



4. On information and belief, Micron makes dynamic random-access memory (“DRAM”), NAND Flash, and NOR Flash memory, and other memory products in semiconductor fabrication plants in the United States and other countries throughout the world. On information and belief, Micron sells its products to customers, including customers in this District, in the computer, networking and storage, consumer electronics, solid-state drives and mobile telecommunications markets.

5. On information and belief, Micron Technology is a corporation organized and existing under the laws of Delaware. On information and belief, Micron Technology has a regular and established place of business at 805 Central Expressway South, Suite 100, Allen, Texas 75013. On information and belief, Micron Technology is registered to do business in the State of Texas, and can be served through its registered agent, The Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701-3218.

6. On information and belief, Micron Semiconductor is a corporation organized and existing under the laws of Idaho. On information and belief, Micron Semiconductor has a regular and established place of business at 805 Central Expressway South, Suite 100, Allen, Texas 75013. On information and belief, Micron Semiconductor is registered with the Texas Secretary of State to do business in Texas. On information and belief, Micron Semiconductor can be served through its registered agent, The Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701-3218.

7. On information and belief, Micron Texas is a corporation organized and existing under the laws of Idaho. On information and belief, Micron Texas has a regular and established place of business at 805 Central Expressway South, Suite 100, Allen, Texas 75013. On information and belief, Micron Texas also has a regular and established place of business at 950 West Bethany Drive, Suite 120, Allen, Texas 75013-3837. On information and belief, Micron

Texas is registered with the Texas Secretary of State to do business in Texas. On information and belief, Micron Texas can be served through its registered agent, The Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas, 78701-3218.

8. On information and belief, Micron Semiconductor and Micron Texas are wholly owned subsidiaries of Micron Technology. On information and belief, Micron Technology does not separately report revenue from Micron Semiconductor or Micron Texas in its filings to the Securities Exchange Commission, but rather reports combined revenue from its various products and subsidiaries.

9. On information and belief, Defendants have semiconductor fabrication plants in the United States and other countries throughout the world and manufacture memory products such as DRAM, NAND Flash, and NOR Flash at those plants. On information and belief, Defendants also use, sell, and offer for sale in the United States, import into the United States and/or export from the United States memory products, including DDR4 load reduced dual in-line memory modules (“LRDIMMs”), and DDR4 registered DIMMs (“RDIMMs”). On information and belief, Defendants have at least used, sold, or offered to sell products and services, including the Accused Instrumentalities, in this judicial district, *e.g.*, through sales and distribution channels managed by Micron Texas.

10. On information and belief, Defendants place, have placed, and contributed to placing Accused Instrumentalities into the stream of commerce via an established distribution channel knowing or understanding that such products would be sold and used in the United States, including in this judicial district. On information and belief, Defendants have also derived substantial revenues from infringing acts in this judicial district, including from the sale and use of the Accused Instrumentalities.

## II. JURISDICTION AND VENUE

11. The Court has subject matter jurisdiction under 28 U.S.C. § 1338, in that this action arises under federal statute, the patent laws of the United States (35 U.S.C. §§ 1, *et seq.*).

12. Each Defendant is subject to this Court's personal jurisdiction consistent with the principles of due process and/or the Texas Long Arm Statute.

13. Personal jurisdiction exists generally over the Defendants because each Defendant has sufficient minimum contacts and/or has engaged in continuous and systematic activities in the forum as a result of business conducted within the State of Texas and the Eastern District of Texas. Personal jurisdiction also exists over each Defendant because each, directly or through subsidiaries, makes, uses, sells, offers for sale, imports, advertises, makes available, and/or markets products within the State of Texas and the Eastern District of Texas that infringe one or more claims of the Patents-in-Suit. Further, on information and belief, Defendants have placed or contributed to placing infringing products into the stream of commerce knowing or understanding that such products would be sold and used in the United States, including in this District.

14. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391(b) and (c) and/or 1400(b) because Defendants (1) have committed and continue to commit acts of patent infringement in this District by, among other things, directly and/or indirectly making, using, selling, offering to sell, or importing products that infringe one or more claims of the Patents-in-Suit, and (2) have done and continue to do business in this District by maintaining regular and established places of business, including at least at 805 Central Expressway South, Suite 100, Allen, Texas 75013.

### **III. FACTUAL ALLEGATIONS**

#### **Background**

15. Since its founding in 2000, Netlist has been a leading innovator in high-performance memory module technologies. Netlist designs and manufactures a wide variety of high-performance products for the cloud computing, virtualization and high-performance computing markets. Netlist's technology enables users to derive useful information from vast amounts of data in a shorter period of time. These capabilities will become increasingly valuable as the volume of data continues to dramatically increase.

16. Netlist has a long history of being the first to market with disruptive new products such as the first LRDIMM, HyperCloud®, based on Netlist's distributed buffer architecture later adopted by the industry for DDR4 LRDIMM. Netlist was also the first to bring NAND flash to the memory channel with its NVvault® NVDIMM. These innovative products built on Netlist's early pioneering work in areas such as embedding passives into printed circuit boards to free up board real estate, doubling densities via quad-rank double data rate ("DDR") technology, and other off-chip technology advances that result in improved performance and lower costs compared to conventional memory.

17. In many commercial products, a memory module is a printed circuit board that contains, among other components, a plurality of individual memory devices (such as DRAMs). The memory devices are typically arranged in "ranks," which are accessible by a processor or memory controller of the host system. A memory module is typically installed into a memory slot on a computer motherboard.

18. Memory modules are designed for, among other things, use in servers such as those supporting cloud-based computing and other data-intensive applications (e.g. scaled data manipulation and aggregation, on-demand tracking, AI-based image analysis, weather patterning,

etc.). The structure, function, and operation of memory modules is defined, specified, and standardized by the JEDEC Solid State Technology Association (“JEDEC”), the standard-setting body for the microelectronics industry. Memory modules are typically characterized by, among other things, the generation of DRAM on the module (*e.g.*, DDR4, DDR3) and the type of module (*e.g.*, RDIMM, LRDIMM).

### **The Asserted '912 Patent**

19. The '912 patent is entitled “Memory Module Decoder.” Netlist owns the '912 patent by assignment from the listed inventors Jayesh R. Bhakta and Jeffrey C. Solomon. The '912 patent was filed as Application No. 11/862,931 on September 27, 2007, issued as a patent on November 17, 2009, and claims priority to three provisional applications: Nos. 60/588,244 filed on July 15, 2004, 60/550,668 filed on March 5, 2004, and 60/575,595 filed on May 28, 2004. The '912 patent also claims priority to application, filed July 1, 2005, now U.S. Patent No. 7,289,386, which is a continuation-in-part of application No. 11/075,395, filed March 7, 2005, now U.S. Patent No. 7,286,436.

20. Micron has had actual knowledge of the '912 Patent no later than April 28, 2021 via Exhibit A to Netlist's April 28, 2021 letter to Micron, and as of the filing of this Complaint.

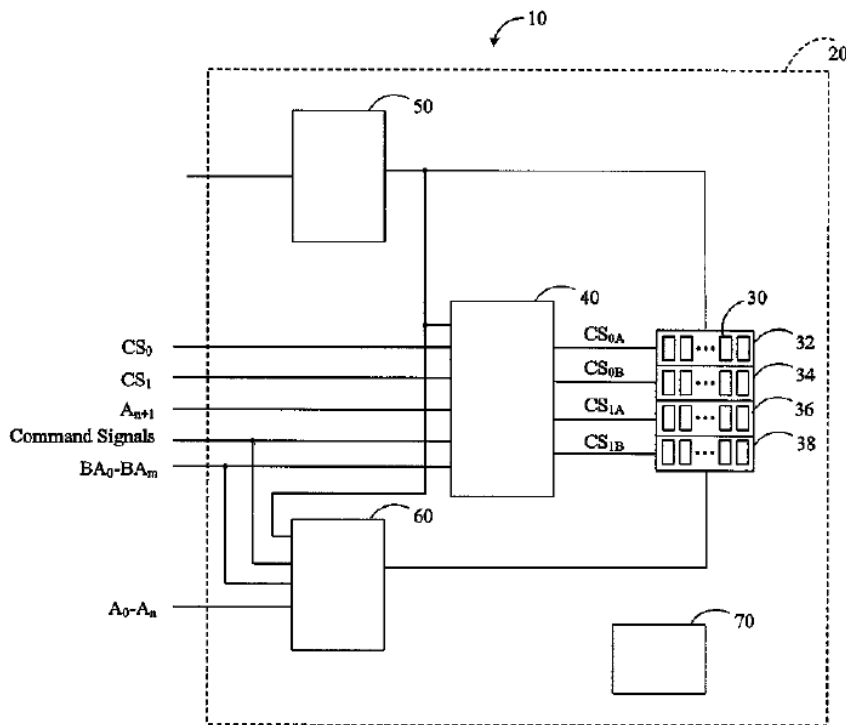
21. The '912 patent relates to memory module technology, and more specifically, to a concept called rank multiplication. A memory module is a device that contains individual memory devices arranged in “ranks” on a printed circuit board. At the time of the invention, most computer systems supported accessing only one or two ranks, limiting the number of ranks that can be added per memory module. *Ex. 1, 1:20-2:42.*

22. The '912 patent teaches that one way to upgrade the memory capacity of a memory module is to use on-module logic to present a memory module with, *e.g.*,  $2n$  physical ranks of memory devices, as a module with  $n$  (virtual) ranks to the computer system. *Id.*, 6:64-7:19. In

this way, “even though the memory module 10 actually has the first number of [physical] ranks of memory devices 30, the memory module 10 simulates a virtual memory module by operating as having the second number of [logical or virtual] ranks of memory devices 30.” *Id.*, 7:9-13. This technique is commonly referred to as “rank multiplication.”

23. Rank multiplication allows a designer to expand the number of ranks and hence the total memory capacity on a memory module. It also enables them to construct a memory module of a given capacity using lower density memory devices that often cost less. *Id.*, 4:42-58, 22:5-14. For example, for the same 1 GB memory capacity, it could be more cost-effective to use thirty-six 256-Mb DRAMs arranged in 4 ranks than eighteen 512-Mb DRAMs arranged in two ranks. *Id.*, 4:42-58, 4:59-5:5.

24. Figure 1A illustrates an example of a memory module with rank multiplication capability. The memory module has a register 60 and a logic element 40.



25. The logic element receives a set of input control signals from the computer system that include chip-select signals CS<sub>0</sub>-CS<sub>1</sub>, address signal A<sub>n+1</sub>, and bank address signals BA<sub>0</sub>-BA<sub>m</sub>.

*Id.*, 7:35-53; Fig. 1A. From the computer system's perspective, it is connected to only two ranks of memory devices, to be selected by CS<sub>0</sub> or CS<sub>1</sub>, even though the memory devices are arranged in four physical ranks. *Id.*, 6:55-7:19. In response to the received input control signals, the logic element on the memory module generates a set of output control signals, corresponding to the four physical ranks of the memory devices. *Id.*, 6:61-63. The logic element 40 also receives command signals (such as read/write) from the computer system. *Id.*, 6:55-61, 7:46-53. In response to the command signal and the input signals, the logic element transmits the command signal to the memory devices on the selected rank of the memory module. *Id.* In some embodiments, command signals are transmitted to only a single memory device on a multi-device rank at a time.

### **Micron's Infringing Activities**

26. Defendants are worldwide semiconductor solution providers that primarily manufacture semiconductor memory products such as DRAM, DIMMs, and MCP (Multi-Chip Package), such as HBM. Defendants develop, manufacture, sell, offer to sell, import into the United States and export from the United States memory components and memory modules (including semi-finished ones) designed for, among other things, use in servers such as those supporting cloud-based computing and other data-intensive applications as well as for use in consumer end products.

27. Netlist contacted Micron by letter dated April 28, 2021 requesting that it take a license; Micron has declined to take a license.

### **DDR4 Memory Modules**

28. The accused DDR4 products include, without limitation, any Micron DDR4 LRDIMM and RDIMM products made in, sold in, offered for sale in, used in, exported from and/or imported into the United States by Micron. By way of non-limiting example, the accused DDR4 LRDIMM and RDIMM products include Micron products advertised on Micron's website that



employ per DRAM addressability (“PDA”) (the “Accused Products”). The accused DDR4 LRDIMM and RDIMM products include all branded, alternatively branded and non-branded products by Micron that employ PDA.

**IV. FIRST CLAIM FOR RELIEF – ’912 PATENT**

29. Netlist re-alleges and incorporates by reference the allegations of the preceding paragraphs of this Complaint as if fully set forth herein.

30. On information and belief, Micron directly infringed and is currently infringing at least one claim of the ’912 patent by, among other things, making, using, selling, offering to sell, and/or importing within this District and elsewhere in the United States, without authority, the Accused Products and other products with materially the same structures in relevant parts. An exemplary claim chart comparing claim 16 of the ’912 patent to exemplary DDR4 LRDIMM and RDIMM Accused Products is attached hereto as **Exhibit 2**. As shown in Exhibit 2, accused DDR4 LRDIMMs and DDR4 RDIMMs, and other products with materially the same structures in relevant parts, infringe at least claim 16 of the ’912 patent.

**V. DEMAND FOR JURY TRIAL**

31. Pursuant to Federal Rule of Civil Procedure 38(b), Netlist hereby demands a trial by jury on all issues triable to a jury.

**VI. PRAYER FOR RELIEF**

WHEREFORE, Netlist respectfully requests that this Court enter judgment in its favor ordering, finding, declaring, and/or awarding Netlist relief as follows:

- A. that Micron infringes the Patents-in-Suit;
- B. all equitable relief the Court deems just and proper as a result of Micron’s infringement;

- C. an award of damages resulting from Micron's acts of infringement in accordance with 35 U.S.C. § 284;
- D. enhanced damages pursuant to 35 U.S.C. § 284;
- E. that Micron's infringement of the '912 patent is willful;
- F. that this is an exceptional case and awarding Netlist its reasonable attorneys' fees pursuant to 35 U.S.C. § 285;
- G. an accounting for acts of infringement and supplemental damages, without limitation, pre-judgment and post-judgment interest; and
- H. such other equitable relief which may be requested and to which Netlist is entitled.

Dated: August 1, 2022

Respectfully submitted,

/s/ Jason Sheasby

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