

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

NORTH STAR INNOVATIONS INC.,

Plaintiff,

vs.

HEWLETT-PACKARD COMPANY,

Defendant.

C.A. No.

**JURY DEMANDED**

**COMPLAINT**

Plaintiff North Star Innovations Inc. (“North Star”) complains of Defendant Hewlett-Packard Company (“Hewlett-Packard”) as follows:

**JURISDICTION AND VENUE**

1. Title 28 of the United States Code Section 1338(a) confers subject matter jurisdiction on this Court because Defendant has infringed Plaintiff’s patent. The Patent Act of 1952, as amended, 35 U.S.C. § 271, *et seq.*, makes patent infringement actionable through a private cause of action.

2. Defendant has transacted business in the State of Delaware, and in this judicial district by making, using, selling, offering to sell and distributing products in this judicial district that violate North Star’s patent. Accordingly, this Court has personal jurisdiction over Defendant.

3. Venue is proper in the District of Delaware under the general federal venue statute, 28 U.S.C. § 1391(d), and under the specific venue provision relating to patent infringement cases, 28 U.S.C. § 1400(b).

**PARTIES**

4. North Star is a Delaware corporation with its principal place of business at Plaza Tower, 600 Anton Boulevard, Suite 1350, Costa Mesa, CA 92626. North Star is a subsidiary of Wi-LAN Technologies Inc. North Star is the assignee of and owns all right, title and interest in and has standing to sue for infringement of United States Patent No.

5,892,777 (“the ’777 Patent”), entitled Apparatus and Method for Observing the Mode of a Memory Device. The ’777 Patent issued April 6, 1999 and claims priority to May 5, 1997 and is attached as Exhibit A.

5. Hewlett-Packard is a Delaware corporation with its principal place of business at 3000 Hanover Street, Palo Alto, CA 94304-1112. Hewlett-Packard has previously and is presently making, using, selling, offering for sale, and/or importing into the United States computing products (containing memory devices) that infringe one or more claims of the ’777 Patent.

### BACKGROUND

6. North Star is the owner of patent rights, which cover commercially significant technologies related to observing the mode of a memory device. In particular, the ’777 Patent covers a method and apparatus to observe a mode register in a synchronous memory device.

7. Defendant designs, manufactures, and sells computing products (containing memory devices) that infringe the ’777 Patent.

### PATENT INFRINGEMENT OF THE ’777 PATENT

8. Defendant has infringed and continue to infringe at least claim 1 of the ’777 Patent, in violation of 35 U.S.C. § 271 through, among other activities, making, using, offering to sell, and/or selling its HP ElitePad 1000 G2 Tablet (64GB). Photos of the HP ElitePad 1000 G2 Tablet (64GB) are depicted below, including a product photo – top view (left) and product photo – bottom view (right):



Product Photo – Top View



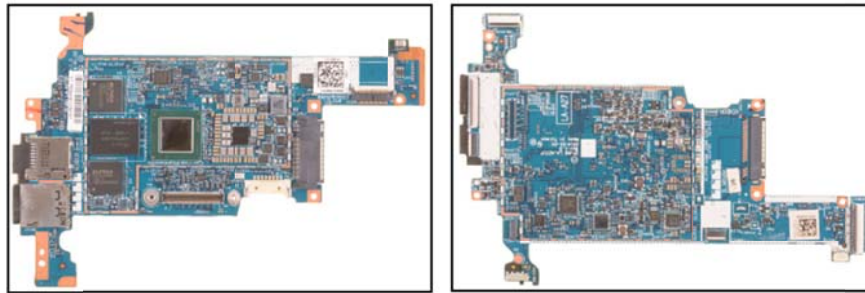
Product Photo – Bottom View

A package label photo of the HP ElitePad 1000 G2 Tablet (64GB) is shown below:



Package Labels Photos

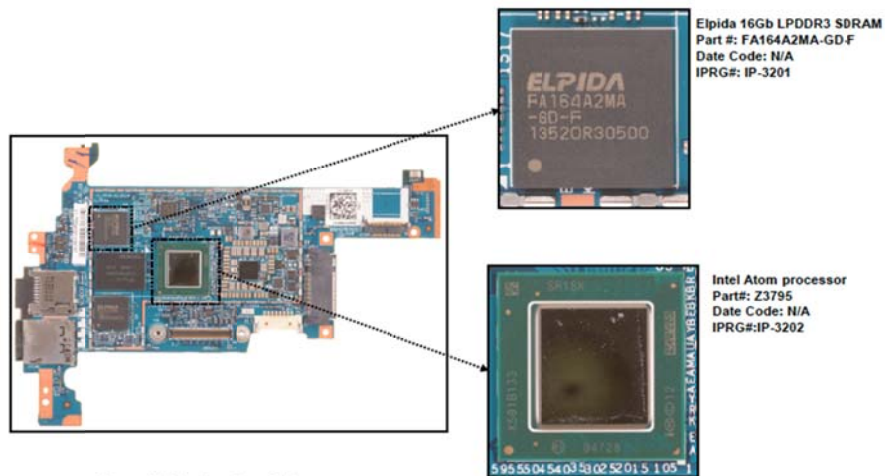
Board photos of the HP ElitePad 1000 G2 Tablet (64GB) are shown below, including a board photo – top view (left) and board photo – bottom view (right):



Board Photo – Top View

Board Photo – Bottom View

Another board photo of the HP ElitePad 1000 G2 Tablet (64GB) is shown below, with larger views of two of its components, the Elpida 16 Gb LPDDR3 SDRAM Part#: FA164A2MA-GD-F (above right), and Intel Atom processor Part#: Z3795 (below right):



Board Photo – Top View

9. Defendant's infringing technology and products include without limitation its computing products (containing memory devices), including, for example, the HP ElitePad 1000 G2 Tablet (64GB) and other computing products. Defendant's infringement may include additional products and technologies (to be determined in discovery) marketed or used by Defendant.

10. Claim 1 is an exemplary infringed claim. Its preamble states: "A method for observing a control register (A) in a memory device (B), the control register defining an operation of the memory device (C), the control register not observable from the memory device (D), the method comprising the steps of." Subparts of the preamble are labeled (A) through (D) for analysis purposes. Defendant's products, such as its HP ElitePad 1000 G2 Tablet (64GB), perform a method for observing a control register (A) in a memory device (B), the control register defining an operation of the memory device (C), the control register not observable from the memory device (D).

11. The HP ElitePad 1000 G2 Tablet (64GB) contains subpart (A) of the preamble, a control register, by virtue of a mode register of the LPDDR3 SDRAM. Section 3.4.1 of LPDDR3 JEDEC Standard JESD209-3C, August 2015 on page 24 defines the Mode Register Assignment and Definition in LPDDR3 SDRAM. Table 8 – Mode Register Assignment in LPDDR3 SDRAM shows the mode registers for LPDDR3 SDRAM. The control register is MR# 4.

12. The HP ElitePad 1000 G2 Tablet (64GB) contains subpart (B) of the preamble, in a memory device, by virtue of the LPDDR3 SDRAM which it contains. The memory device is the Elpida 16Gb LPDDR3 SDRAM Part#: FA164A2MA-GD-F.

13. The HP ElitePad 1000 G2 Tablet (64GB) contains subpart (C) of the preamble, the control register defining an operation of the memory device, by virtue of the Refresh Rate function of the control register MR# 4, Access "R" for read access, and values TUF for OP7, (RFU) for OP6-OP3, and Refresh Rate for OP2-OP0. Section 4.10.1, Temperature Sensor, of LPDDR3 JEDEC Standard JESD209-3C, August 2015 on

page 59 indicates that “LPDDR3 devices feature a temperature sensor whose status can be read from MR4. This sensor can be used to determine an appropriate refresh rate.”

14. The HP ElitePad 1000 G2 Tablet (64GB) contains subpart (D) of the preamble, the control register not observable from the memory device, by virtue of clock synchronization and the Mode Register Read Command of the LPDDR3. Section 4.10, Mode Register Read (MRR) Command, of LPDDR3 JEDEC Standard JESD209-3C, August 2015 on page 57 indicates that “The Mode Register Read (MRR) command is used to read configuration and status data from SDRAM mode registers. The MRR command is initiated with CS<sub>n</sub> LOW, CA0 LOW, CA1 LOW, CA2 LOW, and CA3 HIGH at the rising edge of the clock. The mode register is selected by CA1f-CA0f and CA9r-CA4r. The mode register contents are available on the first data beat of DQ[7:0] after  $RL \times t_{CK} + t_{DGSK} + t_{DQSQ}$  following the rising edge of the clock where MRR is issued.”

15. After the preamble, the first limitation of claim 1 states: “storing a received value in the control register responsive to a first signal (E) (F).” This limitation is labeled (E) (F) for analysis purposes.

16. The HP ElitePad 1000 G2 Tablet (64GB) contains limitation (E), storing a received value in the control register responsive to a first signal, by virtue of internal updates of MR4. Pages 59-60 of LPDDR3 JEDEC Standard JESD209-3C, August 2015 indicate that “TempSensorInterval (tTSI) is maximum delay between internal updates of MR4.” The graph shown in Section 4.10.1 Temperature Sensor (cont’d) of LPDDR3 JEDEC Standard JESD209-3C, August 2015 (Figure 36 – Temp Sensor Timing) shows storing a received value in the control register responsive to a first signal along the Time axis at MR4 = 0x03, MR4=0x86, MR4=0x86, MR4=0x86, MR4=0x86, and MR4=0x06.

17. The HP ElitePad 1000 G2 Tablet (64GB) contains sublimitation (F), a first signal, by virtue of the Temperature Sensor Update, which is shown in the graph in Section 4.10.1 Temperature Sensor (cont’d) of LPDDR3 JEDEC Standard JESD209-3C, August 2015 (Figure 36 – Temp Sensor Timing).

18. After the first limitation, the second limitation of claim 1 states: “outputting the received value responsive to a second control signal (G) when no output is expected from the memory device (H).” This limitation is labeled (G) and (H) for analysis purposes. The HP ElitePad 1000 G2 Tablet (64GB) contains this limitation.

19. The HP ElitePad 1000 G2 Tablet (64GB) contains sublimitation (G), a second control signal, by virtue of the Mode Register Read (MRR) command. This command is the Host MR4 Read, shown in Section 4.10.1 Temperature Sensor (cont’d) on pages 59-60 in LPDDR3 JEDEC Standard JESD209-3C, August 2015. Section 4.10, Mode Register Read (MRR) Command, of LPDDR3 JEDEC Standard JESD209-3C, August 2015 on page 57 indicates that “The Mode Register Read (MRR) command is used to read configuration and status data from SDRAM mode registers. The MRR command is initiated with CS<sub>n</sub> LOW, CA0 LOW, CA1 LOW, CA2 LOW, and CA3 HIGH at the rising edge of the clock.” The second control signal is also shown as the MRR command in Figure 32 – Mode Register Read timing example: RL = 8 of the LPDDR3 JEDEC Standard JESD209-3C, August 2015. This is also represented as the CA2, CA1, CA0, CA3, CS1<sub>n</sub>, CS0<sub>n</sub>, CK<sub>t</sub>, and CK<sub>c</sub> signals sent between the processor and memory.

20. The HP ElitePad 1000 G2 Tablet (64GB) contains limitation (H), outputting the received value responsive to a second control signal when no output is expected from the memory device, by virtue of the MR4 reads from the system. The LPDDR3 JEDEC Standard JESD209-3C, August 2015 on pages 59-60 indicates that “ReadInterval is the time period between MR4 reads from the system.” These reads are shown in the graph in Section 4.10.1 Temperature Sensor (cont’d) of LPDDR3 JEDEC Standard JESD209-3C, August 2015 at MRR MR4 = 0x03 and MRR MR4 = 0x86. Additionally, Section 4.10, Mode Register Read (MRR) Command, of LPDDR3 JEDEC Standard JESD209-3C, August 2015 on page 57 states “The mode register contents are available on the first data beat of DQ[7:0] after  $RL \times t_{CK} + t_{DGSK} + t_{DQSQ}$  following the rising edge of the clock where MRR is issued.” Moreover, Section 4.10.1, Temperature

Sensor, of LPDDR3 JEDEC Standard JESD209-3C, August 2015 on page 59 indicates “ReadInterval is the time period between MR4 reads from the system,” and “SysRespDelay is the maximum time between a read of MR4 and the response by the system.” This is further represented by DOUTA of DG[0-7] in Figure 32 – Mode Register Read timing example: RL=8 of LPDDR3 JEDEC Standard JESD209-3C, August 2015, page 57, and on the same page, “NOTE 3 Mode register data is valid only on DQ[7:0] on the first beat.” Finally, this is also represented as the DQ7, DQ6, DQ5, DQ2, DQ1, DQ0, DQ3, and DQ4 signals sent between the processor and memory.

21. After the second limitation, the third and final limitation of claim 1 states, “disabling the operation of the memory device responsive to the second control signal subsequent to the step of outputting (I).” This limitation is labeled (I) for analysis purposes. The The HP ElitePad 1000 G2 Tablet (64GB) contains this limitation (I), because only the NOP (no operation) command is supported during the time of Mode Register Read. The LPDDR3 JEDEC Standard JESD209-3C, August 2015 on page 57 indicates “NOTE 2 Only the NOP command is supported during  $t_{MRR}$ .”

22. As a direct and proximate consequence of Defendant’s infringement, North Star has been, is being and, unless such acts and practices are enjoined by the Court, will continue to be injured in its business and property rights, and has suffered, is suffering, and will continue to suffer injury and damages for which it is entitled to relief under 35 U.S.C. § 284 adequate to compensate for such infringement, but in no event less than a reasonable royalty.

23. Defendant’s infringement will continue to injure North Star, unless and until this Court enters an injunction, which prohibits further infringement and specifically enjoins further manufacture, use, sale and/or offer for sale of products that come within the scope of the ’777 Patent.

#### JURY DEMAND

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, North Star demands a trial by jury on all issues presented that can properly be tried to a jury.

REQUEST FOR RELIEF

THEREFORE, North Star asks this Court to enter judgment against Defendant and against its subsidiaries, affiliates, agents, servants, employees and all persons in active concert or participation with Defendant, granting the following relief:

- A. An award of damages adequate to compensate North Star for the infringement that has occurred, together with prejudgment interest from the date infringement began and postjudgment interest;
- B. All other damages permitted by 35 U.S.C. § 284;
- C. A finding that this case is exceptional and an award to North Star of its attorneys' fees and costs as provided by 35 U.S.C. § 285;
- D. A permanent injunction prohibiting further infringement, inducement and contributory infringement of the '777 Patent; and
- E. Such other and further relief as this Court or a jury may deem proper and just.

Dated: August 19, 2016

Respectfully submitted,

FARNAN LLP

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