

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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MICRON TECHNOLOGY, INC.,  
Petitioner,

v.

VERVAIN, LLC,  
Patent Owner.

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Case No.: IPR2021-01547  
U.S. Patent No. 8,891,298  
Original Issue Date: November 18, 2014

Title: LIFETIME MIXED LEVEL NON-VOLATILE MEMORY SYSTEM

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**PETITIONER'S NOTICE OF FILING DEMONSTRATIVE EXHIBITS**

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## LISTING OF EXHIBITS

| Exhibit   | Description  |
|-----------|--|
| 1001      | U.S. Patent No. 8,891,298 to Rao (“298 patent”)  |
| 1002      | File History of U.S. Patent No. 8,891,298  |
| 1003-1008 | <i>Intentionally omitted</i>   |
| 1009      | Declaration of Dr. David Liu (“Liu Decl.”) - IPR2021-01547   |
| 1010      | U.S. Patent Application Publication No. 2011/0099460 (“Dusija”)  |
| 1011      | U.S. Patent Application Publication No. 2008/0140918 (“Sutardja”)  |
| 1012      | U.S. Patent Application Publication No. 2009/0327591 (“Moshayedi”)   |
| 1013      | U.S. Patent No. 7,254,059 (“Li”)   |
| 1014      | Betty Prince, Semiconductor Memories – A Handbook of Design, Manufacture, and Application (2d ed. 1991) (“Prince”) |
| 1015      | U.S. Patent No. 8,120,960 (“Varkony”)  |
| 1016      | U.S. Patent No. 7,000,063 (“Friedman”)   |
| 1017      | U.S. Patent Application Publication No. 2005/0251617 (“Sinclair”)  |
| 1018      | Jan Axelson, USB Mass Storage: Designing and Programming Devices and Embedded Hosts (2006) (“Axelson”)             |
| 1019      | Rino Micheloni et al., Inside NAND Flash Memories (1 <sup>st</sup> ed. 2010) (“Micheloni”)                         |
| 1020      | U.S. Patent Application Publication No. 2011/0115192 (“Y. Lee”)  |

| <b>Exhibit</b> | <b>Description</b>   |
|----------------|--|
| 1021           | U.S. Patent No. 7,453,712 (“Kim”)  |
| 1022           | U.S. Patent Application Publication No. 2011/0096601 (“Gavens”)  |
| 1023           | U.S. Patent No. 8,078,794 (“C. Lee”)   |
| 1024           | U.S. Patent No. 7,733,729 (“Boeve”)  |
| 1025           | Microsoft Computer Dictionary, Fifth Edition, 2002, definition of read-after-write   |
| 1026           | Merriam-Webster’s Collegiate Dictionary, Eleventh Edition, 2006, definition of periodic  |
| 1027           | New Oxford American Dictionary, 3 <sup>rd</sup> Edition, 2010, definition of module  |
| 1028           | U.S. Patent Application Publication No. 2010/0172180 (“Paley”)   |
| 1029           | U.S. Patent No. 7,853,749 (“Kolokowsky”)   |
| 1030           | U.S. Patent Application Publication No. 2010/0017650 (“Chin”)  |
| 1031           | European Patent Specification No. EP 2.291.746 B1 (“Radke”)  |
| 1032           | U.S. Patent Application Publication No. 2015/0214476 (“Matsui”)  |
| 1033           | U.S. Patent Application Publication No. 2006/0053246 (“S. Lee”)  |
| 1034           | Complaint for Patent Infringement, Dkt. No. 1, <i>Vervain, LLC v. Micron Technology, Inc., Micron Semiconductor Products, Inc., and Micron Technology Texas, LLC</i> , Case No. 6:21-cv-00487-ADA (May 10, 2021 W.D. Tex.) |

| Exhibit | Description   |
|---------|---|
| 1035    | Agreed Scheduling Order, Dkt. No. 24, dated September 16, 2021, in <i>Vervain, LLC v. Micron Technology, Inc., Micron Semiconductor Products, Inc., and Micron Technology Texas, LLC</i> , Case No. 6:21-cv-00487-ADA       |
| 1036    | Vervain’s Preliminary Infringement Contentions, dated August 6, 2021, in <i>Vervain, LLC v. Micron Technology, Inc., Micron Semiconductor Products, Inc., and Micron Technology Texas, LLC</i> , Case No. 6:21-cv-00487-ADA |
| 1037    | Judge Albright, Order Governing Proceedings - Patent Cases (OGP 3.4), dated June 24, 2021   |
| 1038    | Scott McKeown, “WDTX ‘Implausible Schedule’ & Cursory Markman Order Highlighted,” Ropes & Gray, Patents Post-Grant, Inside Views & News Pertaining to the Nation’s Busiest Patent Court, June 2, 2021                       |
| 1039    | Dani Kass, Judge Albright Now Oversees 20% of New U.S. Patent Cases, Law360, March 10, 2021   |
| 1040    | Brian Dipert and Markus Levy, Designing with Flash Memory (1994) (“Dipert & Levy”)  |
| 1041    | U.S. Patent No. 7,366,826 (“Gorobets”)  |
| 1042    | U.S. Patent No. 6,901,498 (“Conley”)  |
| 1043    | U.S. Patent No. 8,356,152 (“You”)   |
| 1044    | U.S. Patent Application Publication No. 2012/0311244 (“Huang”)  |
| 1045    | U.S. Patent Application Publication No. 2008/0082736 (“Chow”)   |
| 1046    | U.S. Patent No. 8,656,256 (“Weathers”)  |
| 1047    | Ashok Sharma, Advanced Semiconductor Memories, Architectures, Designs, and Applications (2003) (“Sharma”)   |

| <b>Exhibit</b> | <b>Description</b>   |
|----------------|--|
| 1048-1055      | <i>Intentionally omitted</i>   |
| 1056           | Pro Hac Vice Motion of Jared Bobrow  |
| 1057           | Reply Declaration of Dr. David Liu (“Liu Reply”) - IPR2021-01547   |
| 1058           | <i>Curriculum Vitae</i> of Dr. David Liu   |
| 1059           | Deposition Transcript of Sunil Khatri (September 1, 2022) [IPR2021-01547, -01548 and -01549]   |
| 1060           | <i>Intentionally omitted</i>   |
| 1061           | U.S. Patent No. 8,130,554 (“Linnell”)  |
| 1062           | U.S. Patent No. 7,917,709 (“Gorobets III”)   |
| 1063           | Excerpt from Exhibit 1 (eMMC) to Vervain’s Final Infringement Contentions, dated August 31, 2022, in <i>Vervain, LLC v. Micron Technology, Inc., Micron Semiconductor Products, Inc., and Micron Technology Texas, LLC</i> , Case No. 6:21-cv-00487-ADA – FILED UNDER SEAL |
| 1064           | Byung-Woo Nam, Gap-Joo Na, and Sang-Won Lee, “A Hybrid Flash Memory SSD Scheme for Enterprise Database Applications”   |
| 1065           | Yuan-Hao Chang, Jen-Wei Hsieh, Tei-Wei Kuo, “Improving Flash Wear-Leveling by Proactively Moving Static Data”  |
| 1066           | Muthukumar Murugan, “Rejuvenator: A Static Wear Leveling Algorithm for NAND Flash Memory with Minimized Overhead”  |
| 1067-1068      | <i>Intentionally omitted</i>   |
| 1069           | Petitioner’s Hearing Demonstratives (IPR2021-01547 and -01548)   |

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