set of motion vectors.

319. The Amlogic ‘230 Products perform a method of selecting a background motion vector for a pixel in an occlusion region of an image comprising selecting a particular motion vector of the set of motion vectors on basis of the comparing and for assigning the particular motion vector as the background motion vector.

320. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Amlogic ‘230 Products, Amlogic has injured Dynamic Data and

is liable for directly infringing one or more claims of the '230 patent, including at least claim 6, pursuant to 35 U.S.C. § 271(a).

321. Amlogic also indirectly infringes the '230 patent by actively inducing infringement under 35 USC § 271(b).

322. Amlogic has had knowledge of the '230 patent since at least service of this Complaint or shortly thereafter, and Amlogic knew of the '230 patent and knew of its infringement, including by way of this lawsuit.

323. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic '230 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '230 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '230 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic '230 Products that have the capability of operating in a manner that infringe one or more of the claims of the '230 patent, including at least claim 6, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '230 Products to utilize the products in a manner that directly infringe one or more claims of the '230 patent.[32] By

[32] *See e.g., Amlogic 805X Buildroot Openlinux Release Note*, AMLOGIC DOCUMENTATION (2018); *Amlogic S905X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 14, 2017); *Amlogic S912 Datasheet Revision No. 0.1,* AMLOGIC DOCUMENTATION (March 14, 2017); *Amlogic S922X Datasheet Revision No. 0.2,* Amlogic Documentation (March 10, 2019); *Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); and *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018).

providing instruction and training to customers and end-users on how to use the Amlogic '230 Products in a manner that directly infringes one or more claims of the '230 patent, including at least claim 6, Amlogic specifically intended to induce infringement of the '230 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '230 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '230 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '230 patent, knowing that such use constitutes infringement of the '230 patent.

324. The '230 patent is well-known within the industry as demonstrated by multiple citations to the '230 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the '230 patent without paying a reasonable royalty. Amlogic is infringing the '230 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

325. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '230 patent.

326. As a result of Amlogic's infringement of the '230 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

COUNT IX
INFRINGEMENT OF U.S. PATENT NO. 7,542,041

327. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

328. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for dynamically configuring a multi-pipe pipeline system.

329. Amlogic designs, makes, sells, offers to sell, imports, and/or uses processors that dynamically configuring a multi-pipe pipeline system including at least the following processor models: Amlogic A311D; Amlogic A311X; Amlogic S805X; Amlogic S905D; Amlogic S905D2; Amlogic S905X; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; and Amlogic S922X (collectively, the "Amlogic '041 Product(s)").

330. On information and belief, one or more Amlogic subsidiaries and/or affiliates use the Amlogic '041 Products in regular business operations.

331. On information and belief, one or more of the Amlogic '041 Products include technology for dynamically configuring a multi-pipe pipeline system.

332. On information and belief, Amlogic has directly infringed and continues to directly infringe the '041 patent by, among other things, making, using, offering for sale, and/or selling technology for dynamically configuring a multi-pipe pipeline system, including but not limited to the Amlogic '041 Products.

333. On information and belief, one or more of the Amlogic '041 Products enable a multiple-pipeline system that is dynamically configurable to effect various combinations of functions for each pipeline.

334. On information and belief, one or more of the Amlogic ‘041 Products include a multiple pipeline system that includes a pool of auxiliary function blocks that are provided as required to select pipelines.

335. On information and belief, one or more of the Amlogic ‘041 Products consist of a multiple-pipeline system wherein each pipeline is configured to include a homogenous set of core functions.

336. On information and belief, one or more of the Amlogic ‘041 Products include a pool of auxiliary functions is provided for selective insertion of auxiliary functions between core functions of select pipelines.

337. On information and belief, one or more of the Amlogic ‘041 Products includes auxiliary functions wherein each auxiliary function includes a multiplexer that allows it to be selectively coupled within each pipeline.

338. On information and belief, one or more of the Amlogic ‘041 Products contain a processing system that includes a plurality of pipelines, with each pipeline of the plurality including a plurality of core pipeline elements that are configured to sequentially process data as it traverses the pipeline.

339. On information and belief, one or more of the Amlogic ‘041 Products contain a processing system that includes a plurality of auxiliary elements, each auxiliary element of the plurality of auxiliary elements being configured to be selectively coupled to multiple pipelines of the plurality of pipelines.

340. On information and belief, one or more of the Amlogic ‘041 Products contain a processing system wherein the auxiliary elements are responsive to external coupling-select signals.

341. On information and belief, one or more of the Amlogic '041 Products contain a processing system wherein a plurality of auxiliary elements are within a selected pipeline of the multiple pipelines, between a pair of core pipeline elements of the plurality of core pipeline elements to process the data as it traverses between the pair of core elements.

342. On information and belief, the Amlogic '041 Products are available to businesses and individuals throughout the United States.

343. On information and belief, the Amlogic '041 Products are provided to businesses and individuals located in the District of Delaware.

344. By making, using, testing, offering for sale, and/or selling products and services for dynamically configuring a multi-pipe pipeline system, including but not limited to the Amlogic '041 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '041 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

345. On information and belief, Amlogic also indirectly infringes the '041 patent by actively inducing infringement under 35 USC § 271(b).

346. Amlogic has had knowledge of the '041 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Amlogic knew of the '041 patent and knew of its infringement, including by way of this lawsuit.

347. On information and belief, Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic '041 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '041 patent. Amlogic performed the acts that

constitute induced infringement, and would induce actual infringement, with knowledge of the '041 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic '041 Products that have the capability of operating in a manner that infringe one or more of the claims of the '041 patent, including at least claim 1, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '041 Products to utilize the products in a manner that directly infringe one or more claims of the '041 patent.[33] By providing instruction and training to customers and end-users on how to use the Amlogic '041 Products in a manner that directly infringes one or more claims of the '041 patent, including at least claim 1, Amlogic specifically intended to induce infringement of the '041 patent. On information and belief, Amlogic engaged in such inducement to promote the sales of the Amlogic '041 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '041 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '041 patent, knowing that such use constitutes infringement of the '041 patent.

348. The '041 patent is well-known within the industry as demonstrated by multiple citations to the '041 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the '041 patent without paying a reasonable royalty. Amlogic is infringing the '041 patent in a manner best

[33] *See e.g., Amlogic S922X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 10, 2019); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); and *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019).

described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

349. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '041 patent.

350. As a result of Amlogic's infringement of the '041 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

COUNT X
INFRINGEMENT OF U.S. PATENT NO. 7,750,979

351. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

352. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for motion compensation in video signal processing.

353. Amlogic designs, makes, sells, offers to sell, imports, and/or uses processors for pixel-data processing including at least the following Amlogic processor models: Amlogic A311D; Amlogic A311X; Amlogic S905D2; Amlogic S905X2; Amlogic S905Y2; Amlogic S922D; and Amlogic S922X (collectively, the "Amlogic '979 Product(s)").

354. On information and belief, one or more Amlogic subsidiaries and/or affiliates use the Amlogic '979 Products in regular business operations.

355. On information and belief, one or more of the Amlogic '979 Products include technology for motion compensation in video signal processing.

356. On information and belief, Amlogic has directly infringed and continues to directly infringe the '979 patent by, among other things, making, using, offering for sale, and/or selling technology for motion compensation in video signal processing, including but not limited to the Amlogic '979 Products.

357. On information and belief, one or more of the Amlogic '979 Products use line buffers that are decoupled and that can deliver a fixed number of pixels, as may be required by a video processing stage, using a sampling pattern that is defined as one among several selectable sampling windows.

358. On information and belief, one or more of the Amlogic '979 Products have a variable window size for sampling subsets of the array as a two-dimensional window that spans the pixels in the array.

359. On information and belief, one or more of the Amlogic '979 Products have a video processing stage that inputs pixels using a fixed number of pixels.

360. On information and belief, one or more of the Amlogic '979 Products performs a method for delivering the input stream of pixels to the video processing stage.

361. On information and belief, one or more of the Amlogic '979 Products performs a method comprising establishing a window size and a sampling-window size, such that the window size is a multiple of the sampling-window size and the sampling-window size defines the fixed number of pixels.

362. On information and belief, one or more of the Amlogic '979 Products performs a method comprising storing pixels from the input stream into a first set of line butters, the pixels stored in the first set of line butters including pixels for the established window size.

363. On information and belief, one or more of the Amlogic ‘979 Products performs a method comprising prefetching the stored pixels from the first set of line butters into a second set of line buffers, the second set of line buffers being sufficiently long to store at least the pixels corresponding to the established sampling-window size.

364. On information and belief, one or more of the Amlogic ‘979 Products performs a method comprising fetching the fixed number of pixels from the second set of line buffers for the video processing stage.

365. On information and belief, one or more of the Amlogic ‘979 Products performs a method wherein storing pixels from the input stream into a first set of line butters, the pixels stored in the first set of line butters including pixels for the established window size, prefetching the stored pixels from the first set of line butters into a second set of line buffers, and fetching the fixed number of pixels from the second set of line buffers for the video processing stage are performed concurrently.

366. On information and belief, the Amlogic ‘979 Products are available to businesses and individuals throughout the United States.

367. On information and belief, the Amlogic ‘979 Products are provided to businesses and individuals located in the District of Delaware.

368. By making, using, testing, offering for sale, and/or selling products and services for motion compensation in video signal processing, including but not limited to the Amlogic ‘979 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the ‘979 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

369. On information and belief, Amlogic also indirectly infringes the ‘979 patent by actively inducing infringement under 35 USC § 271(b).

370. Amlogic has had knowledge of the '979 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Amlogic knew of the '979 patent and knew of its infringement, including by way of this lawsuit.

371. On information and belief, Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic '979 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '979 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '979 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic '979 Products that have the capability of operating in a manner that infringe one or more of the claims of the '979 patent, including at least claim 1, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '979 Products to utilize the products in a manner that directly infringe one or more claims of the '979 patent.[34] By providing instruction and training to customers and end-users on how to use the Amlogic '979 Products in a manner that directly infringes one or more claims of the '979 patent, including at least claim 1, Amlogic specifically intended to induce infringement of the '979 patent. On information and belief, Amlogic engaged in such inducement to promote the sales of the Amlogic '979 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to

[34] *See e.g., Amlogic S922X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 10, 2019); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); and *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019).

infringe the '979 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '979 patent, knowing that such use constitutes infringement of the '979 patent.

372. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '979 patent.

373. As a result of Amlogic's infringement of the '979 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

COUNT XI
INFRINGEMENT OF U.S. PATENT NO. 7,058,227

374. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

375. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for detecting occlusion and reducing halo effects in motion compensated pictures.

376. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that support content encoded using VP9 including at least the following processor models: Amlogic A311D; Amlogic A311X; Amlogic S805X; Amlogic S905D; Amlogic S905D2; Amlogic S905X; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; and Amlogic S922X (collectively, the "Amlogic '227 Product(s)").

377. One or more Amlogic subsidiaries and/or affiliates use the Amlogic '227 Products in regular business operations.

378. One or more of the Amlogic ‘227 Products include technology for detecting occlusion and reducing halo effects in motion compensated pictures.

379. Amlogic has directly infringed and continues to directly infringe the ‘227 patent by, among other things, making, using, offering for sale, and/or selling technology for detecting occlusion and reducing halo effects in motion compensated pictures, including but not limited to the Amlogic ‘227 Products.

380. One or more of the Amlogic ‘227 Products interpolate images between existing images.

381. One or more of the Amlogic ‘227 Products are capable of adapting the interpolation strategy depending on a segmentation of the image in various areas.

382. One or more of the Amlogic ‘227 Products perform a method of locating problem areas in an image signal that includes estimating a motion vector field for the image signal.

383. One or more of the Amlogic ‘227 Products perform a method of locating problem areas in an image signal that includes detecting edges in the motion vectors field.

384. One or more of the Amlogic ‘227 Products perform a method of locating problem areas in an image signal that includes comparing edge locations in successive field periods to identify both foreground and background.

385. The Amlogic ‘227 Products are available to businesses and individuals throughout the United States.

386. The Amlogic ‘227 Products are provided to businesses and individuals located in Delaware.

387. By making, using, testing, offering for sale, and/or selling products and services for detecting occlusion and reducing halo effects in motion compensated pictures, including but not

limited to the Amlogic '227 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '227 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

388. Amlogic also indirectly infringes the '227 patent by actively inducing infringement under 35 USC § 271(b).

389. Amlogic has had knowledge of the '227 patent since at least service of this Complaint or shortly thereafter, and Amlogic knew of the '227 patent and knew of its infringement, including by way of this lawsuit.

390. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic '227 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '227 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '227 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic '227 Products that have the capability of operating in a manner that infringe one or more of the claims of the '227 patent, including at least claim 1, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '227 Products to utilize the products in a manner that directly infringe one or more claims of the '227 patent.[35] By

[35] *See e.g.*, *Amlogic 805X Buildroot Openlinux Release Note*, AMLOGIC DOCUMENTATION (2018); *Amlogic S905X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 14, 2017); *Amlogic S912 Datasheet Revision No. 0.1*, AMLOGIC DOCUMENTATION (March 14, 2017); *Amlogic S922X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 10, 2019); *Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1*, AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note*, AMLOGIC DOCUMENTATION (2018); and

providing instruction and training to customers and end-users on how to use the Amlogic '227 Products in a manner that directly infringes one or more claims of the '227 patent, including at least claim 1, Amlogic specifically intended to induce infringement of the '227 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '227 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '227 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '227 patent, knowing that such use constitutes infringement of the '227 patent.

391. The '227 patent is well-known within the industry as demonstrated by multiple citations to the '227 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the '227 patent without paying a reasonable royalty. Amlogic is infringing the '227 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

392. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '227 patent. As a result of Amlogic's infringement of the '227 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note, AMLOGIC DOCUMENTATION (2018).

COUNT XII
INFRINGEMENT OF U.S. PATENT NO. 6,639,944

393. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

394. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for sub-pixel accurate motion vector estimation and motion-compensated interpolation or prediction.

395. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that decode content in compliance with the H.265 standard including at least the following processor models: Amlogic A311D; Amlogic A311X; Amlogic S802; Amlogic S805; Amlogic S805X; Amlogic S812; Amlogic S905; Amlogic S905D; Amlogic S905D2; Amlogic S905L; Amlogic S905L2; Amlogic S905L3; Amlogic S905X; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; Amlogic S922X; Amlogic T826; Amlogic T866; Amlogic T868; Amlogic T962; Amlogic T962E; Amlogic T962X; Amlogic T962X2; Amlogic T966; and Amlogic T968 (collectively, the "Amlogic '944 Product(s)").

396. One or more Amlogic subsidiaries and/or affiliates use the Amlogic '944 Products in regular business operations.

397. One or more of the Amlogic '944 Products include technology for sub-pixel accurate motion vector estimation and motion-compensated interpolation or prediction.

398. Amlogic has directly infringed and continues to directly infringe the '944 patent by, among other things, making, using, offering for sale, and/or selling technology for sub-pixel accurate motion vector estimation and motion-compensated interpolation or prediction, including but not limited to the Amlogic '944 Products.

399. One or more of the Amlogic ‘944 Products enable higher accuracy motion estimation at a lower cost through improvements in motion vector estimation and motion-compensated interpolation.

400. One or more of the Amlogic ‘944 Products perform a method of generating an intermediate image using sub-pixel accurate motion vectors having vector components that may have non-integer values, from first and second images having a given mutual temporal distance, the intermediate image being at a fractional distance from said first image, said fractional distance being a fraction of said given mutual temporal distance.

401. One or more of the Amlogic ‘944 Products perform a method that includes deriving first and second vectors from said sub-pixel accurate motion vectors.

402. One or more of the Amlogic ‘944 Products perform a method that includes generating an intermediate image by combining first positions in a first image shifted over first vectors and second positions in said second image shifted over second vectors.

403. One or more of the Amlogic ‘944 Products perform a method that includes deriving first and second vectors from sub-pixel accurate motion vectors by multiplying the vector components of the sub-pixel accurate motion vectors by a fraction to obtain fractional vector components.

404. One or more of the Amlogic ‘944 Products perform a method that includes deriving first and second vectors from sub-pixel accurate motion vectors by rounding the fractional vector components to obtain vector components of the first vectors, which have only integer vector components.

405. One or more of the Amlogic ‘944 Products perform a method that includes deriving first and second vectors from sub-pixel accurate motion vectors by subtracting the first vector from

the candidate vector to obtain the second vector, whereby the second vectors have vector components that, depending on the candidate vector and the fraction, may have non-integer values.

406. The Amlogic '944 Products are available to businesses and individuals throughout the United States.

407. The Amlogic '944 Products are provided to businesses and individuals located in Delaware.

408. By making, using, testing, offering for sale, and/or selling products and services for sub-pixel accurate motion vector estimation and motion-compensated interpolation or prediction, including but not limited to the Amlogic '944 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '944 patent, including at least claim 2 pursuant to 35 U.S.C. § 271(a).

409. Amlogic also indirectly infringes the '944 patent by actively inducing infringement under 35 USC § 271(b).

410. Amlogic has had knowledge of the '944 patent since at least service of this Complaint or shortly thereafter, and Amlogic knew of the '944 patent and knew of its infringement, including by way of this lawsuit.

411. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic '944 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '944 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '944 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic

'944 Products that have the capability of operating in a manner that infringe one or more of the claims of the '944 patent, including at least claim 2, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '944 Products to utilize the products in a manner that directly infringe one or more claims of the '944 patent.[36] By providing instruction and training to customers and end-users on how to use the Amlogic '944 Products in a manner that directly infringes one or more claims of the '944 patent, including at least claim 2, Amlogic specifically intended to induce infringement of the '944 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '944 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '944 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '944 patent, knowing that such use constitutes infringement of the '944 patent.

412. The '944 patent is well-known within the industry as demonstrated by multiple citations to the '944 patent in published patents and patent applications assigned to technology

[36] *See e.g., Amlogic S905 Quick Reference Manual Revision No. 0.6,* AMLOGIC DOCUMENTATION (2015); *Amlogic S812 Quick Reference Manual Revision No. 0.6,* AMLOGIC DOCUMENTATION (September 4, 2014); *Amlogic S802 Quick Reference Manual Revision No. 0.5,* AMLOGIC DOCUMENTATION (September 4, 2014); *Amlogic S805 Datasheet Reference Manual Revision No. 0.8,* AMLOGIC DOCUMENTATION (January 1, 2015); *Amlogic S905 Datasheet Revision No. 1.1.4,* AMLOGIC DOCUMENTATION (June 6, 2016); *Amlogic Smart Projector Solution Presentation Version 1.0,* AMLOGIC DOCUMENTATION (2015); *Amlogic S905X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 14, 2017); *Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S912 Datasheet Revision No. 0.1,* AMLOGIC DOCUMENTATION (March 14, 2017); and *Amlogic S922X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 10, 2019).

companies and academic institutions. Amlogic is utilizing the technology claimed in the '944 patent without paying a reasonable royalty. Amlogic is infringing the '944 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

413. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '944 patent. As a result of Amlogic's infringement of the '944 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

COUNT XIII
INFRINGEMENT OF U.S. PATENT NO. 6,782,054

414. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

415. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for motion estimation in a sequence of moving video pictures.

416. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that encode content in compliance with the H.265 standard including at least the following Amlogic processor models: Amlogic A311D; Amlogic A311X; Amlogic S905D2; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; and Amlogic S922X (collectively, the "Amlogic '2054 Product(s)").

417. One or more Amlogic subsidiaries and/or affiliates use the Amlogic '2054 Products in regular business operations.

418. One or more of the Amlogic ‘2054 Products include technology for motion estimation in a sequence of moving video pictures.

419. Amlogic has directly infringed and continues to directly infringe the ‘2054 patent by, among other things, making, using, offering for sale, and/or selling technology for motion estimation in a sequence of moving video pictures, including but not limited to the Amlogic ‘2054 Products.

420. One or more of the Amlogic ‘2054 Products increase the speed of convergence of motion vectors to improve the convergence process.

421. One or more of the Amlogic ‘2054 Products perform a method to enhance motion estimation that includes selecting a displacement vector as a best motion vector for a region in a field from a plurality of at least two candidate motion vectors by applying an error function to each of said plural candidate motion vectors, wherein the candidate motion vector with the least error is selected as the displacement vector for the region in the field.

422. One or more of the Amlogic ‘2054 Products perform a method to enhance motion estimation that includes an error function comprising a first penalty term that depends on a type of the candidate motion vector and a second penalty term that depends on the position and size of the candidate motion vector.

423. The Amlogic ‘2054 Products are available to businesses and individuals throughout the United States.

424. The Amlogic ‘2054 Products are provided to businesses and individuals located in Delaware.

425. By making, using, testing, offering for sale, and/or selling products and services for motion estimation in a sequence of moving video pictures, including but not limited to the Amlogic

'2054 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '2054 patent, including at least claim 13 pursuant to 35 U.S.C. § 271(a).

426. Amlogic also indirectly infringes the '2054 patent by actively inducing infringement under 35 USC § 271(b).

427. Amlogic has had knowledge of the '2054 patent since at least service of this Complaint or shortly thereafter, and Amlogic knew of the '2054 patent and knew of its infringement, including by way of this lawsuit.

428. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic '2054 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the '2054 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '2054 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic '2054 Products that have the capability of operating in a manner that infringe one or more of the claims of the '2054 patent, including at least claim 13, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic '2054 Products to utilize the products in a manner that directly infringe one or more claims of the '2054 patent.[37] By providing instruction and training to customers and end-users on how to use the

[37] *See e.g., Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S912 Datasheet Revision No. 0.1,* AMLOGIC DOCUMENTATION (March 14,

Amlogic '2054 Products in a manner that directly infringes one or more claims of the '2054 patent, including at least claim 13, Amlogic specifically intended to induce infringement of the '2054 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '2054 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '2054 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '2054 patent, knowing that such use constitutes infringement of the '2054 patent.

429. The '2054 patent is well-known within the industry as demonstrated by multiple citations to the '2054 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the '2054 patent without paying a reasonable royalty. Amlogic is infringing the '2054 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

430. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '2054 patent. As a result of Amlogic's infringement of the '2054 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

2017); and *Amlogic S922X Datasheet Revision No. 0.2*, AMLOGIC DOCUMENTATION (March 10, 2019).

COUNT XIV
INFRINGEMENT OF U.S. PATENT NO. 7,982,799

431. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

432. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for interpolating an image information value for a pixel of an interline situated between two original image lines in an image.

433. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that encode content in compliance with the H.265 standard including at least the following Amlogic processors: Amlogic A311D; Amlogic A311X; Amlogic S905D2; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; and Amlogic S922X (collectively, the "Amlogic '799 Product(s)").

434. One or more Amlogic subsidiaries and/or affiliates use the Amlogic '799 Products in regular business operations.

435. One or more of the Amlogic '799 Products include technology for interpolating an image information value for a pixel of an interline situated between two original image lines in an image.

436. Amlogic has directly infringed and continues to directly infringe the '799 patent by, among other things, making, using, offering for sale, and/or selling technology for interpolating an image information value for a pixel of an interline situated between two original image lines in an image, including but not limited to the Amlogic '799 Products.

437. One or more of the Amlogic '799 Products reduce or prevent ambiguities in the determination of an optimal image direction by adding a single direction values of several adjacent pixels.

438. One or more of the Amlogic ‘799 Products enable a method for interpolation of an image information value for a pixel of an interline that includes selecting from a number of image directions, to each of which a direction quality value is assigned, a direction of interpolation by comparing the direction quality values.

439. One or more of the Amlogic ‘799 Products enable a method for interpolation of an image information value for a pixel of an interline that includes determining the image information value being interpolated in dependence on image information values assigned to pixels lying adjacent to the pixel being interpolated in the direction of interpolation.

440. One or more of the Amlogic ‘799 Products enable a method for interpolation of an image information value for a pixel of an interline that includes ascertaining a direction quality value for an image direction by selecting a pixel group having at least two pixels.

441. One or more of the Amlogic ‘799 Products enable a method for interpolation of an image information value for a pixel of an interline that includes ascertaining a direction quality value for an image direction by determining a single direction quality value for each pixel of the pixel group, the single direction quality value being dependent on image information values assigned to image regions lying adjacent to the particular pixel of the group in the image direction.

442. One or more of the Amlogic ‘799 Products enable a method for interpolation of an image information value for a pixel of an interline that includes ascertaining a direction quality value for an image direction by creating the direction quality value as a function of the single direction quality values of the pixel group.

443. The Amlogic ‘799 Products are available to businesses and individuals throughout the United States.

444. The Amlogic ‘799 Products are provided to businesses and individuals located in Delaware.

445. By making, using, testing, offering for sale, and/or selling products and services for interpolating an image information value for a pixel of an interline situated between two original image lines in an image, including but not limited to the Amlogic ‘799 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the ‘799 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

446. Amlogic also indirectly infringes the ‘799 patent by actively inducing infringement under 35 USC § 271(b).

447. Amlogic has had knowledge of the ‘799 patent since at least service of this Complaint or shortly thereafter, and Amlogic knew of the ‘799 patent and knew of its infringement, including by way of this lawsuit.

448. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic ‘799 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the ‘799 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the ‘799 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic ‘799 Products that have the capability of operating in a manner that infringe one or more of the claims of the ‘799 patent, including at least claim 1, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic ‘799 Products to utilize

the products in a manner that directly infringe one or more claims of the '799 patent.[38] By providing instruction and training to customers and end-users on how to use the Amlogic '799 Products in a manner that directly infringes one or more claims of the '799 patent, including at least claim 1, Amlogic specifically intended to induce infringement of the '799 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '799 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '799 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '799 patent, knowing that such use constitutes infringement of the '799 patent.

449. The '799 patent is well-known within the industry as demonstrated by multiple citations to the '799 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the '799 patent without paying a reasonable royalty. Amlogic is infringing the '799 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

450. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '799 patent.

[38] *See e.g., Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S912 Datasheet Revision No. 0.1,* AMLOGIC DOCUMENTATION (March 14, 2017); and *Amlogic S922X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 10, 2019).

451. As a result of Amlogic's infringement of the '799 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

COUNT XV
INFRINGEMENT OF U.S. PATENT NO. 8,442,118

452. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

453. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for obtaining transformation parameters.

454. Amlogic designs, makes, sells, offers to sell, imports, and/or uses products and/or services that decode content in compliance with the H.265 standard including at least the following Amlogic processor models: Amlogic A311D; Amlogic A311X; Amlogic S802; Amlogic S805; Amlogic S805X; Amlogic S812; Amlogic S905; Amlogic S905D; Amlogic S905D2; Amlogic S905L; Amlogic S905L2; Amlogic S905L3; Amlogic S905X; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; Amlogic S922X; Amlogic T826; Amlogic T866; Amlogic T868; Amlogic T962; Amlogic T962E; Amlogic T962X; Amlogic T962X2; Amlogic T966; and Amlogic T968 (collectively, the "Amlogic '118 Product(s)").

455. One or more Amlogic subsidiaries and/or affiliates use the Amlogic '118 Products in regular business operations.

456. One or more of the Amlogic '118 Products include technology for obtaining transformation parameters.

457. Amlogic has directly infringed and continues to directly infringe the ‘118 patent by, among other things, making, using, offering for sale, and/or selling technology for obtaining transformation parameters, including but not limited to the Amlogic ‘118 Products.

458. One or more of the Amlogic ‘118 Products reduce the processing capacity associated with obtaining transformation parameters from a vector field.

459. One or more of the Amlogic ‘118 Products enable a method of obtaining transformation parameters from a vector field with an image processing device that includes receiving a video image from a video source, the video image having consecutive video frames.

460. One or more of the Amlogic ‘118 Products enable a method of obtaining transformation parameters from a vector field with an image processing device that includes obtaining, with a processor, the vector field from the video image.

461. One or more of the Amlogic ‘118 Products enable a method of obtaining transformation parameters from a vector field with an image processing device that includes projecting, with the processor, the vector field on at least one axis.

462. One or more of the Amlogic ‘118 Products enable a method of obtaining transformation parameters from a vector field with an image processing device that includes deriving, with the processor, the transformation parameters from the projection of the vector field.

463. One or more of the Amlogic ‘118 Products enable a method of obtaining transformation parameters from a vector field with an image processing device that includes compressing, with the processor, the video image using the transformation parameters.

464. One or more of the Amlogic ‘118 Products enable a method of obtaining transformation parameters from a vector field with an image processing device that includes storing the compressed video image on a non-transitory computer-readable medium.

465. The Amlogic ‘118 Products are available to businesses and individuals throughout the United States.

466. The Amlogic ‘118 Products are provided to businesses and individuals located in Delaware.

467. By making, using, testing, offering for sale, and/or selling products and services for obtaining transformation parameters, including but not limited to the Amlogic ‘118 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the ‘118 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

468. Amlogic also indirectly infringes the ‘118 patent by actively inducing infringement under 35 USC § 271(b).

469. Amlogic has had knowledge of the ‘118 patent since at least service of this Complaint or shortly thereafter, and Amlogic knew of the ‘118 patent and knew of its infringement, including by way of this lawsuit.

470. Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic ‘118 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the ‘118 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the ‘118 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic ‘118 Products that have the capability of operating in a manner that infringe one or more of the claims of the ‘118 patent, including at least claim 1, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic ‘118 Products to utilize

the products in a manner that directly infringe one or more claims of the '118 patent.[39] By providing instruction and training to customers and end-users on how to use the Amlogic '118 Products in a manner that directly infringes one or more claims of the '118 patent, including at least claim 1, Amlogic specifically intended to induce infringement of the '118 patent. Amlogic engaged in such inducement to promote the sales of the Amlogic '118 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '118 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '118 patent, knowing that such use constitutes infringement of the '118 patent.

471. The '118 patent is well-known within the industry as demonstrated by multiple citations to the '118 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the '118 patent without paying a reasonable royalty. Amlogic is infringing the '118 patent in a manner best

[39] *See e.g., Amlogic S905 Quick Reference Manual Revision No. 0.6,* AMLOGIC DOCUMENTATION (2015); *Amlogic S812 Quick Reference Manual Revision No. 0.6,* AMLOGIC DOCUMENTATION (September 4, 2014); *Amlogic S802 Quick Reference Manual Revision No. 0.5,* AMLOGIC DOCUMENTATION (September 4, 2014); *Amlogic S805 Datasheet Reference Manual Revision No. 0.8,* AMLOGIC DOCUMENTATION (January 1, 2015); *Amlogic S905 Datasheet Revision No. 1.1.4,* AMLOGIC DOCUMENTATION (June 6, 2016); *Amlogic Smart Projector Solution Presentation Version 1.0,* AMLOGIC DOCUMENTATION (2015); *Amlogic S905X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 14, 2017); *Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); *Amlogic A311D Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note,* AMLOGIC DOCUMENTATION (2018); *Amlogic S912 Datasheet Revision No. 0.1,* AMLOGIC DOCUMENTATION (March 14, 2017); and *Amlogic S922X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 10, 2019).

described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

472. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '118 patent.

473. As a result of Amlogic's infringement of the '118 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

COUNT XVI
INFRINGEMENT OF U.S. PATENT NO. 8,184,689

474. Dynamic Data references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

475. Amlogic designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for encoding and decoding video data.

476. Amlogic designs, makes, sells, offers to sell, imports, and/or uses processors for encoding and decoding a video stream using a first and second memory including at least the following Amlogic processors: Amlogic A311D; Amlogic A311X; Amlogic S905D2; Amlogic S905X2; Amlogic S905Y2; Amlogic S912; Amlogic S922D; Amlogic S922X; Amlogic T966; and Amlogic T968 (the "Amlogic '689 Product(s)").

477. On information and belief, one or more Amlogic subsidiaries and/or affiliates use the Amlogic '689 Products in regular business operations.

478. On information and belief, one or more of the Amlogic '689 Products include technology for encoding and decoding video data.

479. On information and belief, Amlogic has directly infringed and continues to directly infringe the ‘689 patent by, among other things, making, using, offering for sale, and/or selling technology for encoding and decoding video data, including but not limited to the Amlogic ‘689 Products.

480. On information and belief, one or more of the Amlogic ‘689 Products reduce processing time and power consumption associated with encoding and decoding video stream data by reducing off-chip memory accesses through using simultaneous encoded/decoded images as a reference image for encoding/decoding at least one of the other simultaneously encoded/decoded images.

481. On information and belief, one or more of the Amlogic ‘689 Products perform a method for encoding and decoding a video stream, including a plurality of images in a video processing apparatus having a processing unit coupled to a first memory, further comprising a second memory.

482. On information and belief, one or more of the Amlogic ‘689 Products perform a method for encoding and decoding a video stream comprising providing a subset of image data stored in the second memory in the first memory.

483. On information and belief, one or more of the Amlogic ‘689 Products perform a method for encoding and decoding a video stream comprising simultaneous encoding/decoding of more than one image of the video stream, by accessing said subset, wherein the simultaneously encoding/decoding is performed by access sharing to at least one image.

484. On information and belief, the Amlogic ‘689 Products are available to businesses and individuals throughout the United States.

485. On information and belief, the Amlogic ‘689 Products are provided to businesses and individuals located in the District of Delaware.

486. By making, using, testing, offering for sale, and/or selling products and services for encoding and decoding video data, including but not limited to the Amlogic ‘689 Products, Amlogic has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the ‘689 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

487. On information and belief, Amlogic also indirectly infringes the ‘689 patent by actively inducing infringement under 35 USC § 271(b).

488. Amlogic has had knowledge of the ‘689 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Amlogic knew of the ‘689 patent and knew of its infringement, including by way of this lawsuit.

489. On information and belief, Amlogic intended to induce patent infringement by third-party customers and users of the Amlogic ‘689 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Amlogic specifically intended and was aware that the normal and customary use of the accused products would infringe the ‘689 patent. Amlogic performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the ‘689 patent and with the knowledge that the induced acts would constitute infringement. For example, Amlogic provides the Amlogic ‘689 Products that have the capability of operating in a manner that infringe one or more of the claims of the ‘689 patent, including at least claim 1, and Amlogic further provides documentation and training materials that cause customers and end users of the Amlogic ‘689 Products to utilize the products in a manner that directly infringe one or more

claims of the '689 patent.[40] By providing instruction and training to customers and end-users on how to use the Amlogic '689 Products in a manner that directly infringes one or more claims of the '689 patent, including at least claim 1, Amlogic specifically intended to induce infringement of the '689 patent. On information and belief, Amlogic engaged in such inducement to promote the sales of the Amlogic '689 Products, e.g., through Amlogic user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '689 patent. Accordingly, Amlogic has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '689 patent, knowing that such use constitutes infringement of the '689 patent.

490. The '689 patent is well-known within the industry as demonstrated by multiple citations to the '689 patent in published patents and patent applications assigned to technology companies and academic institutions. Amlogic is utilizing the technology claimed in the '689 patent without paying a reasonable royalty. Amlogic is infringing the '689 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

491. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '689 patent.

492. As a result of Amlogic's infringement of the '689 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for

[40] See e.g., *Amlogic S912 Datasheet Revision No. 0.1*, AMLOGIC DOCUMENTATION (March 14, 2017); *Amlogic S922X Datasheet Revision No. 0.2,* AMLOGIC DOCUMENTATION (March 10, 2019); *Amlogic S905X2 and S905D2 Buildroot Openlinux Release Note*, AMLOGIC DOCUMENTATION (2018); *Amlogic A311D Datasheet Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019); and *Amlogic A311D Quick Reference Manual Revision No. 1,* AMLOGIC DOCUMENTATION (May 5, 2019).

Amlogic's infringement, but in no event less than a reasonable royalty for the use made of the invention by Amlogic together with interest and costs as fixed by the Court.

PRAYER FOR RELIEF

WHEREFORE, Dynamic Data respectfully requests that this Court enter:

A. A judgment in favor of Dynamic Data that Amlogic has infringed, either literally and/or under the doctrine of equivalents, the '3054, '073, '175, '177, '039, '112, '529, '230, '041, '979, '227, '944, '2054, '799, '118, and '689 patents;

B. An award of damages resulting from Amlogic's acts of infringement in accordance with 35 U.S.C. § 284;

C. A judgment and order finding that Amlogic's infringement was willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate within the meaning of 35 U.S.C. § 284 and awarding to Dynamic Data enhanced damages.

D. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Dynamic Data its reasonable attorneys' fees against Amlogic.

E. Any and all other relief to which Dynamic Data may show themselves to be entitled.

JURY TRIAL DEMANDED

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Dynamic Data Technologies, LLC requests a trial by jury of any issues so triable by right.

Dated: June 28, 2019

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