

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,

Petitioner,

v.

TELCOM VENTURES LLC,

Patent Owner.

Case No. IPR2025-01419

U.S Patent No. 10,219,199

DECLARATION OF CHUCK EASTTOM

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Table of Exhibits

Exhibit No.	Description
2001	Interim Processes for PTAB Workload Management, Acting Director Memorandum (March 26, 2025) (https://www.uspto.gov/sites/default/files/documents/InterimProcesses-PTABWorkloadMgmt-20250326.pdf)
2002	Telcom Ventures’ Local Patent Rule 3.1 and 3.2 Disclosures, Served November 21, 2024
2003	Telcom Ventures’ Subpoena to Google, Served July 18, 2025
2004	Stipulated Protective Order for Non-Party Google, Dated September 11, 2025
2005	Third Amended Docket Control Order
2006	Order Denying Motion to Stay Proceedings, Dated August 27, 2025
2007	Exhibit A16 to Samsung’s Invalidity Contentions
2008	Paul Hasting’s Notices of Appearance in the Samsung Litigation
2009	Declaration of William C. Easttom
2010	Curriculum Vitae of William C. Easttom II (Chuck Easttom)
2011	Chiradeep BasuMallick, “What is NFC (Near Field Communication)? Definition, Working, and Examples” (Sept. 29, 2022), https://www.spiceworks.com/tech/networking/articles/what-is-near-field-communication/
2012	Liu et al., “Near-Field Communications: A Comprehensive Survey,” IEEE (June 2025)
2013	“The Creation of the NFC Forum and its Vision” (2011) https://cs.stanford.edu/people/eroberts/courses/cs181/projects/2010-11/NFCChips/nfcforum.html
2014	McHugh & Yarmey, “Near Field Communication: Introduction and Implication,” ERIC (2012)
2015	Coskun et al., “The Survey on Near Field Communication,” Sensors (June 5, 2015)

I. INTRODUCTION

1. My name is Dr. Chuck Easttom, and I have been retained as a technical expert by counsel for Patent Owner Telcom Ventures LLC (“Telcom Ventures” or “Patent Owner”) to investigate and opine as to the validity of U.S. Patent No. 10,219,199 (the “’199 patent”) in view of the Petition for *Inter Partes* Review (the “Petition”, Paper 1) by Petitioner Google LLC (“Petitioner” or “Google”).

2. This declaration is based on information currently available to me. To the extent that additional information becomes available, I reserve the right to continue my investigation and study and thus may expand or modify my opinions as my investigation and study continues. I may also supplement my opinions in response to any additional information that becomes available to me, any matters raised by Petitioner and/or opinions rendered by Petitioner’s experts, or in light of any relevant orders from the Board.

3. My opinions are based on my years of education, research, and experience, as well as my investigation and study of relevant materials.

4. I am being compensated at the rate of \$550 per hour for my work in this case, including time spent testifying. I am also being reimbursed for reasonable fees and expenses, including hotel and travel expenses, incurred as a result of my work in this case. Neither I nor my company have received any additional compensation for my work in this *inter partes* review. My compensation is not tied in any way to

the substance of my testimony or the outcome of this proceeding. I have no other financial interest in this inter partes review or to the parties. I am available to offer these opinions at deposition and at trial if called upon to do so.

II. QUALIFICATIONS

5. I have summarized in this section my educational background, work experience, and other relevant qualifications. A true and correct copy of my curriculum vitae is attached as Ex. 2010 to Patent Owner's Preliminary Response, which includes a list of all other cases in which, during the previous four years, I have testified at trial or by deposition.

6. I have over thirty years of experience in the computer science industry including extensive experience with computer security, mobile devices, and related topics. I have authored forty-five computer science books, including books on mobile devices and on cryptography. I also have authored over eighty research papers and am an inventor with twenty-seven computer science patents.

7. I hold a Doctor of Science (D.Sc.) degree in Cyber Security from Capitol Technology University (Dissertation Topic: "A Comparative Study of Lattice Based Algorithms for Post Quantum Computing"). I also hold a Doctor of Philosophy (Ph.D.) in Technology focused on nanotechnology (Dissertation Topic: "The Effects of Complexity on Carbon Nanotube Failures") from Capitol Technology University. I also have a Doctor of Philosophy (Ph.D.) in Computer

Science from the University of Portsmouth (Dissertation Topic: “A Systematic Framework for Network Forensics Using Graph Theory”). I also hold four Master’s degrees—one in Applied Computer Science, one in Education, one in Defense and Strategic Studies, and one in Systems Engineering.

8. I am currently an Adjunct Lecturer for Georgetown University teaching graduate courses in requirements engineering, artificial intelligence, cybersecurity, and cryptography. I am also an adjunct for Vanderbilt University teaching graduate computer science courses in quantum computing, digital forensics, algorithms, and cybersecurity. I also developed a graduate course in digital forensics for the University of Dallas and taught that course from 2019 to 2022.

9. I am a Senior Member and Distinguished Speaker for the Association of Computing Machinery (“ACM”) and a Senior Member and Distinguished Visitor of the Institute for Electrical and Electronics Engineering (“IEEE”). The IEEE is the world’s largest and most preeminent engineering organization. Among other activities, the IEEE creates industry standards for a wide range of engineering disciplines, including software development. I am also a Distinguished Visitor of the IEEE. I have been involved in IEEE standards creation for several years.

10. I have extensive experience with smart cards, Near Field Communications (“NFC”), the ISO/IEC 7810 standard for identification cards, the ISO/IEC 7816 standard for electronic cards for identification, the ISO/IEC 14443

standard for contactless integrated circuit cards, the EMV standard, and related standards and technologies.

11. I have worked with smart cards as an authentication method since the Department of Defense began using the Common Access Card in the early 2000s. Near Field Communications were covered in networking courses that I took as part of my second Master's degree and in some of the networking certifications I hold. I have also worked with NFC since at least 2005. Specific certifications I hold that are relevant to NFC and/or mobile devices include:

- Associate of Systems Engineering (ASEP) from INCOSE (International Council on Systems Engineering) 275062
- CompTIA Network + Certified COMP10163630
- CompTIA Network Infrastructure Professional – CNIP
COMP10163630
- EC Council Certified Security Administrator (ECSA) ECC947248
- EC Council Certified Encryption Specialist (ECES)
- CISSP – ISSAP – Certified Information Systems Architecture
Professional #387731
- CISSP – ISSEP Information Systems Security Engineering
Professional #387731
- Oxygen Phone Forensics Certified

- CompTIA Security+ COMP001021522764
- SC-300 - Microsoft Identity and Access Administrator

12. Specific publications that I have authored or participated in related to NFC, chip design, and/or mobile devices include the following:

- Easttom, C. (2005). Introduction to Computer Security. New York City, New York: Pearson Press.
- Easttom, C. & Dulaney, E. (2015). CompTIA Security+ Study Guide: SY0-401. Hoboken, New Jersey: Sybex Press.
- Easttom, C. & Roberts, R. (2018). Networking Fundamentals, 3rd Edition. Goodheart-Wilcox Publishing.
- Easttom, C. (2020). Modern Cryptography: Applied Mathematics for Encryption and Information Security 2nd Edition. New York City, New York: Springer Press.
- Easttom, C. (2021). An In-Depth Guide to Mobile Device Forensics. CRC Press.
- Easttom, C., Mei, N. (2019). Mitigating Implanted Medical Device Cybersecurity Risks. IEEE 10th Annual Computing and Communication Conference UEMCON.

- Easttom, C., Sanders, W. (2019). On the Efficacy of Using Android Debugging Bridge for Android Device Forensics. IEEE 10th Annual Computing and Communication Conference UEMCON.

13. I am qualified to render the opinions set forth herein. Under my definition of a POSITA, or Dr. Chatterjee's definition, set forth below, I am and was as of the priority date of the '199 Patent, at least one of ordinary skill in the art.

III. MATERIALS CONSIDERED

14. I have reviewed the '199 Patent, including the Challenged Claims, prosecution history, and relevant patent family. The '199 Patent was marked as Exhibit 1001, and its prosecution history was marked as Exhibit 1004.

15. I also reviewed the Petition, and each of Exhibits 1001-1029 filed by Petitioner.

16. In forming my opinions, I have considered the materials listed above and any other documents cited in this declaration. I have also relied on my own education, knowledge, and experience in the relevant art.

17. I have also considered the understanding of a person of ordinary skill around the time of the invention of the '199 Patent.

IV. SCOPE OF OPINIONS

18. I set forth my opinions throughout this declaration.

19. I understand that Petitioner argues that:

Ground	Claims	Proposed Ground of Unpatentability
1	Claims 1-2, 4-12, and 14-19	Obvious under pre-AIA 35 U.S.C. § 103 over <i>Barnett</i> ¹ in view of <i>Waters</i> . ²
2	Claims 3 and 13	Obvious under pre-AIA 35 U.S.C. § 103 over <i>Barnett</i> in view of <i>Waters</i> , and <i>Wang</i> . ³
3	Claims 5 and 15	Obvious under pre-AIA 35 U.S.C. § 103 over <i>Barnett</i> in view of <i>Waters</i> , and <i>Sakamoto</i> . ⁴

20. All three grounds rely on *Barnett* as a primary reference, and Dr. Chatterjee suggests that a person of ordinary skill would have been motivated to combine *Barnett* with these three different secondary references to meet the language of the claims. Claims 1 and 10 are the independent claims and are addressed in Ground 1. All other claims, across Grounds 1 2, and 3, depend from

¹ U.S. Patent Application Publication No. 2009/0170483 A1 to Barnett et al. (“*Barnett*”) (Ex. 1005).

² International Patent Publication No. WO 2006/087503 A1 to Waters et al. (“*Waters*”) (Ex. 1006).

³ U.S. Patent Application Publication No. 2007/0286147 to Wang et al. (“*Wang*”) (Ex. 1026).

⁴ U.S. Patent Application Publication No. 2007/0026893 to Sakamoto et al. (“*Sakamoto*”) (Ex. 1029).

one of these two claims. Further, Ground 3 is presented as an alternative Ground for claims 5 and 15, which are also addressed in Ground 1. Ex. 1002 ¶¶114, 122.

21. I disagree. It is my opinion that the Challenged Claims of the ‘199 Patent would not have been obvious in view of the asserted references, alone or in combination, for at least the reasons discussed herein. While I address certain limitations and combinations to demonstrate that each of the Challenged Claims is not unpatentable, I reserve the right to supplement this declaration to include additional information and opinions related to any and all Challenged Claims and claim elements and the asserted Grounds and prior art references.

V. RELATED MATTERS

22. Patent Owner filed a complaint against Samsung Electronics Co. Ltd. and Samsung Electronics America, Inc. (collectively “Samsung”) in the Eastern District of Texas, styled *Telcom Ventures LC v. Samsung Electronics Co., Ltd. et al.*, Case No. 2:24-cv-00691-JRG (filed August 21, 2024) (“Samsung Litigation”).

23. I understand Patent Owner initially asserted a total of eight patents against Samsung in that action: U.S. Patent Nos. 9,462,411, 9,832,708, 10,219,199, 10,674,432, 11,770,756, 11,924,743, 11,937,172, and 12,028,793. Further, I have been informed that Patent Owner withdrew its claims regarding certain patents, but that all eight patents are still at issue due to declaratory judgment claims asserted by Samsung.

24. I understand that Patent Owner has accused Google features and/or products as infringing products in the Samsung Litigation. Ex. 2002 at 2-3.

25. I understand that and Petitioner is participating in the Samsung Litigation as a subpoenaed third party. Exs. 2003, 2004.

26. I understand that a jury trial for the suit between Patent Owner and Samsung is expected to begin on June 1, 2026. Ex. 2005 at 1.

27. I understand that Petitioner filed IPR petitions against seven patents asserted by Patent Owner. These are:

- IPR2025-01349, regarding U.S. Patent No. 11,924,743
- IPR2025-01389, regarding U.S. Patent No. 11,937,172
- IPR2025-01401, regarding U.S. Patent No. 12,028,793
- IPR2025-01408, regarding U.S. Patent No. 9,832,708
- IPR2025-01409, regarding U.S. Patent No. 11,770,756
- IPR2025-01419, regarding U.S. Patent No. 10,219,199 (the instant Petition)
- IPR2025-01421, regarding U.S. Patent No. 10,674,432

28. I understand Samsung has filed IPR petitions against the eight patents asserted by Patent Owner in the Samsung Litigation. These are:

- IPR2025-00957, regarding U.S. Patent No. 11,937,172
- IPR2025-00972, regarding U.S. Patent No. 10,219,199

- IPR2025-00973, regarding U.S. Patent No. 9,462,411
- IPR2025-00974, regarding U.S. Patent No. 10,674,432
- IPR2025-00975, regarding U.S. Patent No. 9,832,708
- IPR2025-00976, regarding U.S. Patent No. 11,924,743
- IPR2025-00977, regarding U.S. Patent No. 11,770,756
- IPR2025-00978, regarding U.S. Patent No. 12,028,793

29. I understand that institution was denied in all eight of Samsung's Petitions.

30. I also understand Patent Owner is asserting the '199 Patent against Apple Inc. in the Northern District of California, styled *Telcom Ventures LLC v. Apple Inc.*, Case No. 5:25-cv-05041 (filed October 4, 2024).

31. I understand Patent Owner initially asserted the same eight patents against Apple Inc. in that action.

32. I understand that Apple Inc. has filed IPR petitions against all eight patents asserted by Patent Owner. These are:

- IPR2025-01232, regarding U.S. Patent No. 9,462,411
- IPR2025-01233, regarding U.S. Patent No. 9,832,708
- IPR2025-01234, regarding U.S. Patent No. 10,219,199
- IPR2025-01235, regarding U.S. Patent No. 10,674,432
- IPR2025-01236, regarding U.S. Patent No. 11,770,756

- IPR2025-01237, regarding U.S. Patent No. 11,924,743
- IPR2025-01238, regarding U.S. Patent No. 11,937,172
- IPR2025-01239, regarding U.S. Patent No. 12,028,793

33. As of the signing of this declaration, I have been retained to provide an opinion in all seven IPRs filed by Petitioner against the patents asserted by Patent Owner. I have also been retained to provide an opinion in each of the IPRs filed by Apple Inc. and Samsung.

VI. LEGAL STANDARDS

34. For purposes of this Declaration, I use the legal principles below as a guide in formulating my opinions. I am not an attorney, and I am not offering any opinions regarding legal matters; however, I have been informed by Telcom Venture's counsel of the legal principles relevant to the issues herein and have the following understanding.

35. In an *inter partes* review proceeding, I understand that a party seeking to invalidate a claim must prove invalidity by a preponderance of the evidence, which I understand to mean evidence that convinces you that it is more likely than not that the particular proposition is true. I understand that the preponderance of the evidence standard applies to all aspects of an allegation of anticipation or obviousness, including the prior art status of the relevant reference(s).

A. Claim Construction

36. I understand the first step in determining whether or not a patent claim is valid is to properly construe the claims. I understand that the words of a claim are generally given their ordinary and customary (sometimes referred to as their plain and ordinary) meaning as understood by a person of ordinary skill in the art at the time of the invention. I also understand that, as a general matter, a claim should not be limited to a preferred embodiment, but that in certain cases, the scope of the right to exclude may be limited by a narrow disclosure or by positions taken, such as by statements made during patent prosecution. I also understand the claims must be supported by the specification. Also, to the extent that a patent claims priority to an earlier filed application, the claims must be supported by the disclosure in that application. For terms that have not been construed, I understand that they should be afforded their plain and ordinary meaning to one of ordinary skill in the art.

37. I understand that the plain and ordinary meaning of a claim term is the meaning a person of ordinary skill in the art would have understood at the time of the effective date in view of the specification and the prosecution history.

B. Obviousness

38. I understand that a claimed invention is not patentable under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was

made to a person having ordinary skill in the art to which the subject matter pertains. Obviousness, as I understand it, is based on the scope and content of the prior art, the differences between the prior art and the claim, the level of ordinary skill in the art, and objective indicia of non-obviousness to the extent they exist.

39. I understand that whether there are any relevant differences between the prior art and the claimed invention is to be analyzed from the view of a person of ordinary skill in the art at the time of the invention. A person of ordinary skill in the art is a hypothetical person who is presumed to be aware of all of the relevant art at the time of the invention. The person of ordinary skill is not an automaton and may be able to fit together the teachings of multiple patents employing ordinary creativity and the common sense that familiar items may have obvious uses in another context or beyond their primary purposes.

40. I understand that if a reference or proposed combination of references does not disclose or suggest all of the elements of a claim, the combination cannot render the claim obvious. I also understand that in order to combine prior art references to show obviousness, a person of ordinary skill in the art, without knowledge of the claimed invention, or without the use of hindsight, must have been motivated to combine the prior art by some suggestion or teaching in the prior art, the knowledge of one of skill in the art, or the nature of the problem to be solved.

41. I understand that an invention would have been obvious if a designer of ordinary skill in the art, facing the wide range of needs created by developments in the field, would have seen an obvious benefit to the solutions tried by the applicant. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, it may have been obvious to a person of ordinary skill to try the known options. If a technique has been used to improve one device, and a person of ordinary skill in the art would have recognized that it would improve similar devices in the same way, using the technique may have been obvious. I understand, however, that routine experimentation does not necessarily preclude patentability.

42. I understand that obviousness of a patent claim cannot properly be established through hindsight, and that elements from different prior art references, or different embodiments of a single prior art reference, cannot be selected to create the claimed invention using the invention itself as a roadmap. I understand that the claimed invention as a whole must be compared to the prior art as a whole, and courts must avoid aggregating pieces of prior art through hindsight that would not have been combined absent the inventors' insight.

C. Motivations to Combine

43. I understand that in order to show obviousness based on a single reference or a combination of references, a particular motivation to modify the

reference or combine the teachings in the references, and a reasonable expectation of success must be shown.

44. I understand that the art must evidence a motivation to combine or modify the independently known elements to arrive at the claimed invention and an explanation as to how or why the references would be combined to arrive at the claimed invention to solve the particular problem. I understand that a challenger must show that there was a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does in an obviousness determination. I also understand that it is not enough to prove obviousness merely by showing that the references were capable of combination without a suggestion of the desirability of the modification.

45. I understand that there is no single way to define the line between true inventiveness on the one hand (which is patentable) and the application of common sense and ordinary skill to solve a problem on the other hand (which is not patentable). For example, market forces or other design incentives may be what produced a change, rather than true inventiveness. I may consider whether the change was merely the predictable result of using prior art elements according to their known functions, or whether it was the result of true inventiveness. I may also consider whether there is some teaching or suggestion in the prior art to make the modification or combination of elements claimed in the patent. I may consider

whether there is some teaching or suggestion in the prior art to make the modification or combination of elements claimed in the patent. I may consider whether the innovation applies a known technique that had been used to improve a similar devices or method in a similar way. I may also consider whether the claimed invention would have been obvious to try, meaning that the claimed innovation was one of a relatively small number of possible approaches to the problem with a reasonable expectation of success by those skilled in the art.

46. I also understand, however, that I must be careful not to determine obviousness using the benefit of hindsight; many true inventions might seem obvious after the fact. I should put myself in the position of a person of ordinary skill in the field at the time the claimed invention was made and I should not consider what is known today or what is learned from the teaching of the patent.

47. Finally, I understand that any obviousness rationale for modifying or combining prior art must include a showing that a person of ordinary skill would have had a reasonable expectation of success. I further understand that whether a proposed modification or combination of the prior art has a reasonable expectation of success is determined at the time the invention was made.

VII. LEVEL OF ORDINARY SKILL IN THE ART

48. I understand that patent claims are to be interpreted from the viewpoint of one of ordinary skill in the relevant art. To determine the level of skill that would

be “ordinary,” I understand that a person of skill (“POSITA”) must generally have the capability of understanding the general principles that are applicable to the pertinent art.

49. In my opinion, a POSITA would have had at least a bachelor’s degree in electrical engineering, computer engineering, or a related field, with about two years of experience in wireless communications. More work or practical experience may qualify one not having the requisite education as a person with ordinary skill in the art, while a higher level of education could offset less experience. I was at least a person of ordinary skill in the art as of the effective filing dates of the Asserted Patents under this definition.

50. I have reviewed Dr. Chatterjee’s Declaration (Ex. 1002). I understand that Dr. Chatterjee similarly contends that a POSITA would have had “an undergraduate degree in electrical engineering, computer engineering, computer science or a related field along with two years of work experience in the field of mobile communication applications.” Ex. 1002, ¶20. I do not agree with Dr. Chatterjee’s definition of a POSITA, in particular that two years of work experience in the field of mobile communication applications is required because the claims are not directed towards “applications” and it is unclear what Dr. Chatterjee means by “mobile communications applications.” I was at least a person of ordinary skill in the art as of the effective filing dates of the Asserted Patents under Dr. Chatterjee’s

definition. Thus, I met the requirements of a POSITA under either my definition or Dr. Chatterjee's definition as of the priority date of the '199 Patent.

VIII. CLAIM CONSTRUCTION

51. I understand that unless claim terms are provided an express construction, the terms must be given their plain and ordinary meaning.

A. "Physiological Parameter"

52. I understand that Petitioner contends the "the Board need not construe any terms of the challenged claims to resolve the underlying controversy." Pet. at 9. Other than explaining the plain and ordinary meaning of certain terms, which I do below, I do not offer an opinion on the correct construction of any disputed terms because, in my opinion, the Challenged Claims are not taught or suggested by the prior art. I reserve the right to respond to any future claim construction argument asserted by Petitioner or Dr. Chatterjee.

IX. TECHNOLOGY BACKGROUND

53. Below, I provide a brief overview of the history of contactless smart cards, or proximity cards, and the use of the same technologies in devices.

A. Near Field Communications ("NFC")

54. Near Field Communication ("NFC") is a broad term for short-range wireless communication technology that allows devices to exchange data when they are brought very close together. It is an extension of Radio Frequency Identification ("RFID") technology, designed for secure, quick, and convenient data transfer.

55. NFC-capable devices can communicate with other NFC-capable devices in either active or passive mode. In active mode, both devices generate their own radio frequency field to transmit data. Ex. 2011 at 4. In passive mode, one device generates the radio frequency field while the other responds without a power source. *Id.*

56. A paper by Liu et al. provides a history of NFC, stretching back to the first understanding of the wave theory of light. Ex. 2012 at 4. That paper includes an overview of NFC history which is shown here:

TABLE I: Timeline of NFC Milestones

1678	.....	•	Huygens presented his "Wave Theory of Light".
1801	.....	•	Young presented the double-slit diffraction experiment.
1815	.....	•	Fresnel presented a series of memoirs about his understanding of diffraction.
1821	.....	•	Fraunhofer constructed the first diffraction grating.
1887	.....	•	Hertz demonstrated the existence of radio waves.
1891	.....	•	Lord Rayleigh calculated the Rayleigh distance $\frac{A^2}{2\lambda}$.
1947	.....	•	Cutler <i>et al.</i> reformulated the Rayleigh distance as $\frac{2A^2}{\lambda}$.
1956	.....	•	Polk calculated the Fresnel distance.
1983	.....	•	The first patent on RFID-based NFC was granted.
1984	.....	•	Winters formulated the initial theory of MIMO.
1994	.....	•	The first patent on MIMO was granted.
1996	.....	•	Foschini laid down crucial theoretical foundations for MIMO.
1999	.....	•	Driessen and Foschini utilized a spherical wave-based model to characterize LoS MIMO.
2003	.....	•	Jiang <i>et al.</i> proposed to use spherical wave-based models to describe short-range MIMO.
2010	.....	•	Marzetta proposed the concept of massive MIMO.
2015	.....	•	Channel measurement results on massive MIMO necessitated the use of a spherical wave-based channel model.
2016	.....	•	Prather proposed the concept of holographic MIMO.
2017	.....	•	Hu <i>et al.</i> re-showed the potential of large intelligent surfaces in enhancing wireless transmissions.
2018	.....	•	Amiri <i>et al.</i> proposed the concept of ELAA.
2023	.....	•	The first tutorial review of NFC was presented.

57. Despite the long history of the physics and technology supporting NFC, NFC itself is relatively new. For example, the NFC Forum was created in 2004 to ensure maximum compatibility across all implementations of NFC technology. Ex. 2013 at 1. But the NFC Forum was not even founded until many years after the first standards related to smart cards were published. As late as 2012, *see* Ex. 2014 at 1, and even 2015, some sources still referred to NFC as an “emerging technology.” Ex. 2015 at 1.

58. Within the umbrella of NFC, there are numerous individual standards that are more specific. One such standard is ISO/IEC 14443. The ISO/IEC 14443 standard has four parts. Part 1 defines the physical properties of the card (e.g., size, durability, environmental tolerance). Part 2 specifies how the card is powered by the RF field of the reader and how modulation/coding are done for transmitting and receiving signals. Part 3 describes card initialization and how multiple cards in the field are identified and selected (anti-collision protocol). Part 4 defines higher-level data exchange protocols, including how commands and responses are structured.

59. The specificity of individual NFC standards means that any such standard is self-sufficient. In other words, a POSITA consulting one of these standards, such as ISO/IEC 14443, would have a complete solution for near field communications and would not need to look to other standards or technologies.

X. U.S. PATENT NO. 10,219,199 (“’199 PATENT”) (EX.1001)

B. Priority Date

60. The ’199 Patent was filed as U.S. Patent Application No. 15/800,885, on November 1, 2017 and issued on February 26, 2019. The ’199 Patent is a continuation of U.S. Patent Application No. 15/251,882, which issued as U.S. Patent No. 9,832,708. U.S. Patent No. 9,832,708 is a continuation of U.S. Patent Application No. 12/264,711, which issued as U.S. Patent No. 9,462,411. U.S. Patent Application No. 12/264,711 was filed on November 4, 2008.

61. I understand that Petitioner does not challenge this priority date for purposes of the Petition, and I have assumed that each of the challenged claims is entitled to a priority date of November 4, 2008. Pet. at 5.

C. ’199 Patent Overview

62. The ’199 Patent describes mobile wireless devices and methods of using a mobile wireless device to engage in one or more communications modes, but only when certain conditions or criteria are met, such as the satisfaction of a proximity condition and a value of a parameter, e.g., a physiological parameter, satisfying a criterion. Ex.1001, 1:18-22; 6:10-27. The specification recognizes that the devices in the art were rigidly configured to perform a predetermined number of functions. *Id.*, 1:32-37. The ’199 Patent addresses this rigidity problem by providing devices and methods that “may be used to enable adaptively one or more modes/functions of a device” based upon the satisfaction of certain criteria. *Id.*, 1:44-

46. The specification explains that the invention advantageously allows “a mobile wireless device [to] act as a ‘wallet’ (over and above other functions) only when it is time to pay for an item and not act as a wallet when there is no need to do so.” *Id.*, 1:37-40.

63. The ’199 Patent also describes estimating “a value of at least one other parameter that may be associated with the wireless communications device . . . and/or an entity (living or otherwise) that is associated with and/or is proximate to the wireless communications device.” *Id.*, 6:12-17. Such parameters include “velocity, acceleration, ToD, ToM, ToY, humidity, temperature, height, level of brightness, level of darkness, a blood pressure, a heart rate, a blood content, a physiological state, a psychological state, etc.” *Id.*, 6:16-21. These parameters can be estimated using “sensors that may, according to some embodiments, be device-based and/or network assisted/based means and/or sensors.” *Id.*, 6:22-27. The disclosed wireless communications devices may be “configured to selectively enable the first communications mode/function” responsive to a value of such a parameter. *Id.*, 6:37-46.

D. The ’199 Patent’s Prosecution History

64. I have reviewed the prosecution history of the ’199 Patent.

65. U.S. Patent Application No. 15/800,885 was filed on November 1, 2017 and issued as U.S. Patent No. 10,219,199 on February 26, 2019.

66. The '199 Patent issued after a single rejection during prosecution. Ex. 1004 at 102. The Examiner issued a non-final rejection of initial proposed claims 1-8 and 24 for double patenting in light of claims 1, 11, 16, and 18 of U.S. Patent No. 9,832,708 and as obvious in light of U.S. Patent Application 2007/0260710 to Dowling, and U.S. Patent Application 2007/0129077 to Iguchi et al. Ex. 1004 at 108, 110. Applicant filed a terminal disclaimer over the '708 Patent. Ex. 1004 at 157, 161.

67. Applicant filed amended claims in response to the rejection. Ex. 1004 at 174-182. Applicant argued that the identified prior art did not “disclose or suggest detecting by a smartphone that a proximity condition is satisfied between the smartphone and an entity.” Ex. 1004 at 185. Applicant also argued that the identified prior art did not disclose “wirelessly providing by the smartphone information to the entity in response to. . . a physiological parameter.” Ex. 1004 at 185.

XI. ASSERTED REFERENCES

A. *Barnett* (Ex. 1005)

68. United States Patent Application No. 2009/0170483 to *Barnett*, et al. is titled “System and Method for Transmitting Information Using a Mobile Phone.” Ex. 1005 at 1.

69. *Barnett* is a fully self-sustained system that is narrowly limited to an efficient means of providing a customer information while they are shopping in a

store. *See Barnett*, ¶[0001] (“The invention relates generally to a system and method of communicating shopping information between a consumer and a retailer. In particular, the invention relates to a system for enabling a consumer to obtain shopping information from a retailer, and the retailer to obtain information from the consumer, using a communication device, such as a mobile phone”). Figure 1 (reproduced below) illustrates this system. *Barnett* explains that, for example, “[t]he information transmitted to the retailer may include a shopping list of goods or services desired by the consumer. In return, the retailer may provide the home computer system 12 and portable communications device will information regarding the desired goods or services.” *Id.*, at ¶[0011].

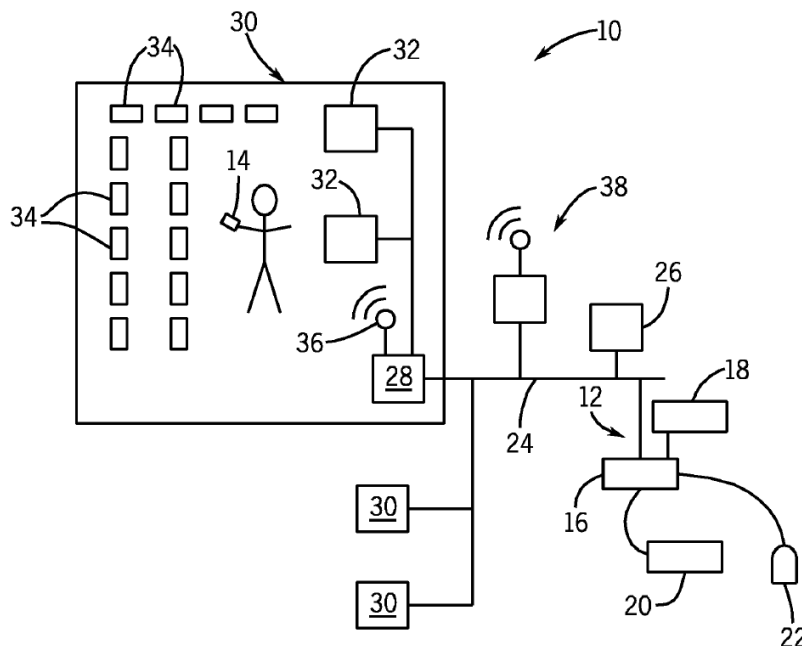


FIG. 1

Barnett, Fig. 1.

70. *Barnett* also discloses how the store's infrastructure is self-sustained, explaining that "[w]ithin the store 30 area series of displays 32 that are connected to the store computing system 28. In this embodiment, the displays 32 are NFC-enabled displays that can interact with a NFC-enabled mobile phone 14 using device-to-device communication" (*Barnett*, ¶[0021]) and that "[s]tand-alone NFC-enabled devices 34 that have been programmed with specific information are located around the store 30. In this embodiment, the stand-alone NFC-enabled devices 34 are used to identify products to NFC-enabled devices" (*Barnett*, ¶[0023]).

71. *Barnett* discloses an infrastructure for reducing the time the customer spends in the store by streamlining the exchange of communication about the products to the customer. *See Barnett*, ¶¶[0002] ("a consumer may go to a store to purchase an item and find on arriving at the store that the item is not in Stock. In addition, even if the item is in stock, considerable time may be wasted looking for the item in the store. Locating a store employee to ask the employee a question about a product can also be very time-consuming. There are many other examples of problems that a consumer can experience when shopping that lead to considerable amounts of time being wasted."); [0042] ("Generally the time that the consumer spends in a store may be used more efficiently. For example, the consumer knows

immediately whether or not an item is in stock at a nearby store. In addition, there is less need to find a person at the store to obtain additional information.”).

B. *Waters (Ex. 1006)*

72. International Patent Publication No. 2006/087503 to *Waters*, et al. is titled “Improved Security for Wireless Communication.” Ex. 1006 at 1.

73. *Waters* focuses on limiting NFC capability. For, example, *Waters* discloses a method of authenticating a subscriber identity module (SIM) to “control to some extent the operation of the near field tag 41” so that the near filed tag 41 is “under control of the SIM 15, by means of communication link 43.” *Waters*, 9.

74. As one example, *Waters* discloses a “[j]amming device” where “near field tag 41 and/or the mobile terminal 1 is designed to jam/disrupt the low level communications of all other RF tags within range of the jamming device. Instead of following the anti-collision protocol commonly used in near field tag technology, the device attempts to create collisions and other forms of interference. The jamming device is disabled, or the near field tag 41 is removed from proximity of the jamming device, when authorised use of the card is required.” *Waters*, 16-17.

C. *Wang (Ex. 1026)*

75. U.S. Patent Application Publication No. 2007/0286147 to Wang et al. is titled “Method for Assigning Frequency Spectrum Bandwidth of an OFDM and OFDMA Coexistence System.” It is directed to a “method for assigning frequency

spectrum bandwidth of an OFDM (Orthogonal Frequency Division Multiplexing) and OFDMA (Orthogonal Frequency Division Multiplexing Access) [sic] coexistence system.” *Wang*, ¶[0001]. *Wang* states that “the coexistence system comprises a base station system, characterized in that the base station system combines the uplink data and the downlink data containing OFDM sub-frames and OFDMA sub-frames in time division fashion, assigns the frequency spectrum reasonably according to the different bandwidth requirements of OFDM and OFDMA and the use condition of the frequency band, and constitutes the frame structure realizing the coexistence of OFDM and OFDMA.” *Wang*, ¶[0015].

D. *Sakamoto* (Ex. 1029)

76. United States Patent Application Publication No. 2007/026893 to Sakamoto et al. is titled “Mobile Radio Communication Apparatus.” It is directed to “a mobile radio communication device[] and more specifically, to a mobile radio communication device and so on equipped with an NFC (near field communication) function.” *Sakamoto*, ¶[0001].

XII. THE CHALLENGED CLAIMS OF THE ’199 PATENT WOULD NOT HAVE BEEN OBVIOUS

77. In Ground 1, Dr. Chatterjee argues that *Barnett* in view of *Waters* teaches the limitations of claims 1-2, 4-12, and 14-19, including independent claims 1 and 10. Ex. 1002, ¶¶46-47. All dependent claims of the ’199 Patent, including those addressed in Grounds 2 and 3, depend from one of these two independent

claims. Dr. Chatterjee provides analysis for claim 1, and then incorporates that analysis into the limitations of claim 10. Ex. 1002, ¶¶85-93. For the reasons set forth below, the references in Ground 1 neither disclose the Challenged Claims nor, individually or in combination, would they have rendered those claims obvious.

- A. ***Barnett-Waters Does Not Disclose and Would Not Have Rendered Obvious “in response to at least the proximity condition having been satisfied between the smartphone and the entity and in response to a physiological parameter, wirelessly providing by the smartphone, using the first air interface, information to the entity and wirelessly receiving by the smartphone, information from the entity independently of, and absent involving the entity in, receiving by the smartphone the communications service from the wireless network using the second air interface.”***

78. Claim limitation 1[c] requires “in response to at least the proximity condition having been satisfied between the smartphone and the entity and in response to a physiological parameter, wirelessly providing by the smartphone, using the first air interface, information to the entity and wirelessly receiving by the smartphone, information from the entity independently of, and absent involving the entity in, receiving by the smartphone the communications service from the wireless network using the second air interface.” Claim limitation 10[d] similarly requires “in response to at least the proximity condition having been satisfied between the smartphone and the entity and in response to a physiological parameter, wirelessly providing, using the first air interface, information to the entity and wirelessly receiving, using the first air interface, information from the entity independently of,

and absent involving the entity in, receiving a communications service from a wireless network using a second air interface that differs from the first air interface.” Dr. Chatterjee addresses claim limitation 10[d] by reference to his analysis for claim limitation 1[c]. Ex. 1002 ¶89. Dr. Chatterjee alleges that “Barnett in view of Waters discloses and/or suggests this limitation.” Ex. 1002 ¶59. I disagree.

79. Dr. Chatterjee admits that “Barnett does not explicitly disclose that the transmission and receipt of information between the consumer’s phone and NFC display 32 occurs ‘in response to a physiological parameter.’” Ex. 1002 ¶60 (underlining in the original). He goes on the state at a POSITA “would have been motivated to implement this feature in view of Waters, such that NFC capabilities are enabled in response to a physiological parameter being sensed.” *Id.*

80. In combining *Barnett* and *Waters* in claim limitation 1[c], Dr. Chatterjee states that a POSITA would have been motivated to combine “a sensing mechanism, similar to that disclosed by *Waters*, to selectively enable/disable the NFC tag in *Barnett*.” Ex. 1002, ¶67 (citing *Barnett*, ¶¶[0005], [0012], [0017], [0043] and *Waters*, 9, 13). He states that a POSITA would have been so motivated because *Barnett*’s system of using NFC devices is meant to permit fewer employees, and “[a] person of ordinary skill in the art would have thus recognized the importance of implementing security features at each user’s mobile phone in an environment with

fewer employees, so as to reduce the risk of unauthorized access by an unauthorized NFC reader.” *Id.* I disagree.

81. *Barnett* is directed to an NFC-enabled system for providing information to a customer within a retail store. *Barnett*, Abstract. Specifically, *Barnett* discloses a technique focused on “efficiency” in the shopping experience. *See, e.g., Barnett*, ¶¶[0004] (“Therefore, a technique is desired that would improve the efficiency of the shopping experience, both to the consumer and to the retail store owner.”); [0042] (“There are many ways that the consumer may benefit from the techniques described above. Generally the time that the consumer spends in a store may be used more efficiently.”). *Barnett* explains that efficiency can be improved by, for example, “reduc[ing] the amount of time that a consumer spends locating items, getting information about items, and purchasing an item” and “enabl[ing] a consumer’s shopping preferences to be identified by a retailer quickly and easily in order for the retailer to optimize the shopping experience for the consumer.” *Barnett*, ¶[0004]; *see also id.*, ¶¶[0002] (“A lot of time is wasted by consumers during the process of shopping. For example, a consumer may go to a store to purchase an item and find on arriving at the store that the item is not in stock. In addition, even if the item is in stock, considerable time may be wasted looking for the item in the store. Locating a store employee to ask the employee a question about a product can also be very time consuming. There are many other examples of problems that a

consumer can experience when shopping that lead to considerable amounts of time being wasted.”); [0003] (“In addition, each consumer may have preferences that differ from other consumers, and which differ depending upon their location. A retailer typically likes to provide the best shopping experience to each consumer when they enter their store. Some consumers may prefer to shop anonymously, while other consumer's may wish to identify themselves to the retailer so that their shopping experience may be optimized for their individual preferences based on past experiences with the retailer.”); [0042] (“Generally the time that the consumer spends in a store may be used more efficiently. For example, the consumer knows immediately whether or not an item is in stock at a nearby store. In addition, there is less need to find a person at the store to obtain additional information. Obtaining unbiased information on new items is possible while in the store without having to connect to the Internet and/or Internet access is provided to the consumer in the form of a Wi-Fi system that may be accessed by the consumer's mobile phone.”); [0043] (“The retailer benefits from these techniques, as well. A retail store does not need as many people employed at the store to handle tasks like finding out if the item is in stock, finding out technical questions, etc. By not requiring product experts to be employed in each store, lower cost employees can be employed to work in the store. The store can attract those that don't like big box stores because the displays can provide more personalized and intelligent responses to their questions, combining

canned responses with human interaction. People employed for their technical expertise can be located anywhere in the world, including countries where the labor costs are low. In addition, time is saved at the checkout line.”). Notably, this system is not restricted to the use of NFC at the point of sale, but discloses the use of NFC to “enable a consumer to obtain information regarding the availability, location, and/or price of the goods or services provided in the shopping list by using either the NFC capability of the mobile phone. . . to receive information from the retailer within a retail stores.” *Barnett*, ¶[0016]. *Barnett* also discloses using NFC to “provide the display 32 [of the store computing system] with the identity of the customer. Thus, informing the store computing system 28 that the consumer is in the store 30.” *Barnett*, ¶[0021]. It is clear that *Barnett*’s goals are squarely directed to efficiency, personalization, and time savings during the shopping experience and, as a result, methods that would restrict, complicate, or add time consuming steps to this system, such as restrictive security mechanisms implementing sensors that must validate inputs before use, would teach away from *Barnett*.

82. *Barnett* does not contemplate a system where NFC is restricted, as suggested by *Waters*. The system of *Barnett* is “NFC-enabled” meaning that NFC should *always* be enabled, otherwise *Barnett* cannot work. *Barnett*, ¶¶[0021] (“Within the store 30 are a series of displays 32 that are connected to the store computing system 28. In this embodiment, the displays 32 are NFC-enabled displays

that can interact with a NFC-enabled mobile phone 14 using device-to-device communication. When a consumer enters the store 30, the consumer can place their NFC-enabled mobile phone 14 proximate to the display 32 to establish communications with the store computing system 28.”); [0023] (“Stand-alone NFC-enabled devices 34 that have been programmed with specific information are located around the store 30. In this embodiment, the stand-alone NFC-enabled devices 34 are used to identify products to NFC-enabled devices. The product identifiers 34 are located proximate to the products that they are used to identify, such as on a shelf supporting the product. In this embodiment, the product identifiers 34 are an RFID device, such as a contact-less smart card. When the NFC-enabled mobile phone 14 is placed proximate to the product identifier 34, the information is extracted from the product identifier 34 and transmitted to, and stored within, the NFC-enabled mobile phone 14.”); [0033] (“as the consumer travels through the store 30, the consumer may see other items of interest. The consumer may hold their mobile phone next to a product identifier 34 and retrieve and store information regarding the product, such as the identity of the product”); [0032] (“Here, once this information is initially programmed into the mobile phone 14, the configuration of the mobile phone 14 as a credit card is done *automatically* simply by placing the mobile phone 14 proximate to the NFC-enabled display 32 so that the desired information may be exchanged between the two.”); [0042] (“the consumer knows

immediately whether or not an item is in stock at a nearby store”) (emphasis added). *Barnett* also contemplates using NFC information “to direct the consumer” and “to analyze traffic flows through the store.” *Barnett*, ¶[0025].

83. *Barnett* discloses using NFC for financial transactions and proposes a novel security regime for conducting these financial transactions. Moreover, in light of *Barnett*’s unrestrained system, *Barnett* is specifically designed with pre-authorization goals in mind. For example, *Barnett* explains that “the mobile phone 14 may be programmed to provide a first credit card number when the consumer is in a first store and provide a second credit card number when the consumer is in a second store” so that “the consumer does not have to scroll through menus or follow any other time consuming process simply to configure the mobile phone 14 each time they make a purchase.” *Barnett*, ¶[0032]. Indeed, in this payment example, *Barnett* includes security features as it limits where each card can be used and enables automatic payments only at approved locations. *Id.* Thus, *Barnett* addresses security concerns by limiting where a card can be used so as to reduce risk and, as a result, does not need to and, in fact, teaches away, from additional security measures that would impede the use of NFC, especially to make a purchase, that might detract from its goals of time savings and efficiency. A POSITA would have understood that the security features in *Barnett* are both sufficient and intentionally streamlined

to support the system's core objectives. Dr. Chatterjee ignores these security features already outlined in *Barnett*.

84. On the other hand and in stark contrast, *Waters* is directed to restricting NFC by providing means for added security measures just to turn NFC on and off. *See Waters*, 2 (“there is provided apparatus for controlling use of a near field communication device, wherein [a] smart card means is operable to receive from the mobile telecommunications network data for controlling use of the near field communication device and is operable to selectively enable the near field communication device in dependence upon the data.”). These measures can include requiring input from users that require validation and requiring that the mobile device be in a specific authorized “cell” area such that the device's SIM is authorized. *See Waters*, 13 (“In the modification to this arrangement, the mobile terminal 1 does not have to be always authenticated with the network 3 for the tag 41 to be enabled. However, the tag 41 is configured so that it is only enabled when it receives messages from the SIM 15 indicating that the SIM 15 has been authenticated at predetermined times or events - for example, once a day or on powering on/off of the mobile terminal 1”). For example, *Waters* explains that “the user of the mobile terminal 1 may initiate a communication session (such as a SIP communication session) with the mobile telecommunications network 1 to configure the times or places in which the RF tag 41 should be enabled. This updating process

may require entry of a password, or employ some other security mechanism, to prevent unauthorised persons from reconfiguring the times and/or locations at which the near field tag is rendered operable or inoperable.” *Waters*, 12. *Waters* also provides an example whereby “the keypad 37 of the mobile terminal 1 is used to enter a PIN (or other secret password) to enable the near field tag 41. The user's PIN may be stored in a secure location in the mobile terminal 1 or in the SIM 15. When the user enters their PIN using the keypad 37, the entered PIN is compared with the stored PIN. If the PINs match, the SIM transmits a message, via link 43, to the near field tag 41 to activate the near field tag.” *Waters*, 14. Thus, until the correct PIN or password is entered, NFC is not enabled for *any* purpose. The techniques disclosed in *Waters* are in line with its goals of restricting NFC usage.

85. Employing a time-consuming and/or multi-step process to enable NFC, as disclosed in *Waters*, would slow down and detrimentally interfere with the use of NFC called for in *Barnett*’s shopping environment. For example in *Barnett*, credit cards are programmed to be automatically used in certain stores, such that the shopper does not have to spend time picking a credit card, configuring their device to be used as a credit card, or authorizing the use of that card. *See Barnett*, ¶[0032]. In contrast, prior to being able to use a mobile device to complete a purchase via NFC as required by *Waters*, a shopper would need to, for example, do exactly what *Barnett*’s system is designed to prevent: spend time opening their phone, selecting a

credit card, inputting a PIN or password, waiting for the PIN or password to be validated before finally being able to complete a purchase. As another example, the “pressure sensor” of *Waters*, cited by Dr. Chatterjee, that can be combined with a fingerprint scanner would fail to validate, for example, in a hypothetical example where a husband gives his phone to his wife to go shopping in a store using the *Barnett* system. Ex. 1002, ¶¶62-65 (citing *Waters*, 14-16). *Barnett* in fact explicitly contemplates a scenario where “the mobile phone 14 may have an ‘anonymous’ option so that the consumer may use some of the features the store provides, but the mobile phone 14 does not reveal the consumer’s name to the store.” *Barnett*, ¶[0031]. Use of *Waters*’ sensor would render this embodiment non-functional.

86. Further, Dr. Chatterjee misrepresents *Barnett*’s disclosure in paragraph [0043]. Dr. Chatterjee cites to paragraph [0043] and states that, in his opinion, “a person of ordinary skill in the art would have understood the benefit of such a security measure [of *Waters*] in the context of *Barnett*’s system/method . . . involves a user interacting with many NFC readers/displays in the same store. *Barnett* explains that these NFC readers are largely unmonitored by retail workers, since the goal of the invention is to reduce the number of higher cost human employees in the store.” Ex. 1002, ¶67. However, *Barnett* never contemplates reducing the number of works in the store, just those that are highly compensated due to product-specific expertise. *Id.* Indeed, paragraph [0043] states that the invention is beneficial to

reduce the number of “product experts” and replace them with “lower cost” employees. *Id.* That is, *Barnett* is trying to reduce the cost of “people employed at the store to handle tasks like finding out if the item is in stock, finding out technical questions, etc.” *Id.* *Barnett* says nothing about removing or reducing the number of employees at checkout or in such a way that security would be impaired. As a result, *Barnett* does not support Dr. Chaterjee’s alleged motivation to combine.

87. Thus, in my opinion, a POSITA would not be motivated to modify *Barnett* in view of *Waters* as Dr. Chatterjee suggests.

88. Thus, in my opinion, a POSITA would not be motivated to modify *Barnett* in view of *Waters* as Dr. Chatterjee suggests. For these reasons, Ground 1 fails to disclose, and would not have rendered obvious, claim limitations 1[c] and 10[d] of the ’199 Patent, and as a result, independent claims 1 and 10 and all dependent claims. Grounds 2 and 3, which are directed only to certain dependent claims, does not alter this analysis or conclusion.

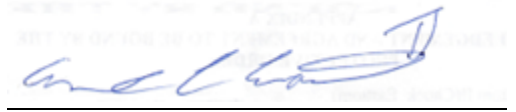
XIII. SUMMARY AND OTHER REMARKS

89. It is my opinion that Petitioner has failed to show that any of the Challenged Claims set forth in Grounds 1-3 are unpatentable as obvious as explained above.

90. My opinions expressed in this Declaration are based on the information available to me at this time. To the extent that any additional information becomes available, I reserve the right to supplement any opinions contained herein.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further 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.

Executed on November 18, 2025.



William C. Easttom II (Chuck)