

**United States Court of Appeals
for the Federal Circuit**

**POLARA ENGINEERING INC, A CALIFORNIA
CORPORATION,**
Plaintiff-Cross-Appellant

v.

**CAMPBELL COMPANY, AN IDAHO
CORPORATION,**
Defendant-Appellant

2017-1974, 2017-2033

Appeals from the United States District Court for the
Central District of California in No. 8:13-cv-00007-DFM,
Magistrate Judge Douglas F. McCormick.

Decided: July 10, 2018

NATHANIEL L. DILGER, One LLP, Newport Beach, CA,
argued for plaintiff-cross-appellant.

CHRISTOPHER T. HOLLAND, Holland Law LLP, San
Francisco, CA, argued for defendant-appellant. Also
represented by LORI HOLLAND.

Before LOURIE, DYK, and HUGHES, *Circuit Judges*.

LOURIE, *Circuit Judge*.

Campbell Company (“Campbell”) appeals from the final judgment of the United States District Court for the Central District of California entering judgment in favor of Polara Engineering Inc. (“Polara”) on its claim for infringement of claims 1–4 (“the asserted claims”) of U.S. Patent 7,145,476 (“the ’476 patent”) and its decision, following a jury trial, denying Campbell’s post-trial motions for judgment as a matter of law of invalidity and no willfulness, and granting Polara’s motion to enhance the damages award. *See Polara Eng’g, Inc. v. Campbell Co.*, 237 F. Supp. 3d 956 (C.D. Cal. 2017) (“*Post-trial Motions Opinion*”); Judgment, *Polara Eng’g, Inc. v. Campbell Co.*, No. SACV-13-00007 (C.D. Cal. Mar. 31, 2017), ECF No. 499 (J.A. 83–84). For the following reasons, we affirm in part, vacate in part, and remand.¹

BACKGROUND

I

Polara, a manufacturer of accessible pedestrian signal systems (“APS”) and pedestrian push buttons, owns the ’476 patent. Polara originally entered the APS market with an eight-wire system called the Navigator. Because many intersections only have two wires, installation of eight-wire systems like the Navigator could be difficult and labor-intensive. In about late 2000 or early 2001, Polara engineers Leslie Beckwith and Randy Cruz, the named inventors listed on the ’476 patent, began designing a two-wire version of the Navigator. Their work led to the ’476 patent.

¹ Although Polara noticed a cross-appeal from certain determinations of the district court, it has not pursued those issues in its briefing before this court. Accordingly, Polara has not properly raised any issue on cross-appeal, and we need not address the cross-appeal.

The '476 patent relates to a two-wire control system for push-button crosswalk stations for a traffic-light-controlled intersection with visual, audible, and tactile accessible signals. These signals “enable both sighted and visually impaired pedestrians to receive information concerning the status of the intersection to be crossed once vehicular traffic has been halted.” '476 patent col. 2 ll. 21–24. The patent discloses using a DC signal to provide both power and digital data over two wires to control the system. *Id.* col. 2 l. 44–col. 3 l. 11, col. 4 ll. 43–63, Fig. 3. The patent explains the benefits of using “the existing underground wire pairs to transmit power and data signals in order to generate the accessible signal functions for both sighted and visually impaired pedestrians.” *Id.* col. 2 ll. 1–9.

Claim 1 of the '476 patent is representative and reads as follows:

A control system by which vibro-tactile messages are provided to alert pedestrians when to cross a traffic light controlled intersection, said control system comprising:

at least one push button station located at the traffic light controlled intersection to be crossed by pedestrians, said push button station including a push button head that is depressed by the pedestrians and message generating means adapted to cause said push button head to vibrate to provide a tactile indication to a visually impaired pedestrian when to cross the intersection; and

a control unit that is responsive to the depression of the push button head of said push button station to *transmit to the push button station both power and digital data signals over a single pair of wires by*

which to power and control the operation of said message generating means.

Id. col. 9 l. 56–col. 10 l. 4 (emphasis added).

Polara filed the application that led to the '476 patent on August 5, 2004. The critical date for purposes of pre-AIA 35 U.S.C. § 102(b) (2006)² is thus August 5, 2003. In September 2003, Polara began selling the Navigator-2, a two-wire APS system that practices the asserted claims.

II

Prior to the critical date, Polara tested prototypes that satisfied the limitations of the asserted claims. Polara first developed a prototype that it tested in its laboratory. In January 2002, it tested the prototype in its parking lot. It also sent a letter to the traffic engineer for the City of Fullerton, California requesting permission to install a prototype system at the intersection of Gilbert Street and Commonwealth Avenue. The letter explained that the intersection was “close to [Polara’s] plant” so they could “monitor it daily during the test phase.” J.A. 3728. The letter also stated that Polara “would take full responsibility for installing, maintaining and deinstalling [sic] the equipment,” and that the City of Fullerton “would need to provide a responsible representative to open the intersection cabinet for installation and deinstallation [sic] of the system” and maybe a few other times during the test period. *Id.*

Following the city’s agreement, in March 2002, Polara installed a prototype in Fullerton at the intersection of Gilbert Street and Commonwealth Avenue (“First Instal-

² Because the '476 patent issued before the enactment of the Leahy–Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284 (2011), we apply the pre-AIA version of 35 U.S.C. §§ 102, 103.

lation”). Because that prototype immediately failed, Polara ran tests and uninstalled it. Polara determined that the problem was with electrical noise impacting the digital data signal. Based on this determination, Polara modified the transmitting and receiving circuitry of the prototype and then reinstalled it at the same intersection. The modification process took a few months. Following reinstallation, Polara monitored the operation of the First Installation for a couple of months and then uninstalled it.

Polara subsequently installed a prototype in Fullerton at the intersection of Nutwood Avenue and College Boulevard (“Second Installation”), a larger intersection with a different configuration than at the location of the First Installation. The Second Installation initially experienced intermittent problems with the digital data signal communication resulting in Polara modifying the prototype’s circuitry. The Second Installation was in use from fall 2002 to fall 2003. Polara’s president testified that they “continued to monitor it and consider it a test intersection . . . until the official release of the [Navigator-2] device at the August 24[, 2003] trade show.” J.A. 3000–01; *see also* J.A. 2517–18 (inventor testimony regarding testing and monitoring of the Second Installation).

Polara did not enter into a confidentiality agreement with the City of Fullerton with respect to the First and Second Installations. Polara witnesses testified that they did not tell anyone from the city how the prototype worked and that a person could not determine how the device worked once it was installed merely by looking at it. According to the terms of the January 2002 letter, Polara employees installed, uninstalled, and performed testing of the prototypes at the First and Second Installations.

In January 2003, Polara had a prototype installed in Burnaby, Canada. Polara entered into an agreement with

the City of Burnaby to test the prototype and keep the information concerning the prototype and its testing confidential. J.A. 3745–46. The City of Burnaby arranged for Cobra Electric to install and monitor the test system and Polara also had Cobra sign a confidentiality agreement. J.A. 3748. Polara selected Burnaby as a test location because of the different environmental conditions, *e.g.*, heavy rain and snowfall, than in Fullerton.

III

In or around 2008, Campbell, a manufacturer of traffic-industry products, began collaborating with Dr. Richard Wall of the University of Idaho to develop an APS. That collaboration led to the development of Campbell’s Advisor Advanced Accessible Pedestrian Station (“AAPS”), a two-wire APS.

In May 2008, Dr. Wall and Campbell personnel corresponded regarding the system under development and the ’476 patent and discussed the possibility of developing a three-wire APS. Dr. Wall identified what he termed “significant differences” and “similarities” between the ’476 patent and proposed APS. J.A. 3362. The “similarities” included “two wire communications over power line.” *Id.* Dr. Wall subsequently sent an email to Phil Tate, Campbell’s president, stating “I have my design team on it – we may have a 3 wire solution.” J.A. 3829. Mr. Tate testified that one reason he wanted to consider a three-wire solution was that “[i]t would make it much cleaner” in light of the ’476 patent. J.A. 2571.

Dr. Wall also discussed the ’476 patent with a technology transfer attorney employed by the University of Idaho, Michael Jones, and reported his conversation to Mr. Tate. Mr. Jones identified “areas of potential conflict” with the APS being developed and third-party patent rights, including the ’476 patent. J.A. 2572–73, 2575. As of May 2008, Mr. Jones had not given a two-wire APS “a clean bill of health.” J.A. 2574.

Around the same time period, Mr. Tate also discussed the '476 patent with an attorney named Bob Shaver, and received a written analysis of the patent from his law firm. The document begins by stating that “[a]ll but one claim in the [’476] patent [is] limit[ed] to the 2-wire configuration as previously discussed. Claim 11 does not have this limitation.” J.A. 3832. The remainder of the document focuses on claim 11, and does not provide an analysis of the validity of the asserted claims or any infringement analysis. This was the only written communication Campbell received from a law firm that opines on the ’476 patent.

IV

On January 2, 2013, Polara filed this patent infringement suit against Campbell. The district court subsequently granted Polara’s motion for partial summary judgment that Campbell’s AAPS infringes claims 1–4 of the ’476 patent. *See Polara Eng’g, Inc. v. Campbell Co.*, No. SACV-13-00007, slip op. (C.D. Cal. June 10, 2014) (J.A. 1–15). The AAPS transmits both AC power and data via Ethernet over Powerline (“EoP”) packets using orthogonal frequency division modulation (“OFDM”) to the pushbuttons over a single pair of wires. J.A. 5, 12. The court held that the AAPS “satisfies the ‘digital data signals’ limitation” because it “sends EoP data packets to pushbuttons using OFDM technology to encode digital data onto electrical waveforms.” J.A. 13. The court subsequently denied Campbell’s motion for reconsideration of the grant of summary judgment of infringement. *See Polara Eng’g, Inc. v. Campbell Co.*, No. SACV-13-00007, 2015 WL 12914379 (C.D. Cal. May 26, 2015).

Although the district court expressly construed certain claim language in its summary judgment opinion, it did not expressly construe “transmit[ting] . . . both power and digital data signals . . . by which to power and control the operation of said messages generating means”

(“transmitting limitation”) or “digital data signals.” ’476 patent col. 9 l. 56–col. 10 l. 4. At trial, Polara argued that the jury should be instructed that the transmitting limitation means “transmitting a power signal and a separate digital data signal encoded/embedded onto the power signal, wherein the power signal powers the message generating means and the digital data signal controls the operation of the message generating means” based on what the court had stated in its summary judgment order. J.A. 334–41.

Campbell objected to Polara’s proposal, and advocated for a plain and ordinary meaning instruction to be given for terms not expressly construed in the summary judgment opinion, including “digital data signals.” J.A. 358–59, 3167–68; *see also* J.A. 354–58. In the alternative, Campbell argued that the jury should receive a claim construction instruction using the “exact language” used by the district court in its summary judgment opinion. J.A. 358–59. The district court instructed the jury to give the non-expressly construed words, including “digital data signals,” “their ordinary and customary meaning.” J.A. 3214.

At the conclusion of the trial, the jury returned a special verdict finding, *inter alia*, that Campbell willfully infringed the asserted claims and that the asserted claims were not proven invalid under 35 U.S.C. §§ 102, 103. The district court had previously denied the parties’ relevant pre-verdict JMOL motions.³

Following post-trial briefing, the district court denied Campbell’s renewed motions for JMOL that the infringe-

³ The court granted Polara’s motion for JMOL that the claims were not shown to be invalid under the on-sale bar of pre-AIA § 102. Campbell has not appealed this determination.

ment was not willful and the claims were invalid pursuant to 35 U.S.C. §§ 102, 103. The court upheld the jury's verdict that the invention was not in public use for more than a year before the filing of the application that led to the '476 patent. The court held that substantial evidence supported the jury's finding that Polara's installation of prototypes in Fullerton was experimental use necessary to ensure that the invention would work for its intended purpose.

The district court determined that Campbell had failed to prove that the asserted claims would have been obvious over the cited prior art. Campbell's arguments focused on two-wire prior art APSs sold starting in the late 1990s, *i.e.*, its Enlightened, a combination DC/AC-based system, and the third-party Tassimco PIU 500, a DC-based system, and U.S. Patent 4,851,836 ("Wilkinson"), which teaches a two-wire AC-based system. The court held that substantial evidence supported the jury's implicit finding that Tassimco, Enlightened, and Wilkinson did not disclose the claimed digital-data-over-power limitation and that objective indicia of commercial success, long-felt need, and copying support a conclusion of nonobviousness.

The district court also upheld the jury's willfulness finding and, applying the factors listed in *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 826–27 (Fed. Cir. 1992), enhanced damages by two-and-a-half times. The district court determined that five of the nine *Read* factors favored an award of enhanced damages, two of the factors weighed against enhancement, and two of the factors were neutral.

DISCUSSION

We review the denial of a motion for JMOL under the law of the regional circuit. *ClearValue, Inc. v. Pearl River Polymers, Inc.*, 668 F.3d 1340, 1343 (Fed. Cir. 2012). In the Ninth Circuit, the denial of a motion for JMOL is

reviewed *de novo*. *Pavao v. Pagay*, 307 F.3d 915, 918 (9th Cir. 2002). “A jury’s verdict must be upheld if it is supported by substantial evidence, which is evidence adequate to support the jury’s conclusion, even if it is also possible to draw a contrary conclusion.” *Id.* “While the court must review the entire evidentiary record, it must view all evidence in the light most favorable to the non-moving party, draw all reasonable inferences in the favor of the non-mover, and disregard all evidence favorable to the moving party that the jury is not required to believe.” *Harper v. City of Los Angeles*, 533 F.3d 1010, 1021 (9th Cir. 2008).

Campbell argues that the district court erred by not granting JMOL of invalidity and that the infringement was not willful. Campbell further contends that the district court abused its discretion in enhancing the damages award. Polara responds that the jury’s verdict was supported by substantial evidence, and that the court did not abuse its discretion. We address each of these arguments in turn.

I. Validity

Campbell argues that the asserted claims are invalid both for prior public use and over the prior art. Patents are presumed valid. 35 U.S.C. § 282. At trial, the party challenging validity must prove that the claims are invalid by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd.*, 564 U.S. 91, 95 (2011).

A. Public Use

Under pre-AIA 35 U.S.C. § 102(b): “A person shall be entitled a patent unless . . . the invention was . . . in public use . . . in this country, more than one year prior to the date of the application for patent in the United

States.”⁴ “Although the determination of whether a patent is invalid for public use is a question of law that we review *de novo*, the disputed facts found to support that determination are reviewed for substantial evidence.” *Lisle Corp. v. A.J. Mfg. Co.*, 398 F.3d 1306, 1313 (Fed. Cir. 2005). We treat the jury’s verdict of no invalidating public use “as a resolution of all genuinely disputed underlying factual issues in favor of the verdict winner.” *Id.* at 1312.

The public use bar is triggered “where, before the critical date, the invention is in public use and ready for patenting.” *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 424 F.3d 1374, 1379 (Fed. Cir. 2005). Proof of reduction to practice before the critical date demonstrates that the invention is ready for patenting. *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 67 (1998). “Reduction to practice occurs if ‘the claimant had possession of the subject matter of the [claim] and . . . it was shown or known to work for its intended purpose.’” *Helsinn Healthcare S.A. v. Teva Pharm. USA, Inc.*, 855 F.3d 1356, 1372 (Fed. Cir. 2017) (first alteration in original) (quoting *Streck, Inc. v. Research & Diagnostic Sys., Inc.*, 659 F.3d 1186, 1193 (Fed. Cir. 2011)), *cert. granted*, No. 17-1229, 2018 WL 1142984 (U.S. June 25, 2018).

However, “an inventor who seeks to perfect his discovery may conduct extensive testing without losing his right to obtain a patent for his invention—even if such testing occurs in the public eye.” *Pfaff*, 525 U.S. at 64. Proof of experimental use serves “as a negation of the statutory bars.” *EZ Dock v. Schafer Sys., Inc.*, 276 F.3d 1347, 1352 (Fed. Cir. 2002). A use may be experimental if its purpose is: “(1) [to] test claimed features of the inven-

⁴ Because pre-AIA § 102(b) applies to this case, the testing in Canada cannot constitute an invalidating prior public use.

tion or (2) to determine whether an invention will work for its intended purpose—itsself a requirement of patentability.” *Clock Spring, L.P. v. Wrapmaster, Inc.*, 560 F.3d 1317, 1327 (Fed. Cir. 2009).

We have identified a number of factors that may be relevant to determining whether a use is experimental:

(1) the necessity for public testing, (2) the amount of control over the experiment retained by the inventor, (3) the nature of the invention, (4) the length of the test period, (5) whether payment was made, (6) whether there was a secrecy obligation, (7) whether records of the experiment were kept, (8) who conducted the experiment, (9) the degree of commercial exploitation during testing, (10) whether the invention reasonably requires evaluation under actual conditions of use, (11) whether testing was systematically performed, (12) whether the inventor continually monitored the invention during testing, and (13) the nature of contacts made with potential customers.

Id. (internal quotation marks and citations omitted).

Campbell argues that the district court erred in denying its motion for JMOL that the asserted claims are invalid for prior public use before the critical date. Campbell contends that substantial evidence does not support the jury’s finding of experimental use with respect to the testing done in Fullerton. Rather, Campbell asserts, the evidence established that the inventors reduced the invention to practice as early as January 2002 and no later than March 2002. Campbell further argues that the evidence established that Polara’s public uses were to test non-claimed features and were not undertaken for the purposes of filing a patent application.

Polara responds that the jury’s finding of experimental use was supported by substantial evidence.

Polara contends that it was testing claimed features, *i.e.*, the “digital data signals” limitation. Polara argues that testing to ensure that the invention would work for its intended purpose and in its intended environment constitutes experimental use.

We agree with Polara that substantial evidence supports the jury’s finding of experimental use that negates application of the public use bar. The jury heard testimony that Polara needed to test the claimed invention at actual crosswalks of different sizes and configurations and where the prototype would experience different weather conditions to ensure that the invention would work for its intended purpose. The jury also heard testimony underscoring the importance of such testing of the invention as “a life safety device,” J.A. 2233, that the testing was “imperative,” J.A. 2243, and that “public safety is [Polara’s] primary focus. The last thing [Polara] would want to do is rush a product out and get it out there and have it not work and work incorrectly and put somebody out into an unsafe condition,” *id.*; *accord* J.A. 2999–3000.

We reject Campbell’s contention that this testimony is insufficient to support the jury’s finding of experimental use. The jury could have properly based its finding of experimental use on the need for testing to ensure the durability and safety of the claimed APS. In *City of Elizabeth v. American Nicholson Pavement Co.*, the Supreme Court held that testing an inventive pavement for “usefulness and durability” for six years on a public roadway constituted experimental use. 97 U.S. 126, 133–34 (1877). We have similarly recognized as sufficient to negate the statutory bar experimental use testing performed “to perfect features inherent to the claimed invention,” such as “durability.” *Electromotive Div. of Gen. Motors Corp. v. Transp. Sys. Div. of Gen. Elec. Co.*, 417 F.3d 1203, 1211–12 (Fed. Cir. 2005) (collecting cases); *accord* *Manville Sales Corp. v. Paramount Sys., Inc.*, 917 F.2d 544, 551 (Fed. Cir. 1990) (“When durability in an

outdoor environment is inherent to the purpose of an invention, then further testing to determine the invention's ability to serve that purpose will not subject the invention to a section 102(b) bar.”). Moreover, the safety and durability testing Polara conducted at the First and Second Installations related to claimed features, most particularly the claimed transmission of digital data signals over a single pair of wires.

In *City of Elizabeth*, the Supreme Court explained:

[The inventor] wished to experiment on his pavement. He believed it to be a good thing, but he was not sure; and the only mode in which he could test it was to place a specimen of it in a public roadway. He did this at his own expense, and with the consent of the owners of the road. Durability was one of the qualities to be attained. He wanted to know whether his pavement would stand, and whether it would resist decay. Its character for durability could not be ascertained without its being subjected to use for a considerable time. He subjected it to such use, in good faith, for the simple purpose of ascertaining whether it was what he claimed it to be. . . . The public had the incidental use of the pavement, it is true; but was the invention in public use, within the meaning of the statute? We think not. The proprietors of the road alone used the invention, and used it at [the inventor's] request, by way of experiment. The only way in which they could use it was by allowing the public to pass over the pavement.

97 U.S. at 136.

The factual situation here bears a striking similarity to the situation in *City of Elizabeth*. Given that the invention relates to public safety in crossing the street, the inventors could reasonably believe that they needed to

ensure the invention's durability and safety before being certain that it would work for its intended purpose. The trial testimony showed that durability and safety of the system could not be ascertained without it being subjected to use for a considerable period of time under different actual use conditions, *e.g.*, different crosswalk sizes and configurations and different environments. Experimenting under actual use conditions necessitated that the testing occur at public intersections. Polara conducted this testing at its own expense and the jury heard testimony that supported finding that Polara was not commercially exploiting the invention during the Fullerton testing.

We reject Campbell's argument that the *Clock Spring* factors compel a finding of a lack of experimental use in this case. As discussed above, the jury heard testimony from which it could have determined that many of the factors, including the necessity of public testing, the nature of the invention, the lack of payment for the invention, the experiments being conducted by Polara, and the invention reasonably requiring evaluation under actual use conditions, favored finding experimental use. *See Post-trial Motions Opinion*, 237 F. Supp. 3d at 970. That Campbell points to evidence that could have supported a contrary finding does not mean that the jury reached an impermissible verdict. *See Pavao*, 307 F.3d at 918 ("A jury's verdict must be upheld if it is supported by substantial evidence, which is evidence adequate to support the jury's conclusion, even if it is also possible to draw a contrary conclusion.").

For example, although it is undisputed that Polara did not enter into a confidentiality agreement with Fullerton, Polara introduced evidence that it maintained the secrecy of the invention in other ways. The jury heard testimony that Polara installed, uninstalled, and tested the prototypes itself and did not explain to the Fullerton employees how the invention operated. The functionality

of the system was also not apparent to pedestrians using the system.

Similarly, while Polara tested the prototypes at public intersections for numerous months without making additional changes, Polara introduced testimony supporting the necessity of this period of testing to ensure safety and durability. The jury also heard testimony that the prototypes initially failed at the First and Second Installations, and that Polara had to make changes to the prototypes for the system to work properly. Mr. Beckwith testified that these changes were related to the claimed transmission of digital data signals. Additionally, although a lack of contemporaneous records of the experiments is a factor that may support finding the use non-experimental, a lack of such records does not compel such a finding.

Finally, while Campbell elicited some testimony that could support finding that the Fullerton testing was to test commercial features, the jury also heard testimony that supported finding that Polara was not commercially exploiting its invention during the test periods and that the testing was necessary for patentability to ensure that the invention would work for its intended purpose. Although the public use issue is close, given this mixed factual record, we cannot say that the jury's finding of experimental use lacked substantial evidentiary support. To the extent Campbell invites us to reweigh the evidence, we decline the invitation. *See Harper*, 533 F.3d at 1021 (explaining on JMOL "the court must not weigh the evidence, but should simply ask whether the plaintiff has presented sufficient evidence to support the jury's conclusion").

B. Prior Art

Anticipation is a question of fact reviewed for substantial evidence following a jury verdict. *TI Grp. Auto. Sys. (N. Am.), Inc. v. VDO N. Am., L.L.C.*, 375 F.3d 1126,

1133 (Fed. Cir. 2004). Obviousness is a question of law with underlying factual issues. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966). Following a jury verdict on obviousness, “we first presume that the jury resolved the underlying factual disputes in favor of the verdict and leave those presumed findings undisturbed if they are supported by substantial evidence.” *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1356–57 (Fed. Cir. 2012) (internal quotation marks and alterations omitted). We then “examine the ultimate legal conclusion of obviousness *de novo* to see whether it is correct in light of the presumed jury fact findings.” *Id.* at 1357 (internal quotation marks and alterations omitted).

Campbell argues that the district court erred by not granting JMOL of anticipation based on Wilkinson, or obviousness based on Wilkinson, Tassimco, and/or Enlightened. According to Campbell, the district court’s failure to instruct the jury regarding the court’s implicit prior construction of “digital data signals” to “mean both DC and AC signals” resulted in the jury applying a different claim construction to reject the invalidity challenges from the one the court applied to find infringement at summary judgment. Appellant Br. 41–42. Campbell further argues that the court erred by not resolving the parties’ dispute regarding the construction of “digital data signals” as required by *O2 Micro International Ltd. v. Beyond Innovation Technology Co.*, 521 F.3d 1351 (Fed. Cir. 2008).

Polara responds that the district court did not err in its claim construction instructions to the jury and that substantial evidence supports the jury’s findings. Polara contends that Campbell is estopped from arguing that the district court erred in its claim construction instruction because the court adopted Campbell’s proposed construction of “digital data signals.” According to Polara, Wilkinson, Tassimco, and Enlightened are simple analog

devices that do not disclose the “digital data signals” limitation. Polara also contends that Campbell waived its argument that Wilkinson anticipates the asserted claims by not raising it in its Rule 50(b) motion.

We agree with Polara that the district court did not commit reversible error in instructing the jury on claim construction. While Campbell is correct “that claims are construed the same way for both invalidity and infringement,” *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1330 (Fed. Cir. 2003), it has failed to show that the court’s instructions permitted the jury to apply a different claim construction at trial from the one that the court applied on summary judgment.

As an initial matter, we find disingenuous Campbell’s assertion that it “did not assert [to the district court] that . . . ‘digital data signals’ should be given [its] ‘plain and ordinary meaning.’” Reply Br. 13. Campbell urged the district court to adopt an instruction using the “exact language” used by the district court in its summary judgment opinion or “the [p]lain and [o]rdinary [m]eaning” for all terms not expressly construed in the summary judgment opinion, including “digital data signals.” J.A. 358–59. Campbell has pointed us to no portion of the record where it withdrew its suggestion that the district court adopt a plain and ordinary meaning instruction, or told the court that an instruction with the “exact language” of the summary judgment opinion was its preferred instruction. Accordingly, “we look with extreme disfavor” on Campbell’s assertion that the district court erred by adopting a claim construction position it advocated at trial. *Key Pharm. v. Hercon Labs. Corp.*, 161 F.3d 709, 715 (Fed. Cir. 1998). Indeed, we have recognized that “a party will be judicially estopped from asserting a position on appeal that is inconsistent with a position it advocated at trial and persuaded the trial court

to adopt.” *Interactive Gift Exp., Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1346 (Fed. Cir. 2001).⁵

Even if Campbell were not judicially estopped, Campbell’s argument appears to be based on the unsupported assertion that the jury could only have found that Wilkinson, Tassimco, and Enlightened did not teach the “digital data signals” limitation by applying a claim construction excluding AC signals from “digital data signals.” Campbell has pointed to no evidence that Polara made such an argument at trial. The viability of Campbell’s contention is further foreclosed by Campbell’s admission that “Tassimco is a DC-based system,” Appellant Br. 20, and failure to cite any evidence that Wilkinson, Tassimco, and/or Enlightened send the alleged “digital data signals” in the same way as the district court stated the AAPS does, *i.e.*, via “EoP data packets to pushbuttons using OFDM technology to encode digital data onto electrical waveforms,” J.A. 13.

We also agree with Polara that the jury’s findings that Wilkinson, Tassimco, and Enlightened do not teach or suggest the “digital data signals” limitation are supported

⁵ Given this record, the district court also did not commit reversible error by not resolving a claim construction dispute between the parties. The court resolved the only dispute presented to it by adopting Campbell’s proposal to instruct the jury on plain and ordinary meaning. *See O2 Micro*, 521 F.3d at 1362 (recognizing that “district courts are not (and should not be) required to construe *every* limitation present in a patent’s asserted claims” and explaining “[w]hen the parties present a fundamental dispute regarding the scope of a claim term, it is the court’s duty to resolve it”).

by substantial evidence.⁶ We note that Campbell advocates for an incorrect standard on appeal. The question is not whether Campbell’s “losing position was also supported by substantial evidence,” but rather “whether substantial evidence supports [the jury’s] implied fact finding.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1052 (Fed. Cir. 2016) (en banc), *cert. denied*, 138 S. Ct. 420 (2017). Polara presented substantial evidence from which the jury could have found that the prior art did not teach or suggest the “digital data signals” limitation. The fact that Campbell presented competing evidence to support its invalidity contentions does not compel a different outcome. *See id.* Additionally, we reject Campbell’s arguments predicated on the “combining of well-known prior art ‘digital data signals’” with Wilkinson, Tassimco, and Enlightened, Appellant Br. 51, for a failure of proof on motivation to combine. *See Post-trial Motions Opinion*, 237 F. Supp. 3d at 973; *see also Apple*, 839 F.3d at 1051–52.

II. Enhanced Damages

Under 35 U.S.C. § 284 “the court may increase the damages up to three times the amount found or assessed.” The Supreme Court has described § 284 “as providing that punitive or increased damages could be recovered in a case of willful or bad-faith infringement.” *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1930 (2016) (internal quotation marks omitted). The Court has thus instructed that enhanced damages “are not to be meted out in a typical infringement case, but are instead designed as a ‘punitive’ or ‘vindictive’ sanction for egregious infringement behavior,” and explained that “[t]he sort of conduct warranting enhanced damages has been various-

⁶ Given our resolution of this issue, we need not, and do not, address whether Campbell waived its argument for JMOL based on anticipation by Wilkinson.

ly described in our cases as willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, or—indeed—characteristic of a pirate.” *Id.* at 1932. We review a district court’s ultimate decision whether to enhance damages for abuse of discretion. *Id.* at 1934.

Willful infringement is a question of fact reviewed for substantial evidence following a jury trial. *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1341–42 (Fed. Cir. 2016). A finding of willful infringement does not require the district court to award enhanced damages. *Halo*, 136 S. Ct. at 1933. The district court thus retains “the discretion to decide whether the case is sufficiently egregious to warrant enhancing damages and to decide the amount of enhancement that is warranted (up to the statutory limit of treble damages).” *WBIP*, 829 F.3d at 1342.

Campbell argues that, applying the *Halo* standard, the jury’s willfulness verdict lacked substantial evidence and the court abused its discretion in awarding enhanced damages. Campbell also contends that it “was not allowed to present its pre-litigation non-infringement defenses to the jury to refute willfulness,” and that the district court “erred in not requiring the jury to assess Campbell’s alleged willfulness throughout the period of alleged infringement.” Appellant Br. 53–54. Campbell further argues that the district court erred by failing to consider that Polara never sought a preliminary injunction and thus “should not be allowed to accrue enhanced damages based solely on the infringer’s post-filing conduct.” Appellant Br. 55 (quoting *In re Seagate Tech., LLC*, 497 F.3d 1360, 1374 (Fed. Cir. 2007)).

Polara responds that substantial evidence supports the jury’s willfulness verdict, and the district court did not abuse its discretion in enhancing damages. Polara contends that Campbell was not prohibited from presenting its pre-litigation noninfringement defenses to the jury, and did in fact argue noninfringement to the jury. Polara

argues that Campbell waived its other alleged errors by failing to timely raise them to the district court.

We agree with Polara that substantial evidence supports the jury's finding of willful infringement. Based on the evidence adduced at trial, the jury reasonably could have found that Campbell intentionally copied the '476 patent despite a significant known risk that its two-wire AAPS would infringe the '476 patent. It is undisputed that Campbell was aware of the '476 patent prior to developing its AAPS. Campbell's president testified that Campbell developed its AAPS to compete with Polara's Navigator-2, and that Campbell did not have a product that could compete with the Navigator-2 when Polara launched it in 2003. The jury also heard evidence that Campbell adopted a two-wire design for its AAPS despite being advised by University of Idaho counsel and its lead developer of "areas of potential conflict," J.A. 2572–73, 2575, and "similarities," J.A. 3362, with the '476 patent.

Campbell asserts that its reliance on competent opinion of counsel demonstrates its good faith belief that the '476 patent was invalid or not infringed. Campbell has not pointed to any documentary or third-party evidence showing it received an opinion of counsel that the asserted claims of the '476 patent are invalid and/or would not be infringed by its AAPS. To the extent Campbell relies on the testimony of its president that Campbell allegedly eventually received "a clean bill of health" from the University of Idaho and "got the go" from his own "IP attorneys," J.A. 2574, the jury was entitled not to credit this testimony, *see Harper*, 533 F.3d at 1021 ("While the court must review the entire evidentiary record, it must . . . disregard all evidence favorable to the moving party that the jury is not required to believe.").

The only written opinion of counsel Campbell received that it alleges shows its good faith only substantively discusses claim 11, which is not at issue in this case. The

document begins by stating “[a]ll but one claim in the [476] patent [is] limit[ed] to the 2-wire configuration previously discussed. Claim 11 does not have this limitation.” J.A. 3832. We agree with the district court that a “fair reading” of this document “is that [the author] assumed that Campbell did not intend to adopt a two-wire device.” *Post-trial Motions Opinion*, 237 F. Supp. 3d at 981. We thus must assume that the jury adopted this view of the document. *See Harper*, 533 F.3d at 1021 (on JMOL the court “must view all evidence in the light most favorable to the nonmoving party[and] draw all reasonable inferences in the favor of the non-mover”). Accordingly, it offers little, if any, support for the contention that Campbell acted in good faith or had a reasonable basis to believe that the asserted claims are invalid or would not be infringed.

Moreover, Campbell’s contention that it “was not allowed to present its pre-litigation non-infringement defenses to the jury to refute willfulness,” Appellant Br. 53–54, is belied by the record. Campbell provides no record citation to support this contention, and portions of the record cited by Polara and the district court refute it. We thus agree with the district court that “nothing prevented Campbell from vigorously and steadfastly maintaining that it reasonably believed that it had a defense to Polara’s charges of infringement. As Polara points out, Campbell did just that, arguing that Tate believed that Campbell’s products did not infringe and that the ’476 Patent was invalid.” *Post-trial Motions Opinion*, 237 F. Supp. 3d at 979 (citing J.A. 3323–24).

Additionally, Campbell waived its argument that the district court erred by presenting the jury with a verdict form that required a simple “yes” or “no” answer on the question of willfulness, rather than requiring the jury to specify the time period during which Campbell’s conduct was willful. While Campbell is correct that “culpability is generally measured against the knowledge of the actor at

the time of the challenged conduct,” *Halo*, 136 S. Ct. at 1933, Campbell did not object to the district court’s proposed verdict form on this basis, *see Post-trial Motions Opinion*, 237 F. Supp. 3d at 979. By not timely informing the district court that failing to adopt Campbell’s proposed verdict form would be “an error of law or abuse of discretion,” Campbell waived its objection to the verdict form. *United States v. Parson Corp.*, 1 F.3d 944, 945 (9th Cir. 1993).

Similarly, Campbell waived its *Seagate*-based argument that the district court should have considered that Polara did not seek a preliminary injunction in its analysis by failing to raise it to the district court. As the Supreme Court has observed, as a “general rule . . . a federal appellate court does not consider an issue not passed upon below.” *Singleton v. Wulff*, 428 U.S. 106, 120 (1976). Although we have discretion to decide when to deviate from this general rule, *see id.* at 121, Campbell has not articulated a basis for us to reach this issue for the first time on appeal and we discern none, *see HTC Corp. v. IPCom GmbH & Co., KG*, 667 F.3d 1270, 1282–83 (Fed. Cir. 2012); *In re Cybernetic Serv., Inc.*, 252 F.3d 1039, 1045 n.3 (9th Cir. 2001). Moreover, the relied-upon language does not even apply to this situation because the jury’s finding of willful infringement was not “based solely on the infringer’s post-filing conduct.” *Seagate*, 497 F.3d at 1374.

We next turn to the district court’s decision to enhance the damages award by two-and-a-half times. Although “the district court is not required to discuss the *Read* factors,” *Presidio Components, Inc. v. Am. Tech. Ceramics Corp.*, 875 F.3d 1369, 1382 (Fed. Cir. 2017), it “is obligated to explain the basis for the [enhanced damages] award, particularly where the maximum amount is imposed,” *Read*, 970 F.2d at 828. In exercising its discretion, the district court must “take into account the particular circumstances of each case,” *Halo*, 136 S. Ct. at 1933,

and “consider all relevant factors in determining whether to award enhanced damages,” *WesternGeco L.L.C. v. ION Geophysical Corp.*, 837 F.3d 1358, 1363 (Fed. Cir. 2016), *rev’d on other grounds sub nom. WesternGeco LLC v. ION Geophysical Corp.*, No. 16-1011, 2018 WL 3073503 (U.S. June 22, 2018). After *Halo* and under *Read*, the “closeness of the case” remains a relevant consideration for determining the appropriateness of enhancement. Here, the district court awarded almost the maximum amount of enhanced damages, but did not adequately explain its basis for doing so, and failed to even mention Campbell’s public use defense, which presented a close question in this case.

The district court referred to Campbell’s invalidity theories generally in the closeness of the case *Read* factor. In determining that this factor was “neutral,” the district court merely observed that “obviousness was a close call” and that the “other invalidity theories were weaker.” *Post-trial Motions Opinion*, 237 F. Supp. 3d at 993. This explanation is insufficient for us to determine why the court viewed this factor as “neutral.” The court’s use of the relative term “weaker” provides little insight because it did not explain its reasons for viewing the other defenses, especially public use, as comparatively “weaker.” We view the public use defense, which the court did not explicitly address, as a closer call than obviousness. Thus, to the extent the district court determined that the public use defense was weak in this case, the court clearly erred.

Accordingly, we vacate the award of enhanced damages and remand. *See, e.g., Whitserve, LLC v. Comput. Packages, Inc.*, 694 F.3d 10, 37 (Fed. Cir. 2012) (remanding “for a determination of whether enhanced damages are warranted and an explanation of the grounds for that determination”); *S.C. Johnson & Son, Inc. v. Carter-Wallace, Inc.*, 781 F.2d 198, 202 (Fed. Cir. 1986) (“vacat[ing] the decision refusing [enhanced] damages under

35 U.S.C. § 284, and remand[ing] for clarification by the district court”). On remand, we instruct the district court to provide a more complete explanation, including a discussion of the public use defense, in exercising its discretion. We express no view on whether damages should be enhanced or, if so, by what amount.

We have considered the parties’ remaining arguments but find them to be unpersuasive.

CONCLUSION

For the foregoing reasons, we affirm the district court’s denial of judgment as a matter of law of invalidity and no willful infringement, vacate the court’s enhanced damages award, and remand for proceedings consistent with this opinion.

**AFFIRMED IN PART, VACATED IN PART, AND
REMANDED**

COSTS

Costs to Polara.