UNITED STATES PATENT AND TRADEMARK OFFICE

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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CIRRUS LOGIC, INC.;
OMNIVISION TECHNOLOGIES, INC.; AND
AMS SENSORS USA INC.

Petitioner
v.

GREENTHREAD LLC,

Patent Owner

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**U.S. Patent No. 10,510,842**

**Case IPR2023-0001**

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**DECLARATION OF SYLVIA D. HALL-ELLIS, Ph.D.**

## I. INTRODUCTION

1. My name is Sylvia D. Hall-Ellis. I have been retained as an expert by GlobalFoundries, Incorporated ("GlobalFoundries").

2. I have written this declaration at the request of GlobalFoundries to provide my expert opinion regarding the authenticity and public availability of several publications. My declaration sets forth my opinions in detail and provides the basis for my opinions regarding the authenticity and public availability of these publications.

3. I reserve the right to supplement or amend my opinions, and bases for them, in response to any additional evidence, testimony, discovery, argument, and/or other additional information that may be provided to me after the date of this declaration.

4. I am being compensated for my time spent working on this matter at my normal consulting rate of $325 per hour, plus reimbursement for any additional reasonable expenses. My compensation is not in any way tied to the content of this declaration, the substance of my opinions, or the outcome of this proceeding. I have no other interests in this proceeding or with any of the parties.

5. All of the materials that I considered and relied upon are discussed explicitly in this declaration.

## II. QUALIFICATIONS

6. I am currently an Adjunct Professor in the School of Information at San José State University in San José, California. I obtained a Master of Library Science from the University of North Texas in 1972 and a Ph.D. in Library and Information Science from the University of Pittsburgh in 1985. Over the last fifty years, I have held various positions in the field of library and information resources. I was first employed as a librarian in 1966 and have been involved in the field of library sciences since, holding numerous positions.

7. I am a member of the American Library Association (ALA) and its Association for Library Collections & Technical Services (ALCTS) Division, and I served on the Committee on Cataloging: Resource and Description (which wrote the new cataloging rules) and as the chair of the Committee for Education and Training of Catalogers and the Competencies and Education for a Career in Cataloging Interest Group. I also served as the founding Chair of the ALCTS Division's Task Force on Competencies and Education for a Career in Cataloging. Additionally, I have served as the Chair for the ALA Office of Diversity's Committee on Diversity, as a member of the REFORMA National Board of Directors, as a member of the Editorial Board for the ALCTS premier cataloging journal, *Library Resources and Technical Services,* as a Co-Chair of the Membership Committee for the Library

Research Round Table (LRRT) of the American Library Association, and as a member of the LRRT Nominating Committee.

8. I have also given over one hundred presentations in the field, including several on library cataloging systems and Machine-Readable Cataloging ("MARC") standards. My current research interests include library cataloging systems, metadata, and organization of electronic resources.

9. My full curriculum vitae is attached as an Appendix to this declaration.

## III. PRELIMINARIES

### A. Scope of Declaration and Legal Standards

10. I am not an attorney and will not offer opinions on the law. I am, however, rendering my expert opinion on the authenticity of the documents referenced herein and on when and how each of these documents was disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, could have located the documents before September 3, 2004.

11. I am informed by counsel that a printed publication qualifies as publicly accessible as of the date it was disseminated or otherwise made available such that a person interested in and ordinarily skilled in the relevant subject matter could locate it through the exercise of ordinary diligence.

12. While I understand that the determination of public accessibility under

the foregoing standard rests on a case-by-case analysis of the facts particular to an individual publication, I also understand that a printed publication is rendered "publicly accessible" if it is cataloged and indexed by a library such that a person interested in the relevant subject matter could locate it exercising reasonable diligence (*i.e.*, I understand that cataloging and indexing by a library in a manner that permits a person of ordinary skill in the relevant subject matter to locate the publication is sufficient, though there are other ways that a printed publication may qualify as publicly accessible). One manner of sufficient indexing is indexing according to subject matter category. I understand that the cataloging and indexing by a single library of a single instance of a particular printed publication is sufficient, even if the single library is in a foreign country. I understand that, even if access to a library is restricted, a printed publication that has been cataloged and indexed therein is publicly accessible so long as a presumption is raised that the portion of the public concerned with the relevant subject matter would know of the printed publication. I also understand that the cataloging and indexing of information that would guide a person interested in the relevant subject matter to the printed publication, such as the cataloging and indexing of an abstract for the printed publication, is sufficient to render the printed publication publicly accessible.

13. I understand that routine business practices, such as general library cataloging and indexing practices, can be used to establish an approximate date on

which a printed publication became publicly accessible.

**B. Persons of ordinary skill in the art.**

14. I am told by counsel that the subject matter of this proceeding relates to Complementary Metal-Oxide Semiconductor (CMOS) devices having graded dopant concentrations.

15. I have been informed by counsel that a "person of ordinary skill in the art at the time of the invention" ("POSITA") is a hypothetical person who is presumed to be familiar with the relevant field and its literature at the time of the inventions. This hypothetical person is also a person of ordinary creativity, capable of understanding the scientific principles applicable to the pertinent field.

16. I am told by counsel that persons of ordinary skill in this subject matter or art would have had a Bachelor's degree in electrical engineering, material science, applied physics, or a related field, and four years of experience in semiconductor design and manufacturing or equivalent work experience. I understand that this level of skill is approximate, and more experience would compensate for less formal education, and vice versa. I have been further informed by counsel that a person of ordinary skill in the art would have been familiar with and able to understand the information known in the art relating to these fields, including the publications discussed in this declaration.

17. It is my opinion that such a person would have been engaged in

research, learning, study, and practice in the field, and formal instruction so that the bibliographic resources relevant to his or her research would be familiar. Before September 3, 2004, such a person would have had access to a vast array of long-established print resources in electrical engineering as well as to a rich set of online resources providing indexing information, abstracts, and full text services.

## IV. LIBRARY PROFESSIONAL PRACTICES

18. In preparing this declaration, I used authoritative databases, such as the OCLC bibliographic database, the Library of Congress Online Catalog, and the Library of Congress Subject Authorities, to confirm citation details of the various publications discussed. Unless I note otherwise below in reference to a specific serial publication, it is my expert opinion that this standard protocol was followed for the serial publication discussed below.

19. *Indexing*. A researcher may discover material relevant to his or her topic in a variety of ways. One common means of discovery is to search for relevant information in an index of periodicals and other publications. Having found relevant material, the researcher will then normally obtain it online, look for it in libraries, or purchase it from the publisher, a bookstore, a document delivery service, or other provider. Sometimes, the date of a document's public accessibility will involve both indexing and library date information. However, date information for indexing entries is often unavailable. This is especially true for online indices.

20. Indexing services use a wide variety of controlled vocabularies to provide subject access and other means of discovering the content of documents. The Library of Congress Subject Authorities includes standard forms of terms and cross references that are included in bibliographic records. Subject headings are terms that an individual seeking a document regardless of format can enter in the search bar of the online catalog. Subjects also connect an authenticated term (one included in the Library of Congress subject headings list) with related, broader, and narrower terms. The formats in which these access terms are presented vary from service to service.

21. Online indexing services commonly provide bibliographic information, abstracts, and full-text copies of the indexed publications, along with a list of the documents cited in the indexed publication. These services also often provide lists of publications that cite a given document. A citation of a document is evidence that the document was publicly available and in use by researchers no later than the publication date of the citing document. Prominent indexing services include *Scopus,* the *IEEE Xplore* database, the *ACM Digital Library, Google Scholar,* and the *Internet Archive*.

## V. LIBRARY CATALOGING PRACTICES

### A. MARC RECORDS AND THE ONLINE CATALOG

22. MARC is a framework into which descriptive bibliographic data are

transcribed to interact with the software in online library catalogs to provide access to books, journals, and other resources in the collection. The bibliographic data provide points of access and can be searched by a POSITA to identify and obtain resources in the library collection. An information seeker (or POSITA) can search a local online library catalog or the holdings of a group of libraries in a state or region or in the global catalog WorldCat.

23. MARC records are not designed for public viewing. Although a significant number of libraries provide access to the MARC version of a bibliographic record, the public display is designed to show information in a succinct manner that is quickly understood and useful to the information seeker. Libraries determine the default search for the online catalog to make the entry of search terms efficient and result in a successful search. Information seekers can enter a keyword, title, author, or standard number for the item. Libraries may also provide a search capability called "Summon" that allows the information seeker to enter known information about the item to conduct a search.

24. Learning to use an online library catalog begins in elementary school and continues through high school and post-secondary studies. Undergraduate students further develop their skills to use the online catalog at the academic institution where they are studying through information literacy instruction which is provided by professional reference and user experience librarians. The skills

required to search, identify, and obtain the resources identified in this declaration are fundamental to using the online catalogs in libraries and information centers. Therefore, a POSITA who has attained the undergraduate and/or graduate educational levels described above (see paragraph xx) possesses the searching and retrieval skills needed to search library catalogs.

25. Professional catalog and metadata librarians prepare and enhance MARC records to provide points of access for each item in the library collection. Using a set of internationally adopted guidelines, rules for the assignment of classification numbers, and the assignment of subject headings from standardized lists, taxonomies, folksonomies, locally developed lists. An information seeker (including POSITAs) can search the online library catalog in a number of ways to identify a specific item or resources on a defined topic.

26. The continued development of the software that supports integrated online library catalogs resulted in the potential to search by an individual creator or author, title proper or variant title, a series that contains the desired item, subjects, corporate bodies responsible in part for the creation of an item, or standard identification numbers associated with the item (e.g., International Standard Book Numbers (ISBN), International Standard Serial Numbers (ISSN), and Publisher's Numbers). Each of these data elements appears in a prescribed location within the MARC framework so that the software can parse, index, and display data elements

resulting from a user-initiated search.

27. Examining the MARC records for a specific item reveals the comprehensive data transcribed about a particular item at the time that cataloging and classification occurred. In addition to the creator, title, subjects, and standard numbers, additional information may provide additional and relevant data depending on the type of resource. Understanding the full extent of bibliographic data for an item and the points of access associated with it provides essential information that can be used to determine the indexing and public availability for documents described in this declaration.

**B. MARC RECORDS**

28. I am fully familiar with the library cataloging standard known as the MARC standard, which is an industry-wide standard method of storing and organizing library catalog information.[1] MARC was first developed in the 1960's by the Library of Congress. A MARC-compatible library is one that has a catalog consisting of individual MARC records for each of its items. Today, MARC is the primary communications protocol for the transfer and storage of bibliographic

[1] The full text of the standard is available from the Library of Congress at http://www.loc.gov/marc/bibliographic/ (last visited August 25, 2023).

metadata in libraries.[2]

29. Since at least the early 1970s and continuing to the present day, MARC has been the primary communications protocol for the transfer and storage of bibliographic metadata in libraries.[3] As explained by the Library of Congress:

> You could devise your own method of organizing the bibliographic information, but you would be isolating your library, limiting its options, and creating much more work for yourself. Using the MARC standard prevents duplication of work and allows libraries to better share bibliographic resources. Choosing to use MARC enables libraries to acquire cataloging data that is predictable and reliable. If a

[2] Almost every major library in the world is MARC-compatible. *See, e.g.*, *MARC Frequently Asked Questions (FAQ)*, Library of Congress, https://www.loc.gov/marc/faq.html (last visited August 25, 2023) ("MARC is the acronym for MAchine-Readable Cataloging. It defines a data format that emerged from a Library of Congress-led initiative that began nearly fifty years ago. It provides the mechanism by which computers exchange, use, and interpret bibliographic information, and its data elements make up the foundation of most library catalogs used today."). MARC is the ANSI/NISO Z39.2-1994 (reaffirmed 2016) standard for Information Interchange Format.

[3] A complete history of the development of MARC can be found in *MARC: Its History and Implications* by Henrietta D. Avram (Washington, DC: Library of Congress, 1975) and available online from the Hathi Trust (https://babel.hathitrust.org/cgi/pt?id=mdp.39015034388556;view=1up;seq=1; last visited August 25, 2023).

library were to develop a "home-grown" system that did not use MARC records, it would not be taking advantage of an industry-wide standard whose primary purpose is to foster communication of information.

Using the MARC standard also enables libraries to make use of commercially available library automation systems to manage library operations. Many systems are available for libraries of all sizes and are designed to work with the MARC format. Systems are maintained and improved by the vendor so that libraries can benefit from the latest advances in computer technology. The MARC standard also allows libraries to replace one system with another with the assurance that their data will still be compatible. *Why Is a MARC Record Necessary?* LIBRARY OF CONGRESS. [4]

30. Thus, almost every major library in the world is MARC-compatible. *See, e.g.*, *MARC Frequently Asked Questions (FAQ)*, LIBRARY OF CONGRESS. [5] ("MARC is the acronym for MAchine-Readable Cataloging. It defines a data format that emerged from a Library of Congress-led initiative that began fifty years ago. It provides the mechanism by which computers exchange, use, and interpret bibliographic information, and its data elements make up the foundation of most library catalogs used today."). MARC is the ANSI/NISO Z39.2-1994 standard (reaffirmed in 2016) for Information Interchange Format. The full text of the

[4] http://www.loc.gov/marc/umb/um01to06.html#part2

[5] https://www.loc.gov/marc/faq.html

standard is available from the Library of Congress.[6]

31. A MARC record comprises several fields, each of which contains specific data about the work. Each field is identified by a standardized, unique, three-digit code corresponding to the type of data that follow. For example, a work's title is recorded in Field 245; the primary author of the work is transcribed in Field 100; an item's International Standard Book Number ("ISBN") consisting of ten or thirteen digits is transcribed in Field 020; an item's International Standard Serial Number ("ISSN") is transcribed in Field 022; the Library of Congress classification notation is recorded in Field 050; and the publication date is recorded in Field 260 under the subfield "c." If a work is a periodical, then its publication frequency is recorded in Field 310, and the publication dates (e.g., the first and last publication) are recorded in Field 362, which is also referred to as the enumeration/chronology field.[7]

32. The library that created the record is recorded in Field 040 in subfield "a" with a unique library code. When viewing the MARC record online via Online Computer Library Center's ("OCLC") bibliographic database, hovering over this code with the mouse reveals the full name of the library. I used this method of "mousing over" the library codes in the OCLC database to identify the originating

[6] http://www.loc.gov/marc/bibliographic/

[7] http://www.loc.gov/marc/bibliographic/bd3xx.html

library for the MARC records discussed in this declaration. Where this "mouse over" option was not available, I consulted the Directory of OCLC Libraries to identify the institution that created the MARC record.[8]

33. MARC records also include several fields that include subject matter classification information. An overview of MARC record fields is available through the Library of Congress.[9] For example, 6XX fields are termed "Subject Access Fields."[10] Among these, for example, is the 650 field; this is the "Subject Added Entry – Topical Term" field.[11] The 650 field is a "[s]ubject added entry in which the entry element is a topical term." These entries "are assigned to a bibliographic record to provide access according to generally accepted thesaurus-building rules (e.g., *Library of Congress Subject Headings* (LCSH), *Medical Subject Headings* (MeSH))." *Id.* Further, MARC records include call numbers, which themselves include a classification number. For example, the 050 field is the "Library of Congress Call Number."[12] A defined portion of the Library of Congress Call (LCC) Number is the classification number, and "source of the classification number is

[8] https://www.oclc.org/en/contacts/libraries.html

[9] http://www.loc.gov/marc/bibliographic/

[10] http://www.loc.gov/marc/bibliographic/bd6xx.html

[11] http://www.loc.gov/marc/bibliographic/bd650.html

[12] http://www.loc.gov/marc/bibliographic/bd050.html

*Library of Congress Classification* and the *LC Classification-Additions and Changes*." Thus, included in the 050 field is a subject matter classification. Further, the 082 field is the "Dewey Decimal Call Number."[13] A defined portion of the Dewey Decimal Call (DDC) Number is the classification number, and "source of the classification number is the *Dewey Decimal Classification and Relative Index*." Thus, included in the 082 field is a subject matter classification. Each item in a library has a single classification number. A library selects a classification scheme (*e.g.*, the Library of Congress classification scheme just described or a similar scheme such as the Dewey Decimal classification scheme) and uses it consistently. When the Library of Congress assigns the LCC classification number, it appears as part of the 050 field. When the Library of Congress assigns the DDC classification number, it appears as part of the 082 field. If a local library assigns the classification number, it appears in a 090 field. In either scenario, the MARC record includes a classification number that represents a subject matter classification.

**C. OCLC**

34. The OCLC was created "to establish, maintain and operate a computerized library network and to promote the evolution of library use, of libraries themselves, and of librarianship, and to provide processes and products for the benefit of library users and libraries, including such objectives as increasing

[13] http://www.loc.gov/marc/bibliographic/bd082.html

availability of library resources to individual library patrons and reducing the rate of rise of library per-unit costs, all for the fundamental public purpose of furthering ease of access to and use of the ever-expanding body of worldwide scientific, literary and educational knowledge and information."[14] Among other services, OCLC and its members are responsible for maintaining the WorldCat database (http://www.worldcat.org/), used by independent and institutional libraries throughout the world.

35. OCLC also provides its members online access to MARC records through its OCLC bibliographic database. When an OCLC member institution acquires a work, it creates a MARC record for this work in its computer catalog system in the ordinary course of its business. MARC records created at the Library of Congress are tape-loaded into the OCLC database through a subscription to MARC Distribution Services daily or weekly. Once the MARC record is created by a cataloger at an OCLC member institution or is tape-loaded from the Library of Congress, the MARC record is then made available to any other OCLC members online, and therefore made available to the public. Accordingly, once the MARC record is created by a cataloger at an OCLC member institution or is tape-loaded

[14] Third Article, Amended Articles of Incorporation of OCLC Online Computer Library Center, Incorporated (available at https://www.oclc.org/content/dam/oclc/membership/articles-of-incorporation.pdf).

from the Library of Congress or another library anywhere in the world, any publication corresponding to the MARC record has been cataloged and indexed according to its subject matter such that a person interested in that subject matter could, with reasonable diligence, locate and access the publication through any library with access to the OCLC bibliographic database or through the Library of Congress.

36. When an OCLC member institution creates a new MARC record, OCLC automatically supplies the date of creation for that record. The date of creation for the MARC record appears in the fixed Field (008), characters 00 through 05. The MARC record creation date reflects the date on which, or shortly after which, the item was first acquired or cataloged. Initially, Field 005 of the MARC record is automatically populated with the date the MARC record was created in year, month, day format (YYYYMMDD) (some of the newer library catalog systems also include hour, minute, second (HHMMSS)). Thereafter, the library's computer system may automatically update the date in Field 005 every time the library updates the MARC record (*e.g.*, to reflect that an item has been moved to a different shelving location within the library). Field 005 is visible when viewing a MARC record via an appropriate computerized interface, but when a MARC record is printed to hardcopy, no "005" label appears. The initial Field 005 date (*i.e.*, the date the MARC

record was created) does appear, however, next to the label "Entered."[15] The date upon which the most recent update to Field 005 occurred also appears, next to the label "Replaced." Thus, when an item's MARC record has been printed to hardcopy—as is the case with the exhibits to this declaration—the date reflected next to the label "Entered" is necessarily on or after the date the library first cataloged and indexed the underlying item.

37. Once one library has cataloged and indexed a publication by creating a MARC record for that publication, other libraries that receive the publication do not create additional MARC records—the other libraries instead rely on the original MARC record. They may update or revise the MARC record to ensure accuracy, but they do not replace or duplicate it. This practice does more than save libraries from duplicating labor. It also enhances the accuracy of MARC records. Further, it allows librarians around the world to know that a particular MARC record is authoritative (in contrast, a hypothetical system wherein duplicative records were created would result in confusion as to which record is authoritative).

38. Catalogers can create MARC records for all types of print, online, and

[15] Field 005 is visible when viewing a MARC record via an appropriate computerized interface. But when a MARC record is printed directly to hardcopy from the OCLC database, the "005" label is not shown. The date in the 005 field instead appears next to the label "Replaced."

digital resources. The date of creation of the MARC record by a cataloger at an OCLC member institution reflects when the underlying item is accessible to the public. Upwards of two-thirds to three-quarters of book sales to libraries come from a jobber or wholesaler for online and print resources. These resellers make it their business to provide books to their customers as fast as possible, often providing turnaround times of only a single day after publication. Libraries purchase a significant portion of the balance of their books directly from publishers themselves, which provide delivery on a similarly expedited schedule. In general, libraries make these purchases throughout the year as the books are published and shelve the books as soon thereafter as possible to make the books available to their patrons. Thus, books are generally available at libraries across the country within just a few days of publication.

39. *Journals.* MARC records that cover serial publications include both serially-published monographs and journals. OCLC hosts MARC records for more than 320 million serial publications. Serial publications are those publications that have the same collective title but are intended to be continued indefinitely with enumeration such as a volume or issue number (*e.g.*, magazines, journals, etc.). In the OCLC bibliographic database, the first issue of the serial publication is typically cataloged (*i.e.*, a corresponding MARC record is created), but the date is left open-ended with the use of a punctuation mark such as a dash. OCLC serial publication

MARC records represent the entire run of the serial title. With knowledge of the first issue published, future issues can be predicted based on the information provided in the MARC record, for example in field 362. In my extensive professional experience, is it highly unusual for a library to stop collecting and shelving a serial publication prior to the end of its publication run. If a subscription to a serial publication ends its run or is cancelled before the end of its run, the library will denote that it has stopped receiving new volumes by filling in the end date in the MARC record.

40. The handling of printed journal subscriptions is shown on the cover or the first few pages of individual issues. As was the best practice among libraries, issues arrived at a central facility and were immediately received, verified as part of a subscription, checked in, and stamped or labeled with the institution's name and date. Determining that the issue was part of the library subscription ensured that the entire set of publications for the year had been received so that they could be professionally bound and retained. This process also verified that all of the published issues arrived so that the library staff did not have to request or claim an issue that did not arrive as expected. In large public libraries with branches and multi-campus libraries within academic institutions, the journals were sorted and delivered to the subscribing unit. The new issue was placed in the public area; the older issue was stored so that it remained available.

41. The foregoing process has been standard library practice longer than I have been working in the profession. I first learned the steps in the process in the late 1970s and later supervised it. Although the checking in process has become automated and now links electronically to holdings records for the MARC record for each serial title, the manual placement of a stamp or label and placing the issue in a public area has not changed for 50 years. Unless I note otherwise below in reference to a specific serial publication, it is my expert opinion that this standard protocol was followed for the serial publication discussed below.

## VI. *Silicon Processing for the VLSI Era,* 2nd edition, 4 volumes, by Stanley Wolf and Richard N. Tauber. EXHIBIT 1008 ("Wolf")

42. Exhibit 1008 is a set of copies from the four-volume series titled *Silicon Processing for the VLSI Era,* 2nd edition, by Stanley Wolf and Richard N. Tauber. Each volume has a distinct title in addition to the series title. Exhibit 1008 includes excerpts from each of the four volumes.

43. I obtained physical copies of all four volumes of Exhibit 1008 from the University of Wisconsin – Madison Libraries. As described further below, from an inspection of the physical copies from the University of Wisconsin – Madison Libraries, I have confirmed that the electronic excerpts submitted as Exhibit 1008 are true and correct copies of excerpts from the identified volumes.

44. *Volume 1.* Exhibit 1008A is a copy of the cover, title page, copyright page, detailed table of contents, preface to the 2nd edition, preface to the 1st edition,

and excerpts from Volume 1 titled *Process Technology* by Stanley Wolf and Richard N. Tauber issued by Lattice Press. The excerpts are Chapter 7, "Silicon Epitaxial Growth and Silicon on Insulator" (pp. 225-229); Chapter 9, "Diffusion in Silicon" (pp. 324-363); Chapter 10, "Ion Implantation for ULSI" (pp. 371-424); and Chapter 16, "CMOS Process Integration" (pp. 807-838). These excerpts in Exhibit 1008 are true and correct copies from Volume 1 titled *Process Technology.* The excerpts from Volume 1 are complete; no pages are missing, and the text on each page appears to flow seamlessly from one page to the next; further, there are no visible alterations to the document. The excerpts are true and correct copies in a condition that creates no suspicion about its authenticity.

45. *Volume 2.* Exhibit 1008B is a copy of the cover, title page, copyright page, detailed table of contents, list of technical reviewers, preface, and excerpts from Volume 2 titled *Process Integration* by Stanley Wolf and Richard N. Tauber issued by Lattice Press. The excerpts are Chapter 1, "Process Integration for VLSI and ULSI" (pp. 1-4); Chapter 5, "MOS Devices and NMOS Process Integration" (pp. 298-363); Chapter 6, "CMOS Process Integration" (pp. 368-452); and, Chapter 8, "Semiconductor Memory Process Integration" (pp. 567-642). The excerpts in Exhibit 1008 are true and correct copies from Volume 2 titled *Process Integration.* The excerpts from Volume 2 are complete; no pages are missing, and the text on each page appears to flow seamlessly from one page to the next; further, there are

no visible alterations to the document. The excerpts are true and correct copies in a condition that creates no suspicion about its authenticity.

46. *Volume 3.* Exhibit 1008C is a copy of the cover, preface, detailed table of contents, and excerpts from Volume 3 titled *The Submicron MOSFET* by Stanley Wolf and Richard N. Tauber issued by Lattice Press. The excerpts are Chapter 3, "MOS Transistor Device Physics: Part 1 Basics MOS Physics and The MOS Capacitor" (pp. 83-133); Chapter 4, "MOS Transistor Device Physics: Part 2 Long-Channel MOSFETS" (pp. 134-204); Chapter 5, "MOS Transistor Device Physics: Part 3 The Submicron MOSFET" (pp. 205-320); and, Chapter 8, "Well Formation in CMOS" (pp. 523-558). The excerpts in Exhibit 1008 are true and correct copies from Volume 3 titled *The Submicron MOSFET.* The excerpts from Volume 3 are complete; no pages are missing, and the text on each page appears to flow seamlessly from one page to the next; further, there are no visible alterations to the document. The excerpts are true and correct copies in a condition that creates no suspicion about its authenticity.

47. *Volume 4.* Exhibit 1008D is a copy of the cover, title page, copyright page, detailed table of contents, preface, and excerpt from Volume 4 titled *Deep-Submicron Process Technology* by Stanley Wolf and Richard N. Tauber issued by Lattice Press. The excerpt is Chapter 5, "The Structure of Deep-Submicron MOSFETS: Retrograde-Wells; Super-Steep Retrograde Channel Doping; Drain

Engineering; Punchthrough-Control Structures" (pp. 181-226). The excerpt in Exhibit 1008 is a true and correct copy from Volume 4 titled *Deep-Submicron Process Technology.* The excerpt from Volume 4 is complete; no pages are missing, and the text on each page appears to flow seamlessly from one page to the next; further, there are no visible alterations to the document. The excerpt is a true and correct copy in a condition that creates no suspicion about its authenticity.

48. Attached hereto as Attachment A-1 is a true and correct copy of the MARC record for the four-volume series titled *Silicon Processing for the VLSI Era* from the OCLC bibliographic database. I personally identified and retrieved the MARC record that is Attachment A-1. As previously noted, the library that created the record is recorded in field 040 with a unique library code. For Attachment A-1 that library code is "DLC," which means that the MARC record for this book was created in the Library of Congress as part of the Cataloging in Publication (CIP) Program.[16] A cataloger prepares basic information about the forthcoming book which is included on the verso of the title page (also called the copyright page). The information is provided to save time needed for the cataloging process at the library after the book is purchased. The CIP data includes the author (field 100), title and subtitle (field 245), ISBN (field 022), suggested subject headings (field 650),

[16] https://www.loc.gov/publish/cip/

classification numbers for the Library of Congress classification number (field 050), and the Dewey Decimal classification number (field 082). These data elements are included in the MARC record that the Library of Congress contributes to the OCLC bibliographic database. The CIP information does not appear on the copyright page but is on file at the Library of Congress. As can be seen in the "Entered" field in the MARC record for this exhibit, a cataloger at the Library of Congress created OCLC record number 14258223 on July 2, 1986, as shown in the "Entered" field ("19860702"). The library continues to update and enhance this MARC record to meet current cataloging rules. The most recent enhancement to Attachment 1A occurred on October 18, 2022, as shown in the "Replaced" field ("20221018"). I personally identified and retrieved the MARC record that is Attachment A-1. The library continues to update and enhance this MARC record to meet current cataloging rules. I personally identified and retrieved the MARC record that is Attachment A-1.

49. Attachment A-1 further includes an entry in field 050 ("TK7874 $b .W635 1986") that, as described above, includes a subject matter classification number consistent with the Library of Congress classification system (analogous to the Dewey Decimal classification system) and an entry in field 082 ("621.381/73") that, as described above, includes a subject matter classification number consistent with the Dewey Decimal classification system. Attachment A-1 further includes

three descriptor terms reading "Semiconductors $x Etching" (see Attachment A-2, Library of Congress subject heading sh85119910), "Integrated circuits $x Very large scale integration" (see Attachment A-3, Library of Congress subject heading sh85067125), and "Silicon" (see Attachment A-4, Library of Congress subject heading sh85122512) in the 650 fields. Thus, as of its cataloging, the publication corresponding to the MARC record attached hereto as Attachment A-1 was indexed according to its subject matter by virtue of at least three independently sufficient classifications: the field 050 entry, the field 082 entry, and the field 650 entries. Further, as of July 2, 1986, the MARC record attached hereto as Attachment A-1 was accessible through any library with access to the OCLC bibliographic database or the online catalog at a library that added this book to its collection, which means that the corresponding publication was publicly available on or before that same date through any library with access to the OCLC bibliographic database or through an individual library.

50. Further supporting my opinion that Volume 1 titled *Process Technology* of the four-volume series was publicly accessible to ordinarily skilled and interested researchers in the field is the fact that it was registered with the U. S. Copyright Office as item TX0001945323 on November 13, 1986, and indicated a publication date of September 15, 1986 (see Attachment A-5, U. S. Copyright Office Public Catalog). As noted above, this would have provided a POSITA with keyword

searching capabilities and other tools to locate this book.

51. Further supporting my opinion that Volume 2 titled *Process Integration* of the four-volume series was publicly accessible to ordinarily skilled and interested researchers in the field is the fact that it was registered with the U. S. Copyright Office as item TX0002921036 on September 10, 1990, and indicated a publication date of July 15, 1990 (see Attachment B-1, U. S. Copyright Office Public Catalog). As noted above, this would have provided a POSITA with keyword searching capabilities and other tools to locate this book.

52. Further supporting my opinion that Volume 3 titled *The Submicron MOSFET* of the four-volume series was publicly accessible to ordinarily skilled and interested researchers in the field is the fact that it was registered with the U. S. Copyright Office as item TX0005785615 on June 11, 2003, and indicated a publication date of February 15, 1995 (see Attachment C-1, U. S. Copyright Office Public Catalog). As noted above, this would have provided a POSITA with keyword searching capabilities and other tools to locate this book.

53. Attached hereto as Attachment D-1 is a true and correct copy of the MARC record for volume 4 titled *Deep-Submicron Process Technology* from the OCLC bibliographic database. I personally identified and retrieved the MARC record that is Attachment D-1. As previously noted, the library that created the record is recorded in field 040 with a unique library code. For Attachment D-1 that

library code is "GBVCP," which means that the MARC record for this book was created at the Verbundzentrale Des Gemeinsamen Bibliotheksverbundes (Gottingen, Germany). The MARC record identified as OCLC number 249515138 was created on July 28, 2003. Therefore, volume 4 of the *Silicon Processing for the VLSI Era* was cataloged, indeed and publicly available on that date.

54. Attachment A-1 indicates that the four-volume series titled *Silicon Processing for the VLSI Era* as cataloged at the Library of Congress is currently available from 290 libraries. In view of above, the four-volume series titled *Silicon Processing for the VLSI Era* was publicly available on or shortly after the dates indicated for each volume listed above (paragraphs 50-53), because by those dates the individual volume had been received, cataloged, and indexed in a library and made part of the OCLC bibliographic database. For these reasons, it is my opinion that Exhibit 1008 was published and accessible to the public on or shortly after September 15, 1986 (volume 1), July 15, 1990 (volume 2), February 15, 1995 (volume 3), and July 28, 2003 (volume 4).

## VII. SUMMARY OF OPINIONS

55. In view of the foregoing, it is my opinion that the four volumes of the Wolf publication described above were publicly available no later than September 15, 1986 (volume 1); July 15, 1990 (volume 2); February 15, 1995 (volume 3); and, July 28, 2003 (volume 4).

56. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: September 30, 2023 By: Sylvia D. Hall-Ellis, Ph.D.