UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

DYNAMIC DATA TECHNOLOGIES, LLC, ***Plaintiff,*** v. **QUALCOMM INC. AND QUALCOMM TECHNOLOGIES, INC.,** ***Defendants.***	**Civil Action No._____** **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

Dynamic Data Technologies, LLC ("Dynamic Data") bring this action and make the following allegations of patent infringement relating to U.S. Patent Nos.: 8,135,073 (the "'073 patent"); 8,073,054 (the "'054 patent"); 6,774,918 (the "'918 patent"); 8,184,689 (the "'689 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"); 7,571,450 (the "'450 patent"); and 7,750,979 (the "'979 patent") (collectively, the "patents-in-suit"). Defendant Qualcomm Inc. and Qualcomm Technologies, Inc. (collectively, "Qualcomm" or "Defendant") 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 1,000 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 ground breaking 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. Contemporaneous to the filing of this Complaint and complaints against other companies selling the technologies claimed by Dynamic Data's patent portfolio, Dynamic Data filed patent enforcement actions against Google LLC,[1] Advanced Micro Devices, Inc.,[2] and Microsoft Corporation[3] in the Peoples Republic of China before the Nanjing Specialized Intellectual Property Tribunal. In addition, Dynamic Data has filed a patent enforcement action against Apple, Inc. in Düsseldorf, Germany.[4]

DYNAMIC DATA'S LANDMARK INVENTIONS

3. 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.

[1] Asserting Patent Nos. CN1266944C; CN1333373C; and CN1329870C (南京专业知识产权法院).

[2] Asserting Patent Nos. CN1303818C; CN1333373C; and CN1266944C (南京专业知识产权法院).

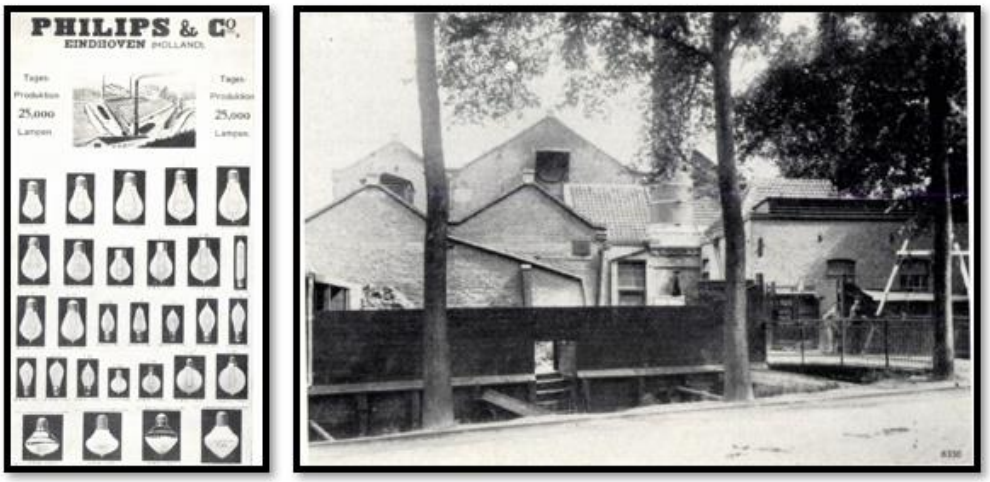
[3] Asserting Patent Nos. CN1266944C, CN1329870C, and CN1333373C (南京专业知识产权法院).

[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).

4. 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.



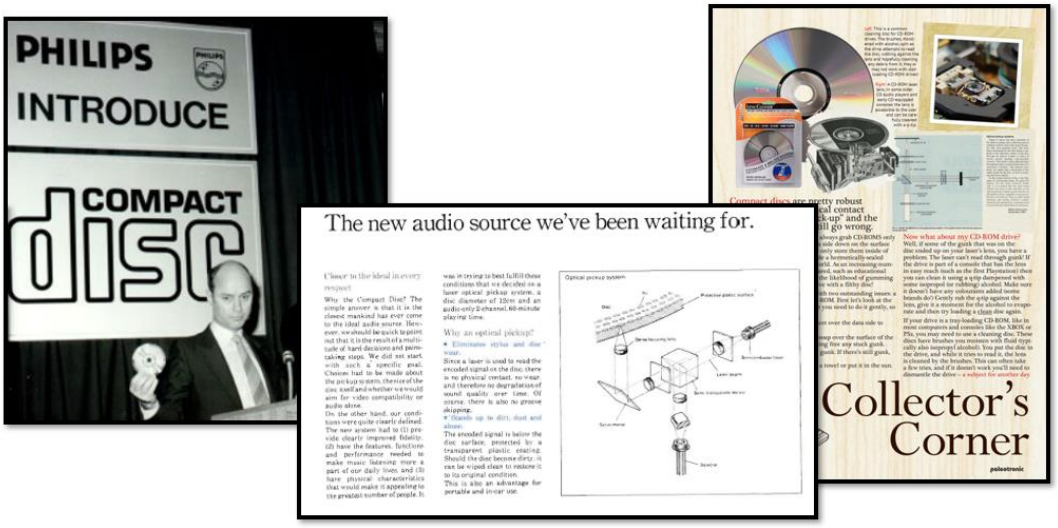
THE ROTARIAN MAGAZINE, Vol. 101 No. 6 at 70 (December 1962) (advertisement showing Philips Norelco device which used cassettes for recording audio for transcription); Fred Chandler,

[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").

5. 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).

6. 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.

7. 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]

8. 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

9. Dynamic Data's patent portfolio includes over 1,000 patent assets, with over 400 issued patents granted by patent offices around the world. Dynamic Data owns numerous patents issued by the United States Patent and Trademark Office, including each of the patents-in-suit,

[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.

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.

10. 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 1,000 of these patent assets, which include over 400 patents issued by patent offices around the world.

11. Highlighting the importance of the patents-in-suit is the fact that the patents-in-suit have been cited by over 400 U.S. and international patents and patent applications by a wide variety of the largest companies operating in the field. For example, the patents-in-suit have been cited by companies such as:

- Samsung Electronics Co., Ltd.[15]
- ***Qualcomm Inc***.[16]
- Google LLC[17]
- Intel Corporation[18]
- Broadcom Corporation[19]
- Microsoft Corporation[20]

[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. 6,930,729; 7,911,537; 7,532,764; 8,605,790; and 8,095,887.

[16] *See, e.g.*, U.S. Patent Nos. 7,840,085; 8,649,437; 8,750,387; 8,918,533; 9,185,439; 9,209,934; 9,281,847; 9,319,448; 9,419,749; 9,843,844; 9,917,874; and 9,877,033.

[17] *See, e.g.*, U.S. Patent No. 8,787,454 and U.S. Patent Appl. No. 10/003,793.

[18] *See, e.g.*, U.S. Patent Nos. 7,554,559; 7,362,377; and 8,462,164.

[19] *See, e.g.*, U.S. Patent Nos. 8,325,273 and 9,377,987.

[20] *See, e.g.*, U.S. Patent Nos. 7,453,939; 7,670,227; 7,408,986; 7,421,129; 7,558,320; and 7,929,599.

- Sony Corporation[21]
- Fujitsu Ltd.[22]
- Panasonic Corporation[23]
- Matsushita Electric Industrial Company Limited[24]

THE PARTIES

DYNAMIC DATA TECHNOLOGIES, LLC

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

13. 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.

14. Dynamic Data pursues the reasonable royalties owed for Qualcomm'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.

QUALCOMM

15. On information and belief, Qualcomm Inc. is a Delaware corporation with its principal place of business at 5775 Morehouse Drive, San Diego, California 92121. Qualcomm Inc. may be served through its registered agent Prentice Hall Corporation System, 211 E. 7th Street, Suite 620, Austin, Texas 78701. On information and belief, Qualcomm Technologies, Inc. is registered to do business in the State of Texas and has been since at least September 17, 1991.

[21] *See, e.g.*, U.S. Patent Nos. 7,218,354 and 8,174,615.
[22] *See, e.g.*, U.S. Patent Nos. 7,092,032 and 8,290,308.
[23] *See, e.g.*, U.S. Patent Nos. 8,164,687 and 8,432,495.
[24] *See, e.g.*, U.S. Patent Nos. 7,362,378 and 7,423,961.

16. On information and belief, Qualcomm Technologies, Inc. is a Delaware corporation with its principal place of business at 5775 Morehouse Drive, San Diego, California 92121. Qualcomm Technologies, Inc. may be served through its registered agent Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701. On information and belief, Qualcomm Technologies, Inc. is registered to do business in the State of Texas and has been since at least September 11, 2012.

17. On information and belief, Qualcomm Technologies, Inc. is a wholly-owned subsidiary of Qualcomm Inc. Qualcomm Technologies, Inc. and Qualcomm Inc. are collectively referred to herein as "Qualcomm."

18. On information and belief, Qualcomm conducts business operations within the Eastern District of Texas in its facilities at 2100 Lakeside Boulevard, Suite 475, Richardson, Texas 75082.

JURISDICTION AND VENUE

19. 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).

20. Upon information and belief, this Court has personal jurisdiction over Qualcomm in this action because Qualcomm has committed acts within the Eastern District of Texas giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over Qualcomm would not offend traditional notions of fair play and substantial justice. Defendant Qualcomm, 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. Moreover, Qualcomm is registered to do business in the State of Texas, has offices and facilities in the State of Texas, and actively directs its activities to customers located in the State of Texas.

21. Venue is proper in this district under 28 U.S.C. §§ 1391(b)-(d) and 1400(b). Defendant Qualcomm is registered to do business in the State of Texas, and upon information and belief, has transacted business in the Eastern District of Texas and has committed acts of direct and indirect infringement in the Eastern District of Texas.

22. On information and belief, during the period that the claims in this case accrued, Qualcomm maintained a regular and established place of business in this District with an office located at 2201 10th St, Plano, Texas 75074 in Collin County, Texas.

23. On information and belief, Qualcomm maintained regular and established places of business in the Eastern District of Texas through entities doing business under: Microtune (TEXAS) LP; Microtune, Inc.; Zoran Corporation; Cambridge Silicon Radio Ltd.; Sirf Technology Holdings, Inc.; CSR Plc; and SiRF Technology, Inc**.**

24. Further, Qualcomm, and prior entities that have been acquired by Qualcomm, have maintained regular and established places of business in this District, including at: 1434 Patton Pl., Carrollton, TX 75007 in Denton County.

25. Qualcomm maintains an office at 2100 Lakeside Blvd. in Richardson, Texas. Qualcomm's Richardson Office is less than a mile from Samsung's own corporate office, and two blocks from the county line of the Eastern District of Texas.

26. Qualcomm is itself a fab-less entity, meaning that Qualcomm maintains tight contractual agreements with manufacturing companies such as Samsung and GLOBALFOUNDARIES that produce integrated circuits. On information and belief, Qualcomm

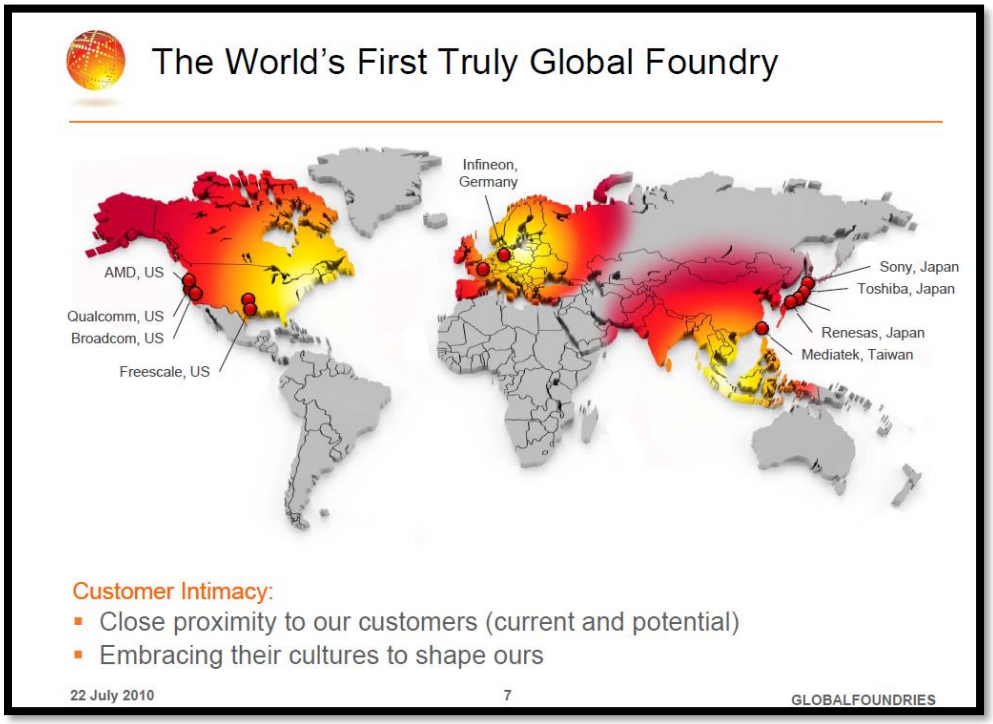
employs the services of these companies, which are located in the Eastern District of Texas. Through the placement of Qualcomm employees at the offices of GLOBALFOUNDARIES and Samsung, the provision of Qualcomm property to Samsung and GLOBALFOUNDARIES that is maintained at these offices, and other contractual relationships, Qualcomm maintains a regular and established place of business in this District.

27. Qualcomm conducts regular business in this District. For example, Qualcomm conducts business with Samsung, which is located in this District, entering into collaboration agreements, joint research, storing of physical property at Samsung's facilities, holding meetings at the Samsung office in this District, phone calls with personnel at the Samsung office, maintaining files at the Samsung office, and other regular business activity connected to this District.

> Qualcomm's Integrated Fabless Manufacturing (IFM) model builds tight technical interfaces among all parties in the semiconductor development cycle, delivering greater efficiency, lower costs and quicker time to market for new products. . . "As one of the largest and most successful semiconductor design companies in the world, Qualcomm needs access to the industry's most advanced technologies along with the ability to rapidly bring them to market," said Douglas Grose, chief executive officer, GLOBALFOUNDRIES.

GLOBALFOUNDRIES And Qualcomm Intend To Collaborate On The Development Of Leading-Edge Technology And Pursue A High Volume Manufacturing Engagement, QUALCOMM PRESS RELEASE (January 7, 2010), *available at*: https://www.qualcomm.com/news/releases/2010/01/07/globalfoundries-and-qualcomm-intend-collaborate-development-leading-edge.

28. The licensing and partnership relationship between GLOBALFOUNDRIES and Qualcomm, as well as the foundry and manufacturing services that GLOBALFOUNDRIES provides to Qualcomm, are part of a long-term, stable, and continuing business presence for Qualcomm in the Eastern District of Texas. Presentations from GLOBALFOUNDRIES describe the "proximity to our customers (current and potential)" as critical to "customer intimacy."



Fab 8 Project Overview: ESDC Worldwide Representatives, GLOBALFOUNDRIES PRESENTATION at 7 (July 22, 2010).

29. Given the intertwined partnership and customer relationship between and among GLOBALFOUNDRIES and Qualcomm, venue is proper and the control and relationship between Qualcomm and GLOBALFOUNDRIES makes venue proper under 28 U.S.C. § 1400(b).

30. GLOBALFOUNDRIES has also described that its offices, by being located in proximity to companies such as Qualcomm, are designed to provide "Regional warehouse and office space for contractors and suppliers. On site office space and technical support for contractors, suppliers and vendors." *Fab 8 Project Overview: ESDC Worldwide Representatives,* GLOBALFOUNDRIES PRESENTATION at 7 (July 22, 2010).

31. Qualcomm has also worked with Samsung (whose office, which is located within the Eastern District of Texas, is located in close proximity to Qualcomm's Richardson Office). Samsung and Qualcomm have described their contractual and business relationship as a "collaboration" and an "important milestone."

> This collaboration is an important milestone for our foundry business as it signifies confidence in Samsung's leading chip process technology," Samsung's chip foundry head, Jong Shik Yoon, said in a statement.

Tom Brandt, *Qualcomm Unveils Snapdragon 835, Quick Charge 4*, PCMAGAZINE ARTICLE (November 17, 2016), *available at*: https://www.pcmag.com/news/349640/qualcomm-unveils-snapdragon-835-quick-charge-4.

32. Further, Qualcomm maintains tight auditing and supplier contract relationships which allow it to control the activities of its partners within the Eastern District of Texas and effectively maintain a regular and established place of business through the locations of its suppliers such as Samsung and GLOBALFOUNDRIES.

> All our semiconductor suppliers that account for the top 90% of total product-related spend are identified as being low risk, according to the RBA SAQ results. Nevertheless, we conduct more thorough on-site audits of selected primary suppliers for their adherence to our supplier code of conduct. In addition, as part of our quality monitoring program, our semiconductor manufacturing suppliers are assessed and monitored periodically for compliance on various sustainability topics, including product environmental governance and conflict minerals.

Molly Gavin, *Qualcomm Sustainability Report*, KNOW THE CHAIN (2017), available at: https://www.business-humanrights.org/sites/default/files/2017%20KnowTheChain%20ICT%20Sector%20-%20Additional%20disclosure%20-%20Qualcomm.pdf (emphasis added).

33. On information and belief, Qualcomm is unique in maintaining tight control over suppliers such as Samsung and GLOBALFOUNDRIES. Qualcomm's tight control includes the placement of Qualcomm employees at the location of its suppliers (such as Samsung and GLOBALFOUNDARIES), review of files, and site audits. The Korea Fair Trade Commission, in

a 2017 report on Qualcomm, found that Qualcomm's anti-competitive practices included on-site visits, review of electronic and hard-copy files, as well as written surveys and interviews of relevant witnesses and experts. *See In re Alleged Abuse of Market Dominance of Qualcomm Incorporated*, KOREA FAIR TRADE COMMISSION DECISION NO. 2017-0-25 (January 20, 2017).

THE ASSERTED PATENTS

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

34. 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 1.

35. 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.

36. 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.

37. 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.

38. 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.

39. 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.

40. 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.

41. 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.

42. The ‘073 patent and its underlying patent application have been cited by 36 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘073 patent and its underlying patent application 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. 8,073,054

43. U.S. Patent No. 8,073,054 (the “’054 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 ‘054 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 ‘054 patent. A true and correct copy of the ‘054 patent is attached hereto as Exhibit 2.

44. The ‘054 patent discloses novel methods and apparatuses for estimating a current motion vector for a group of pixels of an image.

45. The inventions disclosed in the ‘054 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.

46. The ‘054 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.

47. The ‘054 patent discloses a motion estimation unit comprising a match error unit for calculating match errors of respective candidate motion vectors.

48. The ‘054 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.

49. The ‘054 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.

50. The ‘054 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.

51. The ‘054 patent and its underlying patent application have been cited by 14 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘054 patent and its underlying patent application 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. 6,774,918

52. U.S. Patent No. 6,774,918 (“the ‘918 patent”) entitled, *Video Overlay Processor with Reduced Memory And Bus Performance Requirements*, was filed on June 28, 2000. The ‘918 patent is subject to a 35 U.S.C. § 154(b) term extension of 591 days. Dynamic Data is the owner by assignment of all right, title, and interest in the ‘918 patent. A true and correct copy of the ‘918 patent is attached hereto as Exhibit 3.

53. The ‘918 patent claims specific methods and systems for providing an overlay such as a cursor in an on-screen display in a consumer electronic device. On-screen display (OSD) data for generating an image on a display device are downloaded to an OSD unit on an integrated circuit.

54. The ‘918 patent discloses downloading on-screen display (OSD) data for generating an image on a display device.

55. The ‘918 patent further discloses downloading the on-screen display (OSD) data in segments separated by gaps.

56. The ‘918 patent further discloses, during a gap in downloading the on-screen display data, downloading an amount of overlay data for generating an overlay on the image generated on a display device.

57. Further, the ‘918 patent discloses that the overlay data downloaded during a gap comprises a portion of the overlay data.

58. The inventions disclosed in the ‘918 patent improve the operation and efficiency of computer components because only a portion of the overlay data is downloaded during each burst gap, thus reducing the amount of memory needed to store the overlay data. The inventions disclosed in the ‘918 patent further eliminate the requirement that on-chip memory be large enough to hold the data needed for an entire overlay. Instead, only one line or a part of one line of the overlay needs to be stored on-chip.

59. The ‘918 patent claims a technical solution to a problem unique to video processing.

60. The ‘918 patent has been cited by several United States patents and patent applications as relevant prior art. Specifically, patents issued to Realtek Semiconductor Corp., Samsung Electronics Co., Ltd., and Thomson Licensing SA have all cited the ‘918 patent as relevant prior art.

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

61. 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 4.

62. The '689 patent discloses novel methods and apparatuses for encoding and decoding video data.

63. 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.

64. 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.

65. 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.

66. 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.

67. The '689 patent and its underlying patent application have been cited by several patents and patent applications as relevant prior art. Specifically, patents issued to Fujitsu Ltd., ***Qualcomm Inc***., Sony Corporation, Sun Patent Trust, and VIXS Systems Incorporated have all cited the '689 patent and its underlying patent application as relevant prior art.

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

68. 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 5.

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

70. 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.

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

72. 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.

73. 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.

74. 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.

75. The ‘177 patent has been cited by 16 United States and International patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘177 patent as relevant prior art:

- ***Qualcomm Incorporated***
- LG Electronics
- Microsoft Corporation
- Samsung Electronics Co., Ltd.
- VIXS Systems Incorporated
- General Instrument Corporation

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

76. 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 6.

77. 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.

78. 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.

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

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

81. 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.

82. The ‘039 patent and its related patents have been cited by 30 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

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

83. 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 7.

84. The ‘112 patent discloses novel methods and systems for video compression.

85. 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.

86. 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.

87. 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.

88. The ‘112 patent and its underlying patent application have been cited by 10 patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘112 patent and its underlying patent application 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

89. 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 8.

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

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

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

93. 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.

94. 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.

95. 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.

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

97. The ‘529 patent and its underlying patent application have been cited by multiple patents and patent applications as relevant prior art. Specifically, patents issued to Fujifilm Corp., and Samsung Electronics Co., Ltd. have cited the ‘529 patent and its underlying patent application as relevant prior art.

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

98. 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 9.

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

100. 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.

101. 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.

102. 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.

103. 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.

104. The '230 patent has been cited by 28 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '230 patent as relevant prior art:

- Sony Corporation
- Fujitsu Ltd.
- Motorola Solutions Inc.
- Nokia Oyj

- ***Qualcomm Inc***.
- Samsung Electronics Co., Ltd.
- Toshiba Corporation

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

105. 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 10.

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

107. 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.

108. 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.

109. 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.

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

111. 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.

112. 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.

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

114. 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.

115. The ‘041 patent has been cited by several United States patents and patent applications as relevant prior art. Specifically, patents and patent applications issued to Microsoft Corporation, Xilinx Inc., Canon Inc., Intel Corporation, and Nokia Oyj have cited the ‘041 patent and its underlying patent application as relevant prior art.

U.S. PATENT NO. 7,571,450

116. U.S. Patent No. 7,571,450 (the “’450 patent”) entitled, *System For And Method Of Displaying Information*, was filed on February 12, 2003, and claims priority to March 11, 2002. The ‘450 patent is subject to a 35 U.S.C. § 154(b) term extension of 846 days. Dynamic Data is the owner by assignment of all right, title, and interest in the ‘450 patent. A true and correct copy of the ‘450 patent is attached hereto as Exhibit 11.

117. The ‘450 patent discloses novel methods and systems for displaying information. The inventions disclosed in the ‘450 patent enable methods and systems wherein a user does not need to make a new selection after being switched from one service to a second service.

118. The inventions disclosed in the ‘450 patent permit a user of an information display system to have selections made on a first service also presented when the user switches to a second service without requiring the user to browse through the menus to define the type of information to be displayed a second time.

119. In one embodiment of the ‘450 patent, the user selection being made on the basis of the provided options while the first service was selected is use to select the appropriate data elements of the stream of the second service.

120. The inventions disclosed in the ‘450 patent enable various content sources to share similar information models.

121. The ‘450 patent, in one embodiment, discloses a method of displaying information on a display device wherein receiving a transport stream comprises services, with the services having elementary streams of video and of data elements.

122. The ‘450 patent, in one embodiment, discloses a method of displaying information on a display device wherein user actions of making a user selection of a type of information to be displayed on the device are received.

123. The ‘450 patent, in one embodiment, discloses a method of displaying information on a display device wherein filtering to select a data element of a first one of the services on the basis of the user selection is performed.

124. The ‘450 patent, in one embodiment, discloses a method of displaying information on a display device wherein rendering to calculate an output image to be displayed on the display device, on the basis of the first data element selected by the filer is performed.

125. The ‘450 patent, in one embodiment, discloses a method of displaying information on a display device wherein switching from the first one of the services to a second one of the

services, characterized in comprising a second step of filtering to select a second data-element of the second one of the services, on basis of the user selection is performed.

126. The ‘450 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 basis of the second data-element selected by the filter is performed.

127. The ‘450 patent and its underlying patent application have been cited by several patents and patent applications as relevant prior art. Specifically, patents issued to AT&T Intellectual Property I LP, Nokia Oyj, Samsung Electronics Co., Ltd., and ZTE Corporation have all cited the ‘450 patent and its underlying patent application as relevant prior art.

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

128. 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 12.

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

130. 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.

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

132. 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.

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

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

135. 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.

136. 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.

137. 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.

138. 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.

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

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

140. Qualcomm 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.

141. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm products that enable H.265 decoding functionality, including but not limited to: Qualcomm's HEVC Encoder for Servers (*available at*: https://developer.qualcomm.com/software/hevc-encoder-servers) and Qualcomm Snapdragon Processors (e.g., Snapdragon 850 Mobile Compute Platform, Snapdragon 845 Mobile Platform, Snapdragon 835 Mobile PC Platform, Snapdragon 835 Mobile Platform, Snapdragon 821 Mobile Platform, Snapdragon 820 Mobile Platform, Snapdragon 710 Mobile Platform, Snapdragon 675 Mobile Platform, Snapdragon 670 Mobile Platform, Snapdragon 660 Mobile Platform, Snapdragon 653 Mobile Platform, Snapdragon 652 Mobile Platform, Snapdragon 636 Mobile Platform, Snapdragon 632 Mobile Platform, Snapdragon 630 Mobile Platform, Snapdragon 626 Mobile Platform, Snapdragon 610 Mobile Platform, Snapdragon 450 Mobile Platform, Snapdragon 439 Mobile Platform, Snapdragon 435 Mobile Platform, Snapdragon 429 Mobile Platform, and the Snapdragon 212 Mobile Platform) (collectively, the "Qualcomm '073 Product(s)").

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

143. On information and belief, one or more of the Qualcomm '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.

144. On information and belief, Qualcomm 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 Qualcomm '073 Products.

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

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

147. On information and belief, one or more of the Qualcomm '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.

148. On information and belief, one or more of the Qualcomm '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.

149. On information and belief, one or more of the Qualcomm '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.

150. On information and belief, one or more of the Qualcomm '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.

151. On information and belief, the Qualcomm '073 Products are available to businesses and individuals throughout the United States.

152. On information and belief, the Qualcomm '073 Products are provided to businesses and individuals located in the Eastern District of Texas.

153. 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 Qualcomm '037 Products, Qualcomm 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).

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

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

156. Alternatively, Qualcomm has had knowledge of the '073 patent since at least August 12, 2014, when U.S. Patent No. 8,806,050, which is owned by Qualcomm and cites the '073 patent as relevant prior art, was issued.

157. Alternatively, Qualcomm has had knowledge of the '073 patent since at least November 11, 2014, when U.S. Patent No. 8,887,020, which is owned by Qualcomm and cites the '073 patent as relevant prior art, was issued.

158. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least December 23, 2014, when U.S. Patent No. 8,918,553, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

159. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least February 17, 2015, when U.S. Patent No. 8,958,375, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

160. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least September 15, 2015, when U.S. Patent No. 9,136,878, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

161. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least September 15, 2015, when U.S. Patent No. 9,136,983, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

162. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least November 3, 2015, when U.S. Patent No. 9,178,535, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

163. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least November 10, 2015, when U.S. Patent No. 9,185,439, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

164. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least November 17, 2015, when U.S. Patent No. 9,191,151, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

165. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least December 8, 2015, when U.S. Patent No. 9,209,934, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

166. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least January 12, 2016, when U.S. Patent No. 9,326,885, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

167. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least January 12, 2016, when U.S. Patent No. 9,236,887, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

168. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least January 12, 2016, when U.S. Patent No. 9,236,976, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

169. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least January 12, 2016, when U.S. Patent No. 9,237,101, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

170. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least January 19, 2016, when U.S. Patent No. 9,240,810, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

171. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least January 26, 2016, when U.S. Patent No. 9,246,633, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

172. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least February 2, 2016, when U.S. Patent No. 9,253,233, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

173. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least February 16, 2016, when U.S. Patent No. 9,264,069, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

174. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least February 23, 2016, when U.S. Patent No. 9,270,299, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

175. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least February 23, 2016, when U.S. Patent No. 9,270,414, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

176. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least March 8, 2016, when U.S. Patent No. 9,281,847, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

177. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least March 22, 2016, when U.S. Patent No. 9,294,226, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

178. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least March 15, 2016, when U.S. Patent No. 9,288,010, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

179. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least April 19, 2016, when U.S. Patent No. 9,319,448, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

180. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least June 28, 2016, when U.S. Patent No. 9,380,096, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

181. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least July 5, 2016, when U.S. Patent No. 9,386,064, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

182. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least August 16, 2016, when U.S. Patent No. 9,419,749, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

183. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least August 30, 2016, when U.S. Patent No. 9,432,433, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

184. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least September 27, 2016, when U.S. Patent No. 9,456,015, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

185. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least November 1, 2016, when U.S. Patent No. 9,485,546, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

186. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least March 14, 2017, when U.S. Patent No. 9,596,447, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

187. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least March 21, 2017, when U.S. Patent No. 9,602,802, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

188. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least April 18, 2017, when U.S. Patent No. 9,628,536, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

189. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least May 23, 2017, when U.S. Patent No. 9,660,763, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

190. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least December 12, 2017, when U.S. Patent No. 9,843,844, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

191. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least January 23, 2018, when U.S. Patent No. 9,876,607, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

192. Alternatively, Qualcomm has had knowledge of the ‘073 patent since at least March 13, 2018, when U.S. Patent No. 9,917,874, which is owned by Qualcomm and cites the ‘073 patent as relevant prior art, was issued.

193. Alternatively, Qualcomm has had knowledge of the '073 patent since at least June 5, 2018, when U.S. Patent No. 9,992,555, which is owned by Qualcomm and cites the '073 patent as relevant prior art, was issued.

194. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm '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. Qualcomm specifically intended and was aware that the normal and customary use of the accused products would infringe the '073 patent. Qualcomm 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, Qualcomm provides the Qualcomm '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 Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm '073 Products to utilize the products in a manner that directly infringe one or more claims of the '073 patent.[25] By providing instruction and training to customers and end-users on how to use the Qualcomm '073 Products in a manner that directly infringes one or more claims of the '073 patent, including at least claim 14, Qualcomm specifically intended to induce infringement of the '073 patent. On information and belief,

[25] *See, e.g.*, *Qualcomm High Efficiency Video Coding (HEVC) Video Encoder*, USER MANUAL (July 11, 2017); *Snapdragon 850 Mobile Compute Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-850-mobile-compute-platform (last visited Nov. 2018); *Snapdragon 710 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-710-mobile-platform (last visited Nov. 2018); *Snapdragon 653 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon/processors/653 (last visited Nov. 2018); *Snapdragon 212 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/snapdragon/processors/212 (last visited Nov. 2018).

Qualcomm engaged in such inducement to promote the sales of the Qualcomm '073 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '073 patent. Accordingly, Qualcomm 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.

195. 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. Qualcomm is utilizing the technology claimed in the '073 patent without paying a reasonable royalty. Qualcomm 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.

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

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

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

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

199. Qualcomm 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.

200. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm products that enable H.265 encoding functionality, including but not limited to: Qualcomm's HEVC Encoder for Servers (*available at*: https://developer.qualcomm.com/software/hevc-encoder-servers) and Qualcomm Snapdragon Processors (e.g., Snapdragon 850 Mobile Compute Platform, Snapdragon 845 Mobile Platform, Snapdragon 835 Mobile PC Platform, Snapdragon 835 Mobile Platform, Snapdragon 821 Mobile Platform, Snapdragon 820 Mobile Platform, Snapdragon 710 Mobile Platform, Snapdragon 675 Mobile Platform, Snapdragon 670 Mobile Platform, Snapdragon 660 Mobile Platform, Snapdragon 653 Mobile Platform, Snapdragon 652 Mobile Platform, Snapdragon 636 Mobile Platform, Snapdragon 632 Mobile Platform, Snapdragon 630 Mobile Platform, Snapdragon 626 Mobile Platform, Snapdragon 450 Mobile Platform, Snapdragon 439 Mobile Platform, Snapdragon 435 Mobile Platform, Snapdragon 429 Mobile Platform, and the Snapdragon 212 Mobile Platform) (collectively, the "Qualcomm '054 Product(s)").

201. On information and belief, one or more Qualcomm subsidiaries and/or affiliates use the Qualcomm '054 Products in regular business operations.

202. On information and belief, one or more of the Qualcomm '054 Products include technology for estimating a current motion vector for a group of pixels of an image.

203. On information and belief, Qualcomm has directly infringed and continues to directly infringe the '054 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 Qualcomm '054 Products.

204. On information and belief, one or more of the Qualcomm '054 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.

205. On information and belief, one or more of the Qualcomm '054 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.

206. On information and belief, one or more of the Qualcomm '054 Products include a motion estimation unit comprising a match error unit for calculating match errors of respective candidate motion vectors.

207. On information and belief, one or more of the Qualcomm '054 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.

208. On information and belief, one or more of the Qualcomm '054 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.

209. On information and belief, one or more of the Qualcomm '054 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.

210. On information and belief, the Qualcomm '054 Products are available to businesses and individuals throughout the United States.

211. On information and belief, the Qualcomm '054 Products are provided to businesses and individuals located in the Eastern District of Texas.

212. 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 Qualcomm '054 Products, Qualcomm has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the '054 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

213. On information and belief, Qualcomm also indirectly infringes the '054 patent by actively inducing infringement under 35 USC § 271(b).

214. Qualcomm has had knowledge of the '054 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Qualcomm knew of the '054 patent and knew of its infringement, including by way of this lawsuit.

215. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm '054 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. Qualcomm specifically intended and was aware that the normal

and customary use of the accused products would infringe the '054 patent. Qualcomm performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '054 patent and with the knowledge that the induced acts would constitute infringement. For example, Qualcomm provides the Qualcomm '054 Products that have the capability of operating in a manner that infringe one or more of the claims of the '054 patent, including at least claim 1, and Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm '054 Products to utilize the products in a manner that directly infringe one or more claims of the '054 patent.[26] By providing instruction and training to customers and end-users on how to use the Qualcomm '054 Products in a manner that directly infringes one or more claims of the '054 patent, including at least claim 1, Qualcomm specifically intended to induce infringement of the '054 patent. On information and belief, Qualcomm engaged in such inducement to promote the sales of the Qualcomm '054 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '054 patent. Accordingly, Qualcomm 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 '054 patent, knowing that such use constitutes infringement of the '054 patent.

[26] *See, e.g.*, *Qualcomm High Efficiency Video Coding (HEVC) Video Encoder*, USER MANUAL (July 11, 2017); *Snapdragon 850 Mobile Compute Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-850-mobile-compute-platform (last visited Nov. 2018); *Snapdragon 710 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-710-mobile-platform (last visited Nov. 2018); *Snapdragon 653 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon/processors/653 (last visited Nov. 2018); *Snapdragon 212 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/snapdragon/processors/212 (last visited Nov. 2018).

216. The ‘054 patent is well-known within the industry as demonstrated by multiple citations to the ‘054 patent in published patents and patent applications assigned to technology companies and academic institutions. Qualcomm is utilizing the technology claimed in the ‘054 patent without paying a reasonable royalty. Qualcomm is infringing the ‘054 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

217. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the ‘054 patent.

218. As a result of Qualcomm’s infringement of the ‘054 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Qualcomm’s infringement, but in no event less than a reasonable royalty for the use made of the invention by Qualcomm together with interest and costs as fixed by the Court.

COUNT III
INFRINGEMENT OF U.S. PATENT NO. 6,774,918

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

220. Qualcomm designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for image processing.

221. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm products that enable MPEG-DASH (Dynamic Adaptive Streaming over HTTP, ISO/IEC 23009-1) functionality, including but not limited to Qualcomm Snapdragon Processors (e.g., Snapdragon 850 Mobile Compute Platform, Snapdragon 845 Mobile Platform, Snapdragon 835 Mobile PC Platform, Snapdragon 835 Mobile Platform, Snapdragon 821 Mobile Platform, Snapdragon 820

Mobile Platform, Snapdragon 710 Mobile Platform, Snapdragon 675 Mobile Platform, Snapdragon 670 Mobile Platform, Snapdragon 660 Mobile Platform, Snapdragon 653 Mobile Platform, Snapdragon 652 Mobile Platform, Snapdragon 636 Mobile Platform, Snapdragon 632 Mobile Platform, Snapdragon 630 Mobile Platform, Snapdragon 626 Mobile Platform, Snapdragon 450 Mobile Platform, Snapdragon 439 Mobile Platform, Snapdragon 435 Mobile Platform, Snapdragon 429 Mobile Platform, and the Snapdragon 212 Mobile Platform) (collectively, the "Qualcomm '918 Product(s)").

222. On information and belief, one or more Qualcomm subsidiaries and/or affiliates use the Qualcomm '918 Products in regular business operations.

223. On information and belief, one or more of the Qualcomm '918 Products include technology for image processing.

224. On information and belief, the Qualcomm '918 Products are available to businesses and individuals throughout the United States.

225. On information and belief, the Qualcomm '918 Products are provided to businesses and individuals located in the Eastern District of Texas.

226. On information and belief, Qualcomm has directly infringed and continues to directly infringe the '918 patent by, among other things, making, using, offering for sale, and/or selling video processing technology, including but not limited to the Qualcomm '918 Products.

227. On information and belief, one or more of the Qualcomm '918 Products provide an overlay such as a cursor in an on-screen display in a consumer electronic device.

228. On information and belief, one or more of the Qualcomm '918 Products enable downloading on-screen display (OSD) data for generating an image on a display device.

229. On information and belief, one or more of the Qualcomm '918 Products download the on-screen display (OSD) data in segments separated by gaps.

230. On information and belief, one or more of the Qualcomm '918 Products download, during a gap in downloading the on-screen display data, an amount of overlay data for generating an overlay on the image generated on a display device.

231. On information and belief, one or more of the Qualcomm '918 Products contain overlay data downloaded during a gap that comprises a portion of the overlay data.

232. On information and belief, the Qualcomm '918 Products comprise a computer-usable medium having computer-readable program code embodied therein for causing a video processor to download on-screen display (OSD) data for generating an image on a display device, with said downloading occurring in segments separated by gaps.

233. On information and belief, the Qualcomm '918 Products comprise a computer-usable medium having computer-readable program code embodied therein for causing a video processor to download an amount of overlay data for generating an overlay on an image during a gap in downloading the on-screen display (OSD) data, wherein the amount of overlay data comprises a portion of said overlay.

234. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Qualcomm '918 Products, Qualcomm has injured Dynamic Data and is liable for directly infringing one or more claims of the '918 patent, including at least claim 18, pursuant to 35 U.S.C. § 271(a).

235. On information and belief, Qualcomm also indirectly infringes the '918 patent by actively inducing infringement under 35 USC § 271(b).

236. On information and belief, Qualcomm has had knowledge of the '918 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Qualcomm knew of the '918 patent and knew of its infringement, including by way of this lawsuit.

237. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm '918 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. Qualcomm specifically intended and was aware that the normal and customary use of the accused products would infringe the '918 patent. Qualcomm performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '918 patent and with the knowledge that the induced acts would constitute infringement. For example, Qualcomm provides the Qualcomm '918 Products that have the capability of operating in a manner that infringe one or more of the claims of the '918 patent, including at least claim 18, and Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm '918 Products to utilize the products in a manner that directly infringe one or more claims of the '918 patent.[27] By providing instruction and training to customers and end-users on how to use the Qualcomm '918 Products in a manner that directly infringes one or more claims of the '918 patent, including at least claim 18, Qualcomm specifically intended to induce infringement of the '918 patent. On information and belief,

[27] *See, e.g.*, *Snapdragon 850 Mobile Compute Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-850-mobile-compute-platform (last visited Nov. 2018); *Snapdragon 710 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-710-mobile-platform (last visited Nov. 2018); *Snapdragon 653 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon/processors/653 (last visited Nov. 2018); *Snapdragon 212 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/snapdragon/processors/212 (last visited Nov. 2018).

Qualcomm engaged in such inducement to promote the sales of the Qualcomm '918 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '918 patent. Accordingly, Qualcomm 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 '918 patent, knowing that such use constitutes infringement of the '918 patent.

238. The '918 patent is well-known within the industry as demonstrated by multiple citations to the '918 patent in published patents and patent applications assigned to technology companies and academic institutions. Qualcomm is utilizing the technology claimed in the '918 patent without paying a reasonable royalty. Qualcomm is infringing the '918 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

239. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '918 patent.

240. As a result of Qualcomm's infringement of the '918 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Qualcomm's infringement, but in no event less than a reasonable royalty for the use made of the invention by Qualcomm together with interest and costs as fixed by the Court.

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

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

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

243. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm products that encode and decode video data, including and incorporating the following: Adreno 612, Adreno 615, Adreno 616, and Adreno 630, and Adreno 640 (collectively, the "Qualcomm '689 Product(s)").

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

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

246. On information and belief, Qualcomm 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 Qualcomm '689 Products.

247. On information and belief, one or more of the Qualcomm '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.

248. On information and belief, one or more of the Qualcomm '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.

249. On information and belief, one or more of the Qualcomm ‘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.

250. On information and belief, one or more of the Qualcomm ‘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.

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

252. On information and belief, the Qualcomm ‘689 Products are provided to businesses and individuals located in the Eastern District of Texas.

253. 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 Qualcomm ‘689 Products, Qualcomm 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).

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

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

256. Alternatively, Qualcomm has had knowledge of the ‘689 patent since at least January 23, 2018, when U.S. Patent No. 9,877,033, which is owned by Qualcomm and cites the ‘689 patent as relevant prior art, was issued.

257. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm '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. Qualcomm specifically intended and was aware that the normal and customary use of the accused products would infringe the '689 patent. Qualcomm 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, Qualcomm provides the Qualcomm '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 Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm '689 Products to utilize the products in a manner that directly infringe one or more claims of the '689 patent.[28] By providing instruction and training to customers and end-users on how to use the Qualcomm '689 Products in a manner that directly infringes one or more claims of the '689 patent, including at least claim 1, Qualcomm specifically intended to induce infringement of the '689 patent. On information and belief, Qualcomm engaged in such inducement to promote the sales of the Qualcomm '689 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '689 patent. Accordingly, Qualcomm has induced and continues to induce users of the accused products to use the accused

[28] *See, e.g.*, *Qualcomm Snapdragon 675 Mobile Platform*, PRODUCT BRIEF, *available at*: https://www.qualcomm.com/media/documents/files/snapdragon-675-mobile-platform-product-brief.pdf (last visited Nov. 2018); *Qualcomm Snapdragon 670 Mobile Platform*, Qualcomm Website, *available at*: https://www.qualcomm.com/products/snapdragon-670-mobile-platform (last visited Nov. 2018); *Snapdragon 850 Mobile Compute Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-850-mobile-compute-platform (last visited Nov. 2018).

products in their ordinary and customary way to infringe the '689 patent, knowing that such use constitutes infringement of the '689 patent.

258. 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. Qualcomm is utilizing the technology claimed in the '689 patent without paying a reasonable royalty. Qualcomm 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.

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

260. As a result of Qualcomm's infringement of the '689 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Qualcomm's infringement, but in no event less than a reasonable royalty for the use made of the invention by Qualcomm together with interest and costs as fixed by the Court.

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

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

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

263. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm products that enable H.265 encoding functionality, including but not limited to: Qualcomm's HEVC Encoder for Servers (*available at*: https://developer.qualcomm.com/software/hevc-

encoder-servers) and Qualcomm Snapdragon Processors (e.g., Snapdragon 850 Mobile Compute Platform, Snapdragon 845 Mobile Platform, Snapdragon 835 Mobile PC Platform, Snapdragon 835 Mobile Platform, Snapdragon 821 Mobile Platform, Snapdragon 820 Mobile Platform, Snapdragon 710 Mobile Platform, Snapdragon 675 Mobile Platform, Snapdragon 670 Mobile Platform, Snapdragon 660 Mobile Platform, Snapdragon 653 Mobile Platform, Snapdragon 652 Mobile Platform, Snapdragon 636 Mobile Platform, Snapdragon 632 Mobile Platform, Snapdragon 630 Mobile Platform, Snapdragon 626 Mobile Platform, Snapdragon 450 Mobile Platform, Snapdragon 439 Mobile Platform, Snapdragon 435 Mobile Platform, Snapdragon 429 Mobile Platform, and the Snapdragon 212 Mobile Platform) (collectively, the "Qualcomm '177 Product(s)").

264. On information and belief, one or more Qualcomm subsidiaries and/or affiliates use the Qualcomm '177 Products in regular business operations.

265. On information and belief, one or more of the Qualcomm '177 Products include technology for motion estimation and motion-compensated picture signal processing.

266. On information and belief, the Qualcomm '177 Products are available to businesses and individuals throughout the United States.

267. On information and belief, the Qualcomm '177 Products are provided to businesses and individuals located in the Eastern District of Texas.

268. On information and belief, Qualcomm 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.

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

270. The Qualcomm ‘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.

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

272. The Qualcomm ‘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.

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

274. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Qualcomm ‘177 Products, Qualcomm 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).

275. On information and belief, Qualcomm also indirectly infringes the ‘177 patent by actively inducing infringement under 35 USC § 271(b).

276. On information and belief, Qualcomm has had knowledge of the ‘177 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Qualcomm knew of the ‘177 patent and knew of its infringement, including by way of this lawsuit.

277. Alternatively, Qualcomm has had knowledge of the '177 patent since at least November 23, 2010, when U.S. Patent No. 7,840,085, which is owned by Qualcomm and cites the '177 patent as relevant prior art, was issued.

278. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm '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. Qualcomm specifically intended and was aware that the normal and customary use of the accused products would infringe the '177 patent. Qualcomm 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, Qualcomm provides the Qualcomm '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 Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm '177 Products to utilize the products in a manner that directly infringe one or more claims of the '177 patent.[29] By providing instruction and training to customers and end-users on how to use the Qualcomm '177 Products in a manner that directly infringes one or more claims of the '177 patent, including at least claim 1, Qualcomm specifically intended to induce infringement of the '177 patent. On information and belief,

[29] *See, e.g.*, *Qualcomm High Efficiency Video Coding (HEVC) Video Encoder*, USER MANUAL (July 11, 2017); *Snapdragon 850 Mobile Compute Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-850-mobile-compute-platform (last visited Nov. 2018); *Snapdragon 710 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-710-mobile-platform (last visited Nov. 2018); *Snapdragon 653 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon/processors/653 (last visited Nov. 2018); *Snapdragon 212 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/snapdragon/processors/212 (last visited Nov. 2018).

Qualcomm engaged in such inducement to promote the sales of the Qualcomm '177 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '177 patent. Accordingly, Qualcomm 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.

279. 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. Qualcomm is utilizing the technology claimed in the '177 patent without paying a reasonable royalty. Qualcomm 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.

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

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

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

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

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

284. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm products that enable H.265 encoding functionality, including but not limited to: Qualcomm's HEVC Encoder for Servers (*available at*: https://developer.qualcomm.com/software/hevc-encoder-servers) and Qualcomm Snapdragon Processors (e.g., Snapdragon 850 Mobile Compute Platform, Snapdragon 845 Mobile Platform, Snapdragon 835 Mobile PC Platform, Snapdragon 835 Mobile Platform, Snapdragon 821 Mobile Platform, Snapdragon 820 Mobile Platform, Snapdragon 710 Mobile Platform, Snapdragon 675 Mobile Platform, Snapdragon 670 Mobile Platform, Snapdragon 660 Mobile Platform, Snapdragon 653 Mobile Platform, Snapdragon 652 Mobile Platform, Snapdragon 636 Mobile Platform, Snapdragon 632 Mobile Platform, Snapdragon 630 Mobile Platform, Snapdragon 626 Mobile Platform, Snapdragon 450 Mobile Platform, Snapdragon 439 Mobile Platform, Snapdragon 435 Mobile Platform, Snapdragon 429 Mobile Platform, and the Snapdragon 212 Mobile Platform) (collectively, the "Qualcomm '039 Product(s)").

285. On information and belief, one or more Qualcomm subsidiaries and/or affiliates use the Qualcomm '039 Products in regular business operations.

286. On information and belief, one or more of the Qualcomm '039 Products include technology for detecting motion.

287. On information and belief, the Qualcomm '039 Products are available to businesses and individuals throughout the United States.

288. On information and belief, the Qualcomm '039 Products are provided to businesses and individuals located in the Eastern District of Texas.

289. On information and belief, Qualcomm 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 Qualcomm ‘039 Products.

290. On information and belief, the Qualcomm ‘039 Products detect motion at a temporal intermediate position between previous and next images.

291. On information and belief, the Qualcomm ‘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.

292. On information and belief, the Qualcomm ‘039 Products detect motion at a temporal intermediate position between previous and next images.

293. On information and belief, the Qualcomm ‘039 Products utilize a criterion function for candidate vectors that is optimized.

294. On information and belief, the Qualcomm ‘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.

295. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Qualcomm ‘039 Products, Qualcomm has injured Dynamic Data and is liable for directly infringing one or more claims of the ‘039 patent, including at least claim 1, pursuant to 35 U.S.C. § 271(a).

296. On information and belief, Qualcomm also indirectly infringes the ‘039 Patent by actively inducing infringement under 35 USC § 271(b).

297. On information and belief, Qualcomm has had knowledge of the ‘039 Patent since at least service of this Complaint or shortly thereafter, and on information and belief, Qualcomm knew of the ‘039 Patent and knew of its infringement, including by way of this lawsuit.

298. Alternatively, Qualcomm has had knowledge of the ‘039 patent since at least February 11, 2014, when U.S. Patent No. 8,649,437, which is owned by Qualcomm and cites the ‘039 patent as relevant prior art, was issued.

299. Alternatively, Qualcomm has had knowledge of the ‘039 patent since at least October 8, 2013, when U.S. Patent No. 8,553,776, which is owned by Qualcomm and cites the ‘039 patent as relevant prior art, was issued.

300. Alternatively, Qualcomm has had knowledge of the ‘039 patent since at least January 21, 2014, when U.S. Patent No. 8,634,463, which is owned by Qualcomm and cites the ‘039 patent as relevant prior art, was issued.

301. Alternatively, Qualcomm has had knowledge of the ‘039 patent since at least September 6, 2010, when European Patent Appl. No. EP2194720, which is owned by Qualcomm and cites the ‘039 patent as relevant prior art, was published.

302. Alternatively, Qualcomm has had knowledge of the ‘039 patent since at least September 6, 2010, when European Patent Appl. No. EP2194720, which is owned by Qualcomm and cites the ‘039 patent as relevant prior art, was published.

303. Alternatively, Qualcomm has had knowledge of the ‘039 patent since at least June 10, 2014, when U.S. Patent No. 8,750,387, which is owned by Qualcomm and cites the ‘039 patent as relevant prior art, was issued.

304. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm ‘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. Qualcomm specifically intended and was aware that the normal and customary use of the accused products would infringe the '039 Patent. Qualcomm 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, Qualcomm provides the Qualcomm '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 1, and Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm '039 Products to utilize the products in a manner that directly infringe one or more claims of the '039 Patent.[30] By providing instruction and training to customers and end-users on how to use the Qualcomm '039 Products in a manner that directly infringes one or more claims of the '039 Patent, including at least claim 1, Qualcomm specifically intended to induce infringement of the '039 Patent. On information and belief, Qualcomm engaged in such inducement to promote the sales of the Qualcomm '039 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '039 Patent. Accordingly, Qualcomm has induced and continues to induce users of the accused products to use the accused

[30] *See, e.g.*, *Qualcomm High Efficiency Video Coding (HEVC) Video Encoder*, User Manual (July 11, 2017); *Snapdragon 850 Mobile Compute Platform*, Qualcomm Website, *available at*: https://www.qualcomm.com/products/snapdragon-850-mobile-compute-platform (last visited Nov. 2018); *Snapdragon 710 Mobile Platform*, Qualcomm Website, *available at*: https://www.qualcomm.com/products/snapdragon-710-mobile-platform (last visited Nov. 2018); *Snapdragon 653 Mobile Platform*, Qualcomm Website, *available at*: https://www.qualcomm.com/products/snapdragon/processors/653 (last visited Nov. 2018); *Snapdragon 212 Mobile Platform*, Qualcomm Website, *available at*: https://www.qualcomm.com/snapdragon/processors/212 (last visited Nov. 2018).

products in their ordinary and customary way to infringe the '039 Patent, knowing that such use constitutes infringement of the '039 Patent.

305. 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. Qualcomm is utilizing the technology claimed in the '039 Patent without paying a reasonable royalty. Qualcomm 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.

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

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

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

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

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

310. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm products that enable H.265 encoding functionality, including but not limited to: Qualcomm's HEVC Encoder for Servers (*available at*: https://developer.qualcomm.com/software/hevc-

encoder-servers) and Qualcomm Snapdragon Processors (e.g., Snapdragon 850 Mobile Compute Platform, Snapdragon 845 Mobile Platform, Snapdragon 835 Mobile PC Platform, Snapdragon 835 Mobile Platform, Snapdragon 821 Mobile Platform, Snapdragon 820 Mobile Platform, Snapdragon 710 Mobile Platform, Snapdragon 675 Mobile Platform, Snapdragon 670 Mobile Platform, Snapdragon 660 Mobile Platform, Snapdragon 653 Mobile Platform, Snapdragon 652 Mobile Platform, Snapdragon 636 Mobile Platform, Snapdragon 632 Mobile Platform, Snapdragon 630 Mobile Platform, Snapdragon 626 Mobile Platform, Snapdragon 450 Mobile Platform, Snapdragon 439 Mobile Platform, Snapdragon 435 Mobile Platform, Snapdragon 429 Mobile Platform, and the Snapdragon 212 Mobile Platform) (collectively, the "Qualcomm '112 Product(s)").

311. On information and belief, one or more Qualcomm subsidiaries and/or affiliates use the Qualcomm '112 Products in regular business operations.

312. On information and belief, one or more of the Qualcomm '112 Products include technology for video compression.

313. On information and belief, Qualcomm 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 Qualcomm '112 Products.

314. On information and belief, one or more of the Qualcomm '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.

315. On information and belief, one or more of the Qualcomm '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.

316. On information and belief, one or more of the Qualcomm '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.

317. On information and belief, the Qualcomm '112 Products are available to businesses and individuals throughout the United States.

318. On information and belief, the Qualcomm '112 Products are provided to businesses and individuals located in the Eastern District of Texas.

319. 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 Qualcomm '112 Products, Qualcomm 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).

320. On information and belief, Qualcomm also indirectly infringes the '112 patent by actively inducing infringement under 35 USC § 271(b).

321. Qualcomm has had knowledge of the '112 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Qualcomm knew of the '112 patent and knew of its infringement, including by way of this lawsuit.

322. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm '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. Qualcomm specifically intended and was aware that the normal and customary use of the accused products would infringe the '112 patent. Qualcomm 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, Qualcomm provides the Qualcomm '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 Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm '112 Products to utilize the products in a manner that directly infringe one or more claims of the '112 patent.[31] By providing instruction and training to customers and end-users on how to use the Qualcomm '112 Products in a manner that directly infringes one or more claims of the '112 patent, including at least claim 11, Qualcomm specifically intended to induce infringement of the '112 patent. On information and belief, Qualcomm engaged in such inducement to promote the sales of the Qualcomm '112 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '112 patent. Accordingly,

[31] *See, e.g.*, *Qualcomm High Efficiency Video Coding (HEVC) Video Encoder*, USER MANUAL (July 11, 2017); *Snapdragon 850 Mobile Compute Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-850-mobile-compute-platform (last visited Nov. 2018); *Snapdragon 710 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-710-mobile-platform (last visited Nov. 2018); *Snapdragon 653 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon/processors/653 (last visited Nov. 2018); *Snapdragon 212 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/snapdragon/processors/212 (last visited Nov. 2018).

Qualcomm 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.

323. 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. Qualcomm is utilizing the technology claimed in the '112 patent without paying a reasonable royalty. Qualcomm 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.

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

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

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

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

327. Qualcomm 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.

328. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm products that enable H.265 encoding functionality, including but not limited to: Qualcomm's HEVC Encoder for Servers (*available at*: https://developer.qualcomm.com/software/hevc-encoder-servers) and Qualcomm Snapdragon Processors (e.g., Snapdragon 850 Mobile Compute Platform, Snapdragon 845 Mobile Platform, Snapdragon 835 Mobile PC Platform, Snapdragon 835 Mobile Platform, Snapdragon 821 Mobile Platform, Snapdragon 820 Mobile Platform, Snapdragon 710 Mobile Platform, Snapdragon 675 Mobile Platform, Snapdragon 670 Mobile Platform, Snapdragon 660 Mobile Platform, Snapdragon 653 Mobile Platform, Snapdragon 652 Mobile Platform, Snapdragon 636 Mobile Platform, Snapdragon 632 Mobile Platform, Snapdragon 630 Mobile Platform, Snapdragon 626 Mobile Platform, Snapdragon 450 Mobile Platform, Snapdragon 439 Mobile Platform, Snapdragon 435 Mobile Platform, Snapdragon 429 Mobile Platform, and Snapdragon 212 Mobile Platform) (collectively, the "Qualcomm '529 Product(s)").

329. On information and belief, one or more Qualcomm subsidiaries and/or affiliates use the Qualcomm '529 Products in regular business operations.

330. On information and belief, one or more of the Qualcomm '529 Products include technology for determining motion vectors that are each assigned to individual image regions.

331. On information and belief, Qualcomm 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 Qualcomm '529 Products.

332. On information and belief, one or more of the Qualcomm '529 Products enable an increase in the resolution of video and image signals during the motion estimation process.

333. On information and belief, one or more of the Qualcomm '529 Products perform a method for determining motion vectors which are assigned to individual image regions of an image.

334. On information and belief, one or more of the Qualcomm '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.

335. On information and belief, one or more of the Qualcomm '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.

336. On information and belief, one or more of the Qualcomm '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.

337. On information and belief, one or more of the Qualcomm '529 Products perform a method that assigns the modified motion vector as the motion vector to the first image block.

338. On information and belief, the Qualcomm '529 Products are available to businesses and individuals throughout the United States.

339. On information and belief, the Qualcomm '529 Products are provided to businesses and individuals located in the Eastern District of Texas.

340. 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 Qualcomm '529 Products, Qualcomm 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).

341. On information and belief, Qualcomm also indirectly infringes the '529 patent by actively inducing infringement under 35 USC § 271(b).

342. Qualcomm has had knowledge of the '529 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Qualcomm knew of the '529 patent and knew of its infringement, including by way of this lawsuit.

343. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm '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. Qualcomm specifically intended and was aware that the normal and customary use of the accused products would infringe the '529 patent. Qualcomm 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, Qualcomm provides the Qualcomm '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 Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm '529 Products to utilize the products in a manner that directly infringe one or more claims of the '529 patent.[32] By providing instruction

[32] *See, e.g.*, *Qualcomm High Efficiency Video Coding (HEVC) Video Encoder*, USER MANUAL (July 11, 2017); *Snapdragon 850 Mobile Compute Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-850-mobile-compute-platform (last visited Nov. 2018); *Snapdragon 710 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-710-mobile-platform (last visited Nov. 2018); *Snapdragon 653 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon/processors/653 (last visited Nov. 2018);

and training to customers and end-users on how to use the Qualcomm '529 Products in a manner that directly infringes one or more claims of the '529 patent, including at least claim 1, Qualcomm specifically intended to induce infringement of the '529 patent. On information and belief, Qualcomm engaged in such inducement to promote the sales of the Qualcomm '529 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '529 patent. Accordingly, Qualcomm 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.

344. 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. Qualcomm is utilizing the technology claimed in the '529 patent without paying a reasonable royalty. Qualcomm 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.

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

346. As a result of Qualcomm's infringement of the '529 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Qualcomm's infringement, but in no event less than a reasonable royalty for the use made of the invention by Qualcomm together with interest and costs as fixed by the Court.

Snapdragon 212 Mobile Platform, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/snapdragon/processors/212 (last visited Nov. 2018).

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

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

348. Qualcomm 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.

349. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm products that enable VP9 encoding technology, including but not limited to: Snapdragon 835 Mobile PC Platform, Snapdragon 835 Mobile Platform, Snapdragon 710 Mobile Platform, Snapdragon 675 Mobile Platform, Snapdragon 670 Mobile Platform, Snapdragon 660 Mobile Platform, Snapdragon 652 Mobile Platform, Snapdragon 636 Mobile Platform, Snapdragon 632 Mobile Platform, and the Snapdragon 630 Mobile Platform (collectively, the "Qualcomm '230 Product(s)").

350. On information and belief, one or more Qualcomm subsidiaries and/or affiliates use the Qualcomm '230 Products in regular business operations.

351. On information and belief, one or more of the Qualcomm '230 Products include technology for selecting a background motion vector for a pixel in an occlusion region of an image.

352. On information and belief, the Qualcomm '230 Products are available to businesses and individuals throughout the United States.

353. On information and belief, the Qualcomm '230 Products are provided to businesses and individuals located in the Eastern District of Texas.

354. On information and belief, Qualcomm 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 Qualcomm '230 Products.

355. On information and belief, the Qualcomm '230 Products comprise systems and methods for selecting a background motion vector for a pixel in an occlusion region of an image.

356. On information and belief, the Qualcomm '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.

357. On information and belief, the Qualcomm '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.

358. On information and belief, the Qualcomm '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.

359. On information and belief, the Qualcomm '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.

360. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Qualcomm '230 Products, Qualcomm 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).

361. On information and belief, Qualcomm also indirectly infringes the ‘230 patent by actively inducing infringement under 35 USC § 271(b).

362. On information and belief, Qualcomm has had knowledge of the ‘230 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Qualcomm knew of the ‘230 patent and knew of its infringement, including by way of this lawsuit.

363. Alternatively, Qualcomm has had knowledge of the ‘230 patent since at least September 17, 2013, when U.S. Patent No. 8,537,283, which is owned by Qualcomm and cites the ‘230 patent as relevant prior art, was issued.

364. Alternatively, Qualcomm has had knowledge of the ‘230 patent since at least February 11, 2014, when U.S. Patent No. 8,649,437, which is owned by Qualcomm and cites the ‘230 patent as relevant prior art, was issued.

365. Alternatively, Qualcomm has had knowledge of the ‘230 patent since at least June 4, 2014, when Chinese Patent No. CN1019465514B, which is owned by Qualcomm and cites the ‘230 patent as relevant prior art, was issued.

366. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm ‘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. Qualcomm specifically intended and was aware that the normal and customary use of the accused products would infringe the ‘230 patent. Qualcomm 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, Qualcomm provides the Qualcomm ‘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 Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm '230 Products to utilize the products in a manner that directly infringe one or more claims of the '230 patent.[33] By providing instruction and training to customers and end-users on how to use the Qualcomm '230 Products in a manner that directly infringes one or more claims of the '230 patent, including at least claim 6, Qualcomm specifically intended to induce infringement of the '230 patent. On information and belief, Qualcomm engaged in such inducement to promote the sales of the Qualcomm '230 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '230 patent. Accordingly, Qualcomm 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.

367. 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. Qualcomm is utilizing the technology claimed in the '230 patent without paying a reasonable royalty. Qualcomm 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.

[33] *See, e.g.*, *Qualcomm Snapdragon 675 Mobile Platform*, PRODUCT BRIEF, *available at*: https://www.qualcomm.com/media/documents/files/snapdragon-675-mobile-platform-product-brief.pdf (last visited Nov. 2018); *Qualcomm Snapdragon 670 Mobile Platform*, Qualcomm Website, *available at*: https://www.qualcomm.com/products/snapdragon-670-mobile-platform (last visited Nov. 2018); *Snapdragon 710 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-710-mobile-platform (last visited Nov. 2018).

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

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

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

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

371. Qualcomm 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.

372. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm Adreno processors incorporating Adreno 500 and 600 series technology (e.g., Snapdragon 850 Mobile Compute Platform, Snapdragon 845 Mobile Platform, Snapdragon 835 Mobile PC Platform, Snapdragon 835 Mobile Platform, Snapdragon 821 Mobile Platform, Snapdragon 820 Mobile Platform, Snapdragon 710 Mobile Platform, Snapdragon 675 Mobile Platform, Snapdragon 670 Mobile Platform, Snapdragon 660 Mobile Platform, Snapdragon 653 Mobile Platform, Snapdragon 652 Mobile Platform, Snapdragon 636 Mobile Platform, Snapdragon 632 Mobile Platform, Snapdragon 630 Mobile Platform, Snapdragon 626 Mobile Platform, Snapdragon 450 Mobile Platform, Snapdragon 439 Mobile Platform, Snapdragon 435 Mobile Platform, and the Snapdragon 429 Mobile Platform) (collectively, the "Qualcomm '041 Product(s)").

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

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

375. On information and belief, Qualcomm 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 Qualcomm '041 Products.

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

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

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

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

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

381. On information and belief, one or more of the Qualcomm '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.

382. On information and belief, one or more of the Qualcomm '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.

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

384. On information and belief, one or more of the Qualcomm '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.

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

386. On information and belief, the Qualcomm '041 Products are provided to businesses and individuals located in the Eastern District of Texas.

387. 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 Qualcomm '041 Products, Qualcomm 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).

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

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

390. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm '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. Qualcomm specifically intended and was aware that the normal and customary use of the accused products would infringe the '041 patent. Qualcomm 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, Qualcomm provides the Qualcomm '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 Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm '041 Products to utilize the products in a manner that directly infringe one or more claims of the '041 patent.[34] By providing instruction

[34] *See, e.g.*, *Qualcomm Snapdragon 675 Mobile Platform*, PRODUCT BRIEF, *available at*: https://www.qualcomm.com/media/documents/files/snapdragon-675-mobile-platform-product-brief.pdf (last visited Nov. 2018); *Qualcomm Snapdragon 670 Mobile Platform*, Qualcomm Website, *available at*: https://www.qualcomm.com/products/snapdragon-670-mobile-platform (last visited Nov. 2018); *Snapdragon 850 Mobile Compute Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-850-mobile-compute-platform (last visited Nov. 2018); *Snapdragon 710 Mobile Platform*, QUALCOMM WEBSITE, *available at*:

and training to customers and end-users on how to use the Qualcomm '041 Products in a manner that directly infringes one or more claims of the '041 patent, including at least claim 1, Qualcomm specifically intended to induce infringement of the '041 patent. On information and belief, Qualcomm engaged in such inducement to promote the sales of the Qualcomm '041 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '041 patent. Accordingly, Qualcomm 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.

391. 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. Qualcomm is utilizing the technology claimed in the '041 patent without paying a reasonable royalty. Qualcomm is infringing the '041 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 '041 patent.

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

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https://www.qualcomm.com/products/snapdragon-710-mobile-platform (last visited Nov. 2018).

COUNT XI
INFRINGEMENT OF U.S. PATENT NO. 7,571,450

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

395. Qualcomm designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for displaying information.

396. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm products that enable MPEG-DASH (Dynamic Adaptive Streaming over HTTP, ISO/IEC 23009-1) functionality, including but not limited to Qualcomm Snapdragon Processors (e.g., Snapdragon 850 Mobile Compute Platform, Snapdragon 845 Mobile Platform, Snapdragon 835 Mobile PC Platform, Snapdragon 835 Mobile Platform, Snapdragon 821 Mobile Platform, Snapdragon 820 Mobile Platform, Snapdragon 710 Mobile Platform, Snapdragon 675 Mobile Platform, Snapdragon 670 Mobile Platform, Snapdragon 660 Mobile Platform, Snapdragon 653 Mobile Platform, Snapdragon 652 Mobile Platform, Snapdragon 636 Mobile Platform, Snapdragon 632 Mobile Platform, Snapdragon 630 Mobile Platform, Snapdragon 626 Mobile Platform, Snapdragon 450 Mobile Platform, Snapdragon 439 Mobile Platform, Snapdragon 435 Mobile Platform, Snapdragon 429 Mobile Platform, and Snapdragon 212 Mobile Platform) (collectively, the "Qualcomm '450 Product(s)").

397. On information and belief, one or more Qualcomm subsidiaries and/or affiliates use the Qualcomm '450 Products in regular business operations.

398. On information and belief, one or more of the Qualcomm '450 Products include technology for displaying information.

399. On information and belief, Qualcomm has directly infringed and continues to directly infringe the '450 patent by, among other things, making, using, offering for sale, and/or

selling technology for displaying information, including but not limited to the Qualcomm '450 Products.

400. On information and belief, one or more of the Qualcomm '450 Products enable methods and systems wherein a user does not need to make a new selection after being switched from one service to a second service.

401. On information and belief, one or more of the Qualcomm '450 Products permit a user of an information display system to have selections made on a first service also presented when the user switches to a second service without requiring the user to browse through the menus to define the type of information to be displayed a second time.

402. On information and belief, one or more of the Qualcomm '450 Products enable a user selection being made on the basis of the provided options while the first service was selected is use to select the appropriate data elements of the stream of the second service.

403. On information and belief, one or more of the Qualcomm '450 Products enable various content sources to share similar information models.

404. On information and belief, one or more of the Qualcomm '450 Products perform a method of displaying information on a display device wherein receiving a transport stream comprises services, with the services having elementary streams of video and of data elements.

405. On information and belief, one or more of the Qualcomm '450 Products perform a method of displaying information on a display device wherein user actions of making a user selection of a type of information to be displayed on the device are received.

406. On information and belief, one or more of the Qualcomm '450 Products perform a method of displaying information on a display device wherein filtering to select a data element of a first one of the services on the basis of the user selection is performed.

407. On information and belief, one or more of the Qualcomm ‘450 Products perform a method of displaying information on a display device wherein rendering to calculate an output image to be displayed on the display device, on the basis of the first data element selected by the filer is performed.

408. On information and belief, one or more of the Qualcomm ‘450 Products perform a method of displaying information on a display device wherein switching from the first one of the services to a second one of the services, characterized in comprising a second step of filtering to select a second data-element of the second one of the services, on basis of the user selection is performed.

409. On information and belief, one or more of the Qualcomm ‘450 Products perform 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 basis of the second data-element selected by the filter is performed.

410. On information and belief, the Qualcomm ‘450 Products are available to businesses and individuals throughout the United States.

411. On information and belief, the Qualcomm ‘450 Products are provided to businesses and individuals located in the Eastern District of Texas.

412. By making, using, testing, offering for sale, and/or selling products and services for displaying information, including but not limited to the Qualcomm ‘450 Products, Qualcomm has injured Dynamic Data and is liable to the Plaintiff for directly infringing one or more claims of the ‘450 patent, including at least claim 8 pursuant to 35 U.S.C. § 271(a).

413. On information and belief, Qualcomm also indirectly infringes the ‘450 patent by actively inducing infringement under 35 USC § 271(b).

414. Qualcomm has had knowledge of the ‘450 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Qualcomm knew of the ‘450 patent and knew of its infringement, including by way of this lawsuit.

415. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm ‘450 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. Qualcomm specifically intended and was aware that the normal and customary use of the accused products would infringe the ‘450 patent. Qualcomm performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the ‘450 patent and with the knowledge that the induced acts would constitute infringement. For example, Qualcomm provides the Qualcomm ‘450 Products that have the capability of operating in a manner that infringe one or more of the claims of the ‘450 patent, including at least claim 8, and Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm ‘450 Products to utilize the products in a manner that directly infringe one or more claims of the ‘450 patent.[35] By providing instruction and training to customers and end-users on how to use the Qualcomm ‘450 Products in a manner that directly infringes one or more claims of the ‘450 patent, including at least claim 8, Qualcomm

[35] *See, e.g.*, *Snapdragon 850 Mobile Compute Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-850-mobile-compute-platform (last visited Nov. 2018); *Snapdragon 710 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-710-mobile-platform (last visited Nov. 2018); *Snapdragon 653 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon/processors/653 (last visited Nov. 2018); *Snapdragon 212 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/snapdragon/processors/212 (last visited Nov. 2018).

specifically intended to induce infringement of the '450 patent. On information and belief, Qualcomm engaged in such inducement to promote the sales of the Qualcomm '450 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '450 patent. Accordingly, Qualcomm 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 '450 patent, knowing that such use constitutes infringement of the '450 patent.

416. The '450 patent is well-known within the industry as demonstrated by multiple citations to the '450 patent in published patents and patent applications assigned to technology companies and academic institutions. Qualcomm is utilizing the technology claimed in the '450 patent without paying a reasonable royalty. Qualcomm is infringing the '450 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

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

418. As a result of Qualcomm's infringement of the '450 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Qualcomm's infringement, but in no event less than a reasonable royalty for the use made of the invention by Qualcomm together with interest and costs as fixed by the Court.

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

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

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

421. Qualcomm designs, makes, sells, offers to sell, imports, and/or uses Qualcomm Adreno processors incorporating Adreno 500 and 600 series technology (e.g., Snapdragon 850 Mobile Compute Platform, Snapdragon 845 Mobile Platform, Snapdragon 835 Mobile PC Platform, Snapdragon 835 Mobile Platform, Snapdragon 821 Mobile Platform, Snapdragon 820 Mobile Platform, Snapdragon 710 Mobile Platform, Snapdragon 675 Mobile Platform, Snapdragon 670 Mobile Platform, Snapdragon 660 Mobile Platform, Snapdragon 653 Mobile Platform, Snapdragon 652 Mobile Platform, Snapdragon 636 Mobile Platform, Snapdragon 632 Mobile Platform, Snapdragon 630 Mobile Platform, Snapdragon 626 Mobile Platform, Snapdragon 450 Mobile Platform, Snapdragon 439 Mobile Platform, Snapdragon 435 Mobile Platform, and the Snapdragon 429 Mobile Platform) (collectively, the "Qualcomm '979 Product(s)").

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

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

424. On information and belief, Qualcomm 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 Qualcomm '979 Products.

425. On information and belief, one or more of the Qualcomm '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.

426. On information and belief, one or more of the Qualcomm '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.

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

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

429. On information and belief, one or more of the Qualcomm '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.

430. On information and belief, one or more of the Qualcomm '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.

431. On information and belief, one or more of the Qualcomm '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.

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

433. On information and belief, one or more of the Qualcomm '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.

434. On information and belief, the Qualcomm '979 Products are available to businesses and individuals throughout the United States.

435. On information and belief, the Qualcomm '979 Products are provided to businesses and individuals located in the Eastern District of Texas.

436. 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 Qualcomm '979 Products, Qualcomm 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).

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

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

439. On information and belief, Qualcomm intended to induce patent infringement by third-party customers and users of the Qualcomm '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. Qualcomm specifically intended and was aware that the normal

and customary use of the accused products would infringe the '979 patent. Qualcomm 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, Qualcomm provides the Qualcomm '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 Qualcomm further provides documentation and training materials that cause customers and end users of the Qualcomm '979 Products to utilize the products in a manner that directly infringe one or more claims of the '979 patent.[36] By providing instruction and training to customers and end-users on how to use the Qualcomm '979 Products in a manner that directly infringes one or more claims of the '979 patent, including at least claim 1, Qualcomm specifically intended to induce infringement of the '979 patent. On information and belief, Qualcomm engaged in such inducement to promote the sales of the Qualcomm '979 Products, e.g., through Qualcomm user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '979 patent. Accordingly, Qualcomm 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.

[36] *See, e.g.*, *Qualcomm Snapdragon 675 Mobile Platform*, PRODUCT BRIEF, *available at*: https://www.qualcomm.com/media/documents/files/snapdragon-675-mobile-platform-product-brief.pdf (last visited Nov. 2018); *Qualcomm Snapdragon 670 Mobile Platform*, Qualcomm Website, *available at*: https://www.qualcomm.com/products/snapdragon-670-mobile-platform (last visited Nov. 2018); *Snapdragon 850 Mobile Compute Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-850-mobile-compute-platform (last visited Nov. 2018); *Snapdragon 710 Mobile Platform*, QUALCOMM WEBSITE, *available at*: https://www.qualcomm.com/products/snapdragon-710-mobile-platform (last visited Nov. 2018).

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

441. As a result of Qualcomm's infringement of the '979 patent, Dynamic Data has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Qualcomm's infringement, but in no event less than a reasonable royalty for the use made of the invention by Qualcomm 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 Qualcomm has infringed, either literally and/or under the doctrine of equivalents, the '073, '054, '918, '689, '177, '039, '112, '529, '230, '041, '450, and '979 patents;

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

C. A judgment and order finding that Qualcomm'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 Qualcomm.

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: November 7, 2018

Respectfully submitted,

/s/ Daniel P. Hipskind

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