

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ADVANCED MICRO DEVICES, INC.,

Petitioner

v.

REALTEK SEMICONDUCTOR CORPORATION,

Patent Owner

IPR2023-00788

U.S. Patent No. 9,590,582

SUPPLEMENTAL DECLARATION OF SYLVIA HALL-ELLIS, PH.D.

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

I, Sylvia D. Hall-Ellis, Ph.D., declare as follows:

1. I previously prepared a declaration at the request of Petitioner Advanced Micro Devices, Inc. (“Petitioner”) to provide my expert opinion regarding the public accessibility of a number of publications, which I understand was submitted in IPR proceeding IPR2023-00788 (Ex. 1036).

2. In my original Declaration, I reserved the right to supplement my Declaration (*See* Ex. 1036, ¶3). I submit this supplemental declaration to respond to certain assertions made with respect to my original Declaration.

3. I am informed by counsel that under the legal principles, expert testimony is proper if it is (1) based on sufficient facts or data; (2) the product of reliable principles and methods; and (3) the expert reliably applied the principles and methods to the facts of the case.

I. QUALIFICATIONS

4. My knowledge, skill, experience, training, and education in the fields of library services, information science, cataloging practices, and library operations were laid out in my original Declaration. (*See* Ex. 1036, ¶¶6-10).

5. As I explained in my original Declaration, I have 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. (*Id.*, ¶6.) I have been

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

employed as a professional librarian since 1966. (*Id.*) Over the span of the last fifty years, I have held various positions in the field of library and information resources and have served as a committee and board member for various organizations within my field. (*Id.*, ¶7) I have given over one hundred presentations in the field, including several on library cataloguing systems and MARC standards. (*Id.*, ¶8.) I have served as a Dissertation Committee Chair ten times, as a Dissertation Committee member three times, and as a Thesis (Capstone) Chair fourteen times. (*Id.*, ¶¶9-10.)

6. My work experience includes teaching students earning graduate degrees since 1993. Since graduating these students have had successful careers in public, academic, corporate, government, and special libraries and information centers.

7. I have served as a Dissertation Committee Chair ten times, as a Dissertation Committee member three times, and as a Thesis (Capstone) Chair fourteen times. (*Id.*, ¶¶9-10.)

8. My professional knowledge, skills, and expertise parallels the five levels described in the classic Dreyfus Model of skill acquisition.¹ During the past twenty years, I have dedicated significant research to competency-based education

¹ Dreyfus, Herbert L., and Stuart E. Dreyfus. *The Power of Human Intuition and Expertise in the Era of the Computer*. New York: The Free Press, 1986. pp.18-36.

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

for professional catalogers and metadata specialists in libraries, information centers, and related cultural institutions (e.g., museums, archives). Not only is my research the cornerstone for colleagues,² it also serves as the basis for the Core Competencies for Catalogers and Metadata Specialists adopted by the American Library Association in 2017.³

9. The research that I performed prior to writing my original Declaration is based on a formal methodology. To perform a systematic, objective explanation of the bibliographic metadata to determine cataloging data, public availability, and related information, I employed a descriptive content analysis methodology.⁴ I have been using this proven methodology for over 15 years. For legal matters, I use a content analysis methodology in the consideration of a variety of previously available resources including, but not limited to monographs, journals, and articles published in them, conference papers and proceedings, technical reports, theses and dissertations, government documents, press releases, and websites. For the purposes of legal matters, the analysis focuses on MARC records and bibliographic data from

2

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C6&q=dreyfus+model+of+skill+acquisition&btnG=

³ <http://www.ala.org/news/member-news/2017/03/alcts-endorses-cataloging-and-metadata-core-competencies>

⁴ Neuendorf, Kimberly A. *The Content Analysis Guidebook*. Thousand Oaks, Calif.: Sage Publications, 2002. pp. 53-54.

libraries, corporate entities, government agencies, and other institutions that own print and digital documents provided by counsel.

10. For each document, specific descriptors identified standard numbers, classification designations, authors/creators, titles and variations thereof, publishers, dates of publication and/or copyright, editions, and subject designations. Conducting a descriptive content analysis enables me to describe substance and form characteristics examined in the bibliographic data.

11. Methodologically speaking, the format and structure of bibliographic data can be identified, measured, and analyzed at the field and subfield levels. The subfield proves to be the smallest identifiable unit that can be coded for the desired variables and provided maximal variance across the individual documents. Because the investigation for a specific legal matter does not replicate work, I have developed the measures used. Therefore, the issue of validation began *de novo*.⁵ In order to use actual, concrete measures, I construct a coding scheme that consists of a set of measures in a codebook. The categories in the codebook include an appropriate code for each and every data unit based on the MARC format. Variables identified at the

⁵ Janis, Irving L. "The Problem of Validating Content Analysis." In Harold D. Lasswell, Nathan Leites and Associates (eds.), *Language of Politics: Studies in Quantitative Semantics* (pp. 55-82). New York: George W. Stewart, 1949, pp. 74-75.

subfield level are broken down into separate measures to avoid potential convergence of multiple measures. The codebook provides sufficient specificity to avoid ambiguity and confusion as well as coding protocol guidelines. The findings of the content analysis form the basis for my written report or declaration.

II. BACKGROUND ON UNIVERSITY STUDENT RESEARCH CAPABILITIES AND GRADUATE REQUIREMENTS

12. Developing critical thinking and information literacy skills is a fundamental task for post-secondary students as part of their baccalaureate experiences. Librarians conduct information literacy sessions designed to enhance the library skills developed in high school so that students are prepared for conducting independent research in the library and on the Internet. The Association of College and Research Libraries (ACRL), a division of the American Library Association,⁶ defines information literacy as integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued and the use of information in creating new knowledge and participating ethically in communities of learning.

13. Higher education institutions require students to participate in information literacy experiences. A team of librarians prepares and delivers

⁶ https://en.wikipedia.org/wiki/Association_of_College_and_Research_Libraries

information literacy instruction to students. For example, at the University of California – Berkeley, the experience is currently titled “Digital Literacy.”⁷

14. Graduate students continue to refine their information literacy skills as they pursue master’s and doctoral degrees. Upon completion of a bachelor’s degree, a student may pursue a master’s degree, which requires a formal paper (or thesis) containing the student’s research and conclusions as part of the requirements for the graduate degree. Students pursuing a doctorate conduct original research to investigate a specific question or problem under the guidance of a faculty advisor and committee. The original research is prepared in a dissertation, presented to the research committee, and accepted as a final step in the doctoral process.⁸

15. The research and scholarly communications written by faculty and students are generally added to the institution’s library. The growing accessibility of digital resources through the Internet provided opportunities for higher education institutions to establish and maintain digital repositories. The digital repository provides a permanent collection of research papers, reports, scholarly communications, and other documents that represent the intellectual output of the institution’s learning community.

⁷ <https://update.lib.berkeley.edu/Topics/digital-literacy/>

⁸ <https://en.wikipedia.org/wiki/Thesis>

16. The University of California – Berkeley maintains digital collections in the library that can be searched by students, faculty, and the members of the public.⁹ The digital collections include images, text, audio, and video resources. In addition, the University of California – Berkeley participates in the University of California statewide eScholarship digital repository¹⁰ which is part of the California Digital Library. Currently the eScholarship digital repository contains 2,407 books, 396,780 articles, and 57,520 theses. The eScholarship database can be searched by type of work, supplemental material, publication year, department, campus, journal, or discipline.

17. In addition to institutional digital repositories, colleges and universities in the United States contribute theses and dissertations to ProQuest (originally University Microfilms (UMI)) for inclusion in the database Dissertations and Theses.¹¹ Researchers can search the ProQuest database by author, advisor, institution, subjects, and keywords. Copies of the theses or dissertations can be downloaded or purchased in print from ProQuest.

18. Writing a dissertation at the University of California – Berkeley falls

⁹ <https://www.lib.berkeley.edu/find/digital-collections>

¹⁰ <https://escholarship.org/>

¹¹ <https://about.proquest.com/en/dissertations/>

under the auspices of the Graduate Division.¹² Expectations are stated on the Graduate Division's website and includes the filing requirements for completed dissertations. Students are required to make a PDF of the completed document and submit it to ProQuest/UMI for inclusion in the Dissertations and Theses database and to the University of California eScholarship digital repository.

III. GENERAL BACKGROUND ON LIBRARY STANDARDS

19. I discussed at length the standard cataloging practices used by libraries in Section V of my original Declaration, and that I am fully familiar with each step of those procedures. (*Id.*, ¶¶25-30.) Over my career, I have performed and supervised the work described in my original Declaration. These practices include full familiarity with the MARC standard. (*Id.*, ¶25.) I also explained that I learned the steps of these library cataloguing practices early in my career and have been practicing them for over thirty years. (*Id.*, ¶¶25, 38.) I began using the tools mentioned in my original Declaration since the 1970s. I first used the OCLC bibliographic database in 1976. These tools include (but are not limited to) print and online manifestations of cataloging rules (*Anglo-American Cataloging Rules*, *Anglo-American Cataloging Rules 2*, and *Resource and Description (RDA)*), the *Library of Congress Subject Headings (LCSH)*, *Medical Subject Headings (MESH)*, the *Dewey*

¹² <https://grad.berkeley.edu/academic-progress/dissertation/>

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

Decimal Classification Scheme (DDC), the *Library of Congress Classification Scheme (LCC)*, and the *National Library of Medicine Classification Scheme (NLM)*.

I currently teach four graduate courses for students who are preparing for careers in cataloging and metadata services at San José State University's School of Information. (*Id.*)

20. I explained at length in my original Declaration that I am fully familiar with a library cataloging encoding standard known as the "Machine-Readable Cataloguing" standard, also known as "MARC." (*Id.*, ¶25.) The MARC standard became the national standard for sharing bibliographic data in the United States by 1971 and the international standard by 1973. Moreover, as I explained, MARC is the primary communications protocol for the transfer and storage of bibliographic metadata in libraries. (*Id.*, ¶26.) Almost every library in the world is MARC-compatible. (*Id.*, ¶27.)

21. I also explained in my original Declaration that a MARC record comprises several fields, each containing specific data about its corresponding work. (*Id.*, ¶28, 30.) Each field within a MARC record is identified by a standardized, unique, three-digit code corresponding to the type of data that follows. (*Id.*) I then provided descriptions of exemplary fields that appear in MARC records. (*Id.*, ¶¶28, 30.)

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

22. I explained how fields 008 and 005 in MARC records are indicators of the public accessibility of works held at libraries. (*Id.*, ¶33.) For example, I explained that field 008 is the date of creation for a MARC record at a library during the ordinary course of business and how the MARC record creation date in field 008 reflects the date on which, or shortly after which, a work was first acquired and catalogued by the library that created the original MARC record. (*Id.*)

23. I then explained in my original Declaration that MARC records may be created for all types of print, online, and digital resources. (*Id.*, ¶35.) MARC and OCLC resources had been continuously operational and available since at least 1992, and in my over thirty years of experience, I have consistently found the information contained within these resources to be complete and reliable. (*Id.*, ¶32.)

24. In 1967, the Online Computer Library Center (OCLC) was established in Dublin, Ohio. The non-profit's corporate mission is to "be the leading global library cooperative, helping libraries serve people by providing economical access to knowledge through innovation and collaboration."¹³ The organization and its members in more than 100 countries strive to establish, maintain and operate a computerized library network, provide intelligent databases and a cooperative platform to collectively innovate and drive efficiency in metadata creation,

¹³ <https://www.jobsage.com/companies/about/oclc>

interlibrary loan, digitization, discovery and delivery.¹⁴

25. A research tool developed for the twenty-first century is WorldCat. WorldCat¹⁵ is the largest union catalog in the world of library collections representing print, digital, and other formats in multiple languages. Designed as a user-friendly screen interface for the OCLC bibliographic database, WorldCat provides descriptive information, subject access, and library ownership for materials in thousands of libraries' collections. Since OCLC was established in 1967, libraries around the world have contributed information about millions of books, magazines, movies, songs, maps, genealogical records, research theses, e-books, articles, downloadable audiobooks, photos, and other materials.

26. As of December 2021, WorldCat contained over 540 million bibliographic records in 483 languages, representing over 3 billion physical and digital library assets, and the WorldCat persons dataset included over 100 million people.¹⁶

27. I also described the standard library practice with respect to the handling of serial publications. (*Id.*, ¶¶36-38.) I explained that, as new issues of a printed journal subscription arrived, the best practice among libraries involved,

¹⁴ <https://en.wikipedia.org/wiki/Wikipedia:OCLC>

¹⁵ <https://search.worldcat.org/>

¹⁶ <https://en.wikipedia.org/wiki/WorldCat>

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

among other things, stamping or labeling the new issues with the institution's name and date. (*Id.*, ¶37.) I further explained how these subscription issues were indexed and made available to the public within libraries, and this practice has not changed for 50 years. (*Id.*, ¶38.)

28. Libraries use the check-in modules of the local integrated library system (ILS) to record the arrival of each issue for a journal (or serial). Before the availability of a serials module in the ILS, these check-in records were maintained by entering data on cards. If an issue does not arrive or is damaged, a claim can be placed with the supplier for a replacement copy. Each issue is property stamped with the name of the library and the receipt date. The stamping process ensures that data are recorded in the check-in file and ensures that users and staff recognize the item as library property. Libraries may also use the check-in module to produce labels for each issue with the name of the journal, the name of the library and/or institution, and the date that the issue was received.¹⁷

29. A person interested in learning about a particular subject matter need not know what MARC records are or what OCLC is in order to take advantage of those resources. Because nearly every library is MARC compatible, a person

¹⁷ Wilkinson, Frances C., and Linda K. Lewis. *The Complete Guide to Acquisitions Management*. Westport, CT: Libraries Unlimited, 2003. pp. 18-19.

entering such a library would be able to ask any available librarian for assistance in performing research. The librarian would be able to help such a person to use the WorldCat user interface to access the OCLC database and perform searches for publications in the database. This would be the case whether today or more than a decade ago.

IV. AUTHENTICITY

30. I am 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 or around the listed dates of their respective publications below. This includes additional information concerning the public accessibility of the Muh thesis, which I discussed in my previous declaration (Ex. 1036, ¶¶72-77).

31. As a preliminary matter, I understand that the Patent Trial and Appeal Board asked certain questions in its Institution Decision concerning the Muh thesis submitted in this proceeding. I can address those questions. First, as part of my work in this proceeding, I was provided a copy of the Muh thesis by petitioner's counsel. I understand that the copy that I was provided was submitted as "Exhibit 1006" by

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

petitioner in this proceeding. Separately, as part of my investigation of the Muh thesis, I downloaded a copy of the Muh thesis directly from the University of California – Berkeley library website and confirmed that the copy I downloaded matched the copy provided to me by petitioner’s counsel. The copy submitted as Exhibit 1006 is therefore the same thesis that in my opinion was publicly available from the University of California – Berkeley library system by July 8, 2005.

32. Next, as I stated in my previous declaration, the Muh thesis (Exhibit 1006) was “found within the custody of the custodian to whom the author granted permission to make copies and reproductions. Ex. 1036, ¶72. The “custodian” that I referred to is the University of California – Berkeley Library. In compliance with University of California – Berkeley policies (see ¶18 above), by providing the Library with a copy of his thesis, Mr. Muh agreed that the Library would be able to make copies and reproductions of it.

33. I understand 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.

34. 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

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

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 (*i.e.*, I understand that cataloging and indexing by a library is sufficient, though there are other ways that a printed publication is sufficiently publicly accessible, 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. 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.

35. The main page for the University of California – Berkley Library provides general information about the organization, hours, departmental libraries, events, and featured collections.¹⁸ Selecting the “find + borrow” tab takes the

¹⁸ <https://www.lib.berkeley.edu/>

information seeker to the main page of the library's online catalog. The online public library catalog at the University of California – Berkeley provides a gateway for students, faculty, researchers, and members of the public to search for journals and articles, books in print and digital versions, media, maps and air photos, newspapers, dissertations and theses, government documents and datasets, archives, and special collections.¹⁹ The information seeker can select a subset of the library's collections by clicking a choice at the top of the screen. Clicking on one of the choices (journal search, databases, or browse search) brings up a screen focused on providing stratified selections for ease of searching. An information seeker can also request that an item be borrowed through the interlibrary loan (ILL) service or schedule a consultation with a librarian.

36. To determine whether an item is in the collection, the information seeker needs to enter a keyword, title, author or other identifying data into the search bar. Results appear on the screen with a designation for the type of item, the title, and author in bold type. Clicking on the title/author takes the inquirer to a screen with more information. The inquirer can see categories of information: obtain (or "get") the item; a link to the MARC record, details about the item, and options to send the information to a printer, email, or citation tool. Clicking on the link "Display

¹⁹ https://search.library.berkeley.edu/discovery/search?vid=01UCS_BER:UCB

MARC record” brings up its display. The MARC record shows complete information including the leader, fields, indicators, subfields, and descriptive data appear on the screen.

37. The look and feel of the University of California – Berkeley Library website has changed over time. The evolution of attractive, engaging websites for libraries has been common since libraries developed a web presence in the late twentieth century. The affidavit of Nathaniel E. Frank-White, Records Request Processor for the Internet Archive (Ex. 1047) provides evidence of the University of California – Berkeley Library website as of the December 2013 timeframe.

38. His affidavit includes the following information showing the website as it existed in late 2013: (a) the welcome page for the library (dated December 1, 2013, at 8:15:46 p.m.); (b) the “information for alumni and visitors” page from the “services” link on the home page showing that anyone may obtain a borrowing card and have access to the resources (dated December 10, 2013, at 4:21:31 p.m.); (c) the “find information” page, which “provides access to the tools needed need to find print, electronic and multi-media resources in the UC Berkeley Library collections” (dated December 10, 2013, at 4:23:44 p.m.); (d) the “all types” page from the “find information” page, which lists “dissertations and theses” (dated December 10, 2013, at 4:02:23 p.m.); (e) the “dissertation and theses” page from the “all type” page,

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

which explains that the library has a “large number of Berkeley masters’ theses,” and that “OskiCat is the catalog of materials in UC Berkeley library collections,” which provides “Quick search” and “Advanced Keyword Search” capabilities (dated December 10, 2013, at 7:40:27 p.m.); and (f) the OskiCat search page, which tells a user that they can search by keyword, including author and title (dated December 10, 2013, at 10:55:51 p.m.).

39. This set of screen captures of the University of California – Berkeley Library website before 2014 shows that a person who was aware of the Muh thesis (for example, because it had been identified in published journal papers) as of the end of 2013 could have easily accessed it by going to the University of California – Berkeley Library website, clicking the appropriate links, and searching for “Matthew Muh” on the OskiCat search page. Further, these screen captures show that before 2014 a person interested in the subject matter of the Muh thesis could have located it using the keyword search option on the OskiCat search page even without knowing Mr. Muh’s name. For example, I understand one of the subject matters of the Muh thesis is voltage-controlled oscillators or “VCO.” A person interested in this subject matter could have entered either the phrase “oscillator” or “VCO” to locate the Muh thesis before 2014.

V. CONFIRMATORY EVIDENCE

40. A person interested in a particular subject matter, which I will refer generically to herein as 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 periodical and other publications. Having found relevant material, the researcher will then normally obtain it online, look for it in libraries, or purchase it from a 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.

41. Indexing services use a wide variety of controlled vocabularies to provide subject access and other means of discovering the content of documents. The formats in which these access terms are presented vary from service to service. The Library of Congress Subject Authorities includes standard forms of terms and cross references that are included in bibliographic records.²⁰ 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

²⁰ <https://authorities.loc.gov/>

narrower terms. The formats in which these access terms are presented vary from service to service.

42. Before the widespread development of online databases to index articles in journals, magazines, conference papers, and technical reports, libraries purchased printed volumes of indices. A major firm known for the breadth of subjects and comprehensive treatment in the preparation of index volumes, the H. W. Wilson Company offered these reference resources since the firm was founded in 1898. The *Reader's Guide to Periodical Literature* is one of the best-known titles available from H. W. Wilson. Each volume includes a comprehensive index for 300 of the most popular and important periodicals published in the United States and Canada. Information seekers have subject access expressed in plain language terminology, author access, and cross references to find the desired results from their searches. The family of index titles included *Science & Technology Index*, *Business Periodicals*, *Applied Science & Technology Index*, *Humanities Index*, *Biological & Agricultural Index*, and *Industrial Arts Index*. These printed indices have been superseded by digital database offerings available to information seekers through Ebsco.

43. 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*.

44. *Google Scholar*²¹ is a freely accessible web search engine that indexes the full text or metadata of scholarly literature across an array of publishing formats and disciplines. Released in beta in November 2004, the *Google Scholar* index includes a significant number of peer-reviewed online academic journals, books, conference papers, selected theses and dissertations, preprints, abstracts, technical reports, and other scholarly literature. While Google does not publish the size of *Google Scholar*'s database, scientometric researchers estimated it to contain roughly 389 million documents including theses, dissertations, articles, citations, and patents making it the world's largest academic search engine in January 2018.

45. Because many of *Google Scholar*'s search results link to commercial journal articles, searchers may be able to access only an abstract and the citation details of an article and may have to pay a fee to access the entire article. The most

²¹ <https://scholar.google.com>

relevant results for the searched keywords will be listed first, in order of the author's ranking, the number of references that are linked to it and their relevance to other scholarly literature, and the ranking of the publication that the journal appears in. Through its "cited by" feature, *Google Scholar* provides access to abstracts of articles that have cited the article being viewed. Through its "Related articles" feature, *Google Scholar* presents a list of closely related articles, ranked primarily by how similar these articles are to the original result, but also taking into account the relevance of each paper.

46. Researcher Chip Nilges presented a historical background of the role of OCLC and its WorldCat platform to increase access and enrich the discovery process for library users around the world. WorldCat interfaces with Internet-based search engines (e.g., Yahoo! and Google) to connect information seekers with libraries and websites that can provide identified resources. Nilges' article "The Online Computer Library Center's Open WorldCat Program" was published in volume 54, Number 3 of the seminal library and information science journal, *Library Trends* on pages 430-447 (Winter 2006) (Exhibit 1046). Connecting the Internet and its websites to library resources was and is a long-range goal for libraries and information centers. Google signed an agreement to partner with OCLC in December 2003 (Nilges, p. 435). After a pilot period Google harvested the OCLC bibliographic database and connected it

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

with Google Scholar. Linkages from the Google Scholar database provide the information seeker with the name of libraries with distance from the search site so that the resource can be requested locally or through interlibrary loan services. This feature is a revolutionary development in connecting information seekers with resources located locally, regionally, and globally.

47. Regarding the Muh thesis, as I explained in my previous declaration the MARC record for the Muh thesis was “accessible through any library with access to the OCLC bibliographic database, WorldCat” as of July 8, 2005. Ex. 1036, ¶76. Nilges’s article confirms that by 2006 Google had “harvested the entire WorldCat database for use in [Google] Scholar.” (Nilges, p. 436). Accordingly, this confirms that by 2006 a researcher also could have located the Muh thesis using Google Scholar and searching for the author’s name, or any terms in at least the title of the thesis, such as “VCO.”

48. Two peer-reviewed journal articles cited the Muh thesis and were published before April 14, 2014. Each article is discussed in the following paragraphs.

A. Raj article [Exhibit 1044]

49. Exhibit 1044 is a copy of the journal article titled “Analytical Modeling of Nanoscale Double Gate FinFET Device” by Balwinder Raj, S. K. Vishvakarma,

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

A. K. Saxena, S. Dasgupta (hereafter “Raj”). The Raj article was published in Volume 1, Number 1 of the *International Journal on Intelligent Electronic Systems* that I downloaded from the publisher’s website. The URL for this issue indicates that it was published on October 12, 2007. The Raj article appears beginning on page 66 of this issue dated November 2007. Exhibit 1044 is a true and correct copy of the Balwinder article (pages 66-71) that I downloaded and I understand is being submitted as an exhibit in this proceeding. Specifically, the text of the article 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 Raj article is six pages long and includes 16 references. The first cited reference is the Muh dissertation (see page 6, Exhibit 1044).

50. The Raj article is available from the publisher²² and in the digital repositories *ResearchGate*²³ and *Semantic Scholar*.²⁴ Exhibit 1044 is a true and correct copy in a condition that creates no suspicion about its authenticity.

²² <https://www.journals-sathyabama.com/archives/ies/IES-Int-Journal-Oct-2007-12.pdf>

²³

https://www.researchgate.net/publication/267233784_Analytical_Modeling_of_Nanoscale_Double_Gate_FinFET_Device

²⁴ <https://www.semanticscholar.org/paper/Analytical-Modeling-of-Nanoscale-Double-Gate-FinFET-Raj-Vishvakarma/c15c52faf2e7f41ab51fe48b31a3bac8c525dff4>

51. In view of the above, the Raj article in this issue of the *International Journal on Intelligent Electronic Systems* was publicly available on October 12, 2007, because by that date it had been published and sent digitally to the subscribers of the journal.

B. Nesamani article [Exhibit 1045]

52. Exhibit 1045 is a copy of the journal article titled “Performance Improvement of FinFET Using Nitride Spacer” by I. Flavia Princess Nesamani, Geethanjali Raveendran, and V. Lakshmi Prabha (hereafter “Nesamani”). The Nesamani article was published in Volume 4, Issue 3 of the open access *International Journal of Engineering Trends and Technology* that I downloaded from the publisher’s website.²⁵ The Nesamani article appears beginning on page 298 of this issue, which the website indicates was dated March 2013. Exhibit 1045 is a true and correct copy of the Nesamani article (pages 298-301) that I downloaded and I understand is being submitted as an exhibit in this proceeding. Specifically, the text of the article 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 Nesamani article is three pages long and includes

²⁵

https://ijettjournal.org/index.php?option=com_content&view=article&id=546&catid=9

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

24 references. The sixteenth cited reference is the Muh dissertation (see page 3, Exhibit 1045). The Nesamani article is also available from the digital repositories *Yamputu*²⁶ and *Semantic Scholar*.²⁷ Exhibit 1045 is a true and correct copy in a condition that creates no suspicion about its authenticity.

53. In view of the above, this issue of the *International Journal of Engineering Trends and Technology* containing the Nesamani article (Ex. 1045) was publicly available by no later than spring 2013, because by that date it had been published by the organization responsible for the journal, which published 12 issues per year as indicated on the website.²⁸

54. 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.

²⁶ <https://www.yamputu.com/en/document/view/24257419/performance-improvement-of-finfet-using-nitride-spacer-ijett->

²⁷ <https://www.semanticscholar.org/paper/Performance-Improvement-of-FinFET-using-Nitride-Nesamani-Raveendran/8682fe825d20d9b104ba794b1f4bb48b03cf8146>

²⁸ <https://ijettjournal.org/>

Supplemental Declaration of Sylvia Hall-Ellis, Ph.D.
Petition for *Inter Partes* Review of
U.S. Patent No. 9,590,582

Dated: April 25, 2024

Respectfully submitted,

A handwritten signature in blue ink, reading "Sylvia D. Hall-Ellis". The signature is written in a cursive, flowing style.

Sylvia D. Hall-Ellis, Ph.D.