

1 MATTHEW D. POWERS (Bar No. 104795)
2 matthew.powers@tensegritylawgroup.com
3 STEVEN CHERENSKY (Bar No. 168275)
4 steven.cherensky@tensegritylawgroup.com
5 AZRA M. HADZIMEHMEDOVIC (Bar No. 239088)
6 azra@tensegritylawgroup.com
7 TENSEGRITY LAW GROUP, LLP
8 555 Twin Dolphin Drive, Suite 650
9 Redwood Shores, CA 94065
10 Telephone: (650) 802-6000
11 Fax: (650) 802-6001

9 *Attorneys for Plaintiff,*
10 *Polaris Innovations Limited*

11 UNITED STATES DISTRICT COURT
12 CENTRAL DISTRICT OF CALIFORNIA
13 SOUTHERN DIVISION
14

15
16 POLARIS INNOVATIONS LIMITED,) Case No. 8:16-cv-300
17 an Irish limited company,)
18)
19 Plaintiff,) **COMPLAINT FOR PATENT**
20 vs.) **INFRINGEMENT AND DEMAND**
21) **FOR JURY TRIAL**
22 KINGSTON TECHNOLOGY)
23 COMPANY, INC., a Delaware)
24 corporation,)
25 Defendant.)

26
27
28
COMPLAINT FOR PATENT INFRINGEMENT

1 Plaintiff Polaris Innovations Limited (“Polaris” or “Plaintiff”) hereby alleges
2 for its Complaint against Defendant Kingston Technology Company, Inc.
3 (“Kingston” or “Defendant”) as follows:

4 **JURISDICTION**

5 1. This is an action for patent infringement arising under the patent laws
6 of the United States, Title 35 of the United States Code. This Court has subject
7 matter jurisdiction of this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

8 2. This Court has personal jurisdiction over Kingston. Kingston is
9 headquartered in the Central District of California, has systematic and continuous
10 contacts with the forum, and conducts substantial business within this district.
11 Upon information and belief, Kingston has committed and continues to commit
12 acts of patent infringement, including making, selling, offering to sell, directly or
13 through intermediaries, subsidiaries and/or agents, infringing products within this
14 district, including to customers in this district.

15 **VENUE**

16 3. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391 and
17 1400(b) because Kingston is subject to personal jurisdiction in this district, and
18 because a substantial part of the events giving rise to Polaris’s claims occurred in
19 this district, and Kingston, which is headquartered in Fountain Valley, California,
20 has a regular and established place of business within this district.

21 **THE PARTIES**

22 4. Polaris Innovations Limited is a corporation organized and existing
23 under the laws of Ireland, with its principal place of business at Polaris Innovations
24 Limited, 29 Earlsfort Terrace, Dublin 2, Republic of Ireland.

25 5. On information and belief, Kingston Technology Company, Inc. is a
26 corporation organized and existing under the laws of Delaware with its principal
27 place of business at 17600 Newhope Street, Fountain Valley, California, 92708.

1 **NATURE OF THE ACTION**

2 6. This is a patent infringement action by Polaris to end Kingston's
3 unauthorized, willful, and infringing manufacture, use, sale, offering for sale,
4 and/or importation of products and methods incorporating Polaris's patented
5 inventions.

6 7. Polaris holds all substantial rights and interest in the Asserted Patents
7 described below, including the exclusive right to sue Kingston for infringement
8 and recover damages.

9 8. Kingston makes, uses, sells, offers for sale, and imports products and
10 methods that infringe the Asserted Patents. Polaris seeks monetary damages and
11 prejudgment interest for Kingston's past and ongoing infringement of the Asserted
12 Patents.

13 **THE ASSERTED PATENTS**

14 9. On December 5, 2000, the United States Patent and Trademark Office
15 duly and legally issued U.S. Patent No. 6,157,589 ("the 589 Patent"), entitled
16 "Dynamic semiconductor memory device and method for initializing a dynamic
17 semiconductor memory device." A copy of the 589 Patent is attached hereto as
18 Ex. 1.

19 10. Polaris owns all substantial right, title, and interest in the 589 Patent,
20 and holds the right to sue and recover damages for infringement thereof, including
21 past infringement.

22 11. On August 20, 2002, the United States Patent and Trademark Office
23 duly and legally issued U.S. Patent No. 6,438,057 B1 ("the 057 Patent"), entitled
24 "DRAM refresh timing adjustment device, system and method." A copy of the 057
25 Patent is attached hereto as Ex. 2.

26 12. Polaris owns all substantial right, title, and interest in the 057 Patent,
27 and holds the right to sue and recover damages for infringement thereof, including
28 past infringement.

1 13. On February 1, 2005, the United States Patent and Trademark Office
2 duly and legally issued U.S. Patent No. 6,850,414 B2 (“the 414 Patent”), entitled
3 “Electronic printed circuit board having a plurality of identically designed,
4 housing-encapsulated semiconductor memories.” A copy of the 414 Patent is
5 attached hereto as Ex. 3.

6 14. Polaris owns all substantial right, title, and interest in the 414 Patent,
7 and holds the right to sue and recover damages for infringement thereof, including
8 past infringement.

9 15. On April 17, 2007, the United States Patent and Trademark Office
10 duly and legally issued U.S. Patent No. 7,206,978 B2 (“the 978 Patent”), entitled
11 “Error detection in a circuit module.” A copy of the 978 Patent is attached hereto
12 as Ex. 4.

13 16. Polaris owns all substantial right, title, and interest in the 978 Patent,
14 and holds the right to sue and recover damages for infringement thereof, including
15 past infringement.

16 17. On January 1, 2008, the United States Patent and Trademark Office
17 duly and legally issued U.S. Patent No. 7,315,454 B2 (“the 454 Patent”), entitled
18 “Semiconductor memory module.” A copy of the 454 Patent is attached hereto as
19 Ex. 5.

20 18. Polaris owns all substantial right, title, and interest in the 454 Patent,
21 and holds the right to sue and recover damages for infringement thereof, including
22 past infringement.

23 19. On February 19, 2008, the United States Patent and Trademark Office
24 duly and legally issued U.S. Patent No. 7,334,150 B2 (“the 150 Patent”), entitled
25 “Memory module with a clock signal regeneration circuit and a register circuit for
26 temporarily storing the incoming command and address signals.” A copy of the
27 150 Patent is attached hereto as Ex. 6.

28 20. Polaris owns all substantial right, title, and interest in the 150 Patent,

1 and holds the right to sue and recover damages for infringement thereof, including
2 past infringement.

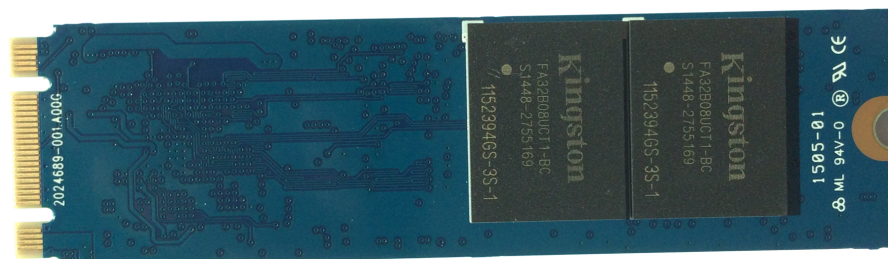
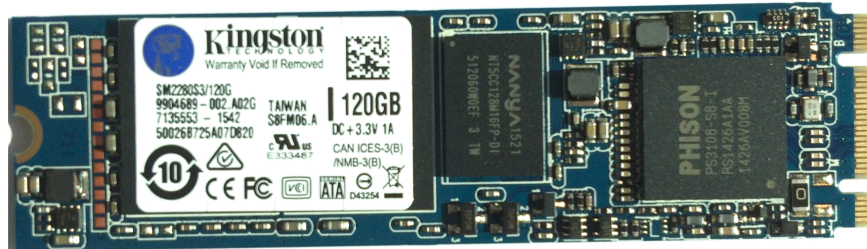
3 **COUNT I:**

4 **INFRINGEMENT OF U.S. PATENT NO. 6,157,589**

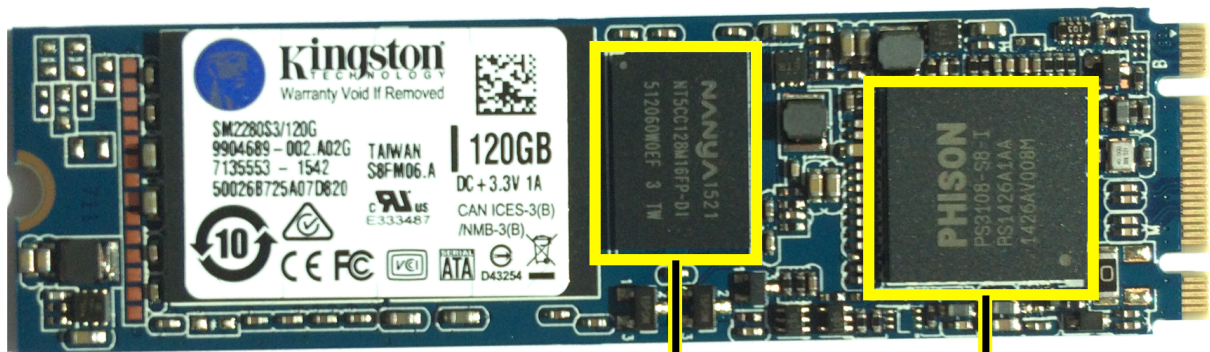
5 21. Polaris incorporates and realleges paragraphs 1-20 above as if fully set
6 forth herein.

7 22. On information and belief, Kingston has willfully infringed and
8 continues to willfully infringe one or more claims of the 589 Patent, including, but
9 not limited to, Claims 11 and 12, pursuant to 35 U.S.C. § 271(a), literally or under
10 the doctrine of equivalents, by making, using, selling, offering to sell in the United
11 States without authority, and/or importing into the United States without authority,
12 solid-state drives (SSDs) performing the claimed methods for initializing a
13 dynamic semiconductor memory device. These products, the “589 Patent
14 Infringing Products,” including by way of a non-limiting example only, Kingston’s
15 SSDs with model number SM2280S3/120G, perform the methods for initializing a
16 dynamic semiconductor memory device as required by the claims of the 589 Patent.

17 23. By way of example, the front and back views of a representative 589
18 Patent Infringing Product (SM2280S3/120G) that performs the claimed methods
19 are shown in the image below.



1 24. The front image of this representative 589 Infringing Product
2 (SM2280S3/120G) is annotated below for illustration.



10 DRAM chip (Nanya NT5CC128M16FP-D1)

11 Controller chip (Phison PS3108)

12
13 Specifically, the 589 Patent Infringing Products, such as SM2280S3/120G, include
14 a dynamic random access memory (DRAM) chip (labeled Nanya
15 NT5CC128M16FP in the photo above) and a controller chip (labeled Phison
16 PS3108 in the photo above). *See generally* 2Gb DDR3 SDRAM H-Die datasheet,
17 Nanya Technology (“Nanya Datasheet”), *available at*
18 <http://www.nanya.com/NanyaAdmin/GetFiles.ashx?ID=1199> (last visited February
19 3, 2016). On information and belief, when Kingston, its customers, and other third
20 parties turn on the 589 Patent Infringing Products, the controller chip supplies, via
21 an initialization circuit, a supply voltage stable signal (for example, the Active
22 Low Asynchronous Reset signal, \overline{RESET} , *see* Nanya Datasheet at 8) once a supply
23 voltage has been stabilized (for example, at the time labeled Tb, *see* Nanya
24 Datasheet, Fig. 3 at 13, and as described in Step 1 of the initialization sequence,
25 Nanya Datasheet at 11) after the switching-on operation of the dynamic
26 semiconductor memory device (for example, in the “Reset Procedure” state which
27 follows the “Power ON” state, Nanya Datasheet, Fig. 2 at 10). The controller chip
28 also supplies, via an enable circuit of the initialization circuit, an enable signal (for

1 example, the Clock Enable signal, CKE, Nanya Datasheet, Table 3 at 7, which the
2 DRAM waits for as described in Step 2 of the initialization sequence, Nanya
3 Datasheet at 11), the initialization circuit receiving the supply voltage stable signal
4 (for example, as described in Step 2 of the Reset and Initialization Procedure,
5 Nanya Datasheet at 11) and further command signals (for example, the “Command”
6 signals, Nanya Datasheet, Fig. 3 at 13) externally applied to the dynamic
7 semiconductor memory device, after an identification of a predetermined proper
8 initialization sequence of the further command signals (for example, the Mode
9 Register Set (“MRS”) and/or ZQ Calibration (“ZQCL”) commands issued in Steps
10 6-10 of the initialization sequence, Nanya Datasheet at 12-14) the enable signal
11 being generated (for example, as shown on the CKE line, Nanya Datasheet, Fig. 3
12 at 13, and as described in Step 3 of the initialization sequence, Nanya Datasheet at
13 11) and effecting an unlatching of a control circuit (for example, the control
14 circuits contained in the DRAM chip which prepare the SDRAM for receiving
15 valid commands during normal operation as described in Steps 10 and 12 of the
16 initialization sequence, Nanya Datasheet at 12) provided for a proper operation of
17 the dynamic semiconductor memory device. *See id.*

18 25. On information and belief, the controller provides at least one of a
19 preparation command signal for word line activation, a refresh command signal,
20 and a loading configuration register command signal as the further command
21 signals (for example, the MRS command, which acts both as a preparation
22 command signal and as a loading configuration register command signal, *see*
23 Nanya Datasheet at 12-14).

24 26. On information and belief, Kingston has induced and continues to
25 induce infringement of one or more claims of the 589 Patent, including, but not
26 limited to, Claims 11 and 12, pursuant to 35 U.S.C. § 271(b), by encouraging its
27 customers and other third parties to perform the claimed method for initializing a
28 dynamic semiconductor memory device. This performance of the claimed method

1 for initializing a dynamic semiconductor memory device, constitutes infringement,
2 literally or under the doctrine of equivalents, of one or more claims of the 589
3 Patent by such customers or third parties. Kingston's acts of inducement include:
4 providing its customers with the 589 Patent Infringing Products and intending its
5 customers to use the 589 Infringing Products with hardware, software, and other
6 infrastructure that enable and/or make use of these products; advertising these
7 products through its own and third-party websites (for example,
8 <http://www.kingston.com/ssd>); encouraging customers and other third parties to
9 communicate directly with Kingston representatives about these products (for
10 example, through the "Ask an Expert" feature on its website); and providing
11 instructions on how to use these products. For example, Kingston's documentation
12 supplied with the representative 589 Patent Infringing Product instructs users to
13 install the product in a computer system and restart the computer system, and thus
14 to perform the claimed methods. *See* Kingston Technology SSDNow Series Solid
15 State Drive Getting Started, No. 4402105-001.B00, *available at*
16 http://media.kingston.com/support/downloads/SSD_mSATA_Installguide.pdf (last
17 visited on February 3, 2016).

18 27. Kingston proceeded in this manner despite its actual knowledge of the
19 589 Patent and its knowledge that the specific actions it actively induced on the
20 part of its customers and other third parties constitute infringement of the 589
21 Patent at least as of February 1, 2016 when Polaris placed Kingston on notice of
22 infringement of the 589 Patent and identified Kingston's infringing products. At
23 the very least, because Kingston has been and remains on notice of the 589 Patent
24 and the accused infringement, it has been and remains willfully blind regarding the
25 infringement it has induced and continues to induce.

26 28. On information and belief, Kingston has contributed to and continues
27 to contribute to infringement of one or more claims of the 589 Patent, including,
28 but not limited to, Claims 11 and 12, pursuant to 35 U.S.C. § 271(c) by, without

1 authority, selling and/or offering to sell within the United States, importing, and/or
2 supplying components of systems that perform the claimed methods for initializing
3 a dynamic semiconductor memory device, including without limitation the 589
4 Patent Infringing Products. These components supplied by Kingston are key
5 components to building computer systems such as laptops or desktop computers.
6 When, for example, these products are installed on a computing device and used
7 for storage, the claimed dynamic semiconductor memory device is used, and/or the
8 claimed methods performed, thereby infringing, literally or under the doctrine of
9 equivalents, one or more claims of the 589 Patent. Kingston supplied and continues
10 to supply these components, including without limitation the 589 Patent Infringing
11 Products, with the knowledge of the 589 Patent and with the knowledge that these
12 components constitute material parts of the claimed inventions of the 589 Patent.
13 Kingston knows that these components are especially made and/or especially
14 adapted for use as claimed in the 589 Patent. Further, Kingston knows that there is
15 no substantial non-infringing use of these components.

16 29. Polaris has suffered damages as a result of Kingston's infringement of
17 the 589 Patent.

18 30. Kingston's infringement of the 589 Patent has been and continues to
19 be willful, deliberate, and in disregard of Polaris's patent rights. At least as of
20 February 1, 2016, when Polaris placed Kingston on notice of infringement of the
21 589 Patent and identified Kingston's infringing products, Kingston has had actual
22 knowledge of infringement of the 589 Patent and has proceeded to infringe the 589
23 Patent with full and complete knowledge of that patent and its applicability to
24 Kingston's products without taking a license under the 589 Patent. Despite
25 knowledge of the 589 Patent, Kingston has acted and is acting despite an
26 objectively high likelihood that its actions constitute patent infringement. This
27 objective risk was and is known to Kingston, and is also so obvious that it should
28 have been known to Kingston. Such willful and deliberate conduct entitles Polaris

1 to increased damages under 35 U.S.C. § 284 and to attorneys’ fees and costs
2 incurred in prosecuting this action under 35 U.S.C. § 285.

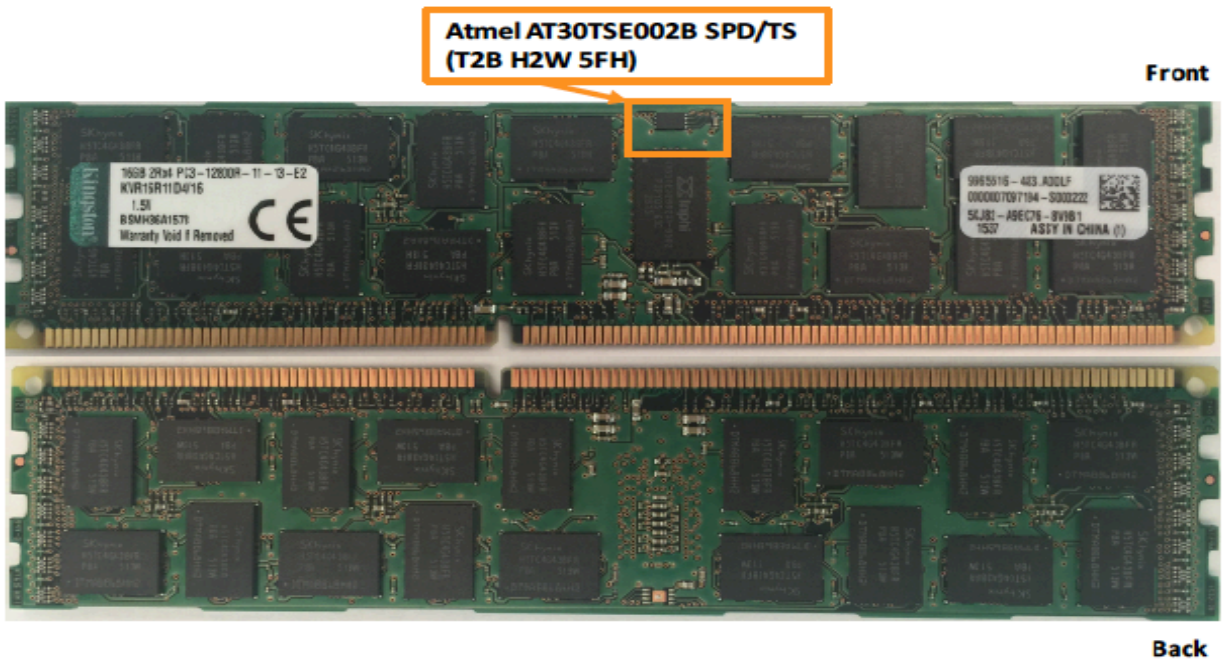
3 **COUNT II:**

4 **INFRINGEMENT OF U.S. PATENT NO. 6,438,057**

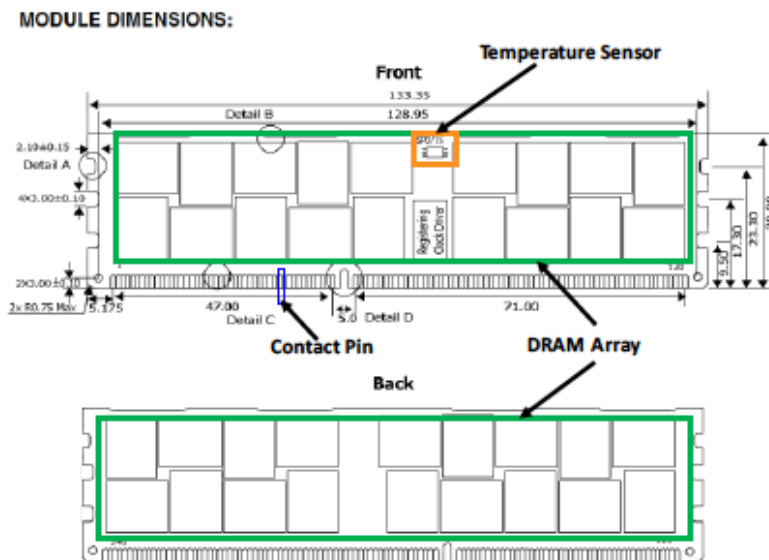
5 31. Polaris incorporates and realleges paragraphs 1-20 above as if fully set
6 forth herein.

7 32. On information and belief, Kingston has willfully infringed and
8 continues to willfully infringe one or more claims of the 057 Patent, including, but
9 not limited to, Claims 1 and 2, pursuant to 35 U.S.C. § 271(a), literally or under the
10 doctrine of equivalents, by making, using, selling, and/or offering to sell in the
11 United States without authority and/or importing into the United States without
12 authority, Double Data Rate 3 (DDR3) Dual In-line Memory Module (DIMM)
13 products, devices, systems, and/or components of systems that support the
14 Extended Temperature Range (85°C to 95°C). These products, the “057 Patent
15 Infringing Products,” including by way of a non-limiting example only, Kingston’s
16 memory module product with model number KVR16R11D4/16, include the
17 temperature-based refresh rate adjustment required by the claims of the 057 Patent.

18 33. By way of example, the front and back views of a representative 057
19 Patent Infringing Product (KVR16R11D4/16) that uses the claimed temperature-
20 based refresh rate adjustment are shown in the image below.



34. The schematic diagram of this representative 057 Infringing Product (KVR16R11D4/16) is reproduced from publicly available Kingston documentation and annotated below for illustration.



Kingston Value RAM Memory Module Specifications, Doc. No. VALUERAM1123-001.A00 (Apr. 25, 2012) (“KVR16R11D4/16 Datasheet”) at 2, available at http://www.kingston.com/dataSheets/KVR16R11D4_16.pdf (last visited February 3, 2016) (annotations added). Specifically, the 057 Patent Infringing Products, such as KVR16R11D4/16, are apparatuses comprising a

1 semiconductor package of the memory module including at least one contact pin
2 (one example shown in the blue box in the diagram above) and at least one
3 dynamic random access memory (DRAM) array comprising one or more DRAM
4 chips (shown in the green box in the diagram above), such as “DDR3-1600 CL11
5 SDRAM” in KVR16R11D4/16, *see* KVR16R11D4/16 Datasheet at 1. On
6 information and belief, all 057 Patent Infringing Products that support the
7 Extended Temperature Range comprise at least one temperature sensor (an
8 example shown in the orange box above) in thermal communication with the
9 DRAM array, operable to produce a signal indicative of a temperature of the
10 DRAM array or the equivalent, and coupled to at least one connection pin such that
11 the signal may be provided to external circuitry. For example, the representative
12 057 Patent Infringing Product (KVR16R11D4/16) comprises an Atmel
13 AT30TSE002B integrated temperature sensor with SEEPROM (annotated in the
14 product image above). *See* AT30TSE002B Integrated Temperature Sensor with
15 SEEPROM datasheet (“Atmel Datasheet”) at 1, *available at*
16 <http://www.atmel.com/images/doc8711.pdf> (last visited February 3, 2016). This
17 AT30TSE002B temperature sensor is in thermal communication with the DRAM
18 array, operable to produce a signal indicative of a temperature of the DRAM array
19 (for example, the Temperature Alert signal output by the EVENT pin) or the
20 equivalent, and coupled to at least one connection pin (for example, the EVENT
21 pin), such that the signal may be provided to external circuitry (for example, the
22 controller). *See* Atmel Datasheet at 1-4, 11, 16-18. Further, the DRAM array on the
23 057 Infringing Products is refreshed at a rate that decreases as the temperature of
24 the DRAM array decreases and that increases as the temperature of the DRAM
25 array increases. *See, e.g.*, KVR16R11D4/16 Datasheet at 1 (“Average Refresh
26 Period 7.8 μ s at lower than TCASE 85°C, 3.9 μ s at 85°C < TCASE \leq 95°C”).

27 35. On information and belief, at least one temperature sensor of one or
28 more of the 057 Infringing Products includes at least one diode having a forward

1 voltage drop that varies as a function of the temperature of the DRAM array, and
2 the signal corresponds to the forward voltage drop of the at least one diode. *See,*
3 *e.g.*, Atmel Datasheet at 3 (“Band Gap Temperature Sensor”) and 11 (“a band gap
4 type temperature sensor”).

5 36. On information and belief, Kingston has induced and continues to
6 induce infringement of one or more claims of the 057 Patent, including, but not
7 limited to, Claims 1, 2, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, and 17, pursuant to 35
8 U.S.C. § 271(b) by inducing its customers and other third parties to make, use, sell,
9 offer to sell, import into the United States without authorization infringing
10 products that comprise an 057 Infringing Product as described above and a refresh
11 unit and/or chip performing the temperature-based refresh rate adjustment (the
12 “057 Infringing Systems”), and by inducing its customers and other third parties to
13 perform the claimed method of the temperature-based refresh rate adjustment. This
14 making, using, selling, offering to sell, importing into the United States without
15 authorization one or more of the 057 Infringing Systems, and performance of the
16 claimed method constitute infringement, literally or under the doctrine of
17 equivalents, of one or more claims of the 057 Patent by such customers or third
18 parties as further explained below.

19 37. Specifically, on information and belief, the 057 Infringing Systems
20 comprise one of the 057 Infringing Products, as described in the paragraph 34
21 *supra*, and a refresh unit (for example, a unit performing the temperature-based
22 refresh rate adjustment in the controller, not shown in the images above) operable
23 to refresh the DRAM array at a rate that varies in response to the signal (such as
24 the Temperature Alert signal output by the EVENT pin). *See, e.g.*,
25 KVR16R11D4/16 Datasheet at 1 (“Average Refresh Period 7.8 μ s at lower than
26 TCASE 85°C, 3.9 μ s at 85°C < TCASE \leq 95°C”).

27 38. On information and belief, such refresh unit of the 057 Infringing
28 Systems further includes a refresh timing unit operable to establish the rate at

1 which the DRAM array is refreshed in response to the signal (such as the
2 Temperature Alert signal output by the EVENT pin). *Id.*

3 39. On information and belief, such refresh timing unit of one or more of
4 the 057 Infringing Systems further includes a refresh timing unit operable to
5 decrease the rate at which the DRAM array is refreshed as the signal (such as the
6 Temperature Alert signal output by the EVENT pin) indicates that the temperature
7 of the DRAM array decreases. *Id.*

8 40. On information and belief, such refresh timing unit of one or more of
9 the 057 Infringing Systems further includes a refresh timing unit operable to
10 increase the rate at which the DRAM array is refreshed as the signal (such as the
11 Temperature Alert signal output by the EVENT pin) indicates that the temperature
12 of the DRAM array increases. *Id.*

13 41. On information and belief, at least one temperature sensor of one or
14 more of the 057 Infringing Systems further includes at least one diode having a
15 forward voltage drop that varies as a function of the temperature of the DRAM
16 array, and the signal corresponds to the forward voltage drop of the at least one
17 diode. *See, e.g.,* Atmel Datasheet at 3 (“Band Gap Temperature Sensor”) and 11
18 (“a band gap type temperature sensor”).

19 42. On information and belief, the refresh unit of one or more of the 057
20 Infringing Systems is operable to sense the forward voltage drop of the diode to
21 determine the temperature of the DRAM array. *Id.*

22 43. On information and belief, one or more of the 057 Infringing Systems
23 comprise at least one DRAM chip including a DRAM array and at least one
24 temperature sensor in thermal communication with the DRAM array, at least one
25 temperature sensor being operable to produce a signal indicative of a temperature
26 of the DRAM array; the DRAM chip further includes at least one connection pin
27 operable to provide the signal to external circuitry. *See* paragraph 34 *supra*. Such
28 057 Infringing Systems further comprise at least one refresh chip (such as a chip in

1 the controller performing the temperature-based refresh rate adjustment, not shown
2 in the images above) operable to refresh the DRAM array at a rate that varies in
3 response to the signal, wherein the refresh chip is operable to (i) decrease the rate
4 at which the DRAM array is refreshed as the signal indicates that the temperature
5 of the DRAM array decreases; and (ii) increase the rate at which the DRAM array
6 is refreshed as the signal indicates that the temperature of the DRAM array
7 increases. *Id.*

8 44. On information and belief, at least one temperature sensor of the 057
9 Infringing Systems as described in paragraph 43 further includes at least one diode
10 having a forward voltage drop that varies as a function of the temperature of the
11 DRAM array, and the signal corresponds to the forward voltage drop of the at least
12 one diode. *See, e.g.,* Atmel Datasheet at 3 (“Band Gap Temperature Sensor”) and
13 11 (“a band gap type temperature sensor”).

14 45. On information and belief, the refresh chip in the 057 Infringing
15 Systems is operable to sense the forward voltage drop of the diode to determine the
16 temperature of the DRAM array. *Id.*

17 46. On information and belief, Kingston’s customers and other third
18 parties perform the claimed method of temperature-based refresh rate adjustment
19 by using the 057 Infringing System. Such method comprises sensing a temperature
20 of a dynamic random access memory (DRAM) array; outputting a signal indicative
21 of the temperature of the DRAM array to external circuitry; and refreshing
22 contents of the DRAM array at a rate that (i) decreases as the temperature of the
23 DRAM array decreases; and (ii) increases as the temperature of the DRAM array
24 increases. *See* paragraphs 34 and 37 *supra*.

25 47. On information and belief, the steps of the claimed method performed
26 by Kingston’s customers and other third parties for sensing the temperature of the
27 DRAM array also comprises sensing a forward voltage drop of a diode that is in
28 thermal communication with the DRAM array. *See* paragraphs 35, 41, 42, 44 *supra*.

1 48. Kingston’s acts of active inducement of direct infringement by its
2 customers and other third parties include: providing its customers with the 057
3 Infringing Products and intending its customers to use these infringing memory
4 module products with hardware and software and other infrastructure, including a
5 controller that comprises a refresh unit and/or chip to make and use the 057
6 Infringing Systems; advertising its infringing memory module products through its
7 own and third-party websites (for example,
8 [http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?Memory](http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?MemoryType=DIMM,3,)
9 [Type=DIMM,3,;](http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?MemoryType=DIMM,3,)); encouraging customers and other third parties to communicate
10 regarding these products directly with Kingston representatives (for example,
11 through the “Ask an Expert” feature on its website); and providing its customers
12 and other third parties with instructions on how to combine these infringing
13 memory module products with hardware and software and other infrastructure to
14 make and use the 057 Infringing System, and to perform the claimed method. For
15 example, Kingston’s user manual, supplied with the representative 057 Patent
16 Infringing Product, instructs the users to install and use the product in a computer
17 system, thus instructing the users to make and use the 057 Infringing System and
18 enable the users to perform the claimed method. *See* Ex. 7, Kingston Technology
19 Warranty and Installation Guide, Doc. 4402092-001.D00; *see also*,
20 KVR16R11D4/16 Datasheet.

21 49. Kingston proceeded in this manner despite its actual knowledge of the
22 057 Patent and its knowledge that the specific actions it actively induced on the
23 part of its customers and other third parties constitute infringement of the 057
24 Patent at least as of February 1, 2016, when Polaris placed Kingston on notice of
25 infringement of the 057 Patent and identified Kingston’s infringing products. At
26 the very least, because Kingston has been and remains on notice of the 057 Patent
27 and the accused infringement, it has been and remains willfully blind regarding the
28 infringement it has induced and continues to induce.

1 50. On information and belief, Kingston has contributed to and continues
2 to contribute to infringement of one or more claims of the 057 Patent, including,
3 but not limited to, Claims 1, 2, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, and 17, pursuant to
4 35 U.S.C. § 271(c) by, without authority, selling, offering to sell within the United
5 States, importing, and/or supplying components of the 057 Infringing Systems, and
6 apparatuses for use in the claimed methods of the temperature-based refresh rate
7 adjustment, including without limitation the 057 Patent Infringing Products. These
8 components and apparatuses supplied by Kingston, including without limitation
9 the 057 Patent Infringing Products, are key components for temperature-based
10 refresh rate adjustment, thus constituting material parts of the claimed inventions
11 of the 057 Patent. Kingston supplied and continues to supply these components and
12 apparatuses, including without limitation the 057 Patent Infringing Products, with
13 the knowledge of the 057 Patent and with the knowledge that these components
14 constitute material parts of the claimed inventions of the 057 Patent. Kingston
15 knows that these components and apparatuses are especially made and/or
16 especially adapted for use as claimed in the 057 Patent to support the Extended
17 Temperature Range (85°C to 95°C) of DDR3 memory module products. Further,
18 Kingston knows that there is no substantial non-infringing use of these components
19 for temperature-based refresh rate adjustment.

20 51. Polaris has suffered damages as a result of Kingston's infringement of
21 the 057 Patent.

22 52. Kingston's infringement of the 057 Patent has been and continues to
23 be willful, deliberate, and in disregard of Polaris's patent rights. At least as of
24 February 1, 2016, when Polaris placed Kingston on notice of infringement of the
25 057 Patent and identified Kingston's infringing products, Kingston has had actual
26 knowledge of infringement of the 057 Patent and has proceeded to infringe the 057
27 Patent with full and complete knowledge of that patent and its applicability to
28 Kingston's products without taking a license under the 057 Patent. Despite

1 knowledge of the 057 Patent, Kingston has acted and is acting despite an
2 objectively high likelihood that its actions constitute patent infringement. This
3 objective risk was and is known to Kingston, and is also so obvious that it should
4 have been known to Kingston. Such willful and deliberate conduct entitles Polaris
5 to increased damages under 35 U.S.C. § 284 and to attorneys’ fees and costs
6 incurred in prosecuting this action under 35 U.S.C. § 285.

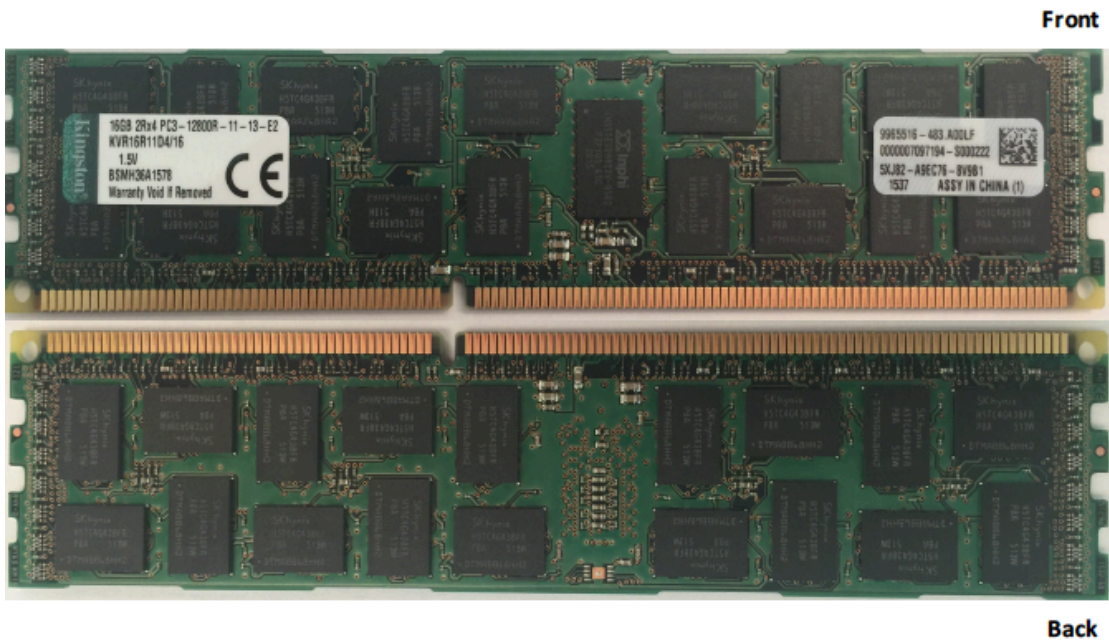
7 **COUNT III:**

8 **INFRINGEMENT OF U.S. PATENT NO. 6,850,414**

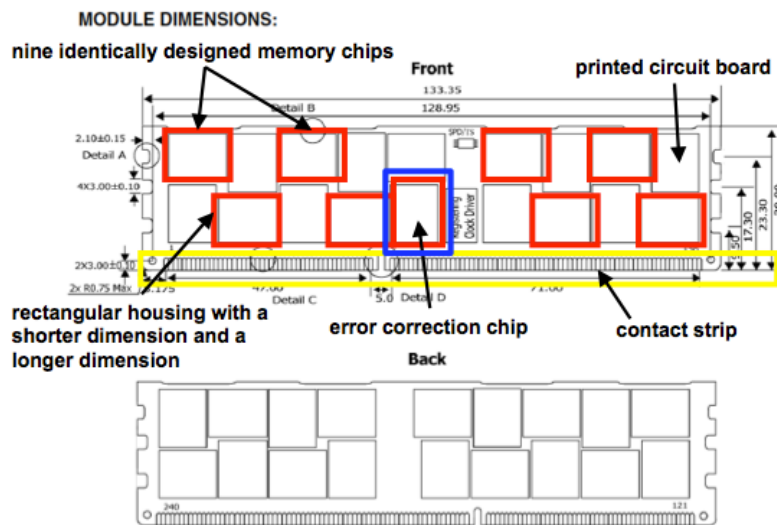
9 53. Polaris incorporates and realleges paragraphs 1-20 above as if fully set
10 forth herein.

11 54. On information and belief, Kingston has willfully infringed and
12 continues to willfully infringe one or more claims of the 414 Patent, including, but
13 not limited to, Claims 1, 4, and 8, pursuant to 35 U.S.C. § 271(a), literally or under
14 the doctrine of equivalents, by making, using, selling, and/or offering to sell in the
15 United States without authority and/or importing into the United States without
16 authority, memory products, devices, systems, and/or components of systems that
17 include the claimed arrangements and configurations of the memory chips (the
18 “414 Patent Infringing Products”), including, for example, Kingston’s memory
19 module products with model number KVR16R11D4/16.

20 55. By way of example, the front and back views of a representative 414
21 Patent Infringing Product (KVR16R11D4/16) that uses the claimed arrangement
22 and configuration of the memory chips are shown in the image below.



11 56. The schematic diagram of this representative 414 Infringing Product
12 (KVR16R11D4/16) is reproduced from publicly available Kingston documentation
13 and annotated below for illustration.



20

21

22

23

24 See KVR16R11D4/16 Datasheet at 2 (annotations added).

25 57. Specifically, the 414 Patent Infringing Products, such as
26 KVR16R11D4/16, are memory modules having at least nine identical
27 semiconductor memories (shown in red in the diagram above) that are
28 encapsulated in rectangular housing with a shorter dimension and a longer

1 dimension, each of which are individually connected to an electronic printed
2 circuit board, the front and back sides of which are illustrated above. The
3 electronic printed circuit board has a contact strip (one example shown in the
4 yellow box in the diagram above) for insertion into another electronic unit. One of
5 the semiconductor memories is connected as an error correction chip (shown in
6 blue above in the diagram above) with its housing being oriented perpendicular to
7 the contact strip, while the longer dimensions of eight other semiconductor
8 memories are oriented parallel with the contact strip. *See* KVR16R11D4/16
9 Datasheet at 2.

10 58. In addition, one or more of the 414 Patent Infringing Products has a
11 height of 1 to 1.2 inches perpendicular to said contact strip. *See id.*

12 59. Further, one or more of the 414 Patent Infringing Products has a width
13 of 5.25 inches. *See id.*

14 60. On information and belief, Kingston has induced and continues to
15 induce infringement of one or more claims of the 414 Patent, including, but not
16 limited to, Claims 1, 4, and 8, pursuant to 35 U.S.C. § 271(b) by inducing its
17 customers and other third parties to use without authorization the infringing
18 products that use the claimed arrangement and configuration of the memory chips,
19 including but not limited to the 414 Patent Infringing Products. The use, without
20 authorization, of the infringing products that comprise the claimed arrangement
21 and configuration of the memory chips constitutes infringement, literally or under
22 the doctrine of equivalents, of one or more claims of the 414 Patent by such
23 customers or third parties. Kingston's acts of inducement include: providing its
24 customers with the 414 Patent Infringing Products and intending its customers to
25 use the 414 Infringing Products with hardware, software and other infrastructure
26 that enable and/or make use of these products; advertising these products through
27 its own and third-party websites (for example,
28 <http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?Memory>

1 [Type=DIMM,3,,](#)); encouraging customers and other third parties to communicate
2 directly with Kingston representatives about these products (for example, through
3 the “Ask an Expert” feature on its website); and providing instructions on how to
4 use these products. For example, Kingston’s documentation accompanying the
5 representative 414 Patent Infringing Product provides the users with instructions
6 on how to install the product in a computer system and enables the users to use the
7 product. *See* Ex. 7, Kingston Technology Warranty and Installation Guide, Doc.
8 4402092-001.D00; *see also*, KVR16R11D4/16 Datasheet.

9 61. Kingston proceeded in this manner despite its actual knowledge of the
10 414 Patent and its knowledge that the specific actions it actively induced on the
11 part of its customers and other third parties constitute infringement of the 414
12 Patent at least as of February 1, 2016 when Polaris placed Kingston on notice of
13 infringement of the 414 Patent and identified Kingston’s infringing products. At
14 the very least, because Kingston has been and remains on notice of the 414 Patent
15 and the accused infringement, it has been and remains willfully blind regarding the
16 infringement it has induced and continues to induce.

17 62. Polaris has suffered damages as a result of Kingston’s infringement of
18 the 414 Patent.

19 63. Kingston’s infringement has been and continues to be willful,
20 deliberate and in disregard of Polaris’s patent rights. At least as of February 1,
21 2016, when Polaris placed Kingston on notice of infringement of the 414 Patent
22 and identified Kingston’s infringing products, Kingston has had actual knowledge
23 of infringement of the 414 Patent and has proceeded to infringe the 414 Patent with
24 full and complete knowledge of that patent and its applicability to Kingston
25 products without taking a license under the 414 Patent. Despite knowledge of the
26 414 Patent, Kingston has acted and is acting despite an objectively high likelihood
27 that its actions constitute patent infringement. This objective risk was and is known
28 to Kingston, and is also so obvious that it should have been known to Kingston.

1 Such willful and deliberate conduct entitles Polaris to increased damages under 35
2 U.S.C. § 284 and to attorneys’ fees and costs incurred in prosecuting this action
3 under 35 U.S.C. § 285.

4 **COUNT IV:**

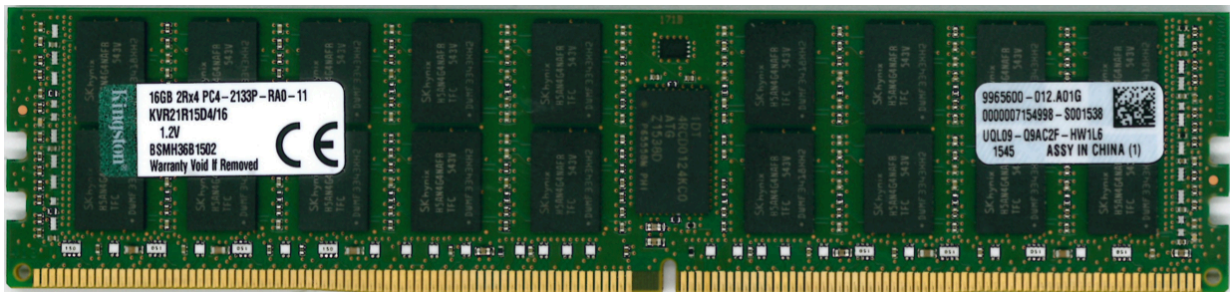
5 **INFRINGEMENT OF U.S. PATENT NO. 7,206,978**

6 64. Polaris incorporates and realleges paragraphs 1-20 above as if fully set
7 forth herein.

8 65. On information and belief, Kingston has willfully infringed and
9 continues to willfully infringe one or more claims of the 978 Patent, including, but
10 not limited to, Claims 1, 2, 3, 5, 10, 11, and 12, pursuant to 35 U.S.C. § 271(a),
11 literally or under the doctrine of equivalents, by making, using, selling, and/or
12 offering to sell in the United States and/or importing into the United States without
13 authority, claimed memory module products, devices, systems, and/or components
14 of systems (the “978 Patent Infringing Products”), including, for example,
15 Kingston’s memory module products with model number KVR21R15D4/16.

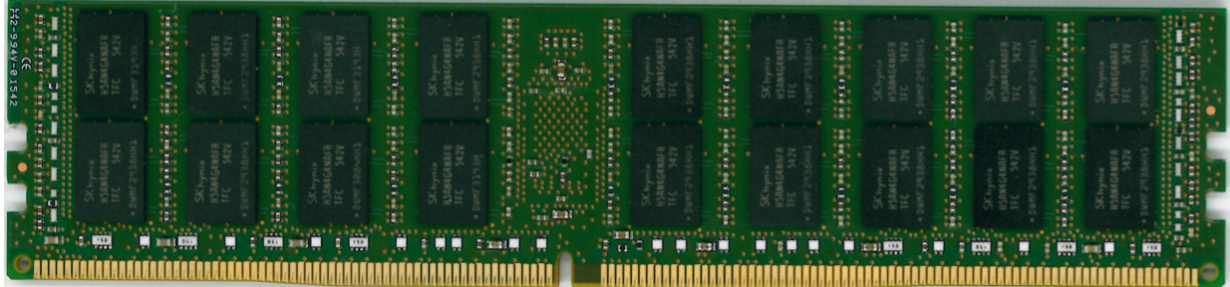
16 66. By way of example, the front and back views of a representative 978
17 Patent Infringing Product (KVR21R15D4/16) are shown in the image below.

18 **Front**



23
24
25
26
27
28

Back



1 67. The 978 Patent Infringing Products, such as KVR21R15D4/16, are
2 circuit modules comprising a module board, the front and back sides of which are
3 shown above. A plurality of circuit units, each consisting of a single integrated
4 circuit memory chip, is arranged on the module board (in the above example, 36
5 integrated memory chips are arranged on the module board). *See, e.g.*, Kingston
6 KVR21R15D4/16 16GB 2Rx4 2G x 72-Bit PC4-2133 CL15 Registered w/Parity
7 288-Pin DIMM Specification, Doc. No. VALUERAM1447-001.C00 (Feb. 24,
8 2015) (“KVR21R15D4/16 Datasheet”) at 1, *available at*
9 http://www.kingston.com/dataSheets/KVR21R15D4_16.pdf (last visited February
10 3, 2016). Further, on information and belief, the 978 Patent Infringing Products
11 comprise a main bus having a plurality of lines, branching into a plurality of sub-
12 buses having a plurality of lines, each of the sub-buses being connected to one of
13 the plurality of the circuit units. Further, upon information and belief, each circuit
14 unit (in the example above, each dynamic random access memory, or “DRAM,”
15 chip) in the 978 Patent Infringing Products comprises an indication signal
16 generating unit for providing an indication signal based on a combination of the
17 signals received on the plurality of lines of the sub-bus connected to the respective
18 circuit unit (in the example above, each memory chip combines the PAR
19 (command and address parity) input signal with the command and address input
20 signals to determine whether there is an error and generate the appropriate
21 indication signal). *See, e.g.*, KVR21R15D4/16 Datasheet at 1 (“CA parity
22 (Command/Address Parity) mode is supported”). Each circuit unit also comprises
23 an indication signal output for outputting the indication signal (in the example
24 above, the ALERT_n pin on each memory chip).

25 68. In addition, one or more 978 Patent Infringing Products comprise
26 means for providing a check signal to each of the circuit units, the structure of
27 which is the same as or equivalent to that disclosed in the patent specification (in
28 the example above, the PAR (command and address parity) input on each dynamic

1 random access memory chip). *See, e.g.*, KVR21R15D4/16 Datasheet at 1 (“CA
2 parity (Command/Address Parity) mode is supported”). Upon information and
3 belief, this indication signal generating unit generates said indication signal based
4 on a combination of the signals on the plurality of lines of the respective sub-bus
5 and the check signal so that the indication signal represents an error signal (in the
6 example above, each memory chip combines the PAR input signal with the
7 command and address input signals to determine whether there is an error and
8 generate the appropriate indication signal).

9 69. In addition, on information and belief, one or more 978 Patent
10 Infringing Products comprise an error reporting means, the structure of which is
11 the same as or equivalent to that disclosed in the patent specification, being
12 connected to the indication signal outputs of the circuit units, and wherein each
13 error reporting means is configured to drive a module error out signal (in the
14 example above, the ALERT_n outputs are connected to each other by traces on the
15 printed circuit board, and buffered by a register, they drive the ALERT_n signal
16 for the entire module). *See, e.g.*, KVR21R15D4/16 Datasheet at 1 (“CA parity
17 (Command/Address Parity) mode is supported”).

18 70. In addition, on information and belief, one or more 978 Patent
19 Infringing Products comprise an indication reporting means, the structure of which
20 is the same as or equivalent to that disclosed in the patent specification, being
21 connected to the indication signal outputs of the circuit units and wherein each
22 indication reporting means is configured to drive a module indication out signal (in
23 the example above, the ALERT_n outputs are connected to each other by traces on
24 the printed circuit board, and buffered by a register, they drive the ALERT_n
25 signal for the entire module).

26 71. In addition, on information and belief, one or more 978 Patent
27 Infringing Products comprise a DIMM, wherein the circuit units are memory units,
28 wherein the main bus is a memory main bus, and the sub-busses are memory sub-

1 buses (in the example above, the module is a DIMM, the circuit units are DRAM
2 memory chips and the traces providing address and command signals to the
3 memory chips form a memory main bus and memory sub-buses). *See, e.g.*,
4 KVR21R15D4/16 Datasheet at 1.

5 72. In addition, on information and belief, one or more 978 Patent
6 Infringing Products comprise a main bus that is a command/address bus (in the
7 example above, the traces providing address and command signals to the dynamic
8 random access memory chips form a memory main bus and memory sub-buses).

9 73. In addition, on information and belief, one or more 978 Patent
10 Infringing Products comprise means for providing a check signal that is a parity
11 signal, the structure of which is the same as or equivalent to that disclosed in the
12 patent specification (in the example above, the PAR input on each dynamic
13 random access memory chip receives a parity signal from the module board).

14 74. On information and belief, Kingston has induced and continues to
15 induce infringement of one or more claims of the 978 Patent, including, but not
16 limited to, Claims 1, 2, 3, 5, 10, 11, and 12, pursuant to 35 U.S.C. § 271(b) by
17 inducing its customers and other third parties to use without authorization the
18 infringing products comprising the claimed arrangement of circuit units, including
19 but not limited to the 978 Patent Infringing Products. This use, without
20 authorization, of the infringing products comprising the claimed arrangement of
21 circuit units constitutes infringement, literally or under the doctrine of equivalents,
22 of one or more claims of the 978 Patent by such customers or third parties.
23 Kingston's acts of inducement include: providing its customers with the 978 Patent
24 Infringing Products and intending its customers to use the 978 Infringing Products
25 with hardware, software, and other infrastructure that enable and/or make use of
26 these products; advertising these products through its own and third-party websites
27 (for example, [http://www.kingston.com/us/memory/search/MemoryType/De](http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?MemoryType=DIMM,3,)
28 [fault.aspx?MemoryType=DIMM,3,,](http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?MemoryType=DIMM,3,)); encouraging customers and other third

1 parties to communicate directly with Kingston representatives about these products
2 (for example, through the “Ask an Expert” feature on its website); and providing
3 instructions on how to use these products. For example, Kingston’s documentation
4 accompanying the representative 978 Patent Infringing Product provides the users
5 with instructions on how to install the product in a computer system and enables
6 the users to use the product. *See* Ex. 7, Kingston Technology Warranty and
7 Installation Guide, Doc. 4402092-001.D00; *see also*, KVR21R15D4/16 Datasheet.

8 75. Kingston proceeded in this manner despite its actual knowledge of the
9 978 Patent and its knowledge that the specific actions it actively induced on the
10 part of its customers and other third parties constitute infringement of the 978
11 Patent at least as of February 1, 2016, when Polaris placed Kingston on notice of
12 infringement of the 978 Patent and identified Kingston’s infringing products. At
13 the very least, because Kingston has been and remains on notice of the 978 Patent
14 and the accused infringement, it has been and remains willfully blind regarding the
15 infringement it has induced and continues to induce.

16 76. Polaris has suffered damages as a result of Kingston’s infringement of
17 the 978 Patent.

18 77. Kingston’s infringement of the 978 Patent has been and continues to
19 be willful, deliberate, and in disregard of Polaris’s patent rights. At least as of
20 February 1, 2016, when Polaris placed Kingston on notice of infringement of the
21 978 Patent and identified Kingston’s infringing products, Kingston has had actual
22 knowledge of infringement of the 978 Patent and has proceeded to infringe the 978
23 Patent with full and complete knowledge of that patent and its applicability to
24 Kingston’s products without taking a license under the 978 Patent. Despite
25 knowledge of the 978 Patent, Kingston has acted and is acting despite an
26 objectively high likelihood that its actions constitute patent infringement. This
27 objective risk was and is known to Kingston, and is also so obvious that it should
28 have been known to Kingston. Such willful and deliberate conduct entitles Polaris

1 to increased damages under 35 U.S.C. § 284 and to attorneys’ fees and costs
2 incurred in prosecuting this action under 35 U.S.C. § 285.

3 **COUNT V:**

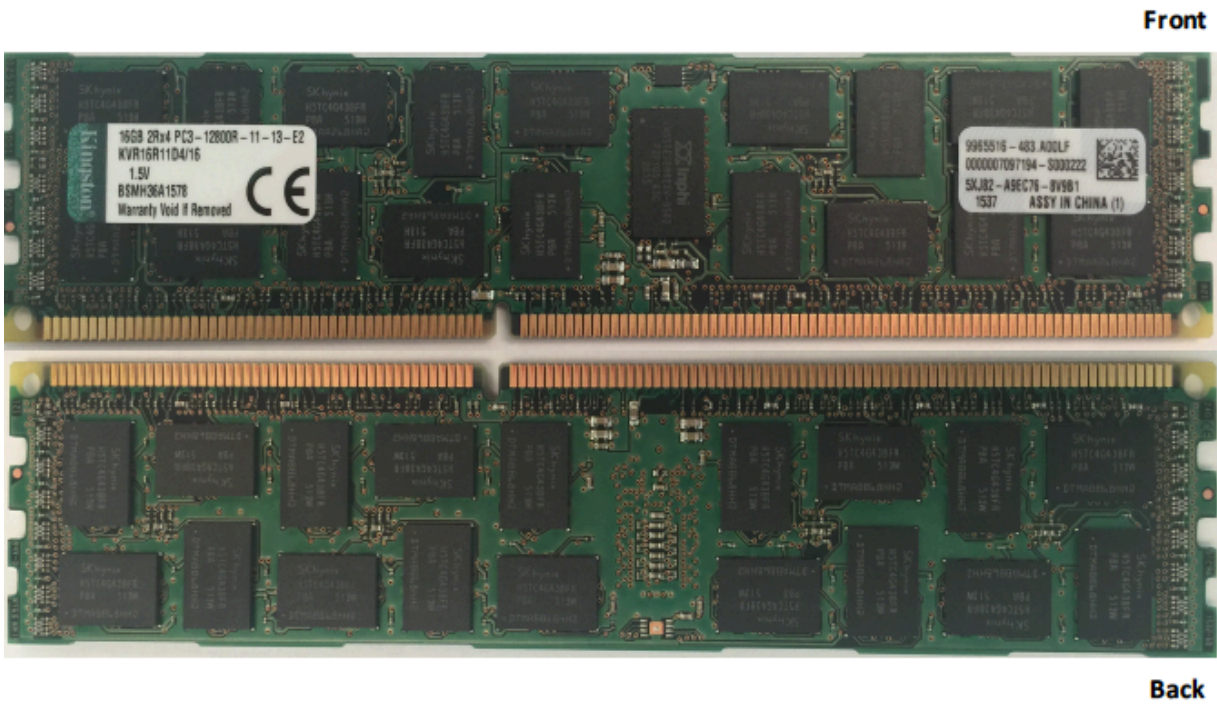
4 **INFRINGEMENT OF U.S. PATENT NO. 7,315,454**

5 78. Polaris incorporates and realleges paragraphs 1-20 above as if fully set
6 forth herein.

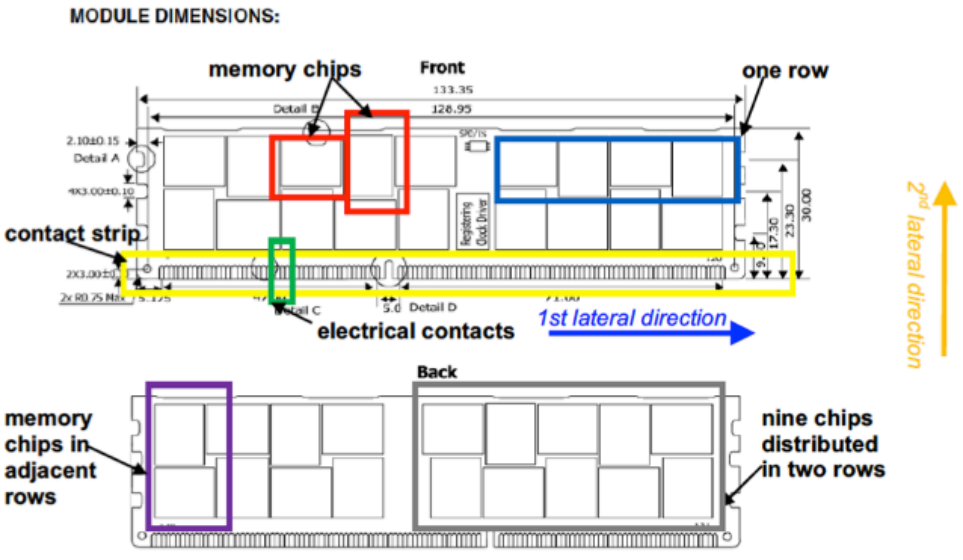
7 79. On information and belief, Kingston has willfully infringed and
8 continues to willfully infringe one or more claims of the 454 Patent, including, but
9 not limited to, Claims 1, 2, 3, 4, and 7, pursuant to 35 U.S.C. § 271(a), literally or
10 under the doctrine of equivalents, by making, using, selling, and/or offering to sell
11 in the United States and/or importing into the United States without authority,
12 memory module products, devices, systems, and/or components of systems that
13 include the claimed arrangements and configurations of the memory chips (the
14 “454 Patent Infringing Products”), including, for example, Kingston’s memory
15 module products with model number KVR16R11D4/16.

16 80. By way of example, the front and back views of a representative 454
17 Patent Infringing Product (KVR16R11D4/16) that uses the claimed arrangement
18 and configuration of the memory chips are shown in the image below.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28



81. The schematic diagram of this representative 454 Patent Infringing Product (KVR16R11D4/16) is reproduced from publicly available Kingston documentation and annotated below for illustration.



See KVR16R11D4/16 Datasheet at 2 (annotations added). Specifically, the 454 Patent Infringing Products, such as KVR16R11D4/16, are semiconductor memory modules comprising an electronic printed circuit board, the front and back sides of

1 which are illustrated above. The electronic printed circuit board has a contact strip
2 (one example shown in the yellow box) that extends at a first edge (for example,
3 the bottom edge) of the printed circuit board along with a first lateral direction and
4 a plurality of electrical contacts (a few shown in the green box as examples)
5 disposed along the first lateral direction between two second edges (left and right
6 edges) that extend in a second lateral direction that is perpendicular to the first
7 lateral direction. The 454 Patent Infringing Products further comprise a plurality of
8 semiconductor memory chips (two exemplary chips are shown in the red boxes) of
9 substantially identical type, such as “DDR3-1600 CL11 SDRAM” in
10 KVR16R11D4/16, *see* KVR16R11D4/16 Datasheet at 1, mounted on at least one
11 external area (the front and/or back sides) of the printed circuit board and having a
12 rectangular form with a shorter dimension and a longer dimension in a direction
13 perpendicular to the shorter dimension. The memory chips are arranged in at least
14 two rows, each row (one exemplary row shown in blue box) extending in the first
15 lateral direction between a center of the printed circuit board and the left or right
16 edge, wherein the memory chips in each row are arranged in an alternating
17 sequence of opposite orientation with the longer dimension of each memory chip
18 being parallel with the shorter dimension of adjacent memory chips in the same
19 row. The memory chips aligned in the second lateral direction and lying in
20 respective adjacent rows (one group of such chips shown in the purple box) have
21 opposite orientations.

22 82. In addition, one or more 454 Patent Infringing Products include four
23 semiconductor memory chips (one example shown in the blue box) that are
24 mounted in a row on one external area (such as the front side) of the printed circuit
25 board.

26 83. Further, one or more 454 Patent Infringing Products include nine
27 chips (one example shown in the grey box) that are distributed between two rows
28 arranged in a manner lying one adjacent to another in the second lateral direction.

1 84. Further, on information and belief, one or more 454 Patent Infringing
2 Products comprise a branching separate line bus comprising a first branch and a
3 second branch, wherein the memory chips mounted on the external area (the front
4 and/or back sides) between the center and the respective second edge (left or right
5 edge) of the printed circuit are connected by the branching separate line bus, such
6 that the memory chips of a first row are connected in series via line tracks of the
7 first branch and the memory chips of a second row are connected in a series via
8 line tracks of the second branch of the branch separate line bus, or the 454 Patent
9 Infringing Products comprise the equivalent.

10 85. Further, the 454 Patent Infringing Products are standardized memory
11 modules in compliance with a JEDEC standard. *See, e.g.,* KVR16R11D4/16
12 Datasheet at 1.

13 86. On information and belief, Kingston has induced and continues to
14 induce infringement of one or more claims of the 454 Patent, including, but not
15 limited to, Claims 1, 2, 3, 4, and 7, pursuant to 35 U.S.C. § 271(b) by inducing its
16 customers and other third parties to use without authorization the infringing
17 products comprising the claimed arrangements and configurations of the memory
18 chips, including but not limited to the 454 Patent Infringing Products. This use,
19 without authorization, of the infringing products comprising the claimed
20 arrangements and configurations of the memory chips constitutes infringement,
21 literally or under the doctrine of equivalents, of one or more claims of the 454
22 Patent by such customers or third parties. Kingston's acts of inducement include:
23 providing its customers with the 454 Patent Infringing Products and intending its
24 customers to use the 454 Infringing Products with hardware, software, and other
25 infrastructure that enable and/or make use of these products; advertising these
26 products through its own and third-party websites (for example,
27 [http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?Memory](http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?MemoryType=DIMM,3,)
28 [Type=DIMM,3,;](http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?MemoryType=DIMM,3,)) encouraging customers and other third parties to communicate

1 directly with Kingston representatives about these products (for example, through
2 the “Ask an Expert” feature on its website); and providing instructions on how to
3 use these products. For example, Kingston’s documentation accompanying the
4 representative 454 Patent Infringing Product provides the users with instructions
5 on how to install the product in a computer system and enables the users to use the
6 product. *See* Ex. 7, Kingston Technology Warranty and Installation Guide, Doc.
7 4402092-001.D00; *see also*, KVR16R11D4/16 Datasheet.

8 87. Kingston proceeded in this manner despite its actual knowledge of the
9 454 Patent and its knowledge that the specific actions it actively induced on the
10 part of its customers and other third parties constitute infringement of the 454
11 Patent at least as of February 1, 2016, when Polaris placed Kingston on notice of
12 infringement of the 454 Patent and identified infringing Kingston’s products. At
13 the very least, because Kingston has been and remains on notice of the 454 Patent
14 and the accused infringement, it has been and remains willfully blind regarding the
15 infringement it has induced and continues to induce.

16 88. Polaris has suffered damages as a result of Kingston’s infringement of
17 the 454 Patent.

18 89. Kingston’s infringement of the 454 Patent has been and continues to
19 be willful, deliberate, and in disregard of Polaris’s patent rights. At least as of
20 February 1, 2016, when Polaris placed Kingston on notice of infringement of the
21 454 Patent and identified Kingston’s infringing products, Kingston has had actual
22 knowledge of infringement of the 454 Patent and has proceeded to infringe the 454
23 Patent with full and complete knowledge of that patent and its applicability to
24 Kingston’s products without taking a license under the 454 Patent. Despite
25 knowledge of the 454 Patent, Kingston has acted and is acting despite an
26 objectively high likelihood that its actions constitute patent infringement. This
27 objective risk was and is known to Kingston, and is also so obvious that it should
28 have been known to Kingston. Such willful and deliberate conduct entitles Polaris

1 to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs
2 incurred in prosecuting this action under 35 U.S.C. § 285.

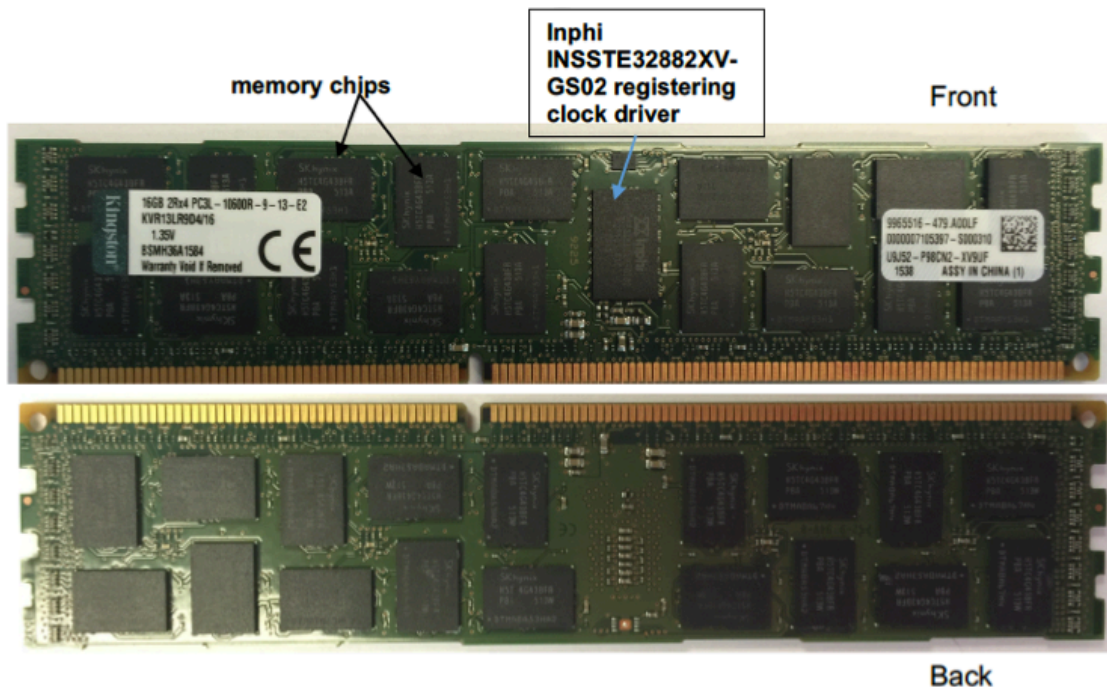
3 **COUNT VI:**

4 **INFRINGEMENT OF U.S. PATENT NO. 7,334,150**

5 90. Polaris incorporates and realleges paragraphs 1-20 above as if fully set
6 forth herein.

7 91. On information and belief, Kingston has willfully infringed and
8 continues to willfully infringe one or more claims of the 150 Patent, including, but
9 not limited to, Claims 1, 2, 3, 5, 6, 8, 9, 10, and 11, pursuant to 35 U.S.C. § 271(a),
10 literally or under the doctrine of equivalents, by making, using, selling, and/or
11 offering to sell in the United States and/or importing into the United States without
12 authority, memory module products, devices, systems, and/or components of
13 systems that included the claimed clock signal regeneration circuit and register
14 circuit (the "150 Patent Infringing Products"), including without limitation,
15 Kingston's memory module product with model number KVR13LR9D4/16.

16 92. By way of example, the front and back views of a representative 150
17 Patent Infringing Product (KVR13LR9D4/16) are shown in the image below.



1 93. Specifically, the 150 Patent Infringing Products, such as
2 KVR13LR9D4/16, comprise a plurality of memory chips arranged on the memory
3 module. On information and belief, the 150 Patent Infringing Products, such as
4 KVR13LR9D4/16, comprise a plurality of bus signal lines operable to supply an
5 incoming clock signal (for example, clock signals CK0_t, CK0_c) and incoming
6 command and address signal (for example, address signals A[N:0]) to at least the
7 memory chips. On information and belief, the 150 Patent Infringing Products
8 further comprise a clock signal regeneration circuit (for example, a standard SSTE
9 32882 registering clock driver) configured to generate a plurality of copies of the
10 incoming clock signal (for example, PCK0A_t, PCK0B_t, PCK_0A_c, PCK_0B_c)
11 and to supply the copies of the incoming clock signal to the memory chip, where
12 the copies of the incoming clock signal have the same frequency as the incoming
13 clock signal. On information and belief, the 150 Patent Infringing Products further
14 comprise a register circuit arranged on the memory module in a common chip
15 packaging with the clock regeneration circuit. *See, e.g.,* Kingston Value RAM
16 Memory Module Specifications, Doc. No. VALUERAM1223-001.B00 (Jan. 22,
17 2013) (“KVR13LR9D4/16 Datasheet”) at 2 (the register and the clock driver are
18 within the same chip), *available at*
19 http://www.kingston.com/dataSheets/KVR13LR9D4_16.pdf (last visited February
20 3, 2016) (annotations added). For example, the representative 150 Patent Infringing
21 Product KVR13LR9D4/16, comprises an Inphi INSSTE32882XV-GS02
22 registering clock driver chip (as annotated in the product image above), that
23 includes both the clock regeneration circuit and the register circuit. *See*
24 INSSTE32882XV datasheet (“Inphi Datasheet”), *available at*
25 http://www.inphi.com/product_pdf_generator.php?prod_link=960 (last visited
26 December 21, 2015). On information and belief, the register circuit in the 150
27 Infringing Products is configured to receive one of the copies of the incoming
28 clock signal from the clock regeneration circuit. On information and belief, the

1 register circuit in the 150 Infringing Products is further configured to temporarily
2 store the incoming command and address signals, and to generate a plurality of
3 copies of the incoming command and address signals and to supply the copies of
4 the incoming command and address signals to the memory chip, where the copies
5 of the incoming command and address signals have the same frequency as the
6 incoming command and address signals.

7 94. The clock signal regeneration circuit in the 150 Patent Infringing
8 Product comprises a phase locked loop (PLL) circuit. *See, e.g.*, KVR13LR9D4/16
9 Datasheet at 1 (“Register/PLL used”).

10 95. On information and belief, the incoming clock signal and the copies of
11 incoming clock signals in the 150 Patent Infringing Products are each supplied via
12 differential clock signal lines.

13 96. In addition, in the 150 Patent Infringing Products, the clock signal
14 regeneration circuit and the register circuit are integrated on a common chip in the
15 common chip packaging. *See, e.g.*, KVR13LR9D4/16 Datasheet at 2.

16 97. Further, the common chip packaging is arranged essentially at a
17 central position on the exemplary 150 Patent Infringing Product
18 (KVR13LR9D4/16) or is arranged equivalently. *See, e.g.*, KVR13LR9D4/16
19 Datasheet at 2.

20 98. On information and belief, the 150 Patent Infringing Products
21 comprise a fly-by bus structure for the bus signal lines of the command and
22 address signals or the equivalent. *See* John Nieto, *The Evolution from DDR2 to*
23 *DDR3 and its Impact on Signal Integrity*, available at
24 [https://www.inphi.com/technology-overview/Evolution%20of%20DDR2%20](https://www.inphi.com/technology-overview/Evolution%20of%20DDR2%20to%20DDR3.pdf)
25 [to%20DDR3.pdf](https://www.inphi.com/technology-overview/Evolution%20of%20DDR2%20to%20DDR3.pdf) (last visited December 21, 2015).

26 99. On information and belief, the clock signal regeneration circuit and
27 the register circuit in the 150 Patent Infringing Products respectively generate two
28 copies of the clock signal and the command signals for distribution to the memory

1 chips.

2 100. On information and belief, one or more of the 150 Patent Infringing
3 Products further comprise an RDIMM module. *See, e.g.*, KVR13LR9D4/16
4 Datasheet at 1 (“Registered w/Parity 240-Pin DIMM”).

5 101. The 150 Patent Infringing Products further comprise DDR-DRAM
6 memories. *See, e.g.*, KVR13LR9D4/16 Datasheet at 1 (“DDR3L-1333 CL9
7 SDRAM”).

8 102. On information and belief, Kingston has induced and continues to
9 induce infringement of one or more claims of the 150 Patent, including, but not
10 limited to, Claims 1, 2, 3, 5, 6, 8, 9, 10, and 11, pursuant to 35 U.S.C. § 271(b) by
11 inducing its customers and other third parties to use without authorization the
12 infringing products comprising the claimed clock signal regeneration circuit and
13 register circuit, including but not limited to the 150 Patent Infringing Products.
14 This use, without authorization, of the infringing products comprising the claimed
15 arrangements and configurations of the memory chips constitutes infringement,
16 literally or under the doctrine of equivalents, of one or more claims of the 150
17 Patent by such customers or third parties. Kingston’s acts of inducement include:
18 providing its customers with the 150 Patent Infringing Products and intending its
19 customers to use the 150 Infringing Products with hardware, software and other
20 infrastructure that enable and/or make use of these products; advertising these
21 products through its own and third-party websites (for example,
22 [http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?Memory](http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?MemoryType=DIMM,3,)
23 [Type=DIMM,3,;](http://www.kingston.com/us/memory/search/MemoryType/Default.aspx?MemoryType=DIMM,3,)); encouraging customers and other third parties to communicate
24 directly with Kingston representatives about these products (for example, through
25 the “Ask an Expert” feature on its website); and providing instructions on how to
26 use these products. For example, Kingston’s documentation accompanying the
27 representative 150 Patent Infringing Product provides the users with instructions
28 on how to install the product in a computer system and enables the users to use the

1 product. *See* Ex. 7, Kingston Technology Warranty and Installation Guide, Doc.
2 4402092-001.D00; *see also*, KVR13LR9D4/16 Datasheet.

3 103. Kingston proceeded in this manner despite its actual knowledge of the
4 150 Patent and its knowledge that the specific actions it actively induced on the
5 part of its customers and other third parties constitute infringement of the 150
6 Patent at least as of February 1, 2016, when Polaris placed Kingston on notice of
7 infringement of the 150 Patent and identified infringing Kingston's products. At
8 the very least, because Kingston has been and remains on notice of the 150 Patent
9 and the accused infringement, it has been and remains willfully blind regarding the
10 infringement it has induced and continues to induce.

11 104. Polaris has suffered damages as a result of Kingston's infringement of
12 the 150 Patent.

13 105. Kingston's infringement of the 150 Patent has been and continues to
14 be willful, deliberate and in disregard of Polaris's patent rights. At least as of
15 February 1, 2016, when Polaris placed Kingston on notice of infringement of the
16 150 Patent and identified Kingston's infringing products, Kingston has had actual
17 knowledge of infringement of the 150 Patent and has proceeded to infringe the 150
18 Patent with full and complete knowledge of that patent and its applicability to
19 Kingston's products without taking a license under the 150 Patent. Despite
20 knowledge of the 150 Patent, Kingston has acted and is acting despite an
21 objectively high likelihood that its actions constitute patent infringement. This
22 objective risk was and is known to Kingston, and is also so obvious that it should
23 have been known to Kingston. Such willful and deliberate conduct entitles Polaris
24 to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs
25 incurred in prosecuting this action under 35 U.S.C. § 285.

26 **PRAYER FOR RELIEF**

27 106. Polaris respectfully prays for relief as follows:

28 107. A judgment that Kingston has infringed and continues to infringe one

1 or more claims of the Asserted Patents;

2 108. A judgment that Kingston has willfully infringed one or more claims
3 of the Asserted Patents;

4 109. A judgment awarding Polaris all damages adequate to compensate for
5 Kingston's infringement, and in no event less than a reasonable royalty for
6 Kingston's acts of infringement, including all pre-judgment and post-judgment
7 interest at the maximum rate allowed by law;

8 110. A judgment awarding Polaris treble damages pursuant to 35 U.S.C. §
9 284 as a result of Kingston's willful conduct;

10 111. A judgment and order finding that this is an exceptional case within
11 the meaning of 35 U.S.C. § 285 and awarding Polaris its reasonable attorneys fees
12 and costs; and

13 112. A judgment awarding Polaris such other relief as the Court may deem
14 just and equitable.

15 **DEMAND FOR JURY TRIAL**

16 113. Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure,
17 Polaris demands a trial by jury in this action.

18
19 Dated: February 19, 2016

Respectfully submitted,

20
21 TENSEGRITY LAW GROUP LLP

22 By: /s/ Matthew D. Powers

23 MATTHEW D. POWERS (Bar No. 104795)

24 matthew.powers@tensegritylawgroup.com

25 STEVEN CHERENSKY (Bar No. 168275)

26 steven.cherensky@tensegritylawgroup.com

27 AZRA M. HADZIMEHMEDOVIC (Bar
28 No. 239088)

azra@tensegritylawgroup.com

TENSEGRITY LAW GROUP, LLP

555 Twin Dolphin Drive, Suite 650

Redwood Shores, CA 94065
Telephone: (650) 802-6000
Fax: (650) 802-6001

*Attorneys for Plaintiff,
Polaris Innovations Limited*

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28