
Note

Halo* from the Other Side: An Empirical Study of District Court Findings of Willful Infringement and Enhanced Damages Post-*Halo

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INTRODUCTION

Patent damages law is one of the most complex areas in patent law and is constantly evolving.¹ Given the lack of legislative oversight, courts have taken it upon themselves to create standards to govern the award of patent damages.² Judges are seated at the heart of this issue. With demanding legal schedules and a seemingly unending docket, it may be difficult for judges to sit down and create empirical calculations to evaluate the effectiveness of these legal standards. Thus, scholars must evaluate the effectiveness of judicially-created standards for awarding patent damages to ensure that the system is functioning as it should and rewarding behavior that it intends to see replicated.

Patent law is built on the principle that providing inventors with exclusive rights to their inventions will incentivize the creation and dissemination of valuable innovations.³ These exclu-

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1. See Dmitry Karshedt, *Enhancing Patent Damages*, 51 U.C. DAVIS L. REV. 1427, 1446 (2018) (detailing the complex developments in awarding damages and enhanced damages in patent law).

2. See *infra* Part I.

3. The instrumental purpose of patent law is stated explicitly in the U.S. Constitution, which empowers Congress “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” U.S. CONST. art. I, § 8, cl. 8; cf. ROGER D. BLAIR & THOMAS F. COTTER, INTELLECTUAL PROPERTY:

sive rights include the ability to make, use, and sell certain innovations and, more importantly, to prevent others from doing the same.⁴ This belief is central to the American patent system and is enshrined in the Constitution.⁵ One possible way of protecting those rights is awarding damages to a party whose property rights were infringed.⁶ Depending on how badly a patentee's rights were infringed, the patentee may be able to sue for "willful infringement." Willful infringement covers behavior that is particularly egregious and detrimental to the patent system, including deliberate copying and attempts to conceal infringement.⁷ Courts have used words such as "pirate behavior"⁸ to describe willful infringement,⁹ but, outside of that, the phrase has not been clarified.¹⁰

ECONOMIC AND LEGAL DIMENSIONS OF RIGHTS AND REMEDIES 42 (2005) ("[T]he standard justification for patents and copyrights is that they provide a necessary incentive to create, disseminate, and commercialize inventions and works of authorship.").

4. 35 U.S.C. § 271(a) (2012) ("Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.").

5. Article I, Section 8 of the U.S. Constitution gives Congress the power to "promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST. art. I, § 8, cl. 8. It was signed in convention on September 17, 1787. *Article I: Legislative Branch*, NAT'L CONST. CTR., <http://www.constitutioncenter.org/interactive-constitution/articles/article-i> (last visited Mar. 12, 2019).

6. *Id.*; see also BLAIR & COTTER, *supra* note 3, at 42 ("[T]he standard justification for patents and copyrights is that they provide a necessary incentive to create, disseminate, and commercialize inventions and works of authorship.").

7. See, e.g., *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337, 1342 (Fed. Cir. 2004) (confirming that neither the Supreme Court nor the Federal Circuit has provided an express definition for willful infringement, which could be applied to all patent infringement cases).

8. *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1932 (2016) ("The sort of conduct warranting enhanced damages has been variously described in our cases as willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, or—indeed—characteristic of a pirate.").

9. *Knorr-Bremse Systeme*, 383 F.3d at 1342 ("[T]he word 'willful' is widely used in the law, and, although it has not by any means been given a perfectly consistent interpretation, it is generally understood to refer to conduct that is not merely negligent, . . . [and] the Court [has cited] conventional definitions such as 'voluntary,' 'deliberate,' and 'intentional.'" (quoting *McLaughlin v. Richland Shoe Co.*, 486 U.S. 128, 133 (1988))).

10. See Stephanie Pall, Note, *Willful Patent Infringement: Theoretically Sound? A Proposal to Restore Willful Infringement to Its Proper Place Within Patent Law*, 2006 U. ILL. L. REV. 659, 689 (2006) (advocating for the adoption of a "more consistent definition of willful patent infringement").

In 2016, the Supreme Court attempted to clarify this ambiguity by creating a new standard to determine willful infringement in *Halo Electronics, Inc. v. Pulse Electronics, Inc. (Halo)*.¹¹ The Supreme Court in *Halo* struck down the previous standard, referring to it as “unduly rigid,” and created a new, lower evidentiary burden and recklessness standard targeted at punishing instances of willful infringement.¹² The standard used to determine whether behavior is “willful” is impactful for several reasons.¹³ Most importantly, willful infringement is a precursor to awarding enhanced damages, damages awarded by the judge to punish particularly malicious behavior on the part of the infringer.¹⁴ Thus, the changed standard may have an immense consequence for patentees and infringers alike: more frequent and larger damages sums.¹⁵ As of yet, no academic studies empirically demonstrate the actual impact of *Halo*.

This Note seeks to fill that gap as the first comprehensive empirical study of willful patent infringement and enhanced damages after *Halo*. Part I discusses the evolution of patent damages and the emergence of the *Halo* standard. Part II explains this Note’s methodology and results. Part III addresses the implications of these results and identifies trends that emerge from the results. This Note ultimately finds that the changed evidentiary standard and the elimination of the objective recklessness standard has significantly changed district courts’ findings of willful infringement and enhanced damages.

I. THE EVOLUTION OF PATENT DAMAGES AND THE EMERGENCE OF *HALO*

Before addressing the impact of *Halo*, it is useful to put *Halo* in context. To do so, a preliminary understanding of the damages available in patent cases may help contextualize the rationale of why certain damages are awarded. Additionally, it will be helpful to trace the evolution of the willful infringement doctrine to better understand the importance of *Halo*. Thus, this Section will first provide a brief overview of patent damages. Second,

11. *Halo Elecs., Inc.*, 136 S. Ct. at 1923.

12. *Id.* at 1932–34.

13. *See infra* Part I.A.

14. Enhanced damages are damages awarded by the judge if behavior is seen as egregious or needing to be deterred. There will be a greater discussion of this concept in Part I.

15. *See infra* Part I.B., I.C.

this Section will trace the historical emergence of the willful infringement standard including a discussion of key standards and their application. Finally, this section will conclude with a description of *Halo* and the anticipated impact of the case.

A. AN OVERVIEW OF DAMAGES IN PATENT LAW

Because this Note studies the effect that *Halo* has made on enhanced damages, a preliminary understanding of patent damages is necessary. This Section provides an overview of the types of damages available to a patentee who has succeeded on a claim of infringement by first introducing infringement and then briefly outlining the rationale behind compensatory and enhanced damages.

Patents, established by Article I, Section 8 of the U.S. Constitution, give Congress the power to “promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”¹⁶ This provision gives inventors the right to exclude others from their inventions and inventive concepts. If a party makes, uses, sells, or offers to sell a patented invention, the patent holder can sue for infringement,¹⁷ a strict liability offense.¹⁸ If a patent is found to have been infringed, the Patent Act, Title 35 §§ 1–376 of the U.S. Code,¹⁹ provides two remedies: monetary damages²⁰ and injunctions.²¹ The monetary damages can be further broken down into compensatory damages and enhanced damages, both discussed under 35 U.S.C. § 284.²²

Modeled after tort law, compensatory damages are aimed at “making the plaintiff whole again.”²³ Compensatory damages

16. U.S. CONST. art. I, § 8, cl. 8.

17. 35 U.S.C. § 271(a) (2012).

18. See Fla. Prepaid Postsecondary Educ. Expense Bd. v. Coll. Sav. Bank, 527 U.S. 627, 645 (1999); *In re Seagate Tech., L.L.C.*, 497 F.3d 1360, 1368 (Fed. Cir. 2007) (en banc), *abrogated by Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923 (2016).

19. 35 U.S.C. §§ 1–376.

20. *Id.* § 284.

21. *Id.* § 283.

22. Attorneys’ fees are also available under 35 U.S.C. § 285. However, attorney’s fees are outside the scope of this Note.

23. See *Rite-Hite Corp. v. Kelley Co.*, 819 F.2d 1120, 1126 (Fed. Cir. 1987) (“The role of a finding of ‘willfulness’ in the law of infringement is partly as a deterrent—an economic deterrent to the tort of infringement—and partly as a basis for making economically whole one who has been wronged”); see also *Karshtedt*, *supra* note 1, at 1447 (discussing the “tort underpinnings” of damages under the Patent Act).

can be broken up into three different categories: lost profits, established royalty, and reasonable royalty. Lost profits, for example, consult a series of factors which determine what profits would have been made by the patentee “but for” the infringement.²⁴ Awarding an established royalty or reasonable royalty adopts or emulates the terms by which the patentee would have licensed the defendant’s use of the invention.²⁵ Importantly, each method for awarding compensatory damages requires judges to fully explain their rationale for the amount awarded.²⁶

In contrast to compensatory damages which are aimed at making the plaintiff whole again, enhanced damages are designed to punish or deter certain behavior.²⁷ Awarding enhanced damages has evolved into a two-step inquiry.²⁸ First the fact-finder must determine whether the infringement was willful.²⁹ Only if there is willful infringement will a judge move forward and evaluate whether enhanced damages are warranted.³⁰ Importantly, enhanced damages are *discretionary*, meaning that

24. *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1545 (Fed. Cir. 1995) (en banc); *BIC Leisure Prods., Inc. v. Windsurfing Int’l, Inc.*, 1 F.3d 1214, 1218 (Fed. Cir. 1993).

25. *Ga.-Pac. Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1121 (S.D.N.Y. 1970) (explaining the willing licensor-willing licensee negotiation that can be used to calculate a reasonable royalty), *modified and aff’d*, 446 F.2d 295 (2d Cir. 1971), *cert. denied*, 404 U.S. 870 (1971); *see also Monsanto Co. v. McFarling*, 488 F.3d 973, 979 (Fed. Cir. 2007) (discussing the basis for an established royalty by stating “[w]hen the patentee has consistently licensed others to engage in conduct comparable to the defendant’s at a uniform royalty, that royalty is taken as established and indicates the terms upon which the patentee would have licensed the defendant’s use of the invention”).

26. *See Comcast Cable Commc’ns, L.L.C. v. Sprint Commc’ns Co.*, 218 F. Supp. 3d 375, 382 (E.D. Pa. 2016) (explaining that judges may be required to establish “[t]he rates paid by the licensee for the use of other patents comparable to the patent in the suit,” “[t]he portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements; the manufacturing process, business risks, or significant features or improvements added by the infringer,” and the result of a hypothetical negotiation to determine “the amount that a licensor . . . and a licensee . . . would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement” (quoting *Ga.-Pac. Corp.*, 318 F. Supp. 3d at 1120) (alterations in original)).

27. *See Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1931 (2016) (“Awards of enhanced damages . . . are . . . designed as a ‘punitive’ or ‘vindictive’ sanction for egregious infringement behavior.”); *see also Karshtedt*, *supra* note 1, at 1449–51 (discussing the historical support for the theory that enhanced damages are meant to punish the infringer).

28. *See infra* Part I.C.

29. *See infra* Part I.C.

30. *See infra* Part I.C.

judges are not required to award enhanced damages even if the infringement is willful.³¹ Thus, it is important to then turn to a more detailed discussion of willful infringement to better assess the impact of this standard on awarding enhanced damages.

B. THE EVOLUTION OF WILLFUL INFRINGEMENT

One of the major issues surrounding willful infringement is the ambiguous standard used to determine exactly what willful infringement is. Congress gave courts the ability to award enhanced damages but did not give courts guidance on when they should be awarded.³² Out of this dilemma, courts created the willful infringement standard.³³ The three most recent iterations of the willful infringement standard are the affirmative duty of care standard,³⁴ the objective recklessness standard,³⁵ and the *Halo* standard.³⁶ All three standards articulate different methods for determining whether willful infringement occurred.³⁷ This Note does not attempt to define what willful infringement should be.³⁸ However, understanding the evolution of the willful

31. 35 U.S.C. § 284 (2012) (“[T]he court *may* increase the damages up to three times the amount found or assessed.” (emphasis added)); *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 826–28 (Fed. Cir. 1992) (citing several factors including deliberate copying, motivation for harm, and attempting to conceal misconduct).

32. 35 U.S.C. § 284 (“When the damages are not found by a jury, the court shall assess them. In either event the *court* may increase the damages up to three times the amount found or assessed.” (emphasis added)); *see also* Karshedt, *supra* note 1 (discussing patent damages).

33. *Beatrice Foods Co. v. New Eng. Printing & Lithographing Co.*, 923 F.2d 1576, 1578 (Fed. Cir. 1991); *see also* *Jurgens v. CBK, Ltd.*, 80 F.3d 1566, 1570 (Fed. Cir. 1996) (holding that bad faith infringement, a type of willful infringement, is required for enhanced damages). This standard aligns with Supreme Court precedent on non-patent related issues and holds that “wanton or malicious” injury could result in enhanced damages. *See* *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 508 (1964) (holding that enhanced damages were available for willful or bad faith infringement); *see also* *Dowling v. United States*, 473 U.S. 207, 227 n.19 (1985) (holding that enhanced damages are available for “willful infringement”); *Seymour v. McCormick*, 57 U.S. 480, 489 (1853) (holding that “wanton or malicious” injury could result in exemplary damages).

34. *Underwater Devices Inc. v. Morrison-Knudsen Co.*, 717 F.2d 1380, 1389 (Fed. Cir. 1983) (coining the term “affirmative duty to exercise due care”).

35. *In re Seagate Tech., L.L.C.*, 497 F.3d 1360, 1382 (Fed. Cir. 2007) (en banc) (coining the term “objective recklessness”), *abrogated by* *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923 (2016).

36. *Halo Elecs., Inc.*, 136 S. Ct. at 1932.

37. *See infra* Parts I.B.2, I.B.3.

38. The most recent iteration of “willful infringement” came from *Halo*. The court stated that willful behavior is “[t]he sort of conduct warranting enhanced damages [which] has been variously described in our cases as willful, wanton,

infringement standard is necessary to assess whether *Halo* has made a difference.

There have been several iterations of what willful infringement actually means. However, a few key principles of willful infringement are constant. First, a party's behavior must be sufficiently "bad" to warrant a finding of willful infringement. Just because a party has infringed, and perhaps did so in a way that is dishonest or unfair, does not mean that the party has willfully infringed. For example, a plaintiff is unlikely to successfully plead willful infringement even if she can show the alleged infringer definitively knew about the existence of the patent, even perhaps knew that the patent could potentially infringe, and failed to investigate and remedy the potential infringement.³⁹

Second, willful infringement can be determined by either a judge or a jury.⁴⁰ If the case is pre-trial or post-trial, the determination of willful infringement falls on the presiding judge.⁴¹ If the case is at trial, willful infringement is determined by the jury.⁴² The jury's role in determining willful infringement is often debated among scholars and practitioners. However, the Federal Circuit has confirmed that there is a right to a jury trial in determining willful infringement.⁴³

malicious, bad-faith, deliberate, consciously wrongful, flagrant, or—indeed—characteristic of a pirate." *Halo Elecs., Inc.*, 136 S. Ct. at 1932. Though all of these adjectives have been used to describe willful behavior, a clear instruction of what constitutes willful infringement is broad enough to constitute its own publication.

39. *Novartis Vaccines & Diagnostics, Inc. v. Regeneron Pharm., Inc.*, No. 18CV2434(DLC), 2018 WL 5282887, at *3 (S.D.N.Y. Oct. 24, 2018).

40. 35 U.S.C. § 284 (2012) ("[W]hen the damages are not found by the jury, the court shall assess them.").

41. FED. R. CIV. P. 12(b)(6); FED. R. CIV. P. 50(a)(1) (stating that judgement as a matter of law is appropriate if "the court finds that a reasonable jury would not have a legally sufficient evidentiary basis to find for [a] party" on an issue); see, e.g., *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1348 (Fed. Cir. 1998) (stating that to prevail on a renewed motion for judgment as a matter of law following a jury trial, the moving party "must show that the jury's findings, presumed or express, are not supported by substantial evidence or, if they were, that the legal conclusions implied [by] the jury's verdict cannot in law be supported by those findings" (alteration in original)). See generally Alan N. Herda, Note, *Willful Patent Infringement and the Right to a Jury Trial*, 9 TEX. WESLEYAN L. REV. 181, 209 (discussing statutory law and case law which lends support to the notion that parties have a right to a jury trial in patent cases).

42. Herda, *supra* note 41.

43. *Exmark Mfg. Co. v. Briggs & Stratton Power Prods. Grp.*, 879 F.3d 1332, 1353 (Fed. Cir. 2018) ("Thus, under *Halo*, the district court no longer determines as a threshold matter whether the accused infringer's defenses are

1. *Underwater Devices* and the “Affirmative Duty of Care”

Given the lack of statutory guidance, courts created the rule that an award of enhanced damages requires a showing of willful infringement.⁴⁴ After the creation of the Federal Circuit,⁴⁵ the standard for determining willful infringement was first consolidated in *Underwater Devices, Inc. v. Morrison-Knudsen Co.*⁴⁶

In this case, Underwater Devices obtained two patents for underwater pipes (“Robley patents”).⁴⁷ In bidding for an underwater-sewer project, Underwater Devices informed Morrison-Knudsen about a series of patents, known as the Robley patents, and offered to license them to Morrison-Knudsen.⁴⁸ Instead of accepting the bid, Morrison-Knudsen obtained a cursory opinion of counsel letter and permitted the construction of an infringing apparatus.⁴⁹ The district court found that Morrison-Knudsen willfully infringed and Morrison-Knudsen swiftly appealed.⁵⁰ In affirming the district court, the Federal Circuit held that when “a potential infringer has actual notice of another’s patent rights”, the infringer has an “affirmative duty” to ensure that it is not infringing.⁵¹ The court found that because the defendant did not seek advice from competent patent counsel, it failed to comply with its “affirmative duty of care,” thereby making its infringement willful.⁵²

objectively reasonable. Rather, the entire willfulness determination is to be decided by the jury.”); *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1341 n.13 (Fed. Cir. 2016) (“[T]here is a right to a jury trial on the willfulness question.”).

44. See *supra* note 33 and accompanying text.

45. In 1982, Congress passed the Federal Courts Improvement Act, which created the Court of Appeals for the Federal Circuit (also known as the CAFC or Federal Circuit). Matthew D. Henry & John L. Turner, *The Court of Appeals for the Federal Circuit’s Impact on Patent Litigation*, 35 J. LEGAL STUD. 85, 86 (2006). At the time the Federal Circuit was created, there was a lack of uniformity in U.S. patent law across the circuit courts. *Id.* To address this problem, Congress gave the Federal Circuit exclusive appellate jurisdiction over nearly all patent litigation. *Id.* Now, if a patentee chooses to appeal a circuit court’s decision regarding infringement, validity, or a variety of other patent issues, the case will go to the Federal Circuit. From there, it can be appealed directly to the Supreme Court. *Id.* at 85–86.

46. 717 F.2d 1380 (Fed. Cir. 1983).

47. *Id.* at 1383.

48. *Id.*

49. *Id.* at 1386.

50. *Id.* at 1387.

51. *Id.* at 1389.

52. *Id.* at 1390.

There were several issues with interpreting this standard.⁵³ Defendants in these actions were now required to sink significant costs into opinion of counsel letters to protect themselves from enhanced damages awards.⁵⁴ Further, if an accused infringer offered an opinion of counsel as evidence to rebuke a willfulness claim, the Federal Circuit required waiver of attorney-client privilege for fairness in litigation.⁵⁵ As such, parties were often forced to choose between protecting attorney-client privilege or potentially losing on a willful infringement action.⁵⁶ Therefore, when *In re Seagate* went to the Federal Circuit, parties were ready to re-evaluate the standard.⁵⁷

2. The *Seagate* Standard

Though there were several iterations of what courts defined as willful infringement before *In re Seagate Technology* (*Seagate*), this 2007 Federal Circuit case created a multi-prong standard by which courts would evaluate whether willful infringement had occurred.⁵⁸

Seagate arose from an infringement dispute regarding a patent on a system for removing selected and unwanted frequencies in a data storage device.⁵⁹ After learning of the alleged infringement, Seagate, the defendant, obtained opinions of counsel

53. Kevin J. Kelly, Comment, *Placing the Burden Back Where It Belongs: A Proposal to Eliminate the Affirmative Duty from Willful Infringement Analyses*, 4 J. MARSHALL REV. INTELL. PROP. L. 509, 520–32 (2005).

54. Mark A. Lemley & Ragesh K. Tangri, *Ending Patent Law's Willfulness Game*, 18 BERKELEY TECH. L.J. 1085, 1092 (2003).

55. See *Aspex Eyewear, Inc. v. E'Lite Optik, Inc.*, 276 F. Supp. 2d 1084, 1092 (D. Nev. 2003) (“Fundamental fairness compels the conclusion that a litigant may not use reliance on advice of counsel to support a claim or defense as a sword in litigation, and also deprive the opposing party the opportunity to test the legitimacy of that claim by asserting the attorney-client privilege or work-product doctrine as a shield.”); see also *In re EchoStar Commc'ns Corp.*, 448 F.3d 1294, 1300 (Fed. Cir. 2006).

56. See *Quantum Corp. v. Tandon Corp.*, 940 F.2d 642, 643 (Fed. Cir. 1991) (“Proper resolution of the dilemma of an accused infringer who must choose between the lawful assertion of the attorney-client privilege and avoidance of a willfulness finding if infringement is found, is of great importance not only to the parties but to the fundamental values sought to be preserved by the attorney-client privilege.”); see also *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337, 1343 (Fed. Cir. 2004) (en banc) (discussing the complex role of attorney-client work product and opinions of counsel in willful infringement decisions).

57. *In re Seagate Tech., L.L.C.*, 497 F.3d 1360, 1367 (Fed. Cir. 2007) (en banc), *abrogated by* *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923 (2016).

58. *Id.* at 1370–72.

59. *Id.* at 1366–67. For the patents at issue, see U.S. Patent No. 4,916,635;

which explicitly said Seagate was not infringing, gathered work product related to the opinions, and continued to develop and market its products.⁶⁰ At trial, Convolve, Inc., the patentee, requested that all attorney work-product communication be turned over if Seagate intended to rely on it.⁶¹ The district court agreed and granted the motion to compel.⁶² Seagate petitioned the Federal Circuit for a writ of mandamus, who stayed the discovery order to answer the questions of attorney-client privileged documents, work-product immunity, and reevaluation of the *Underwater Devices* standard in light of these issues.⁶³ Without addressing the first two concerns, the Federal Circuit overruled *Underwater Devices*.⁶⁴ The Federal Circuit stated that the *Underwater Devices* standard set a lower threshold for willful infringement and it did not comport with Supreme Court precedent in the civil context.⁶⁵ Subsequently, it articulated a two-part test for willfulness.

The first prong of the *Seagate* test required the plaintiff to “show by clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent.”⁶⁶ The court explained that “[t]he state of mind of the accused infringer is not relevant to this objective inquiry,” which was to be judged by “the record developed in the infringement proceeding.”⁶⁷ Once the “threshold objective standard [was] satisfied,” a plaintiff was required to establish that the risk of infringement was “either known or so obvious that it should have been known to the accused infringer.”⁶⁸ In 2012, *Bard Peripheral Vascular, Inc. v. W.L. Gore & Associates, Inc.* made the objectivity prong a question for the judge.⁶⁹ Thus, juries were not even allowed to hear the evidentiary record until this prong was satisfied.

U.S. Patent No. 5,638,267; and U.S. Patent No. 6,314,473.

60. *Seagate*, 497 F.3d at 1366–67.

61. *Id.* at 1366.

62. *Id.* at 1367.

63. *Id.* at 1371.

64. *Id.*

65. *Id.* at 1370–71 (explaining that the duty of care did not align with the “general understanding of willfulness in the civil context” and required reckless behavior, not mere negligence).

66. *Id.* at 1371.

67. *Id.*

68. *Id.*

69. *Bard Peripheral Vascular, Inc. v. W.L. Gore & Assocs., Inc.*, 682 F.3d 1003, 1006–07 (Fed. Cir. 2012) (en banc).

The biggest issue with the *Seagate* standard was that it made willful infringement, specifically the first prong, very difficult for patentees to establish.⁷⁰ Legitimate or credible defenses to infringement, even if ultimately not successful, would easily defeat a willful infringement finding.⁷¹ For example, in *ResQNet.com, Inc. v. Lansa, Inc.*, the district court found that the defendant did not willfully infringe because it provided a viable defense to infringement.⁷² Furthermore, the asserted defense could be brought to the court long after the initial infringement began, thereby creating a perverse incentive to infringe now and worry later.⁷³ Even empirically, it was found that a substantial defense to infringement was the “single best way to defeat a willfulness claim.”⁷⁴ Out of a desire to remedy this bizarre outcome came the Supreme Court opinion in *Halo Electronics, Inc. v. Pulse Electronics, Inc.*⁷⁵

70. *Seagate*, 497 F.3d at 1371; see JANICE M. MUELLER, PATENT LAW 511 (3d ed. 2009) (“The *Seagate* standard significantly raised the bar on willfulness, making it more difficult for a patentee to establish than under the Federal Circuit’s previous standard.”).

71. See, e.g., *Bard*, 682 F.3d at 1005–06; *Ateliers de la Haute-Garonne v. Broetje Automation-USA Inc.*, 85 F. Supp. 3d 768, 777 (D. Del. 2015) (finding the defendant did not willfully infringe because it relied on reasonable infringement defenses, such as claim construction and invalidity defenses); *Impulse Tech. Ltd. v. Microsoft Corp.*, No. 11-586-RGA-CJB, 2015 WL 1737663, at *5 (D. Del. Apr. 9, 2015), report & recommendation adopted, No. 11-586-RGA, 2015 WL 5568616 (D. Del. Sept. 22, 2015), *aff’d*, 665 F. App’x 872 (Fed. Cir. 2016).

72. *ResQNet.com, Inc. v. Lansa, Inc.*, 533 F. Supp. 2d 397, 420 (S.D.N.Y. 2008) (“While *Lansa* was ultimately unsuccessful in defending against infringement or proving invalidity with regard to the ’075 Patent, its arguments in these areas were substantial, reasonable, and far from the sort of easily-dismissed claims that an objectively reckless infringer would be forced to rely upon.”).

73. See *id.*

74. Christopher B. Seaman, *Willful Patent Infringement and Enhanced Damages After In Re Seagate: An Empirical Study*, 97 IOWA L. REV. 417, 457 (2012) (“The low odds ratio for this factor (0.124) suggest that an accused infringer is several times less likely to be found willful if it can establish that it had a substantial or credible defense to the patentee’s infringement claim. Specifically, when a substantial defense existed, willfulness was found only 13% of the time (5 of 40 cases), compared to 57% of the time when no substantial defense was found (55 of 96 cases).”).

75. 136 S. Ct. 1923 (2016) (finding that the *Seagate* standard was based solely on the “ability of the infringer to muster a reasonable (even though unsuccessful) defense at the infringement trial.”).

3. The *Halo* Standard

For nearly ten years, courts used the *Seagate* standard to evaluate willful infringement. However, the Supreme Court abrogated the *Seagate* framework in 2016 with its decision in *Halo Electronics, Inc. v. Pulse Electronics, Inc.*⁷⁶

Beginning in 2002, Halo sent the defendant, Pulse, two letters offering to license Halo's patents.⁷⁷ At this time, one of Pulse's engineers concluded that Halo's patents were invalid.⁷⁸ Subsequently, Pulse continued to sell its infringing products.⁷⁹ In 2007, Halo filed a lawsuit against Pulse in district court for infringement of three patents.⁸⁰ At the district court level, the jury found that it was "highly probable" that Pulse willfully infringed Halo's patent.⁸¹ However, the district court declined to award enhanced damages under § 284 because Pulse's provided defenses that were "not objectively baseless."⁸² The Federal Circuit affirmed this finding.⁸³ Halo then petitioned the Supreme Court for a writ of certiorari.⁸⁴ The Supreme Court granted certiorari and consolidated the case with *Stryker Corp. v. Zimmer, Inc.*,⁸⁵ wherein the Federal Circuit also concluded that the petitioner failed to satisfy the objective recklessness prong of the *Seagate* standard.⁸⁶

76. Importantly, *Halo* involves the appeals from two Federal Circuit cases: *Stryker Corp. v. Zimmer, Inc.*, 782 F.3d 649 (Fed. Cir. 2015) and *Halo Electronics, Inc. v. Pulse Electronics, Inc.*, 769 F.3d 1371 (Fed. Cir. 2014). In both cases, the Federal Circuit held there was no willful infringement based on the *Seagate* test. *Stryker Corp.*, 782 F.3d at 662; *Halo Elecs., Inc.*, 769 F.3d at 1383.

77. *Halo Elecs., Inc.*, 136 S. Ct. at 1935–36.

78. *Id.*

79. *Id.*

80. *Id.*

81. *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, No. 2:07-cv-00331-PMP-PAL, 2013 WL 2319145, at *1 (D. Nev. Nov. 26, 2012), *aff'd*, 769 F.3d 1371 (Fed. Cir. 2014), *vacated and remanded*, 136 S. Ct. 1923 (2016). In a later post-trial motion, the district court concluded that the objective prong of the willful infringement inquiry was not satisfied because Pulse "reasonably relied on at least its obviousness defense" and Pulse's unsuccessful obviousness defense was not "objectively baseless." *Id.* at *15.

82. *Id.*

83. *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 769 F.3d 1371, 1382 (Fed. Cir. 2014), *vacated and remanded*, 136 S. Ct. 1923 (2016).

84. Petition for Writ of Certiorari, *Halo Elecs., Inc.*, 136 S. Ct. 1923 (No. 14-1513).

85. *Halo Elecs., Inc.*, 136 S. Ct. at 1930–31.

86. *Stryker Corp. v. Zimmer, Inc.*, 782 F.3d 649, 661–62 (Fed. Cir. 2015).

The Supreme Court vacated the judgment and subsequently remanded the case.⁸⁷ The opinion had three key holdings. First, the Supreme Court eliminated *Seagate's* objective recklessness prong and focused on a subjective basis for enhancing damages given an infringer's egregious conduct in the particular circumstances of the case.⁸⁸ The Court determined that the two-pronged *Seagate* approach was "unduly rigid" and unnecessarily obstructed the discretion of the district court.⁸⁹ Further, the Court noted that the *Seagate* standard insulated some of the worst patent infringers from liability of enhanced damages.⁹⁰ The Court identified that the *Seagate* standard makes "dispositive the ability of the infringer to muster a reasonable (even though unsuccessful) defense at the infringement trial."⁹¹ This "pirate" behavior enables someone who "plunders a patent—infringing it without any reason to suppose his conduct is arguably defensible" to prevail on a claim based on the "strength of his attorney's ingenuity."⁹² In coming to this conclusion, the Supreme Court relied heavily on *Octane Fitness, L.L.C. v. ICON Health & Fitness, Inc.*,⁹³ which struck down a two-part objective and subjective test before awarding attorney's fees under § 285 of the Patent Act.⁹⁴ Adopting reasoning similar to *Octane Fitness*, the Supreme Court noted that the infringer could prevail in cases where the infringer herself was not aware of the defense at the time of the infringing act.⁹⁵

The second key holding involved the Supreme Court further confirming that enhanced damages can be awarded only as a result of judicial discretion.⁹⁶ In coming to this conclusion, the Court acknowledged the difficult balance between the need to facilitate innovation through patent protection and the need to

87. *Halo Elecs., Inc.*, 136 S. Ct. at 1935–36.

88. *Id.* at 1933.

89. *Id.* at 1932 (quoting *Octane Fitness, L.L.C. v. ICON Health & Fitness, Inc.*, 572 U.S. 545, 553 (2014)).

90. *Id.*

91. *Id.* at 1933.

92. *Id.* at 1932–33.

93. *Id.* at 1932–34 (citing *Octane Fitness*, 572 U.S. at 551–58).

94. *Octane Fitness*, 572 U.S. at 550–51, 553–54.

95. *Halo Elecs., Inc.*, 136 S. Ct. at 1933 ("[C]ulpability is generally measured against the knowledge of the actor at the time of the challenged conduct.").

96. *Id.* at 1934–35.

support innovation, which is necessary to maintain a competitive economy.⁹⁷ The Court reasoned that the best way to enable this outcome would be to support the discretion of district courts, which are guided by 200 years of interpreting the Patent Act.⁹⁸

Third, the Court lowered the patent owner's burden of proof from the "clear and convincing" evidentiary standard to the lower "preponderance of the evidence" standard.⁹⁹ The Court here relied on *Octane Fitness* to reiterate that "patent-infringement litigation has always been governed by a preponderance of the evidence standard" and using a heightened evidentiary standard is not justified.¹⁰⁰

Commentators were quick to point out that *Halo* would again tip the balance in favor of patentees.¹⁰¹ For example, the lowered evidentiary bar would likely lead to more filings of willful infringement claims.¹⁰² Additionally, the infringer would no longer be able to rely on objectively reasonable defenses at trial.¹⁰³ Rather conveniently, practitioners began advocating for the renewed importance of opinion of counsel letters.¹⁰⁴ The

97. *Id.* at 1935 (citing *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989)).

98. *Id.* at 1934 ("Nearly two centuries of exercising discretion in awarding enhanced damages in patent cases, however, has given substance to the notion that there are limits to that discretion. The Federal Circuit should review such exercises of discretion in light of the longstanding considerations we have identified as having guided both Congress and the courts.").

99. *Id.*

100. *Id.* (quoting *Octane Fitness, L.L.C. v. ICON Health & Fitness, Inc.*, 572 U.S. 545, 557 (2014)); *see also* *Herman & MacLean v. Huddleston*, 459 U.S. 375, 390 (1983) (discussing that preponderance of the evidence is the preferred standard because it "allows both parties to 'share the risk of error in roughly equal fashion'" (quoting *Addington v. Texas*, 441 U.S. 418, 423 (1979))); *Béné v. Jeantet*, 129 U.S. 683, 688 (1889) (using the preponderance of the evidence standard in an infringement case).

101. Alden Abbott, *Will the Supreme Court's Halo Electronics Decision Have a Desirable Halo Effect, Reducing Incentives to Infringe Patents?*, HERITAGE FOUND. (June 21, 2016), <https://www.heritage.org/economic-and-property-rights/commentary/will-the-supreme-courts-halo-electronics-decision-have>; Chase Means, *Has the Supreme Court Breathed New Life into Patent Trolls in Halo and Stryker?*, IPWATCHDOG.COM (June 15, 2016), <http://www.ipwatchdog.com/2016/06/15/supreme-court-patent-trolls-halo-stryker/id=70050>.

102. Erik R. Puknys & Yanbin Xu, *Willful Infringement After Halo*, FINNEGAN (Sept. 14, 2016), <https://www.finnegan.com/en/insights/willful-infringement-after-halo.html>.

103. *Halo Elecs., Inc.*, 136 S. Ct. at 1934; Puknys & Xu, *supra* note 102.

104. *Halo Electronics, Inc. v. Pulse Electronics Inc.: The U.S. Supreme Court Establishes a New Framework for Awarding Enhanced Damages in Patent Suits*, GOODWIN PROCTER LLP: BIG MOLECULE WATCH (June 14, 2016), <https://www.bigmoleculerwatch.com/2016/06/14/halo-electronics-inc-v-pulse-electronics>

Seagate standard was borne out of a massive dilemma around how to use opinions of counsel.¹⁰⁵ After *Seagate*, courts still considered them, but did not place as much dispositive weight on opinions of counsel.¹⁰⁶ After *Halo*, commentators highlighted that opinions of counsel could have renewed importance as being indicative, though not dispositive of no willful infringement, or at least no enhanced damages.¹⁰⁷

C. ENHANCED DAMAGES & *READ*

This Section addresses enhanced damages and how they are awarded. An award of enhanced damages is a two-step inquiry. First, the fact finder must determine if the accused infringer willfully infringed.¹⁰⁸ If willful infringement is found, then the district court *may* utilize its discretion to enhance damages.¹⁰⁹ Courts have nearly unlimited discretion in determining the amount of the enhanced damages.¹¹⁰ The only guiding principle comes from § 284 of the Patent Act which caps the available damages at three times the compensatory amount.¹¹¹ Further, courts are not required to explain why they decided on a certain amount for enhanced damages.¹¹² Because there are no clear guidelines

(advocating for the importance of opinions of counsel regarding non-infringement or patent invalidity); *Supreme Court Ruling in Halo Electronics, Inc. v. Pulse Electronics, Inc. Relaxes Standard for Enhanced Damages in Patent Cases; Freedom to Operate Opinions Gain Renewed Importance*, HONIGMAN (June 15, 2016), <https://www.honigman.com/firm-newsroom-alerts-1157.html>.

105. *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337, 1343 (Fed. Cir. 2004) (en banc).

106. *In re Seagate Tech., L.L.C.*, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (en banc).

107. *WBIP, L.L.C. v. Kohler Co.*, 829 F.3d 1317, 1340 (Fed. Cir. 2016) (concluding that when the invalidity defense was created, not just the fact that it was created, is important to a successful defense for willful infringement); see also Michele C. Bosch et al., *Coming Full Circle from Seagate to Halo on Invalidity Opinions*, FINNEGAN (Feb. 16, 2018), <https://www.finnegan.com/en/insights/coming-full-circle-from-seagate-to-halo-on-invalidity-opinions.html> (“Several district courts have declined to find willful infringement when defendants had pre-litigation knowledge of the asserted patents and took pre-litigation steps to investigate them.”).

108. *Halo Elecs., Inc.*, 136 S. Ct. at 1935 (stating that enhanced damages should only be awarded after “egregious cases of misconduct beyond typical infringement” have occurred).

109. See 35 U.S.C. § 284 (2012).

110. See *id.*

111. *Id.*

112. *Halo Elecs., Inc.*, 136 S. Ct. at 1932 (stating district courts have discretion to award enhanced damages and there is “no precise rule or formula’ for

to assessing enhanced damages, courts take various approaches,¹¹³ but the most common way courts assess enhanced damages is by turning to the *Read* factors.¹¹⁴

In 1992, the Federal Circuit decided *Read v. Portec*¹¹⁵ and created a “totality of the circumstances” test to better assess what behavior would warrant enhanced damages.¹¹⁶

The court outlined nine factors:

- (1) whether the infringer deliberately copied the ideas or design of another;
- (2) whether the infringer, when he knew of the other’s patent protection, investigated the . . . patent and formed a good-faith belief that it was invalid or that it was not infringed; []
- (3) the infringer’s behavior . . . [in] the litigation;
- (4) [the infringer’s] size and financial condition;
- (5) [c]loseness of the case;
- (6) [d]uration of [the infringer’s] misconduct;
- (7) [r]emedial action by the [infringer];
- (8) [infringer’s] motivation for harm; [and]
- (9) [w]hether [the infringer] attempted to conceal its misconduct.¹¹⁷

In court opinions that cite the *Read* factors, the text of the case will assess each factor individually.¹¹⁸ For example, in

awarding damages under § 284” (quoting *Octane Fitness, L.L.C. v. ICON Health & Fitness, Inc.*, 572 U.S. 545, 554 (2014))).

113. *Compare Crane Sec. Techs., Inc. v. Rolling Optics AB*, 337 F. Supp. 3d 48, 57–60 (D. Mass. 2018) (conducting a *Read* analysis and going through each factor), *with Forever Found. & Frame v. Optional Prods.*, SA CV 13-1779-DOC (RNBx), 2014 WL 12585800, at *5 (C.D. Cal. Dec. 19, 2014) (awarding treble damages but not using the *Read* factors to award enhanced damages).

114. *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 826–27 (Fed. Cir. 1992). Importantly, the *Read* factors are instructive, not binding. *Id.*

115. *Id.*

116. There was a previous three factor evaluation from *Bott v. Four Star Corp.*, 807 F.2d 1567, 1572 (Fed. Cir. 1986). The factors included “(1) [W]hether the infringer deliberately copied the ideas or design of another; (2) whether the infringer, when he knew of the other’s patent protection, investigated the scope of the patent and formed a good-faith belief that it was invalid or that it was not infringed, and (3) the infringer’s behavior as a party to the litigation.” *Id.*

117. *Read*, 970 F.2d at 826–27 (footnotes and citations omitted). Although *Read* predated *Seagate*, “*Seagate* did not change the application of the *Read* factors with respect to enhancement of damages when willful infringement under [35 U.S.C.] § 285 is found.” *Spectralytics, Inc. v. Cordis Corp.*, 649 F.3d 1336, 1349 (Fed. Cir. 2011).

118. *See Crane Sec. Techs., Inc.*, 337 F. Supp. 3d at 57–60; *see also Fitness Anywhere L.L.C. v. WOSS Enters. L.L.C.*, No. 14-CV-01725-BLF, 2018 WL 6069511, at *4 (N.D. Cal. Nov. 20, 2018) (using the *Read* factors, but doing a much less thorough evaluation).

Crane Security Technologies v. Rolling Optics AB, the court begins with the first *Read* factor, deliberate copying, and assesses that it “weighs in Crane’s favor” because Rolling Optics developed a technology which mirrored Crane’s claimed invention, relied on a design-around, and had extensive knowledge of Crane’s patent portfolio.¹¹⁹ While this factor weighed in favor of enhanced damages, factors nine, four, and three did not weigh in favor of enhancement or have no weight in the assessment.¹²⁰ After evaluating each factor, and balancing the scales of justice, the court found that Crane should be awarded enhanced damages.¹²¹

Though the nine *Read* factors have not changed, the enhanced damages outcomes have changed over time. Courts were awarding enhanced damages more often under the *Underwater Devices* standard than under *Seagate*.¹²² This is likely because there were significantly less findings of willful infringement after *Seagate*, therefore, less opportunities to award enhanced damages.¹²³ After *Halo*, commentators believed that the lowered evidentiary bar to prove willful infringement would lead to an increase in findings of enhanced damages.¹²⁴ The Supreme Court in *Halo* addressed the concern that the lowered standard for willfulness would lead to enhanced damages awards in “garden-variety” patent cases.¹²⁵ However, the Supreme Court reassured commentators by reiterating that § 284 and “two centuries” of

119. *Crane Sec. Techs., Inc.*, 337 F. Supp. 3d at 57.

120. *Id.* at 57–60.

121. *Id.* This case is currently on appeal. *Crane Sec. Techs., Inc. v. Rolling Optics AB*, No. 19-1040 (2d Cir. Oct. 5, 2018).

122. Seaman, *supra* note 74, at 466. Seaman found that findings of enhanced damages were at 81.4% before *Seagate* and 54.9% after *Seagate*. *Id.* The results of this study were statistically significant ($p=0.006$). *Id.* The cases used in this study were all post-*Read* so the same standard was used across the board. *Id.*

123. *Id.*

124. Brian Saunders, *High Court Relaxes Standards for Enhanced Damages in District Court Patent Litigation*, BAKERHOSTETLER (June 16, 2016), <https://www.ipintelligencereport.com/2016/06/16/high-court-relaxes-standards-for-enhanced-damages-in-district-court-patent-litigation>.

125. *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1935 (2016) (“That balance can indeed be disrupted if enhanced damages are awarded in garden-variety cases. As we have explained, however, they should not be. The seriousness of respondents’ policy concerns cannot justify imposing an artificial construct such as the *Seagate* test on the discretion conferred under [35 U.S.C.] § 284.”).

patent cases would protect district courts from abusing their discretion.¹²⁶

This examination of enhanced damages lends itself to two key conclusions as scholars continue to study enhanced damages and willful infringement. First, *Read v. Portec* is the only rule or formula utilized by the courts when determining whether to enhance damages, and if so by how much.¹²⁷ Second, data shows that the willful infringement standard may affect the frequency of enhanced damages.¹²⁸

II. EMPIRICAL FINDINGS: PATENT DAMAGES POST- *HALO*

The effects of the *Halo* decision have not yet been subject to much scholarly discussion. Empirical studies have been useful in evaluating how impactful cases that are supposed to be watershed cases have actually been.¹²⁹ Of note, there is not yet an academic, empirical study of *Halo's* actual impact on findings of willful infringement and enhanced damages. This Note fills that gap. First, it empirically evaluates *Halo's* impact on willful infringement findings. Second, it empirically evaluates *Halo's* impact on findings of enhanced damages. Third, it empirically evaluates any venue-based trends that may be emerging in post-*Halo* cases. Finally, the section concludes with qualitative results including factors outside of *Read v. Portec* that were assessed to determine enhanced damages.

126. *Id.* at 1927 (“Nearly two centuries of enhanced damage awards have given substance to the notion that district courts’ discretion is limited . . .”).

127. *Id.* at 1932 (stating that there is “no precise rule or formula’ for awarding damages under § 284” (quoting *Octane Fitness, L.L.C. v. ICON Health & Fitness, Inc.*, 572 U.S. 545, 554 (2014))); *see also* *WBIP L.L.C. v. Kohler Co.*, 829 F.3d 1317, 1340 (Fed. Cir. 2016); *Finjan, Inc. v. Blue Coat Sys., Inc.*, No. 13-CV-0399-BLF, 2016 U.S. Dist. LEXIS 93267, at *15 (N.D. Cal. July 18, 2016).

128. Seaman, *supra* note 74, at 466.

129. Empirical studies use statistical analysis and data observations to evaluate causal relationships. Over the past two decades, scholars—specifically in patent law—have used empirical research methods to help understand how courts apply legal doctrines. *See, e.g.*, John R. Allison & Mark A. Lemley, *The (Unnoticed) Demise of the Doctrine of Equivalents*, 59 STAN. L. REV. 955 (2007) (conducting an empirical study of doctrine of equivalents decisions); Barton Beebe, *An Empirical Study of U.S. Copyright Fair Use Opinions, 1978–2005*, 156 U. PA. L. REV. 549 (2008); Christian A. Chu, *Empirical Analysis of the Federal Circuit’s Claim Construction Trends*, 16 BERKELEY TECH. L.J. 1075 (2001).

A. METHODOLOGY

This section will outline the methodology of this study. This section begins with a discussion of the hypotheses tested, then proceeds to a discussion of the data set and how the data was collected. After, the variables tracked and coded are listed. Finally, this section ends with the methods and results of the study.

1. Hypothesis

There were three key hypotheses tested in this study. The first hypothesis proposes a relationship between *Halo* and findings of willful infringement; specifically, that *Halo* will increase findings of willful infringement.¹³⁰ The second hypothesis discusses *Halo*'s effect on the frequency of enhanced damages awards and states that there will be more enhanced damages awards under *Halo* as compared to *Seagate*.¹³¹

2. Data Set

The author created an original data set for this study.¹³² This Note attempted to identify all patent cases that decided willful infringement on the merits, starting in December 2013 and ending in December 2018. This represents 61 months of decisions divided equally before and after *Halo*.

The author searched Westlaw and LexisNexis databases for district court decisions from December 2013 through *Halo* in June of 2016, and then from *Halo* through December 2018 to create the data set.

Based on these sources, the author compiled a list of 158 district court cases that reached a final decision on the merits regarding both willful infringement and enhanced damages. Although this figure initially appears low, it is important to note that the overwhelming majority of patent cases settle before reaching a decision on the merits. Previous studies have shown that only 6.2% of patent infringement claims are decided at

130. For further discussion, see *supra* Part I.B.3. The null hypothesis is that there is no difference in the proportion of willful infringement findings before or after *Halo*. The alternative hypothesis is that the proportion is greater after *Halo* than it was before.

131. For further discussion, see *supra* Part I.B.3.

132. This study was modeled after Professor Seaman's study. Seaman, *supra* note 74, at 466.

trial.¹³³ Further, many cases that do reach a verdict never decide willful infringement because the patent is found not infringed, the patent is found invalid, or the patentee did not assert willful infringement.¹³⁴

This data set included decisions from both jury and bench trials, and also included willful infringement found from a pre-trial motion, such as summary judgement. The data set included motions to dismiss¹³⁵ and judgment as a matter of law.¹³⁶

3. Variables

In the data set, each case was coded for several variables using a standardized set of coding instructions. These variables were (1) the final decision of willful infringement in the district court, (2) whether enhanced damages were awarded, (3) and the venue of the litigation.

4. Method

The author ran three different statistical analyses on the data. First, Chi Square tests were run on both the outcomes of the number of willful infringement findings and the number of enhanced damages awards.¹³⁷ This was done to test whether these are independent of *Halo*.¹³⁸ The author then ran z tests for both of these variables to test whether *Halo* increased the outcome for both.¹³⁹ Finally, the author used a Type II ANOVA to determine whether the jurisdiction in which the case is tried has an effect on the number of willful infringement or enhanced damages awards.¹⁴⁰

P-values demonstrate the significance of results.¹⁴¹ A small p-value (typically ≤ 0.05) indicates that the results are likely not

133. See Kimberly A. Moore, *Empirical Statistics on Willful Patent Infringement*, 14 FED. CIR. B.J. 227, 234 (2004).

134. *Id.* For reference, Judge Moore's study only considered 2.1% of the total cases that were filed during the period of her study. *Id.*

135. FED. R. CIV. P. 12(b)(6).

136. Judgment as a Matter of Law (JMOL) occurs either during or after trial. See FED. R. CIV. P. 50.

137. E-mail from Emily Kurtz, Graduate Student, Univ. of Minn. Statistics Dep't, to Veena Tripathi (Jan. 9, 2018, 14:19 CST) (on file with author).

138. DAVID M. LANE ET AL., INTRODUCTION TO STATISTICS 597 (2007), http://onlinestatbook.com/Online_Statistics_Education.pdf.

139. See S.D. Cochran, *T-Tests*, UCLA (2004), <http://www.stat.ucla.edu/~cochran/stat10/winter/lectures/lect20.html>.

140. LANE ET AL., *supra* note 138, at 515–19.

141. *Id.* at 389.

due to chance, and therefore are statistically significant.¹⁴² A larger p-value (typically > 0.05) indicates that results are more likely due to chance, and therefore are not statistically significant.¹⁴³

B. RESULTS

This Section describes the results from the data set. It analyzes these results and offers some tentative conclusions about willful infringement and enhanced damages both before and after *Halo*.¹⁴⁴

1. Willfulness: Statistically Significant Differences Before and After *Halo*

The aim of this section was to determine whether findings of willful infringement would change after the *Halo* standard was adopted. The general assumption was that *Halo* was a watershed case that would lead to noticeable differences in infringement outcomes and would make the process more favorable to the patentee.¹⁴⁵

Table 1 shows results from the findings of willful infringement study. The study evaluated how often disputes ended in findings of willful infringement before and after *Halo*.¹⁴⁶ First, a Chi Square test result shows that willful infringement findings are not independent of *Halo*, therefore establishing a statistically significant relationship between the two.¹⁴⁷ Next, a z test was run to determine whether there was any difference in the number of willful infringement findings before or after *Halo*. Here, the proportion of cases that ended in willful infringement findings were greater after *Halo* than before.¹⁴⁸ As shown in Table 1, 22.8% of cases reviewed had a willful infringement finding

142. *Id.*

143. *Id.*

144. All studies were done using the program R. See *The R Project for Statistical Computing*, R FOUND., <https://www.r-project.org> (last visited Feb. 22, 2019).

145. *Supra* Part I.B.3.

146. To reiterate, the data set included decisions from both jury and bench trials, pre-trial motions, motions to dismiss and judgements as a matter of law. However, the vast majority (68%) of the decisions for willful infringement came from jury determinations.

147. The p-value here is 4.637e-05. This is significantly less than the p-value of 0.05, the standard for determining statistical significance. LANE ET AL., *supra* note 138.

148. There is a 95% confidence level with this factor.

before *Halo* versus 55.7% willful infringement finding after *Halo*.

This result is not surprising. Under the previous *Seagate* standard, patentees were required to establish both objective recklessness *and* subjective recklessness.¹⁴⁹ Furthermore, the data taken for the pre-*Halo* category were all post-*Bard*. This means that the first prong of willfulness, in the two-prong inquiry, was given to a judge before a jury was allowed to evaluate the evidentiary record.¹⁵⁰ Under *Halo*, the evidentiary record was given to the jury at the time of infringement if the case went to a jury trial.¹⁵¹ Moreover, patentees need only prove that the infringing party knew or should have known they were infringing.¹⁵² Further, there is a lowered evidentiary standard to prove this by.¹⁵³ This likely indicates that the change in evidentiary standard and the demolished “rigidity” of the *Seagate* framework did have an impact on the outcome of cases.

	Before Halo (Dec. 2013-June 2016)	After Halo (July 2016-Dec. 2018)
% Willful	22.8%	55.7%
p = 7.587e-06		

2. Enhanced Damages: Statistically Significant Differences Before and After *Halo*

A second major focus of this study was determining whether enhanced damages were affected by *Halo*.¹⁵⁴ As mentioned earlier, the decision in *Halo* would theoretically lead to an increase in willful infringement findings.¹⁵⁵ First, *Halo*'s standard re-

149. *In re Seagate Tech., L.L.C.*, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (en banc).

150. *See Bard Peripheral Vascular v. W.L. Gore & Assocs.*, 682 F.3d 1003, 1006–07 (Fed. Cir. 2012).

151. *See supra* Part I.B.3. Importantly, this does not include a motion to dismiss, which through this empirical evaluation was the most popular action to bring.

152. *See supra* note 88 and accompanying text.

153. *See supra* notes 65–67 and accompanying text.

154. For a more detailed view of the enhanced damages standard, see *supra* Part I.

155. *See Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1934 (2016); *see also supra* Part I.B.2.

placed *Seagate's* "objective recklessness" standard, which limited a finding for willful infringement in only the most egregious cases.¹⁵⁶ Under *Seagate*, scholars believed the overlap between the *Seagate* factors and the *Read* factors would lead to findings of egregiousness in almost all cases, because findings of egregiousness would be few and far between.¹⁵⁷ However, the empirical data rejected this hypothesis. This is likely because the standard for willful infringement was decreased and the bar for egregiousness remained the same. As a result, there were a large percentage of cases that were not egregious enough to warrant enhanced damages.¹⁵⁸

After abrogating *Seagate*, scholars believed that the flood gates would open to a sea of enhanced damages awards.¹⁵⁹ As stated above, awarding enhanced damages is a two-step process.¹⁶⁰ First, a party must establish willful infringement.¹⁶¹ Courts cannot award enhanced damages without a finding of willful infringement.¹⁶² Theoretically, if there were more cases of willful infringement, there would be more opportunities for awarding enhanced damages.¹⁶³ Based on this assumption, the hypothesis tested was whether the lowered standard for determining willful infringement post-*Halo* would increase the number of enhanced damages awards. This test was completed in using the exact two-step process for evaluating willful infringement outcomes. First, a Chi Square test was done to establish whether enhanced damages and *Halo* were independent of one another. The Chi Square test statistic was below the relevant p-value, thus demonstrating that enhanced damages are also dependent on *Halo*.¹⁶⁴ Second, a z test was used to determine whether there was any difference in the number of willful infringement findings before or after *Halo*.

156. *See id.* at 1932, 1935–36.

157. Seaman, *supra* note 74, at 466 ("In addition, the overlap between the *Read* factors for enhanced damages and post-*Seagate* willfulness factors also suggested enhanced damages would be awarded most times when willfulness was found.").

158. *Id.*

159. *Id.*

160. *Id.* at 464.

161. *Id.*

162. *Id.*

163. *See id.*

164. The p-value here is 0.0050308. This is still less than the relevant p-value of 0.05, the standard for determining statistical significance. LANE ET AL., *supra* note 138.

The studies shown in Table 2 demonstrate that enhanced damages are dependent on *Halo*. Further, this test demonstrates that damages are increased 19% more often than pre-*Halo* cases. Moreover, these results are statistically significant.

Table 2. Enhancement Findings Before and After Halo		
	Before <i>Halo</i> (Dec. 2013- June 2016)	After <i>Halo</i> (July 2016- Dec. 2018)
% Awarding Enhanced Damages	10.1%	29.1%
$p=0.001273$		

3. Venue Has No Statistically Significant Effect on Willful Infringement or Enhanced Damages Outcomes.

The last study concerned the effects patent venue might have on the outcome of infringement actions. Type II ANOVA was used to assess whether venue had any effect on both enhanced damages awards and willful infringement findings. The null hypothesis for an ANOVA is that all groups have the same mean.¹⁶⁵ In this context, this means that the proportion of cases that end in willful infringement findings, or enhanced damages awards, is the same over *all* jurisdictions. The alternative is that at least one jurisdiction differs.

Based on the findings from the ANOVA study, there is not sufficient evidence to say that jurisdictions differ in the proportion of cases that end in willful infringement findings or enhanced damages awards.¹⁶⁶ This finding was limited because the assumptions for ANOVA were violated and the data was not normal. Further, the data was not balanced, meaning that there were not an equal number of cases from each venue.¹⁶⁷

165. See ANOVA, STATISTICALLY SIGNIFICANT CONSULTING, L.L.C., <https://www.statisticallysignificantconsulting.com/Anova.htm> (last visited Feb. 22, 2019).

166. See *infra* App.

167. Patent infringement cases are heard in either the (1) defendant's state of incorporation or (2) where the defendant commits an act of infringement and has a regular and established place of business. 28 U.S.C. § 1400(b) (2012); see also *TC Heartland L.L.C. v. Kraft Foods Grp. Brands L.L.C.*, 137 S. Ct. 1514, 1517 (2017) (holding that a defendant resides in its state of incorporation). A majority of patent cases are heard in the Eastern District of Texas and the District of Delaware. See Steve Brachmann, *2017 Saw Fewest Patent Lawsuits Filed Since 2011*, IPWATCHDOG (Jan. 31, 2018), <http://www.ipwatchdog.com/>

Table 3. Infringement Cases Post- <i>Halo</i> by Venue (July 2016-December 2018)	
Venue	Number of Cases Heard
Delaware	20
Eastern District of Texas	7
Northern District of California	7

However, the outcome of willful infringement still had a low p-value (0.054) which was close to the threshold of statistical significance. This shows that willful infringement, perhaps with more data points, may actually be dependent on venue. This is an area for future study and this hypothesis should be further explored.

III. EVALUATING WILLFULNESS AND ENHANCED DAMAGES AFTER *HALO*: WHAT ARE THE IMPLICATIONS OF *HALO*?

This Note is the first real empirical evaluation of *Halo*'s impact on willful infringement and enhanced damages. The results show that *Halo* had a significant impact on the willful infringement and enhanced damages outcomes of patent infringement cases at the district court level.¹⁶⁸ The Supreme Court lambasted the *Seagate* standard, stating that it protected the most malicious infringers and only required a particularly creative lawyer to successfully avoid a willful infringement finding.¹⁶⁹ This study demonstrates that there was a statistically significant shift in findings of willful infringement and enhanced damages post-*Halo*. This Section discusses some of the implications of this finding on determinizations of willful infringement and enhanced damages.

A. THE RENEWED IMPORTANCE OF JURIES POST-*HALO*

In recent years, there have been several challenges to the use of juries in patent trials. Scholars have highlighted a jury's

2018/01/31/2017-fewest-patent-lawsuits-filed-2011/id=92952/.

168. See *supra* Table 1 & Table 2.

169. *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1933 (2016) (discussing that the "pirate" behavior enables someone who "plunders a patent — infringing it without any reason to suppose his conduct is arguably defensible" to prevail on a claim based on the "strength of [her] attorney's ingenuity").

lack of expertise around patent law, which is both a particularly nuanced topic and complex legal standard.¹⁷⁰ Complaints about the use of juries in patent cases have emphasized the lack of formal education and training of the individual jurors,¹⁷¹ the natural tendency of jurors to be swayed by tangential, emotional factors, bias or prejudice,¹⁷² and the high level of complexity in patent cases.¹⁷³

This study lends support to the notion that juries may be pro-patentee once infringement is established. Importantly, willful infringement only arises after assessing validity and or obviousness. In the cases studied, 55.7% of post-*Halo* cases found willful infringement, as compared to 22.8% of cases pre-*Halo*. This signals a return to the levels of infringement seen under *Underwater Devices*, when 68% of the jury cases found willful infringement, an extremely pro-patentee outcome.¹⁷⁴ This has been supported by other empirical findings. In a study done by jury consultants to assess the bias of jurors, 66% of mock jurors

170. *Judicial Panel Discussions on Science and the Law*, 25 CONN. L. REV. 1127, 1145 (1993) (“Honest to God, I don’t see how you could try a patent matter to a jury. Goodness, I’ve gotten involved in a few of these things. It’s like somebody hit you between your eyes with a four-by-four. It’s factually so complicated.” (statement of Judge Covello, U.S. District Judge, Dist. of Conn.)).

171. See, e.g., Matt Krantz, *Patent Suits Try Patience of High-Tech Companies*, INV. BUS. DAILY, Dec. 9, 1996, at A6 (“Because patent cases can last up to three months, better-educated potential jurors are excused from serving. Only people with nothing better to do can give up 12 weeks listening to lawyers talk about high tech.” (internal quotation omitted)); Richard B. Schmitt, *Juries’ Role in Patent Cases Reconsidered*, WALL ST. J., Feb. 18, 1994, at B6 (quoting AT&T lawyers who, after losing a jury trial, complained that the jury consisted of “unemployed laborers and housewives . . . [who did not] understand that stuff”).

172. Kimberly A. Moore, *Judges, Juries, and Patent Cases—An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 373 n.33 (2000) [hereinafter Moore, *Judges, Juries, and Patent Cases*] (quoting a Chief Patent Counsel stating, “I have won and lost cases with juries, and in both situations, the jury reasoning was not related to the facts”); *id.* at 373 (quoting a Chief Patent Counsel stating, “[j]urors’ decisions are based on emotional perceptions of good guy vs. bad guy”); see also Kimberly A. Moore, *Jury Demands: Who’s Asking?*, 17 BERKELEY TECH. L.J. 847, 875 (2002) (finding that jury demands are impacted by popular perceptions of jury bias against foreigners, corporations, out-of-state parties, and infringers). In a 2000 study, Federal Circuit Judge Kimberly Moore found that a preponderance-of-the-evidence standard and a clear-and-convincing standard resulted in nearly the same percentage of pro-patentee outcomes in infringement cases. Moore, *Judges, Juries, and Patent Cases*, *supra*, at 373 (“This contrast with judges’ tendencies suggests that juries may be swayed by bias and may not be giving the evidentiary burden much significance.”).

173. See *supra* note 170 and accompanying text.

174. Moore, *Judges, Juries, and Patent Cases*, *supra* note 172, at 391 (determining that willful infringement was found 71% of the time by juries).

participating in the study supported the patent owner after they were given a neutral statement of facts without any argument or evidence from either side.¹⁷⁵ The study showed that jurors also have a high-regard for inventors and believe the review process for obtaining the patent is rigorous.¹⁷⁶

A major caveat of this study is that after *Bard*, the first prong of *Seagate* was given to the judge.¹⁷⁷ Thus, juries were only presented with information regarding subjective willfulness after the judge determined that the defendant's behavior was objectively willful.¹⁷⁸ This would lead to the inquiry of whether the drastic difference in outcome is due to the jury or the standard. Other empirical studies can be used to fill this gap. In his study evaluating the impact of *Seagate*, Professor Christopher Seaman demonstrated that over 37% of cases between 2007 and 2010 had outcomes of willful infringement.¹⁷⁹ The results in Table 1 show that the post-*Bard* cases found willful infringement in about 27% of cases.¹⁸⁰ Thus, even though there is only a slight difference in the percentages, it may still demonstrate that juries tend to lean in favor of the patentee in infringement actions

In Justice Breyer's *Halo* concurrence, he states that the uncertainty of jury outcomes can help negotiating parties determine whether they want to continue with the costly action of patent litigation.¹⁸¹ If anything, it seems that patentees may want to continue infringement litigation actions, while infringers may want to encourage settlement to avoid costly litigation. Though this Note does not advocate for a complete removal of juries in willful infringement disputes, it does suggest that attorneys and

175. Casey Anderson & Chuck Kauffman, *Why US Juries Are Pro-Plaintiff*, MANAGING INTELL. PROP., Feb. 2009, at 42, 43.

176. *See id.* at 42–43 (noting that a recent study found plaintiffs won more than 63% of patent infringement jury trials and discussing the various factors for juries' pro-patent tendencies).

177. *In re Seagate Tech., L.L.C.*, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (en banc).

178. *Id.*

179. Seaman, *supra* note 74, at 441.

180. The results in Table 1 come from a survey of cases post-*Bard*. *See infra* App.

181. *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1937 (2016) (Breyer, J., concurring) (“Will a jury find that the company behaved ‘recklessly,’ simply for failing to spend considerable time, effort, and money obtaining expert views about whether some or all of the patents described in the letter apply to its activities (and whether those patents are even valid)? These investigative activities can be costly. Hence, the risk of treble damages can encourage the company to settle, or even abandon any challenged activity.”).

judges should be aware of potential jury biases in infringement actions.

B. JUDGES SHOULD PROVIDE MORE TRANSPARENCY WITH ENHANCED DAMAGES CALCULATIONS POST-*HALO*.

Another key takeaway from this study is the lack of discussion around *why* a judge is choosing to enhance damages by a certain degree. The surveyed cases demonstrate an emerging trend: for judges that choose to assess the *Read* factors, they often cite those factors as their basis for the degree of the enhanced damages awards.¹⁸² However, this approach still does not lead to consistent outcomes. For example, in *Barry v. Medtronic* the Eastern District of Texas awarded 20% enhanced damages when four out of the nine *Read* factors favored enhancement.¹⁸³ In contrast, in *Apple v. Samsung*, the Northern District of California awarded 30% enhanced damages when four out of the nine *Read* factors favored enhancement.¹⁸⁴ Even still, it is possible that four factors may weigh in favor of enhanced damages and the judge can ultimately decline to award them. Not only is there a lack of consistency with the degree of enhancement, it provides a weak basis for other jurisdictions looking for guidance when assessing whether to award them.¹⁸⁵

The function of the *Read* factors is to determine whether to enhance damages.¹⁸⁶ Though *Read* is optional in this inquiry, it provides consistency among jurisdictions and is often cited by district courts when assessing enhanced damages.¹⁸⁷ But *Read* is a poor marker for determining how much to enhance damages by. Courts should continue to exercise judicial discretion in awarding enhanced damages but should be required to more aptly explain *why* a certain amount is being awarded.

A possible approach would be to use a model similar to awarding compensatory damages. An example of how this

182. See *Apple Inc. v. Samsung Elecs. Co.*, 258 F. Supp. 3d 1013, 1036 (N.D. Cal. 2017) (“[T]he Court exercises its discretion and finds that increasing the damages award by 30% of the compensatory damages award is a sufficiently punitive sanction for Samsung’s conduct in this case.”).

183. See *Barry v. Medtronic, Inc.*, 250 F. Supp. 3d 107, 123 (E.D. Tex. 2017).

184. *Apple*, 258 F. Supp. 3d at 1036.

185. *Canon, Inc. v. Color Imaging, Inc.*, 292 F. Supp. 3d 1357, 1369 (N.D. Ga. 2018) (citing a range of cases that enhanced damages between 10% and 30% to justify the 20% enhanced damage award).

186. *Presidio Components, Inc. v. Am. Tech. Ceramics Corp.*, 875 F.3d 1369, 1382–83 (Fed. Cir. 2017).

187. *Id.*

should work is *VirnetX v. Apple*.¹⁸⁸ Here, the Eastern District of Texas used a modified lost profits analysis to determine the degree of enhanced damages.¹⁸⁹ Here, the alleged infringer had been infringing for a period of years and the court calculated the annual lost profits and added them on top of the compensatory damages that already included reasonable royalties and lost profits.¹⁹⁰ A model similar to the one used in *VirnetX* may be beneficial in scenarios where the judge is enhancing damages to ensure that the infringer is actually—as opposed to superficially—injured by the damages award.¹⁹¹

A major caveat to the suggestion that the degree of enhanced damages should be more standardized comes from the opinion in *Halo*.¹⁹² There, the Supreme Court clearly stated that district court judges should not be required to adhere to a formula of enhanced damages.¹⁹³ This does not require courts to award damages even if all of the *Read* factors are met. However, this does require judges to undertake a more fact-intensive inquiry to describe their rationale besides simply listing the factors.¹⁹⁴ However, because enhanced damages can have a large impact on both the viability of a company¹⁹⁵ and the future of innovation,¹⁹⁶ greater transparency in district court decisions may more effectively achieve the goals intended for enhanced damages. An additional example of how to more effectively award enhanced damages may come from courts considering factors outside of *Read*.¹⁹⁷

C. CONSIDERING EXTRA-*READ* FACTORS: WHY ARE JUDGES RELUCTANT TO CITE NON-*READ* FACTORS?

Another interesting result of the study is that courts appear to be reluctant to rely on factors outside of *Read* to either support

188. 324 F. Supp. 3d 836 (E.D. Tex. 2017).

189. *Id.* at 869–70.

190. *Id.*

191. See, e.g., Thomas F. Cotter, *An Economic Analysis of Enhanced Damages and Attorneys' Fees for Willful Patent Infringement*, 14 FED. CIR. B.J. 291, 326–27 (2004).

192. *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1935–36 (2016). (discussing that there should not be any rule or formula by which judges should enhance damages).

193. *Id.*

194. See *id.* at 1933–34.

195. *Id.* at 1937–38 (Breyer, J., concurring).

196. See Cotter, *supra* note 191, at 293.

197. See *infra* Part III.C.

or deny an award of enhanced damages. Out of the cases surveyed, only one case cited a non-*Read* factor when determining whether to award enhanced damages.¹⁹⁸ Importantly, *Read* is merely a suggestion to district courts on how to evaluate whether damages should be enhanced and does not attempt to define the bounds of what constitutes egregious behavior.¹⁹⁹ This finding raises the question of why courts choose not to assess factors outside of *Read*.

One possibility is that the *Read* factors are comprehensive. The nine listed factors identify behavior such as bad-faith negotiations and deliberate copying as behavior that weighs in favor of enhanced damages.²⁰⁰ Courts that are unsure about what constitutes sanctionable behavior can simply look to *Read*.²⁰¹ Another possibility is that courts are reluctant to over-deter innovative behavior, and adding additional factors on top of *Read* may negatively impact innovation.²⁰² For example, an inventor may choose not to take a particular design-around technique based on the prospect of undue holdup of innovation, mounting legal expenses and costly litigation.²⁰³ An inventor may consider these factors detractors in the process and choose not to innovate as a result.

However, the *Read* factors should not end the inquiry and other factors should be evaluated when courts decide whether to enhance damages. An example comes from the only post-*Halo* case surveyed that considered the potential impact that the enhanced damages award would have on social welfare; the case specifically concerned access to life-saving medications.²⁰⁴ In

198. *Idenix Pharm. L.L.C. v. Gilead Scis., Inc.*, 271 F. Supp. 3d 694, 703 (D. Del. 2017) (finding that an enhanced damages award would lead to negative consequences for public health and denying enhanced damages even though the *Read* factors pointed to infringement).

199. *See* *Georgetown Rail Equip. Co. v. Holland L.P.*, 867 F.3d 1229, 1244 (Fed. Cir. 2017) (describing the *Read* factors as “non-exclusive”); *see also* *Presidio Components, Inc. v. Am. Tech. Ceramics Corp.*, 875 F.3d 1369, 1382–83 (Fed. Cir. 2017).

200. *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 826–27 (Fed. Cir. 1992).

201. Andrew J. Kennedy, *Enhanced Damages on the Rise for Willful Patent Infringement*, LITIG. NEWS, Fall 2016, at 4 (noting that the *Read* factors remain relevant after *Halo*).

202. *See* *Karshtedt*, *supra* note 1, at 1536–37 (discussing the role of enhanced damages in promoting overdeterrence of innovation).

203. *See id.*

204. *See* *Idenix Pharm. L.L.C. v. Gilead Scis., Inc.*, 271 F. Supp. 3d 694, 703 (D. Del. 2017) (finding that an enhanced damages award would lead to negative consequences for public health).

Idenix Pharmaceuticals v. Gilead Sciences, the District of Delaware refused to award enhanced damages based on the public health benefit of the infringed product. The product in question was directed to a Hepatitis C Virus treatment. The presiding judge did not “‘bless’ th[is] type of underhanded corporate piracy,” which included both confidentiality breaches and deliberate copying, which was at issue in this case.²⁰⁵ However, though some of the *Read* factors weighed in favor of enhancement, the judge determined that the Gilead’s conduct was not the type that the patent system should attempt to deter.²⁰⁶ The efficacy of the drug and the societal interest in encouraging such discoveries made it such that “without both parties’ contributions, humanity may well have been deprived of a cure for HCV.”²⁰⁷ With matters of public health at issue, the presiding judge determined that assigning enhanced damages was not appropriate.²⁰⁸

This is in contrast to the prevailing theme in U.S. patent litigation. One of the most popular areas for patent infringement litigation is the area of pharmaceuticals.²⁰⁹ Further, patent-holders often prevail in cases related to pharmaceuticals and pharmaceutical patent litigation often has the highest median damages awards.²¹⁰ The District of Delaware’s is a unique jurisdiction and most jurisdictions do not utilize factors outside of *Read* in their decision-making process. Moreover, perhaps future research should consider this area an avenue for future research and development.

205. *See id.* at 697. Of note, the jury found willful infringement in this case even though it was a life-saving drug. *Id.*

206. *Id.* at 704 (“The Court—and, more generally, the patent system—wants to encourage, and not deter, innovation on existing ideas, and exploration and investment (including in the form of massive expenditures) in related inventions that may reasonably appear to be outside the scope of another patentee’s claims.”).

207. *Id.* (“Under the totality of the circumstances, society’s interests in deterrence of willful patent infringement does not justify enhancing damages here.”).

208. *Id.*

209. *See* LANDEN ANSELL ET AL., PWC, 2018 PATENT LITIGATION STUDY 11 (2018), <https://www.pwc.com/us/en/forensic-services/publications/assets/2018-pwc-patent-litigation-study.pdf>.

210. *Id.* at 11–12 (finding that 15% of all patent litigation from 1998 to 2017 originated from infringement disputes about the biotech/pharma industry, and that median damages awards in biotech/pharma cases are over \$20 million, compared to the national average median patent damages award of \$5.9 million).

CONCLUSION

The data in this Note confirms the predictions surrounding *Halo*'s impact on willful patent infringement and enhanced damages. Courts after *Halo* find willful infringement in slightly over 55.7% of cases, and judges enhance damages in 29.1% of cases. This Note also provides several implications of *Halo*. First, the study lends empirical support to the assertion that *Halo* affected findings of willful infringement and enhanced damages. Second, this study demonstrates that judges rarely consult factors outside of *Read* to determine whether to enhance damages or not. Third, this study shows that although venue was not a statistically significant factor in determining the outcome of willfulness and enhanced damage cases, it is an area for further research. As mentioned, patent damages is an incredibly complex area of law. It contains many nuances and is quickly evolving. Without legislative evaluation and resources, judges and attorneys must critique the current standard to ensure that it is achieving the intended results. Based on the findings in this Note, *Halo* achieved its intended effect of creating a more flexible standard, but there remain areas for improvement to obtain a more robust patent system.

APPENDIX

Z TESTS

Willful Infringement Findings (Pre-Halo)	Willful Infringement Findings (Post-Halo)
Estimated Proportion: 0.228	Estimated Proportion: 0.557

* p-value: 7.587e-06

** 95% confident true difference in proportions lies above 0.257

Enhanced Damages (Pre-Halo)	Enhanced Damages (Post-Halo)
Estimated Proportion: 0.101	Estimated Proportion: 0.291

* p-value: 0.001273

** 95% confident true difference in proportions lies above 0.044

CHI SQUARE TESTS

Willful Infringement Findings (Pre-Halo)	Willful Infringement Findings (Post-Halo)
Estimated Proportion: 0.228	Estimated Proportion: 0.557

* p-value: 4.637e-05

Enhanced Damages (Pre-Halo)	Enhanced Damages (Post-Halo)
Estimated Proportion: 0.101	Estimated Proportion: 0.291

* p-value: 0.005038

ANOVA

Willful Infringement Findings by Venue

	Sum of Squares	Degrees of Freedom	F-Value	P-Value
Jurisdiction	7.6436	24	1.698	0.05426
Residuals	10.1285	54		

Enhanced Damages by Venue

	Sum of Squares	Degrees of Freedom	F-Value	P-Value
Jurisdiction	4.3009	24	1.0083	0.4728
Residuals	9.5978	54		

CASE LIST

Pre-Halo Cases				
	Case Name	Jurisdiction	Willful Infringement	Enhanced Damages
1	Windy City Innovations, L.L.C. v. Microsoft Corp., 193 F. Supp. 3d 1109, 1117 (N.D. Cal. 2016).	N.D. Cal.	No	No
2	Evolved Wireless, L.L.C. v. Samsung Elecs. Co., No. 15-545-SLR-SRF, 2016 WL 1019667, at*2-4 (D. Del. Mar. 15, 2016).	D. Del.	No	No
3	Word to Info, Inc. v. Google Inc., 140 F. Supp. 3d 986, 989-90 (N.D. Cal. 2015).	N.D. Cal.	No	No
4	Monolithic Power Sys., Inc. v. Silergy Corp., 127 F. Supp. 3d 1071, 1073 (N.D. Cal. 2015).	N.D. Cal.	No	No
5	Veracode, Inc. v. Appthority, Inc., 137 F. Supp. 3d 17, 71, 87 (D. Mass. 2015).	D. Mass.	Yes	No
6	Motion Games, L.L.C. v. Nintendo Co., No. 6:12CV878, 2014 WL 11619163, at *7 (E.D. Tex. Mar. 7, 2014).	E.D. Tex.	No	No
7	Sentius Int'l, L.L.C. v. Microsoft Corp., 78 F. Supp. 3d 967,	N.D. Cal.	No	No

	969 (N.D. Cal. 2015).			
8	Kinetic Concepts, 19Inc. v. Wake Forest Univ. Health Scis., Nos. SA-11-CV-163-XR & SA-11-CV-713-XR, 2014 WL 1612648, at *1 (W.D. Tex. Apr. 22, 2014).	W.D. Tex.	No	No
9	IpVenture, Inc. v. CeL.L.C.o P'ship, No. C 10-04755 JSW, 2011 WL 207978, at *3 (N.D. Cal. Jan. 21, 2011).	N.D. Cal.	No	No
10	L.C. Eldridge Sales Co., v. Jurong Shipyards, Pte., Ltd., No. 6:11CV599, 2014 WL 12597719, at *5 (E.D. Tex. Sept. 23, 2014).	E.D. Tex.	No	No
11	Butamax Advanced Biofuels L.L.C. v. Gevo, Inc., 117 F. Supp. 3d 632, 646 (D. Del. 2015).	D. Del.	No	No
12	W. Coast Trends, Inc. v. Ogio Int'l, Inc., No. 2:11-CV-01190-TC, 2015 WL 3819878, at *1 (D. Utah May 1, 2015).	D. Utah	No	No
13	LSI Corp. v. Funai Elec. Co., No. 15-CV-04307-EMC, 2015 WL 8178869, at *1 (N.D. Cal. Dec. 8, 2015).	N.D. Cal.	No	No

14	Dane Techs., Inc. v. Gatekeeper Sys., Inc., 135 F. Supp. 3d 970, 989–90 (D. Minn. 2015).	D. Minn.	No	No
15	Ateliers de la Haute-Garonne v. Broetje Automation-USA Inc., 85 F. Supp. 3d 768, 777 (D. Del. 2015).	D. Del.	No	No
16	Clear with Computs., L.L.C. v. Fishing Holdings L.L.C., No. 6:13-CV-161, 2014 WL 12628465, at *3 (E.D. Tex. Mar. 21, 2014).	E.D. Tex.	No	No
17	WCM Indus., Inc. v. IPS Corp., No. 213-cv-02019-JPM-tmp, 2016 WL 2771790, at *6 (W.D. Tenn. May 12, 2016).	W.D. Tenn.	Yes	Yes
18	Aqua Shield, Inc. v. Inter Pool Cover Team, No. 2:09-CV-13 TS, 2015 WL 4727955, at *1 (D. Utah Aug. 10, 2015).	D. Utah	Yes	No
19	Glob. Traffic Techs., L.L.C. v. Emtrac Sys., Inc., No. 10-4110 ADM/JJG, 2014 WL 1663420, at *13–14 (D. Minn. Apr. 25, 2014).	D. Minn.	Yes	Yes

20	Blue Spike, L.L.C. v. Adobe Sys., Inc., No. 14-cv-01647-YGR (JSC), 2015 WL 335842, at *8 (N.D. Cal. Jan. 26, 2015).	N.D. Cal.	No	No
21	Master Lock Co. v. Toledo & Co, Inc., No. 13-1658 (PAD), 2014 WL 11099433, at *1 (D.P.R. June 12, 2014).	D.P.R.	No	No
22	OPTi, Inc. v. VIA Techs., Inc., No. 2:10-CV-00279-JRG, 2014 WL 3853429, at *2 (E.D. Tex. Aug. 4, 2014).	E.D. Tex.	No	No
23	Incom Corp. v. Walt Disney Co., No. CV15-3011 PSG (MRWx), 2016 WL 4942032, at *3 (C.D. Cal. Feb. 4, 2016).	C.D. Cal.	No	No
24	Iron Gate Sec., Inc. v. Lowe's Cos., No. 15-cv-8814 (SAS), 2016 WL 1070853, at *5 (S.D.N.Y. Mar. 16, 2016).	S.D.N.Y.	No	No
25	Protegrity Corp. v. AJB Software Design, Inc., No. 3:13-CV-01484 (RNC), 2015 WL 461041, at *3 (D. Conn. Feb. 3, 2015).	D. Conn.	No	No

26	Telebrands Corp. v. GMC Ware, Inc., No. CV15-03121 SJO (JCx), 2016 WL 6237914, at *8 (C.D. Cal. Apr. 5, 2016).	C.D. Cal.	No	No
27	Verdict Form at *3, Navico Inc. v. Garmin Int'l, Inc., No. 2:16-CV-0190-JRG-RSP, 2017 WL 4237194 (E.D. Tex. Sept. 8, 2017).	E.D. Tex.	Yes	No
28	VIA Techs., Inc. v. ASUS Comput. Int'l, No. 14-cv-03586-BLF, 2015 WL 3809382, at *8 (N.D. Cal. June 18, 2015).	N.D. Cal.	No	No
29	M2M Sols. L.L.C. v. Motorola Sols., Inc., No. 12-33-RGA, 2016 WL 70814, at *16 (D. Del. Jan. 6, 2016).	D. Del.	No	No
30	Asetek Danmark A/S v. CMI USA, Inc., No. 13-cv-00457-JST, 2015 WL 5568360, at *22-23 (N.D. Cal. Sept. 22, 2015).	N.D. Cal.	Yes	Yes
31	Georgetown Rail Equip. Co. v. Holland L.P., No. 6:13-CV-366, 2016 WL 3346084, at *1 (E.D. Tex. June 16, 2016), <i>aff'd</i> , 867 F.3d 1229 (Fed. Cir. 2017).	E.D. Tex.	Yes	Yes

32	Creative Internet Advert. Corp. v. Yahoo! Inc., 689 F. Supp. 2d 858 (E.D. Tex. 2010).	E.D. Tex.	Yes	Yes
33	Ceiva Logic Inc. v. Frame Media Inc., No. SACV 08-00636-JVS, 2014 WL 7338840, at *3 (C.D. Cal. Dec. 19, 2014).	C.D. Cal.	No	No
34	Sonos Inc. v. D&M Holdings Inc., 297 F. Supp. 3d 501 (D. Del. 2017).	D. Del.	Yes	No
35	Forever Found. & Frame, L.L.C. v. Optional Prod. L.L.C., No. SA CV 13-1779-DOC (RNBx), 2014 WL 12585800 (C.D. Cal. Dec. 19, 2014).	C.D. Cal.	Yes	Yes
36	Deckers Outdoor Corp. v. J.C. Penney Co., 45 F. Supp. 3d 1181 (C.D. Cal. 2014).	C.D. Cal.	No	No
37	ART+COM Innovationpool GmbH v. Google Inc., 155 F. Supp. 3d 489 (D. Del. 2016).	D. Del.	No	No
38	XY, L.L.C. v. Trans Ova Genetics, LC, No. 13-CV-0876-WJM-NYW, 2016 WL 1391615, at *7 (D. Colo. Apr. 8, 2016).	N.D. Cal.	No	No

39	Greatbatch Ltd. v. AVX Corp., No. 13-723-LPS, 2015 WL 9171042 (D. Del. Dec. 11, 2015).	D. Del.	No	No
40	Vasudevan Software, Inc. v. TIBCO Software Inc., No. C 11-06638 RS, 2012 WL 1831543 (N.D. Cal. May 18, 2012).	N.D. Cal.	No	No
41	Tex. Advanced Optoelectronic Sols., Inc. v. Intersil Corp., No. 4:08-CV-451, 2016 WL 1659926 (E.D. Tex. Apr. 26, 2016).	E.D. Tex.	Yes	No
42	Fortinet Inc. v. FireEye Inc., No. 5:13-CV-02496-EJD, 2014 WL 4955087, at *6 (N.D. Cal. Sept. 30, 2014).	N.D. Cal.	No	No
43	Celsis In Vitro, Inc. v. CellzDirect, Inc., 83 F. Supp. 3d 774 (N.D. Ill. 2015).	N.D. Ill.	No	No
44	Masimo Corp. v. Philips Elec. N. Am. Corp., 62 F. Supp. 3d 368, 392 (D. Del. 2014).	D. Del.	No	No
45	CAP Co. v. McAfee, Inc., No. 14-CV-05068-JD, 2015 WL 3945875, at *3 (N.D. Cal. June 26, 2015).	N.D. Cal.	No	No

46	Bovino v. Levensenger Co., No. 14-CV-00122-RM-KLM, 2015 WL 1064082 (D. Colo. Mar. 9, 2015).	D. Colo.	No	No
47	Master Lock Co. v. Toledo & Co., No. 13-1658 (PAD), 2014 WL 11099433 (D.P.R. June 12, 2014).	D.P.R.	No	No
48	Spherix Inc. v. Cisco Sys., Inc., No. 14-393-SLR, 2015 WL 1517435, at *3 (D. Del. Mar. 31, 2015).	D. Del.	No	No
49	Addiction & Detoxification Inst., L.L.C. v. Aharonov, No. 14-10026, 2015 WL 631959 (E.D. Mich. Feb. 13, 2015).	E.D. Mich.	No	No
50	Allure Energy, Inc. v. Nest Labs, Inc., No. 9-13-CV-102, 2015 WL 11110643 (E.D. Tex. May 11, 2015).	E.D. Tex.	No	No
51	ProCom Heating, Inc. v. GHP Grp., Inc., No. 1:13CV-00163-GNS, 2016 WL 3659137 (W.D. Ky. May 11, 2016).	W.D. Ky.	No	No
52	Word to Info, Inc. v. Google Inc., 140 F. Supp. 3d 986,	N.D. Cal.	No	No

	997 (N.D. Cal. 2015).			
53	CTP Innovations, L.L.C. v. Solo Printing, Inc., No. 1:14-CV-21499-UU, 2014 WL 11997838, at *3 (S.D. Fla. July 15, 2014).	S.D. Fla.	No	No
54	Fairchild Semiconductor Corp. v. Power Integrations, Inc., No. 12-540-LPS, 2015 WL 1883937, at *3 (D. Del. Apr. 23, 2015).	D. Del.	No	No
55	DRG-Int'l, Inc. v. Bachem Ams., Inc., No. CV-15-7276-MWF (SSx), 2016 WL 3460791, at *11 (C.D. Cal. Jan. 5, 2016).	C.D. Cal.	No	No
56	Alfred E. Mann Found. for Sci. Research v. Cochlear Corp., No. CV 07-8108 FMO (SHx), 2015 WL 12644568 (C.D. Cal. Mar. 31, 2015).	C.D. Cal.	No	No
57	Open Text S.A. v. Box, Inc., No. 13-CV-04910-JD, 2015 WL 603144 (N.D. Cal. Feb. 11, 2015).	N.D. Cal.	No	No
58	Pentair Water Pool & Spa, Inc. v. Hayward Indus., Inc., No. CV 11-10280-	C.D. Cal.	No	No

	GW (FMOx), 2014 WL 12587024 (C.D. Cal. Oct. 20, 2014).			
59	IP Power Hold- ings Ltd. v. Bam Brokerage Inc., No. SACV 11- 01234-JVS (ANx), 2014 WL 12589630 (C.D. Cal. Mar. 3, 2014).	C.D. Cal.	Yes	No
60	Impulse Tech. Ltd. v. Microsoft Corp., No. 11- 586-RGA-CJB, 2015 WL 1737663 (D. Del. Apr. 9, 2015).	D. Del.	No	No
61	Spherix Inc. v. Juniper Net- works, Inc., No. 14-578-SLR, 2015 WL 1517508, at *3 (D. Del. Mar. 31, 2015).	D. Del.	No	No
62	Unisone Strate- gic IP, Inc v. Tracelink, Inc., No. 3:13-CV- 1743-GPC-JMA, 2013 WL 12077477, at *4 (S.D. Cal. Dec. 16, 2013).	S.D. Cal.	No	No
63	Bonutti Skeletal Innovations, L.L.C. v. Globus Med. Inc., No. 14-6650, 2015 WL 3755223, at *12 (E.D. Pa. June 15, 2015).	E.D. Pa.	No	No
64	Core Wireless Licensing S.A.R.L. v. Ap- ple Inc., No.	E.D. Tex.	Yes	No

	6:14-CV-752-JRG-JDL, 2015 WL 12850550, at *5 (E.D. Tex. July 15, 2015), <i>report & recommendation adopted</i> , No. 6:14-CV-752-JRG-JDL, 2015 WL 4910427 (E.D. Tex. Aug. 14, 2015).			
65	Smartflash L.L.C. v. Apple Inc., No. 6:13cv447-JRG-KNM, 2015 WL 661276, at *5 (E.D. Tex. Feb. 13, 2015).	E.D. Tex.	Yes	No
66	LifeNet Health v. LifeCell Corp., 2:13CV00486, 2014 WL 7652962 (E.D. Va. Nov. 20, 2014).	E.D. Va.	Yes	No
67	WBIP, L.L.C. v. Kohler Co., No. 11-10374-NMG, 2014 WL 585854, at *10 (D. Mass. Feb. 12, 2014).	D. Mass.	Yes	Yes
68	Va. Innovation Scis., Inc. v. Samsung Elecs. Co., 983 F. Supp. 2d 713, 749 (E.D. Va. 2014), <i>vacated</i> , 614 F. App'x 503 (Fed. Cir. 2015).	E.D. Va.	No	No
69	Trading Techs. Int'l Inc. v. CQG Inc., 1:05CV04811, 2015 WL 1939074 (N.D.	N.D. Ill.	Yes	No

	Ill. Mar. 18, 2015).			
70	TCL Commc'ns Tech. Holdings Ltd. v. Telefonaktenbloget LM Ericsson, No. SACV 14-00341 JVS (ANx), 2014 WL 12588293, at *12 (C.D. Cal. Sept. 30, 2014).	C.D. Cal.	No	No
71	Signal IP, Inc. v. Volkswagen Grp. of Am., Inc., No. LA CV14-03113 JAK (JEMx), 2014 WL 10453350, at *3 (C.D. Cal. Sept. 19, 2014).	C.D. Cal.	No	No
72	Apple, Inc. v. Samsung Elecs. Co., No. 12-CV-00630-LHK, 2014 WL 4467837, at *15 (N.D. Cal. Sept. 9, 2014), <i>rev'd</i> , 816 F.3d 788 (Fed. Cir. 2016), <i>vacated in part and aff'd in part on reh'g en banc</i> , 839 F.3d 1034 (Fed. Cir. 2016).	N.D. Cal.	No	No
73	KEG Kanalreinigungstechnik, GmbH v. Laimer, No. 1:11-CV-01948-ELR, 2015 WL 11123311, at *18-19 (N.D. Ga. Mar. 24, 2015).	N.D. Ga.	No	No
74	<i>In re</i> Method of Processing Ethanol Byproducts	S.D. Ind.	No	No

	& Related Sub-systems ('858) Patent Litig., 303 F. Supp. 3d 791, 908-09 (S.D. Ind. 2014).			
75	Edwards Lifesciences AG v. CoreValve, Inc., No. CV 08-91 (GMS), 2014 WL 1493187, at *7 (D. Del. Apr. 15, 2014).	D. Del.	Yes	No
76	AAT Bioquest, Inc. v. Tex. Fluorescence Labs., Inc., No. 14-cv-03909-DMR, 2015 WL 7708332, at *2 (N.D. Cal. Nov. 30, 2015).	N.D. Cal.	Yes	Yes
77	Zond, Inc. v. SK Hynix Inc., Nos. 13-11591-RGS & 13-11570-RGS, 2014 WL 346008, at *6 (D. Mass. Jan. 31, 2014).	D. Mass.	No	No
78	<i>In re</i> TransData, Inc. Smart Meters Patent Litig., No. 12-ML-2309-C, 2015 WL 5091974, at *5 (W.D. Okla. Aug. 28, 2015).	W.D. Okla.	No	No
79	Bush Seismic Techs. L.L.C. v. Am. Gem Soc'y, No. 2:14-cv-1809-JRG, 2016 WL 9115381, at *3 (E.D. Tex. Apr. 13, 2016).	E.D. Tex.	No	No

Post-Halo Cases				
	Case Name	Jurisdiction	Willful Infringement	Enhanced Damages
1	Trs. of Bos. Univ. v. Everlight Elecs. Co., 212 F. Supp. 3d 254, 258 (D. Mass. 2016).	D. Mass.	Yes	No
2	Sociedad Espanola de Electromedicina y Calidad, S.A. v. Blue Ridge X-Ray Co., 226 F. Supp. 3d 520, 531–32 (W.D.N.C. 2016), <i>aff'd</i> , 721 F. App'x 989 (Fed. Cir. 2018).	W.D.N.C.	Yes	No
3	Barry v. Medtronic, Inc., 250 F. Supp. 3d 107, 119 (E.D. Tex. 2017).	E.D. Tex.	Yes	Yes
4	Arctic Cat Inc. v. Bombardier Recreational Prods., Inc., 198 F. Supp. 3d 1343, 1348–49, 1354 (S.D. Fla. 2016), <i>aff'd</i> , 876 F.3d 1350 (Fed. Cir. 2017).	S.D. Fla.	Yes	Yes
5	Apple Inc. v. Samsung Elecs. Co., 258 F. Supp. 3d 1013, 1029, 1036 (N.D. Cal. 2017).	N.D. Cal.	Yes	Yes
6	Milwaukee Elec. Tool Corp. v. Snap-On Inc., 288 F. Supp. 3d 872, 887, 905 (E.D. Wis. 2017).	E.D. Wis.	Yes	No

7	Imperium IP Holdings (Cayman), Ltd. v. Samsung Elecs. Co., 203 F. Supp. 3d 755, 763 (E.D. Tex. 2016), <i>amended in part</i> , No. 4:14-CV-00371, 2017 WL 1716589 (E.D. Tex. Apr. 27, 2017).	E.D. Tex.	Yes	Yes
8	Presidio Components, Inc. v. Am. Tech. Ceramics Corp., No. 14-cv-02061-H-BGS, 2016 WL 4377096, at *10, *21 (S.D. Cal. Aug. 17, 2016), <i>aff'd in part, vacated in part, remanded</i> , 875 F.3d 1369 (Fed. Cir. 2017) .	S.D. Cal.	Yes	No
9	Dorman Prod., Inc. v. Paccar, Inc., 201 F. Supp. 3d 663, 680 (E.D. Pa. 2016).	E.D. Pa.	No	No
10	Dominion Res. Inc. v. Alstom Grid, Inc., No. 15-224, 2016 WL 5674713, at *10, *18 (E.D. Pa. Oct. 3, 2016), <i>vacated sub nom. Dominion Energy, Inc. v. Alstom Grid L.L.C.</i> , 725 F. App'x 980 (Fed. Cir. 2018).	E.D. Pa.	Yes	Yes
11	Idenix Pharm. L.L.C. v. Gilead Scis., Inc., 271 F. Supp. 3d 694, 698 (D. Del. 2017).	D. Kan.	Yes	No

12	Cobalt Boats, L.L.C. v. Brunswick Corp., 296 F. Supp. 3d 791, 801 (E.D. Va. 2017).	E.D. Va.	Yes	Yes
13	Ansell Healthcare Prods. L.L.C. v. Reckitt Benckiser L.L.C., No. 15-cv-915-RGA, 2018 WL 620968, at *8 (D. Del. Jan. 30, 2018).	D. Del.	No	No
14	Cooper Lighting, L.L.C. v. Cordelia Lighting, Inc., No. 1:16-CV-2669-MHC, 2017 WL 3469535, at *3 (N.D. Ga. Apr. 6, 2017).	N.D. Ga.	No	No
15	Enplas Display Device Corp. v. Seoul Semiconductor Co., No. 13-cv-05038 NC, 2016 WL 4208236, at *8 (N.D. Cal. Aug. 10, 2016), <i>aff'd in part, vacated in part, remanded</i> , 909 F.3d 398 (Fed. Cir. 2018).	N.D. Cal.	Yes	No
16	Adrea, L.L.C. v. Barnes & Noble, Inc., 227 F. Supp. 3d 303, 312–13 (S.D.N.Y. 2017).	S.D.N.Y.	No	No
17	Finjan, Inc. v. Cisco Sys. Inc., No. 17-CV-00072-BLF, 2017 WL 2462423, at *5 (N.D. Cal. June 7, 2017).	N.D. Cal.	No	No

18	Brigham & Women's Hosp., Inc. v. Perrigo Co., 251 F. Supp. 3d 285, 293 (D. Mass. 2017).	D. Mass.	Yes	No
19	Imperium IP Holdings (Cayman), Ltd. v. Samsung Elecs. Co., No. 4:14-CV-00371, 2017 WL 1716788, at *3 (E.D. Tex. Apr. 27, 2017).	E.D. Tex.	Yes	Yes
20	Wis. Alumni Research Found. v. Apple, Inc., 261 F. Supp. 3d 900, 918 (W.D. Wis. 2017).	W.D. Wis.	No	No
21	Vehicle IP, L.L.C. v. AT & T Mobility L.L.C., 227 F. Supp. 3d 319, 331 (D. Del. 2016).	D. Del.	No	No
22	Atmos Nation, L.L.C. v. BnB Enter., L.L.C., No. 16-62083-CIV, 2017 WL 5004844, at *3 (S.D. Fla. Aug. 22, 2017).	S.D. Fla.	No	No
23	Preferential Networks IP, L.L.C. v. AT&T Inc. Mobility, L.L.C., No. 2:16-CV-01374-JRG-RSP, 2017 WL 3816109, at *4 (E.D. Tex. July 15, 2017).	E.D. Tex.	No	No
24	Cont'l Circuits L.L.C. v. Intel Corp., No. CV16-2026 PHX DGC, 2017 WL 679116,	D. Ariz.	No	No

	at *11 (D. Ariz. Feb. 21, 2017).			
25	Wright v. E-Sys., L.L.C., No. 3:12-CV-4715-K-BK, 2016 WL 7802996, at *4-5 (N.D. Tex. Dec. 20, 2016).	N.D. Tex.	Yes	Yes
26	Canon, Inc. v. Color Imaging, Inc., 292 F. Supp. 3d 1357, 1369 (N.D. Ga. 2018).	N.D. Ga.	Yes	Yes
27	PPC Broadband, Inc. v. Corning Optical Commc'ns RF, L.L.C., 193 F. Supp. 3d 133, 148-50 (N.D.N.Y. 2016).	N.D.N.Y.	Yes	No
28	Polara Eng'g, Inc. v. Campbell Co., 237 F. Supp. 3d 956, 980, 984 (C.D. Cal. 2017).	C.D. Cal.	Yes	Yes
29	Green Mountain Glass L.L.C. v. Saint-Gobain Containers, Inc., 300 F. Supp. 3d 610, 622, 630 (D. Del. 2018).	D. Del.	Yes	No
30	Schwendimann v. Arkwright Advanced Coating, Inc., No. 11-820 (JRT/HB), 2018 WL 3621206, at *16 (D. Minn. July 30, 2018).	D. Minn.	Yes	No
31	Chamberlain Grp., Inc. v. Techtronic Indus. Co., 315 F. Supp. 3d 977, 1002, 1015 (N.D. Ill. 2018).	N.D. Ill.	Yes	Yes

32	Nanosys, Inc. v. QD Vision, Inc., No. 16-CV-01957-YGR, 2016 WL 4943006, at *8 (N.D. Cal. Sept. 16, 2016).	N.D. Cal.	No	No
33	Radware, Ltd. v. F5 Networks, Inc., No. 5:13-CV-02024-RMW, 2016 WL 4427490, at *5, *8 (N.D. Cal. Aug. 22, 2016).	N.D. Cal.	No	No
34	Software Research, Inc. v. Dynatrace L.L.C., 316 F. Supp. 3d 1112, 1137 (N.D. Cal. 2018).	N.D. Cal.	No	No
35	Microsoft Corp. v. Corel Corp., No. 5:15-CV-05836-EJD, 2018 WL 2183268, at *8 (N.D. Cal. May 11, 2018).	N.D. Cal.	Yes	Yes
36	Fitness Anywhere L.L.C. v. WOSS Enters. L.L.C., No. 14-CV-01725-BLF, 2018 WL 6069511, at *5 (N.D. Cal. Nov. 20, 2018).	N.D. Cal.	Yes	Yes
37	NetFuel, Inc. v. Cisco Sys. Inc., No. 5:18-CV-02352-EJD, 2018 WL 4510737, at *3 (N.D. Cal. Sept. 18, 2018).	N.D. Cal.	No	No
38	Crane Sec. Techs., Inc. v. Rolling Optics AB, 337 F. Supp.	D. Mass.	Yes	Yes

	3d 48, 60 (D. Mass. 2018).			
39	Olaf Soot Design, L.L.C. v. Daktronics, Inc., 325 F. Supp. 3d 456, 464 (S.D.N.Y. 2018).	S.D.N.Y.	No	No
40	Whirlpool Corp. v. TST Water, L.L.C., No. 2:15-CV-01528-JRG, 2018 WL 1536874, at *10 (E.D. Tex. Mar. 29, 2018).	E.D. Tex.	Yes	Yes
41	Eko Brands, L.L.C. v. Adrian Rivera Maynez Enters., Inc., 325 F. Supp. 3d 1116, 1121 (W.D. Wash. 2018).	W.D. Wash.	No	No
42	Exmark Mfg. Co. Inc. v. Briggs & Stratton Corp., 348 F. Supp. 3d 907, 920 (D. Neb. 2018).	D. Neb.	Yes	No
43	Novartis Vaccines & Diagnostics, Inc. v. Regeneron Pharm., Inc., No. 18CV2434(DLC), 2018 WL 5282887, at *3 (S.D.N.Y. Oct. 24, 2018).	S.D.N.Y.	No	No
44	Evonik Degussa GmbH v. Materia, Inc., 305 F. Supp. 3d 563, 580 (D. Del. 2018).	D. Del.	Yes	No
45	Princeton Dig. Image Corp. v. Ubisoft Entm't SA, No. CV 13-335-LPS-CJB,	D. Del.	No	No

	2016 WL 6594076, at *12 (D. Del. Nov. 4, 2016).			
46	Kahr v. Cole, 1:13CV01005, 2016 WL 5787103 (E.D. Wis. Aug. 10, 2016).	E.D. Wis.	Yes	No
47	Nox Med. Ehf v. Natus Neurology Inc., 1:15CV00709, 2018 WL 3957310 (D. Del. May 7, 2018).	D. Del.	Yes	Yes
48	Sprint Commc'ns Co. L.P. v. Time Warner Cable, Inc., No. 11-2686-JWL, 2017 WL 978107, at *14 (D. Kan. Mar. 14, 2017).	D. Kan.	Yes	No
49	West's Jury Verdicts – Del. Reports, Sonos Inc. v. D&M Holdings Inc., No. 14-cv-1330, 2017 WL 7797066 (D. Del. Dec. 15, 2017).	D. Del.	Yes	No
50	Cobalt Boats, L.L.C. v. Brunswick Corp., 296 F. Supp. 3d 791, 804–05 (E.D. Va. 2017).	E.D. Va.	Yes	Yes
51	Verdict & Settlement Summary, Loggerhead Tools, L.L.C. v. Sears Holding Corp., No. 12-cv-9033, 2017 WL 5989919 (N.D. Ill. Nov. 9, 2017).	N.D. Ill.	Yes	No

52	SiOnyx, L.L.C. v. Hamamatsu Photonics K.K., 330 F. Supp. 3d 574, 613 (D. Mass. 2018).	D. Mass.	No	No
53	Johnstech Int'l Corp. v. JF Tech. SDN BHD, No. 14-cv-02864, (N.D. Cal. Sept. 27, 2016).	N.D. Cal.	Yes	No
54	Adidas Am., Inc. v. Skechers USA, Inc., No. 3:16-cv-1400-SI, 2017 WL 2543811, at *1 (D. Or. June 12, 2017).	D. Or.	No	No
55	Stryker Corp. v. Zimmer, Inc., No. 1:10-CV-1223, 2017 WL 4286412, at *7 (W.D. Mich. July 12, 2017), <i>aff'd</i> , 745 F. App'x 167 (Fed. Cir. 2018).	W.D. Mich.	Yes	Yes
56	Solutran, Inc. v. U.S. Bancorp, No. 13-cv-02637, 2019 WL 405513, at *34–37 (D. Minn. Jan. 18, 2019).	D. Minn.	No	No
57	Columbia Sportswear N. Am., Inc. v. Seirus Innovative Accessories, Inc., No. 3:17-cv-01781-HZ, 2018 WL 1805101, at *1 (S.D. Cal. Apr. 17, 2018).	S.D. Cal.	Yes	No
58	Halo Elecs., Inc. v. Pulse Elecs., Inc., 281 F. Supp. 3d 1087, 1090, 1095 (D. Nev. 2017).	D. Nev.	Yes	No

59	CG Tech. Dev., L.L.C. v. Zynga, Inc., No. 2:16-cv-00859, 2017 WL 662489, at *5 (D. Nev. Feb. 17, 2017).	D. Nev.	No	No
60	Valinge Innovation AB v. Halstead New England Corp., No.16-1082-LPS-CJB, 2018 WL 2411218, at *11 (D. Del. May 29, 2018).	D. Del.	No	No
61	T-Rex Prop. AB v. Regal Entm't Grp., No. 6:16-CV-1029-RWS-KNM, 2017 WL 4229372 (E.D. Tex. Aug. 31, 2017).	E.D. Tex.	No	No
62	Eidos Display, L.L.C. v. Chi Mei Innolux Corp., No. 6:11-CV-00201-JRG, 2018 WL 1156284, at *5-6 (E.D. Tex. Mar. 5, 2018).	E.D. Tex.	Yes	Yes
63	Document Sec. Sys., Inc. v. Lite-On, Inc., No. CV 17-06050, 2018 WL 2422589, at *2 (C.D. Cal. Feb. 5, 2018).	C.D. Cal.	No	No
64	M & C Innovations, L.L.C. v. Igloo Prods. Corp., No. 4:17-CV-2372, 2018 WL 4620713, at *4-6 (S.D. Tex. July 31, 2018).	S.D. Tex.	No	No
65	Ericsson Inc. v. TCL Comm'n Tech. Holdings,	E.D. Tex.	Yes	Yes

	Ltd., No. 2:15-cv-00011-RSP, 2018 WL 2149736, at *10, *12 (E.D. Tex. May 10, 2018).			
66	Simpson Performance Prods., Inc. v. Impact Racing, Inc., No. 3:17-cv-01706, 2018 WL 2229372 (S.D. Cal. May 16, 2018).	S.D. Cal.	No	No
67	BlackBerry Ltd. v. Nokia Corp., No. 17-cv-155-RGA, 2018 WL 1401330 (D. Del. Mar. 20, 2018).	D. Del.	No	No
68	VirnetX Inc. v. Apple Inc., 324 F. Supp. 3d 836, 870 (E.D. Tex. 2017).	E.D. Tex.	Yes	Yes
69	Plastic Omnium Advanced Innovation & Research v. Donghee Am., Inc., No. cv 16-187-LPS, 2018 WL 2316637, at *11 (D. Del. May 22, 2018).	D. Del.	No	No
70	Cobalt Boats, L.L.C. v. Brunswick Corp., 296 F. Supp. 3d 791, 804 (E.D. Va. 2017).	E.D. Va.	Yes	Yes
71	EcoServices, L.L.C. v. Certified Aviation Servs., L.L.C., 312 F. Supp. 3d 830, 842 (C.D. Cal. 2018).	C.D. Cal.	No	No

72	EMC Corp. v. Zerto, Inc., No. cv 12-956 (GMS), 2017 WL 3434212, at *5 (D. Del. Aug. 10, 2017).	D. Del.	No	No
73	SRI Int'l, Inc. v. Cisco Sys., Inc., 254 F. Supp. 3d 680, 723–24 (D. Del. 2017).	D. Del.	Yes	Yes
74	Finjan, Inc. v. Juniper Networks, Inc., No. C 17-05659 WHA, 2018 WL 905909, at *1 (N.D. Cal. Feb. 14, 2018).	N.D. Cal.	No	No
75	Sleep No. Corp. v. Sizewise Rentals, L.L.C., No. ED cv 18-00356-AB, 2018 WL 5263065, at *7 (C.D. Cal. June 26, 2018).	C.D. Cal.	No	No
76	Novitaz, Inc. v. inMkt. Media, L.L.C., No. 16-cv-06795-EJD, 2017 WL 2311407, at *6 (N.D. Cal. May 26, 2017).	N.D. Cal.	No	No
77	Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc., No. 09-CV-05235-MMC, 2017 WL 130236, at *7 (N.D. Cal. Jan. 13, 2017).	N.D. Cal.	Yes	No
78	Scripps Research Inst. v. Illumina, Inc., No. 16-cv-661 JLS (BGS), 2016 WL 6834024, at *7	S.D. Cal.	No	No

	(S.D. Cal. Nov. 21, 2016).			
79	Finjan, Inc. v. Blue Coat Sys., Inc., No. 13-cv-03999-BLF, 2016 WL 3880774, at *7 (N.D. Cal. July 18, 2016).	N.D. Cal.	No	No