United States Court of Appeals for the Federal Circuit

CONVOLVE, INC. AND MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
Plaintiffs-Appellants,

v.

COMPAQ COMPUTER CORPORATION,
Defendant-Appellee,

AND

SEAGATE TECHNOLOGY, LLC AND SEAGATE TECHNOLOGY, INC.,
Defendant-Appellee.

2012-1074

Appeal from the United States District Court for the Southern District of New York in No. 00-CV-5141, Judge George B. Daniels.

Decided: July 1, 2013

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plaintiffs-appellants. With him on the brief were ALLEN M. SOKAL and GARTH D. BAER. Of counsel on the brief were GREGORY A. MARKEL, JAMES T. BAILEY, MICHAEL P. DOUGHERTY and KEVIN J. MCNAMEE, Cadwalader, Wickersham & Taft LLP, of New York, New York. Of counsel was DEBRA B. STEINBERG.

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Before RADER, *Chief Judge*, DYK, and O'MALLEY, *Circuit Judges*.

O'MALLEY, *Circuit Judge*.

Convolve, Inc. ("Convolve") and Massachusetts Institute of Technology ("MIT") appeal the decision of the United States District Court for the Southern District of New York granting summary judgment in favor of Compaq Computer Corp. ("Compaq"), Seagate Technology, LLC, and Seagate Technology, Inc. (collectively "Seagate"). The district court found that Compaq and Seagate did not misappropriate eleven (11) of the fifteen (15) Convolve trade secrets that remained at issue in the suit. The court also held that Compaq and Seagate did not infringe claims 1, 3, 4, and 7–15 of U.S. Patent No. 6,314,473 ("the '473 patent") and that claims 1–4, 7, 11,

21, and 24[1] of U.S. Patent No. 4,916,635 ("the '635 patent") are invalid. After the district court's summary judgment order, all remaining claims were dismissed without prejudice. Convolve's appeal is timely and we have jurisdiction under 28 U.S.C. § 1295(a)(1). For the reasons below, we *affirm* the district court's rulings on the trade secret claims and validity of the asserted claims of the '635 patent, but *vacate* the court's judgment of non-infringement with respect to the '473 patent. We remand for further proceedings on the '473 patent.

I. BACKGROUND

In July 2000, Convolve and MIT sued Compaq and Seagate for, among other things, trade secret misappropriation and patent infringement. Convolve was conceived and is owned by Dr. Neil Singer. While a graduate student at MIT, Dr. Singer set out to solve the general problem of moving equipment quickly while minimizing the resultant vibrations. The '635 and '473 patents grew out of that research. MIT owns the '635 patent while Convolve owns the '473 patent and all alleged trade secrets in this suit. Convolve contends that Seagate manufactured drives and tools that infringe the '473 and '635 patents and misappropriated Convolve's trade secrets. Convolve also asserts that Compaq incorporated the Seagate drives into its computers and provided tools, such as the "F10 BIOS," that together infringe certain claims of the '473 patent. Convolve further claims that Compaq misappropriated multiple trade secrets relating to the Quick and Quiet User Interface.

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[1]   Claims 11, 21, and 24 were cancelled as indicated by the '635 patent *ex parte* reexamination certificate. *See* Joint Appendix ("J.A.") at 193–94. While the district court stated at note 15 of its opinion that claims 7, 21, and 24 were cancelled, rather than 11, 21, and 24, that statement appears to have been a typo.

Convolve is MIT's exclusive licensee for use of a software motion control technology called Input Shaping. According to Convolve, Input Shaping technology is a method for commanding equipment to move as quickly as possible without excitation or vibration. Convolve explains that, from 1997 to 1998, it developed an application for its Input Shaping technology in hard disk drives. Convolve asserts that this technology is covered by the trade secrets and patents involved in this case.

The technology at issue relates to improving "seeks" in computer hard drives. The figure below depicts a generic hard drive:

FIG.10A
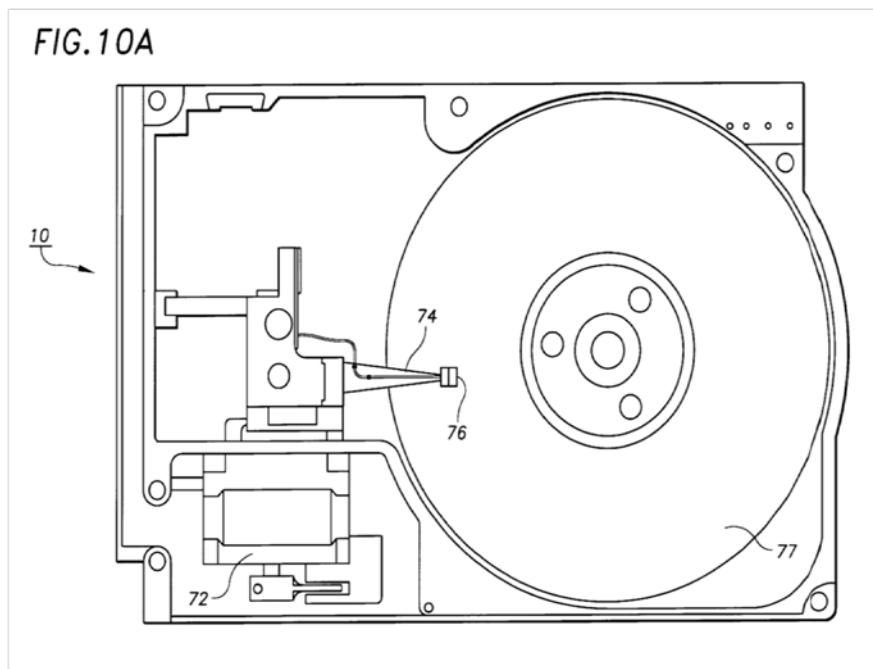
'473 patent, Figure 10A.

Hard drives store data in small magnetized spots on a magnetic coating on the surface of platters (77) inside the drive. Data is arranged in concentric "tracks" on each platter. Disk drives have multiple platters, each containing thousands of tracks. Data can be stored randomly on the surface of the platters such that a single file may be stored in non-contiguous blocks, sometimes far apart on the disk. To retrieve data, the drive uses an inductor to detect the magnetic polarization of each "bit." To store data, electromagnets change a bit's magnetic polarization. The inductor and electromagnet are located on a "head" (76) which itself is located on an "arm" (74).

The hard drive employs two motors to read and write data: (1) the spindle motor that spins the platters, allowing the head to cover the platters' area while traversing over a line or arc; and (2) the voice coil motor ("VCM"), that moves the arm across the spinning platters. The VCM is controlled by a microcontroller or processor using feedback from the arm's position. When the microcontroller receives instructions, it directs the VCM to move the head toward the target track. The process of moving from track-to-track is called "seeking," and the amount of time it takes for the head to arrive at the correct track is called "seek time." Because data is stored on disparate parts of the platter, the arm must be able to move both between tracks that are far apart, called "long seeks," and tracks that are close together, called "short seeks."

A component of seek time is "settle time," which is the time it takes for the arm to settle from any residual vibrations caused by the arm's movement. Quickly stopping the arm will cause it to vibrate, and the vibrations must stop before reading or writing. If the arm does not properly settle over the desired track, the data will not be retrieved or written accurately. Naturally, fast seeks are preferable because they allow for faster reading or writing of data and, in turn, faster computer performance.

Historically, fast seeks were "noisy." Quickly moving and stopping the head caused vibrations that created "seek acoustics," or a distinct clicking noise that can irritate users. As such, there is a direct correlation between fast seeks and increased seek acoustics. In other words, the faster the seek, the more noise, the slower the seek, the less noise. Convolve's technology attempted to minimize seek acoustics resulting from fast seeks.

A. PATENTS

The '635 patent is entitled "Shaping Command Inputs to Minimize Unwanted Dynamics" and was filed on September 12, 1988. The '635 patent discloses a "method[,

called shaping,]. . . for generating an input to a system to minimize unwanted dynamics in the system response and to reduce energy consumed by the system during moves." '635 patent, col. 3, ll. 62–65. The '635 patent also discloses an apparatus for shaping commands to a system "to reduce endpoint vibration." *Id.* at col. 12, ll. 36–37. Claim 1 is representative:

> A method for generating an input to a physical system to minimize unwanted dynamics in the physical system response comprising:
>
>> establishing expressions quantifying the unwanted dynamics of the physical system;
>>
>> establishing first constraints bounding the available input to the physical system;
>>
>> establishing second constraints on variation in system response with variations in the physical system characteristics; finding a solution which is used to generate the input which minimizes the value of the expressions while satisfying the first and second constraints; and
>>
>> controlling the physical system based on the input to the physical system whereby unwanted dynamics are minimized.

'635 patent, col. 10, ll. 40–56.

The '473 patent is entitled "System For Removing Selected Unwanted Frequencies In Accordance With Altered Settings In A User Interface Of A Data Storage Device," and was filed on March 4, 1999. The '473 patent discloses a method for application of input shaping to computer disk drives and embodies a user interface that allows customization of disk drive speed and acoustics. A user can choose to make a drive run faster and noisier, or

slower and quieter. Claim 10 of the patent is representative:

> Method of controlling operation of a data storage
> device, comprising:
>
> > providing a user interface for controlling
> > one of a seek time of the data storage de-
> > vice and an acoustic noise level of the data
> > storage device;
> >
> > operating the user interface so as to alter
> > settings of one of the seek time and the
> > acoustic noise level of the data storage de-
> > vice in inverse relation; and
> >
> > outputting commands to the data storage
> > device causing the data storage device to
> > alter seek trajectory shape by shaping in-
> > put signals to the data storage device to
> > reduce selected unwanted frequencies
> > from a plurality of frequencies in accord-
> > ance with the altered settings.

'473 patent, col. 44, ll. 33–46.

B. CONVOLVE'S CLAIMS

In 1998, Convolve and Compaq began licensing nego-
tiations regarding Convolve's technology. To facilitate the
discussions, Convolve and Compaq signed a non-
disclosure Agreement ("NDA") and agreed to share their
respective confidential information for "furthering a
business relationship." J.A. at 820. The confidential
information to be disclosed was described as "storage
peripheral market information and technology infor-
mation" from Compaq and "algorithms and processes for
enhancing positioning systems" from Convolve. *Id.* The
NDA states that, to trigger either party's obligations, the
disclosed information must be: (1) marked as confidential
at the time of disclosure; or (2) unmarked, but treated as

confidential at the time of disclosure, and later designated confidential in a written memorandum summarizing and identifying the confidential information. The NDA explicitly excludes from its scope any information that: (1) the recipient possessed prior to disclosure; (2) was a matter of public knowledge; (3) was received from a third party without a duty of confidentiality attached; (4) was independently developed by the recipient; (5) was disclosed under operation of law; or (6) was disclosed by the recipient with the discloser's prior written approval. The NDA covered any confidential disclosures between August 13, 1998 and October 15, 2000.

Compaq made personal computers, but did not itself manufacture disk drives. Compaq instead purchased disk drives from third parties, including Seagate, to incorporate into its computers. Compaq asked if Seagate could be involved in evaluating Convolve's technology. Seagate designs, manufactures, and sells hard disk drives for computers. Convolve agreed to share information with Seagate upon execution of a similar NDA. Seagate was to share "business and technical information related to servo systems for disc drives, including: present and future product plans, specifications, and drawings." J.A. at 293. Convolve agreed to share "feed forward and closed loop techniques for improving disc drive seek and settle performance." *Id.* The purpose of sharing the information was for "evaluation and testing." *Id.* All written materials clearly marked "confidential" (or something comparable) were within the scope of the protections of the NDA. For an oral disclosure to be within the scope of the NDA, it must have been designated confidential at the time of disclosure and followed by a written memorandum within twenty (20) days of disclosure clearly providing notice of what specific information was confidential. The exclusions are largely the same as the exclusions in the Convolve-Compaq NDA. The NDA covered any confidential

disclosures between October 14, 1998 and December 31, 2000.

With the NDAs in place, Compaq, Seagate, and Convolve had a meeting on October 15 and 16, 1998, during which Convolve gave a presentation regarding its input shaping technology and its application to computer disk drives. After the meeting, the parties acknowledged in writing that any oral disclosure of confidential information during that meeting was covered by the NDAs. Convolve gave two other presentations to Compaq and Seagate, on February 10 and April 7, 1999. Although Convolve sent Seagate copies of the slides from the February presentation and a letter discussing the April demonstration, Convolve did not state in writing that any of the disclosures during or in connection with those later meetings were confidential. Despite these meetings and continued communications, Convolve never consummated a deal with Compaq and Seagate regarding the technology.

Convolve filed suit against Seagate and Compaq on July 13, 2000. On January 16, 2002, Convolve amended its complaint alleging against both Seagate and Compaq: (1) breach of contract; (2) tortious interference with contract; (3) fraud; (4) misappropriation of trade secrets; (5) patent infringement of the '473 patent, '635 patent and U.S. Patent No. 5,638,267 ("the '267 patent");[2] (6) violation of California Business and Professions Code § 17200 ("California Unfair Competition"); (7) breach of confi-

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[2] The parties, and the district court, do not clearly indicate which claims were originally at issue in this case. The district court's claim construction order reveals that Convolve originally asserted claim 1–4, 7, 11, 21, and 24 of the '635 patent, claims 19, 29, 39, and 55 of the '267 patent, and claims 1, 3, 4, and 7–15 of the '473 patent. J.A. at 89.1–89.2.

dence; and (8) breach of good faith and fair dealing. In March 2006, the district court granted summary judgment in favor of Seagate and disposed of Convolve's claims of fraud, tortious interference with contract, breach of confidence, and violation of California's Unfair Competition statute. Later, in March 2010, the district court dismissed Convolve's '267 patent from the case. In August 2011, the district court issued its order from which this appeal derives, dismissing Convolve's claims of breach of contract, infringement of the asserted claims of the '473 and '635 patents, and misappropriation of a subset of the trade secrets asserted against Compaq and Seagate.

C. TRADE SECRETS

As the litigation progressed, the district court found that California Civil Procedure § 2019(d) compelled Convolve to provide an Amended Trade Secret Identification ("ATSI") identifying the trade secrets at issue with reasonable specificity.[3] At the time of the district court's summary judgment ruling, fifteen trade secrets remained at issue.[4] They were enumerated in Convolve's ATSI as trade secrets (relevant subparts designated in parenthe-

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[3] California Code of Civil Procedure § 2019.210 reads, "[i]n any action alleging the misappropriation of a trade secret under the Uniform Trade Secrets Act (Title 5 (commencing with Section 3426) of Part 1 of Division 4 of the Civil Code), before commencing discovery relating to the trade secret, the party alleging the misappropriation shall identify the trade secret with reasonable particularity subject to any orders that may be appropriate under Section 3426.5 of the Civil Code."

[4] In December 2005, the parties agreed that Convolve would be precluded from bringing any litigation against Seagate based on past activities for misappropriation of trade secrets 1A, 2D, 4A–E, 7B–D. J.A. at 445.

sis): 1(B), 2(A–C), 2(E–F), 3(A–D), 6(A–C), and 7(A and E). Convolve accused Seagate of misappropriating all fifteen trade secrets and accused Compaq of misappropriating trade secrets six and seven.

Convolve's first claimed trade secret is directed to its "disk drive instrumentation techniques useful for disk drive research and development." J.A. at 904. That trade secret includes Convolve's Laser Doppler Vibrometer Feedback Technique ("LDVFT") and Acoustic Microphone Technique ("AMT"). AMT is used for making "time-based" acoustic measurements outside of an anechoic chamber. *Id.* The second asserted group of trade secrets is a compilation of Convolve's "seek trajectory design" ("STD") data, methods, techniques, and applications useful for disk drive seek trajectory research, development, and production. *Id.* It includes the "use of higher order models for trajectory designs," which Convolve explains is the concept that it is important to move to a higher order dynamic model of a disk drive for the purpose of designing trajectories to produce faster and acoustically quieter disk drives. *Id.* at 910–11. These trade secrets include the concept that "abrupt current and voltage saturation should be avoided to optimize vibration reduction." J.A. 912–13. The third class of trade secrets relates to Convolve's Model Reference ("MREF") controller techniques and related data. The sixth category is Convolve's marketing trade secrets relating to its Quick and Quiet user interface for disk drives, among other things. The seventh group of trade secrets cover information from Convolve's Patent Cooperation Treaty ("PCT") Application. They include the Quick and Quiet user interface, among other things.

D. District Court Rulings

1. Trade Secrets

Seagate and Compaq moved for summary judgment on the remaining trade secret and patent infringement

claims. While there was no dispute that California law applied to Convolve's state law claims against Seagate, Convolve and Compaq squabbled over whether Texas or New York law should apply to their claims. The district court applied New York law to Compaq's claims because no party identified an actual conflict between the relevant New York and Texas law. The district court then meticulously analyzed each of the trade secrets at issue. We now summarize those rulings as to each defendant in turn.

A. SEAGATE

Regarding ATSI 1B, which Convolve alleged included AMT, the district court rejected Convolve's contention that the complete trade secret was disclosed at the February 2, 2009 presentation to Seagate. The district court additionally found that, even if it was disclosed at the meeting, Convolve did not send any confirmatory memorandum following the February 2009 presentation as required by the NDA. On these alternative grounds, the district court granted Seagate's motion for summary judgment.

ATSI 2A, which Convolve alleged included the "Use of Higher Order Models for Trajectory Design," the district court found that the substance of the trade secret was generally and publically known via Dr. Evert Cooper's 1993 dissertation titled "Minimum Time Control with Minimum Vibration and with Power Limiting, with Application to the Magnetic Disk File." J.A. at 49–50. The district court also found that the use of third order models was publicly disclosed in the master's thesis of William Ray titled, "The Reduction of Acoustic Noise Emissions from a Hard Disk Drive." *Id.* The district court further found that, even if ATSI 2A was entitled to trade secret protection, there was insufficient evidence that Convolve properly preserved the trade secret according to the procedures of the NDA. Again, the district

court granted Seagate's summary judgment motion on these alternative grounds.

The district court also granted Seagate judgment as a matter of law on those claims premised on ATSIs 2C, 2E, and 2F. The court found that 2C was independently known to Seagate, and that Convolve did not disclose the substance of the trade secret in any confidential writings or properly designate it as confidential following any oral disclosure. The district court similarly found that 2E was not disclosed in a confidential writing or properly protected after an oral or visual disclosure. And, the district court found that Seagate did not misappropriate 2F because it never used the trade secret, regardless of how it was obtained. The district court, however, denied Seagate's motion regarding 2B, titled "Seek Trajectories Need Not Be Smooth." The district court found that genuine issues of material fact remained regarding whether the trade secret was disclosed at the February 1999 meeting between Convolve and Seagate and whether Seagate used the trade secret thereafter.

The district court also denied Seagate's summary judgment motion regarding trade secret 3A, but granted the motion as to trade secrets 3B through 3D. The district court concluded that, under California law, a trade secret may have independent economic value, even if a particular defendant finds no value in it. The court, accordingly, rejected Seagate's argument that there was no value to Seagate in the information Convolve provided it regarding "Convolve's MREF Control Demonstration and Test Result Data." J.A. at 61. Because the district court found, however, that Convolve failed to provide a post-disclosure confirmatory memorandum with respect to those disclosures related to ATSIs 3B and 3D, the court granted Seagate's motion as to those, but denied it as to ATSI 3A.

ATSIs 6A–6C all relate to marketing research, strategies, and plans regarding Convolve's Quick and Quiet user interface. The district court denied Seagate's motion related to 6A, finding that fact issues remained whether the relevant market research may be a trade secret. The district court also denied Seagate's motion regarding 6C, finding that it may have independent economic value to Seagate. The district court granted Seagate's summary judgment motion as to 6B because it was common knowledge in the industry that quiet operation of disk drives had market appeal.

The district court granted Seagate's motion for summary judgment regarding ATSIs 7A and 7E. ATSI 7A allegedly included Convolve's Quick and Quiet user interface, which, according to Convolve, enables the user of the drive to choose quicker, but noisier operation or slower, but quieter operation. The district court found that the record evidence demonstrated that Seagate and others contemplated having different seek modes as early as 1990, and that U.S Patent No. 5,982,570 disclosed the Quick and Quiet concept in 1997. As such, the district court found that the substance of 7A was generally known in the industry. Regarding 7E, titled "Shape on Transient," the district court found no evidence that Seagate used Convolve's information in any of its disk drives and, therefore, dismissed Convolve's misappropriation claim. After the district court's order resolving the foregoing trade secrets, the parties stipulated to the dismissal of the remaining four trade secrets asserted against Seagate and entry of final judgment.

B. COMPAQ

The district court found that Convolve only asserted trade secrets 6 and 7 against Compaq (discussed further below). Because ATSIs 6A–6C all related to marketing research, strategies, and plans, and because New York law does not extend trade secret protection to marketing

concepts, the district court granted Compaq's motion for summary judgment on all three. The district court also granted summary judgment in favor of Compaq on Convolve's ATSIs 7A and 7E on the same rationale as the court's grant in favor of Seagate. Additionally, Compaq sought summary judgment on Convolve's breach of contract claims which were predicated on the unlawful disclosure and use of ATSI 7A in violation of the NDA. Because the district court found that ATSI 7A was generally known prior to any purported disclosures, the court found that Compaq did not breach the NDA and granted its summary judgment motion.

2. PATENT CLAIMS

The district court next turned to Convolve's claims of patent infringement. By the time of the district court's August 2011 summary judgment order, Convolve asserted that Seagate and Compaq infringed, both directly and indirectly, claims 1, 3, 4, and 7–15 of the '473 patent. Convolve accused Seagate's ATA III, ATA IV, SCSI, and U5 drives of infringement. Convolve also asserted that Compaq infringed claims 1, 3, 4, and 7–15 of the '473 patent when it sold computers with the "F10 Bios" and certain Seagate drives. Seagate and Compaq countered that the accused drives did not directly infringe the asserted claims of the '473 patent because they did not have a "user interface" or target "selected unwanted frequencies," as required by the patent claims. The district court's analysis both focused and turned on its construction of the "selected unwanted frequencies" language.

The district court construed "selected unwanted frequencies" to mean "at least the chosen unwanted frequencies." The court explained that the prosecution history of the '473 patent compelled the court's construction because the patentee distinguished prior art by disclosing a method that "targets" specific frequencies, rather than reduc-

ing all frequencies indiscriminately. The court further noted that the parties did not dispute that, to practice the '473 patent, someone would first have to discover unwanted frequencies and then target them for reduction. The district court concluded that, for the accused devices to directly infringe the asserted claims of '473 patent, the drives must not only reduce unwanted frequencies, but do so by using the "discover" and "target" method.

The district court then analyzed each of the accused drives to determine whether they were developed using this method. The district court first turned to the ATA IV drive and determined that the record evidence demonstrated that Seagate targeted a single frequency to reduce; namely, 2.6 kilohertz ("KHz"). Since Seagate targeted that specific frequency, the district court found it irrelevant that other frequencies might happen to be reduced, because those frequencies were not "targeted" for reduction. And, because the claim language is directed at reducing *multiple frequencies*, the district court held that the ATA IV did not infringe the asserted claims of the '473 patent because it only targeted a single frequency.

The district court next turned to the Seagate SCSI drives. It found that the evidence demonstrated that Seagate engineers did not identify frequencies causing unwanted acoustics and then target them for reduction. The district court found that Seagate engineers instead tried a variety of filters to find the one that gave the best performance, and chose a "low-pass filter" which indiscriminately reduced all frequencies "above the knee." Because the filter was not chosen to target the specific knee frequency, but was chosen to reduce all frequencies indiscriminately, the court concluded that the SCSI drives did not target "selected unwanted frequencies" and thus did not infringe claims 1, 3, 4, and 7–15 of the '473 patent.

The district court last turned to the Seagate ATA III and U5 drives. For those drives, the district court found

that the evidence revealed that Seagate engineers did not identify and target specific frequencies for reduction, but made improvements to create quieter seeks without regard to specific frequencies. The district court further found that Convolve's contrary evidence was mostly directed at the ATA IV drive, not the ATA III and U5 drives. As such, the district court granted summary judgment of noninfringement in favor of Seagate on those drives. Given that Convolve's claims of infringement against Compaq were predicated on Seagate's underlying infringement, the district court also granted summary judgment in favor of Compaq with respect to all of Convolve's direct infringement claims relating to the '473 patent.

The district court also granted summary judgment of noninfringement in favor of both Seagate and Compaq on Convolve's inducement claims under 35 U.S.C. § 271(b). The court reasoned that, because Seagate's drives did not directly infringe the asserted claims of the '473 patent, Convolve's inducement claims must fail for lack of a direct infringer. The district court also held that, even if use of the drives would directly infringe the asserted claims of the '473 patent, Convolve failed to present any evidence of instances of direct infringement by a user. Though Convolve had proffered evidence that Seagate and Compaq provided end-users instructions on how to select between quick and quiet modes, the district court found that insufficient to demonstrate actual direct infringement by another.

The district court next turned to the asserted claims of the '635 patent. Seagate sought summary judgment on various grounds, but the district court focused on Seagate's claim that the asserted claims of the '635 patent were not enabled and, therefore, were invalid. The district court found that, for the written description of the '635 patent to be enabling as to the asserted claims, it must teach a person of ordinary skill in the art to gener-

ate an input to *all* physical systems to minimize unwanted dynamics, or vibrations, subject to the other limitations in the claims. Relying on testimony from Dr. Singer that he was unable to implement the asserted claims for "long seeks" in disk drives in 1992, the district court found the patent invalid. Thus, the district court granted summary judgment in favor of Seagate on all claims of infringement relating to the asserted claims of the '635 patent as well as on its affirmative invalidity claim.[5]

II. DISCUSSION

A. TRADE SECRET AND CONTRACT CLAIMS

Convolve asserts three grounds for its belief that the district court improperly granted summary judgment on its trade secret claims: (1) that it presented sufficient evidence to create material issues of fact regarding Seagate and Compaq's claims of prior knowledge and non-use of the trade secrets, as well as enough evidence that the trade secrets were disclosed in accordance with the NDA marking provisions; (2) that it presented evidence that would support a verdict that the parties, through their course of conduct, adopted a broad construction of the NDAs or waived their specific requirements for designating matters as confidential; and (3) that the Convolve-Seagate NDA did not govern the entire confidential relationship between the parties because trade secret misappropriation claims may also be analyzed as tort claims under California law. Each of Convolve's arguments will be addressed in turn.

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[5]   Convolve asserted claims of indirect infringement against Compaq on the asserted claims of the '635 patent. While the district court's decision only referred to Seagate's motion for summary judgment on the asserted claims of the '635 patent, because the district court found the asserted claims of the '635 patent invalid, the indirect infringement claims against Compaq must also fail.

Trade secret misappropriation is a matter of state law. *See Atlantic Research Mktg. Sys., Inc. v. Troy*, 659 F.3d 1345, 1356 (Fed. Cir. 2011) (citing *Ultimax Cement Mfg. Corp. v. CTS Cement Mfg. Corp.*, 587 F.3d 1339, 1355 (Fed. Cir. 2009)). The parties agree that California law applies to Convolve's trade secret claims against Seagate. The district court concluded that New York law applies to the claims against Compaq. We apply our own law "to substantive and procedural issues 'pertaining to patent law.'" *Finjan, Inc. v. Secure Computer Corp.*, 626 F.3d 1197, 1207 (Fed. Cir. 2010) (quoting *Aero Prods. Int'l, Inc. v. Intex Recreation Corp.*, 466 F.3d 1000, 1016 (Fed. Cir. 2006)). We review the district court's grant of summary judgment under the law of the regional circuit. *See IGT v. Alliance Gaming Corp.*, 702 F.3d 1338, 1343 (Fed. Cir. 2012) (citing *MicroStrategy Inc. v. Bus. Objects, S.A.*, 4229 F.3d 1344, 1349 (Fed. Cir. 2005)). The Second Circuit reviews a grant of summary judgment *de novo*, and will affirm "only where, construing all the evidence in the light most favorable to the non-movant and drawing all reasonable inferences in that party's favor, there is no genuine [dispute] as to any material fact and the movant is entitled to judgment as a matter of law." *Bacolitsas v. 86th & 3rd Owner, LLC*, 702 F.3d 673, 678 (2d Cir. 2012) (quoting *McBride v. BIC Consumer Prods. Mfg. Co.*, 583 F.3d 92, 96 (2d Cir. 2009)) (alteration in original).

1. NO GENUINE ISSUES OF FACT

We have reviewed the district court's opinion regarding the trade secrets and the evidence that Convolve contends precluded judgment as a matter of law. After such review, we perceive no error in the district court's conclusions that Seagate and Compaq are entitled to summary judgment on Convolve's contract and misappropriation claims.

First, we find that the district court was correct when it concluded that, to the extent they would otherwise be

trade secrets and were disclosed to either defendant, ATSIs 1B, 2A, 2C, 2E, and 3B–D were disclosed in the absence of the written confidentiality follow-up memorandum mandated by the NDAs. For this reason, barring waiver of the NDAs marking requirements (discussed below) we conclude that Seagate did not breach the NDA to the extent it may have appropriated the information disclosed. Because the disclosure of the information was not subject to the confidentiality obligations of the NDAs, moreover, barring some other basis upon which to predicate a promise of confidentiality (which we also discuss below) information relating to those ATSIs lost any trade secret status it might have had upon disclosure.

We also find that the trial court was correct to conclude that the information disclosed regarding ATSIs 2A, 2C, 2F, 6B, 7A, and 7E—ATSI's as to which the confidentiality obligations of the NDAs did apply—were either generally known before disclosure (and, thus, were not "trade secrets" worthy of protection under the agreement or otherwise), or were not used by Seagate following disclosure. While Convolve contends it presented sufficient evidence to create genuine issues of material fact on these findings, for the reasons explained by the district court, we are not persuaded.

Finally, we agree with the district court that New York law applies to Convolve's claims against Compaq and that New York law does not extend trade secret protection to the information designated as ASTIs 6A–6C. For those reasons, subject to our discussion below of Convolve's assertions that its trade secret and contract claims survive despite these careful findings by the trial court, we find no error in the trial court's trade secret rulings and find no need to discuss those rulings in detail.

2. BROAD CONSTRUCTION OR WAIVER

Convolve contends the district court erred when it found that Compaq failed to protect the confidentiality of

certain information because it failed to designate it as such pursuant to its obligations under the NDAs. Convolve asserts that the parties understood that all of their mutual disclosures were confidential, notwithstanding the marking requirements in the NDAs. In other words, Convolve argues that fact issues remain as to whether those trade secrets were confidentially disclosed, despite Convolve's failure to follow the NDA confidentiality procedures, because the right to enforce those procedures was waived. The district court found that Convolve did not send a confirmatory letter designating the alleged disclosure of the information relating to ATSIs 1B, 2A, 2C, 2E, and 3B–D as confidential. While Convolve does not dispute this finding, it contends that the parties' course of conduct did not require a follow-up letter. To address this argument, we look to the relevant language of the NDAs.

Convolve alleged that only Seagate misappropriated these particular trade secrets; therefore, we apply the law of the state that controls that NDA—as noted, that is California law. When interpreting a contract, California law requires courts to "give effect to the mutual intention of the contracting parties at the time the contract was formed." *Windsor Pacific LLC v. Samwood Co., Inc.*, 152 Cal. Rptr. 3d 518, 527 (Cal. Ct. App. 2013) (citing Cal. Civ. Code § 1636). Such intent is ascertained "solely from the written contract if possible," and also "the circumstances under which the contract was made and the matter to which it relates." *Id.* (citing Cal. Civ. Code. §§ 1639, 1647). The contract's terms and provisions are to be interpreted according to their ordinary meaning. *See Canaan Taiwanese Christian Church v. All World Mission Ministries*, 150 Cal. Rptr. 3d 415, 422 (Cal. Ct. App. 2012). Contract interpretation is a question of law that we review *de novo*. *Wash. State Republican Party v. Wash. State Grange*, 676 F.3d 784, 796 (9th Cir. 2012)

(citing *Doe I v. Wal-Mart Stores, Inc.*, 572 F.3d 677, 681 (9th Cir. 2009)).

The plain language of the Convolve-Seagate NDA unambiguously requires that, for any oral or visual disclosures, Convolve was required to confirm in writing, within twenty (20) days of the disclosure, that the information was confidential. Paragraph 7 of the Convolve-Seagate NDA provides that, for "any oral or visual disclosures," the disclosing party must (1) designate the information as confidential at the time of disclosure and (2) confirm "in a writing delivered within twenty (20) days to the Recipient which provides clear notice of the claim of confidentiality and describes the specific information disclosed." J.A. at 293. The intent of the parties, based on this language, is clear: for an oral or visual disclosure of information to be protected under the NDA, the disclosing party must provide a follow-up memorandum. And, we see no error in the district court's conclusion that Convolve failed to provide this written follow-up memorandum with respect to each of these ASTIs.

Convolve argues that, regardless of whether the confidentiality of the trade secrets was confirmed in writing, it presented evidence that the parties understood their mutual disclosures were confidential, notwithstanding the NDA strictures. In other words, Convolve argues that it presented evidence that the parties waived the written confidentiality requirement through their course of conduct. And, Convolve argues that the district court disregarded such evidence in contravention of controlling California law. Even assuming Convolve is correct that the district court was required to provisionally consider the evidence of the parties' conduct, we still find the court's conclusion to be correct.

As previously stated, the NDAs do not appear reasonably susceptible to the interpretation Convolve urges. Convolve's assertion that the parties understood that all

oral and visual disclosures were under the purview of the NDAs *absent* a written follow-up memorandum so stating is contrary to the terms of the NDAs. Thus, Convolve's interpretation is unreasonable and would render paragraph 7 of the NDA a dead letter.

In California, "where the subsequent conduct of parties is inconsistent with and clearly contrary to provisions of the written agreement, the parties' modification setting aside the written provisions will be implied." *Alvarado Orthopedic Research, L.P. v. Linvatech Corp.*, 2013 WL 2351814, at *4 (S.D. Cal. May 24, 2013) (quoting *Diamond Woodworks, Inc. v. Argonaut Ins. Co.*, 135 Cal. Rprt. 2d 736, 747 (Cal. Ct. App. 2003)); *see also Biren v. Equality Emergency Med. Grp.*, 125 Cal. Rptr. 325, 335 (Cal. Ct. App. 2002) ("[T]he parties may, by their conduct, waive such a provision where the evidence shows that was their intent.") (quoting *Frank T. Hickey, Inc. v. L.A. Jewish Cmty. Council*, 128 Cal. App. 2d 676, 682–83 (Cal. Ct. App. 1954)). "Before a contract modifying a written contract can be implied, [however,] the conduct of the parties according to the findings of the trial court must be inconsistent with the written contract so as to warrant the conclusion that the parties intended to modify the written contract." *Garrison v. Edward Brown & Sons*, 25 Cal. 2d 473, 479 (1944)). The operative question, therefore, is whether Convolve presented enough evidence to create a genuine issue of material fact that the parties, through their conduct, intended to waive or modify the NDA marking provision.

Convolve's evidence consists of the testimony of a single Seagate employee that he believed that all disclosures were confidential. But, the subjective intent of one of the parties is not indicative of the mutual intent of both parties. *Founding Members of the Newport Beach Country Club v. Newport Beach Country Club, Inc.*, 135 Cal. Rptr. 2d 505, 514 (Cal. Ct. App. 2003) ("The parties' undisclosed intent or understanding is irrelevant to

contract interpretation.") (citations omitted). Convolve also argues that, because Seagate and Compaq acknowledged that the oral and visual disclosures at the October 1998 meeting were covered under the NDAs, this demonstrates that the parties understood that all subsequent disclosures were also covered under the NDA. This evidence, however, leads to precisely the opposite conclusion. By acknowledging that the disclosures at the October 1998 meeting were confidential, the parties' conduct demonstrates they understood that oral and visual disclosures indeed required such written follow-up. As such, we perceive no error in the district court's conclusion that the parties did not waive or modify the marking provisions of the NDAs.

3. TRADE SECRET MISAPPROPRIATION CLAIM

Convolve next argues that, even if it failed to disclose or confirm its trade secrets in writing, such failure only warranted dismissal of its contract claims. Convolve also pled a separate claim for trade secret misappropriation; Convolve argues that its failure to comply with the NDA is irrelevant to that tort claim. Instead, Convolve contends that the California Uniform Trade Secrets Act ("CUTSA") controls its misappropriation claims against Seagate. And, because CUTSA does not require trade secrets to be disclosed in writing, the NDA does not define the entirety of the parties' relationship. According to Convolve, CUTSA provides that confidential relationships can be express or implied, and can depend on whether the defendant knew or should have known that disclosures were made under circumstances that compelled the receiving party to maintain confidentiality. As such, Convolve argues that it presented enough evidence to support a finding that the confidential relationship between it and Seagate was either not governed by, or not fully governed by, the NDA.

Under CUTSA, misappropriation means, among other things, disclosure or use of a trade secret of another without express or implied consent by a person who, at the time of disclosure, knew or should have known that knowledge of the trade secret was acquired under circumstances giving rise to a duty to maintain its secrecy. Cal. Civ. Code § 3426.1(b). While true that an implied duty may arise under certain circumstances, the parties have not provided any citation, and we have found no California case law that "discuss[es] the relationship between [NDAs] and implied duties of confidentiality." *Marketel Int'l, Inc. v. Priceline.com, Inc.*, 36 F. App'x. 423, 425 (Fed. Cir. 2002).

As another panel from this court found, the most relevant authority is from the Ninth Circuit (applying Oregon law), that "a written non-disclosure agreement supplants any implied duty of confidentiality that may have existed between the parties." *Id.* (citing *Union Pacific R.R. Co. v. Mower*, 219 F.3d 1069, 1076 (9th Cir. 2000)). This conclusion is fully consistent with general principles of California contract law. *See Faigan v. Signature Grp. Holdings, Inc.*, 150 Cal. Rptr. 3d 123, 134 (Cal. Ct. App. 2012) ("There cannot be a valid express contract and an implied contract, each embracing the same subject, but requiring different results.") (citing *Shapiro v. Wells Fargo Realty Advisors*, 199 Cal. Rptr. 613 (Cal. Ct. App. 1984)); *see also Hill v. State Farm Mut. Auto Ins. Co.*, 83 Cal. Rptr. 3d 651, 663 (Cal. Ct. App. 2008) ("Express covenants abrogate the operation of implied covenants so courts will not permit implied agreements to overrule or modify the express contract of the parties."); *Wagner v. Glendale Adventist Med. Ctr.*, 265 Cal. Rptr. 412 (Cal. Ct. App. 1989) (holding that there can be no implied contractual term at variance with an express term of a contract). "The reason for the rule is simply that where the parties have freely, fairly and voluntarily bargained for certain benefits in exchange for undertaking certain obligations,

it would be inequitable to imply a different liability." *Wal-Noon Corp. v. Hill*, 119 Cal. Rptr. 646, 650–51 (Cal. Ct. App. 1975). Common sense leads to the same conclusion. If the parties have contracted the limits of their confidential relationship regarding a particular subject matter, one party should not be able to circumvent its contractual obligations or impose new ones over the other via some implied duty of confidentiality.

Indeed, the CUTSA itself compels such a result. The CUTSA states that misappropriation occurs when a trade secret is acquired under circumstances giving rise to a duty to maintain its secrecy. Cal. Civ. Code § 3426.1(b). Convolve disclosed its alleged trade secrets to Seagate pursuant to the provisions of the NDA. Therefore, the "circumstances" giving rise to a duty to maintain the secrecy of the disclosed information is dictated by the terms of the NDA. Convolve did not follow the procedures set forth in the NDA to protect the shared information, so no duty ever arose to maintain secrecy of that information. As such, Convolve's argument must fail.

Convolve cites *AT&T Commc'ns of Cal., Inc. v. Pacific Bell*, 238 F.3d 427, 2000 WL 1277937, at *3 (9th Cir. 2000), for the proposition that the NDA's marking provisions do not foreclose its CUTSA claims as a matter of law. In *AT&T*, the court found that "electronic data" was not within the scope of the parties' agreement; therefore, no "duty of confidentiality as to [the] electronic data [was] established by contract." *Id.* Because the record was not sufficient to "indisputably" determine whether a confidential relationship existed outside the confines of the contractual relationship regarding the electronic data, the court remanded to the district court for further proceedings. *Id.*

AT&T, at most, allows for an implied confidential relationship regarding subject matter *not covered by the parties' contract*. Convolve does not dispute, however,

that its NDA with Seagate covers the substance of the information disclosed. And, since the subject matter covered under the NDA and that as to which Convolve alleges an "implied duty of confidentiality" are the same, the NDA controls the entirety of the parties' relationship regarding those disclosures. *AT&T* is inapplicable on these facts, and does not undermine the parties' NDA. Convolve's argument that the district court erred in dismissing its tort-based trade secret misappropriation claims fails.

4. CLAIMS AGAINST COMPAQ

Convolve finally argues that the district court erred by granting Compaq summary judgment on *all* trade secrets-in-suit even though ATSI 2B and 3A survived Seagate's motion for summary judgment. The district court found that Convolve only accused Compaq of misappropriating ATSIs 6 and 7 and that Convolve's breach of contract claim against Compaq was predicated solely on the unlawful disclosure and use of ATSI 7A. The district court thus granted summary judgment in favor of Compaq based on its earlier noted findings as to ATSI 6 and 7A. Convolve now contends that it had always accused Compaq of misappropriating *all* of Convolve's trade secrets, and that the district court's judgment for Compaq must be vacated. We are unconvinced.

During discovery, Compaq asked Convolve to identify "each and every" alleged trade secret Convolve contended Compaq disclosed to Seagate. In response, Convolve only identified ATSI 6 and 7A. That response made sense; Compaq is not in the disk drive business and all trade secrets other than ATSI 6 and 7A involve the development of such drives. ATSIs 6 and 7, on the other hand, are directed to the Quick and Quiet graphical user interface and marketing secrets, which are apropos to Compaq's business. As such, we find that the district court properly found that Convolve's allegations against Com-

paq for trade secret misappropriation and breach of contract were predicated only on ATSI 6 and 7, and that summary judgment in favor of Compaq was proper.

B. PATENTS

Convolve accuses Seagate and Compaq of infringing claims 1, 3, 4, and 7–15 of the '473 patent and claims 1–4, 7, 11, 21, and 24[6] of the '635 patent. The district court entered summary judgment in favor of both Seagate and Compaq on all asserted claims of both patents, finding that neither party infringed the claims of the '473 patent, directly or indirectly, and that the asserted claims in the '635 patent were invalid for a lack of enablement. We reverse the district court's findings regarding the '473 patent, but affirm the invalidity finding regarding the asserted claims of the '635 patent.

1. THE '473 PATENT

We first turn to the '473 patent. "To prove literal infringement, a plaintiff must show that the accused device contains each and every limitation of the asserted claims." *Presidio Components, Inc. v. Am. Technical Ceramics, Corp.*, 702 F.3d 1351, 1358 (Fed. Cir. 2012) (citing *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1301 (Fed. Cir. 2011)). When determining whether a patent is infringed, the court must first construe the disputed claims and then compare the claims to the allegedly infringing devices. *See Grober v. Mako Prods., Inc.*, 686 F.3d 1335, 1344 (Fed. Cir. 2012) (citing *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998)).

The district court construed the term "selected unwanted frequencies" as "at least the chosen unwanted frequencies." No other claim construction is relevant to

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6   Claims 11, 21, and 24 were cancelled as indicated by the '635 patent *ex parte* reexamination certificate. *See* J.A. at 193–94.

the district court's ruling on the claims of the '473 patent. After examining the written description and prosecution history of the '473 patent, the district court found that the patentee chose the term "selected" to distinguish the claimed invention from prior art that failed to "target" specific frequencies. The prior art indiscriminately reduced all frequencies without "targeting" specific ones. No party objects to the district court's construction of "selected unwanted frequencies," or the court's reasoning in support of that construction. The parties' dispute is over whether Seagate practiced Convolve's asserted method when it created the accused disk drives. *See* J.A. at 74.

Convolve accused four different categories of Seagate drives of infringement: ATA IV, SCSI, ATA III, and U5. The district court began it analysis with Seagate's ATA IV drive, which the parties agree reduces the 2.6 KHz frequency. Because claims 1, 3, 4, and 7–15 of the '473 patent require the reduction of *more than one* frequency, the district court found that the ATA IV did not infringe those claims. We find that the district court erred because it failed to consider evidence that calls into question whether Seagate's disk engineer actually only targeted *a single* frequency when developing the ATA IV.

Chris Settje—a disk drive engineer working on the ATA IV—testified that, during development of the drive, he identified the 2.6 KHz resonance and was surprised that so much sound power was focused in a narrow frequency *band*. Settje set out to develop a filter to reduce that frequency band and recorded his results in a graph that demonstrates *multiple peaks* in the area *around* the 2.6 KHz frequency, not only the 2.6 KHz frequency in isolation.

Convolve also presented other evidence that Settje did not solely target the 2.6 KHz frequency, including source code from the ATA IV. Convolve's expert opined, based on

a review of that source code, that the notch filter Settje used targeted and reduced a band of frequencies around the 2.6 KHz frequency. And, Convolve's expert explained that a notch filter, as used by Settje, reduces a range of frequencies, not just a single one.

While the district court did not find Convolve's evidence sufficient to demonstrate that Settje targeted multiple frequencies for reduction, Convolve was entitled to have all reasonable inferences drawn in its favor. *Olin Corp. v. Am. Home Assur. Co.*, 704 F.3d 89, 96 (2d Cir. 2012) (in determining whether fact disputes exist, "a court should 'draw all reasonable inferences in favor of the nonmoving party, and it may not make credibility determinations or weigh the evidence.'") (quoting *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 150 (2000)); *see also Meyer Intellectual Props. Ltd. v. Bodum, Inc.*, 690 F.3d 1354, 1365 (Fed. Cir. 2012). Because we find ambiguities in Settje's testimony regarding what he targeted for noise reduction, and because Convolve proffered testimony based on relevant evidence opining that Settje targeted multiple frequencies, we conclude that Seagate was not entitled to a judgment of noninfringement as a matter of law.

The district court also found that Seagate did not identify frequencies that were causing unwanted acoustics and then target those specific frequencies for reduction when creating its SCSI drives. Instead, the district court held that Seagate engaged in a trial-and-error process using different filters and then selected one that gave the best performance. According to Seagate, that approach caused it to choose a low-pass filter that would reduce all frequencies above the "knee." Because it found that Seagate did not "target" unwanted frequencies at all when developing its SCSI drives, the district court found that Seagate did not infringe claims 1, 3, 4, and 7–15 the '473 patent. We find that material issues of fact prevent-

ed the district court from reaching this conclusion as a matter of law.

During development of the Seagate SCSI drives, a Seagate supervisor explained in an email that silent seeks were deemed operational after evaluation of a group of filters. The supervisor explained that the development team looked at various filters at various frequencies, and determined which one gave the best inhibited excitation of audio frequencies. A "low-pass" filter was chosen. Convolve's expert opined that low-pass filters do not "indiscriminately" reduce all frequencies, but discriminate between frequencies below and above a *selected* cutoff frequency. Convolve also presented evidence that the low-pass filter chosen used a specified cut-off frequency, thereby reducing all unwanted frequencies beyond the cut-off. Convolve proffered evidence that the cut-off frequency was different for different SCSI drives. Based on this evidence, and drawing all reasonable inferences in Convolve's favor, a genuine issue of material fact remains regarding whether specifying a cut-off frequency, even when using a low-pass filter, amounts to targeting and selecting unwanted frequencies for reduction.

The district court also granted Seagate summary judgment of noninfringement on the ATA III and U5 drives. Again, the court found that Convolve failed to present evidence that Seagate engineers identified and targeted specific frequencies for reduction. The district court disregarded Convolve's evidence to the contrary because it believed that evidence did not relate to the development of the ATA III or U5 drives, but instead was directed to the ATA IV drive. The district court also found that references by Seagate engineers to using the "Convolve method" were too generic to refer to the invention disclosed in claims 1, 3, 4, and 7–15 of the '473 patent. We disagree.

Much like with the SCSI drives, when drawing all justifiable inferences in Convolve's favor, we find genuine disputes of material fact remain on this question. For example, Convolve's expert relied on evidence that Seagate engineers performed a quantitative analysis to identify particular frequencies when developing the U5 and ATA III drives. Convolve's evidence demonstrates that the quantitative identification of unwanted frequencies began during the development of a predecessor to the U5 and ATA III drives, and that the code developed then was subsequently used in the U5 and ATA III code base. Convolve also presented a Technology Development Plan that appears to demonstrate systematic identification of unwanted frequencies. Convolve's expert also identified log notebooks that indicate that Seagate was conducting roundtable discussions at the U5 and ATA III design center regarding the "Convolve method," among other things. In light of this evidence, and drawing all reasonable inferences in the non-movant's favor, a reasonable juror could conclude that Seagate targeted specific frequencies when developing these drives. We therefore reverse the district court's non-infringement finding on these drives as well.

The district court also granted Seagate and Compaq's motions for summary judgment regarding Convolve's claim of inducement. Convolve contends that Compaq and Seagate induced infringement of claims 7 and 10 of the '473 patent. Convolve claims that Compaq sold computers that incorporated allegedly infringing Seagate drives and provided instructions to users demonstrating how to select between performance and quiet modes. The district court first held that, because Seagate's drives do not directly infringe the asserted claims, Convolve cannot prove direct infringement by anyone. Since, as we held above, Convolve may be able to demonstrate that Seagate drives directly infringe the asserted claims, judgment on its inducement claims could not be premised on that fact.

The district court alternatively held, however, that even if the drives conceivably could infringe, Convolve's inducement claim fails because it proffered no evidence of actual direct infringement by another. Claims 1, 3, 4, and 7–15 of the '473 patent disclose generating a user interface that gives a user the ability to choose between seeks that are "slower" but quieter, or "faster" but louder. Convolve alleged that Seagate and Compaq induced users to infringe the asserted claims of the '473 patent by providing such an interface, along with instructions on how to use it. But, the district court found that Convolve failed to present evidence of a user who actually altered drive parameters, i.e., who used the user interface in an infringing way.

Since Convolve did not contend that the drives could only be used in an infringing way, the court found that the drives can be used in a non-infringing way (by not changing the acoustic mode of the drives). The court concluded that Convolve's evidence regarding how to use the drives in an infringing way was insufficient to defeat summary judgment on the inducement claims (the instructions provided by Compaq and Seagate). As such, the court held that Convolve's evidence was insufficient to demonstrate direct infringement by another.

A showing of indirect infringement necessarily requires a showing of direct infringement. *See Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1317 (Fed. Cir. 2009). Demonstrating direct infringement requires Convolve either to point to specific instances of direct infringement or show that the accused device necessarily infringes. *ACCO Brands, Inc. v. ABA Locks, Mfr. Co.*, 501 F.3d 1307, 1313 (Fed. Cir. 2007). Convolve proffers circumstantial evidence of direct infringement by customers. *See Lucent Tech.*, 580 F.3d at 1317 ("[A] finding of infringement can rest on as little as one instance of the claimed method being performed during the pertinent time period."). Convolve presented evidence from Seagate

and Compaq including: press releases, end-user instructions, and distributed tools that allowed and even encouraged computer users to select between different performance levels of the disk drives, i.e., quiet and slower versus noisy and faster. Convolve also provided expert analysis of Compaq's F10 Bios feature demonstrating how it allows computer users to select between the different operational speeds of the drive.

As we recently confirmed, when an alleged infringer "instructs users to use a product in an infringing way, there is sufficient evidence for a jury to find direct infringement." *Toshiba Corp. v. Imation Corp.*, 681 F.3d 1358, 1366 (Fed. Cir. 2012) (citing *Lucent Tech.*, 580 F.3d at 1318). While a very close call, we find that Convolve presented enough evidence to preclude *summary judgment* on its inducement claims. Convolve did not merely demonstrate that the drives are capable of infringing, but provided evidence of specific tools, with attendant instructions, on how to use the drives in an infringing way. Unlike *Fujitsu Ltd. v. Netgear, Inc.*, 620 F.3d 1321, 1325 (Fed. Cir. 2010), upon which the district court relied, the evidence here does not demonstrate that the infringing option in the Seagate drives was disabled by default. *See Toshiba Corp.*, 681 F.3d at 1365 (analyzing the holding in *Fujitsu*). Accordingly, given the procedural posture in which the claim is presented to us, we conclude that Convolve may proceed with its inducement claims on remand.

2. THE '635 PATENT

We next turn to the '635 patent. Section 112 of Title 35 requires the written description of a patent to enable a person skilled in the art to make use of the claimed invention. *In re Wands*, 858 F.2d 731, 735 (Fed. Cir. 1998). Enablement is a question of law based on underlying facts. *Callicrate v. Wadsworth Mfg., Inc.*, 427 F.3d 1361, 1373 (Fed. Cir. 2005). While the factual findings underly-

ing the legal conclusion of enablement are reviewed for clear error, we review the ultimate question of law *de novo*. *Plant Genetic Sys., N.V. v. DeKalb Genetics, Corp.*, 315 F.3d 1335, 1339 (Fed. Cir. 2003). Invalidity based on nonenablement must be proven by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd. P'ship*, __ U.S. __, 131 S.Ct. 2238, 2242 (2011).

"To be enabling, the [written description] of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation." *Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997) (citations omitted). Determining whether undue experimentation is necessary requires the weighing of many factual considerations. *Cephalon, Inc. v. Watson Pharm., Inc.*, 707 F.3d 1330, 1336 (Fed. Cir. 2013). "Enablement is determined as of the effective filing date of the patent," which, here, is September 12, 1988. *Plant Genetic Sys., N.V.*, 315 F.3d at 1339.

The district court found that, for the disclosure of the '635 patent to be enabling, the patent must teach one of ordinary skill in the art to generate inputs to minimize unwanted dynamics for all physical systems. The district court noted that it was undisputed that Dr. Singer was unable to practice claims 1–4 and 7, of the '635 patent on disk drives for long seeks until 1997, long after the filing date of the patent. Consequently, the district court held that, given the breadth of the asserted claims of the '635 patent, and because long seeks are a fundamental requirement for proper hard drive functionality, the patent failed to enable long seeks.

Convolve contends that the district court erred in two ways. Convolve first asserts that there is no evidence that the drive Dr. Singer tested in 1992 was available in 1988. As such, Convolve contends that Dr. Singer's failure to implement his method on the drive in 1992 is

irrelevant to Seagate's enablement defense because enablement is to be judged as of the date of filing. Convolve next argues that long seeks are merely a commercial requirement and have no bearing on whether the disclosure in the '635 patent is enabling for disk drives. Accordingly, Convolve argues that, because the claims of the '635 patent have been implemented in other physical systems, and for short seeks on some disk drives, it is enabling for all disk drives. We disagree on both counts.

The asserted claims of the '635 patent broadly claim a method for "generating an input to a physical system to minimize unwanted dynamics in the physical system response." '635 patent, col. 10, ll. 40–43. As the district court found, the claims purport to cover inputs into *any and all* physical systems, including disk drives. And, we perceive no clear error in—nor does Convolve seriously contest—the district court's fact finding regarding Dr. Singer's failure to perform long seeks on disk drives until 1997. Dr. Singer unequivocally testified that, given his inability to practice long seeks on disk drives in 1992, he decided to set aside applying the invention to those systems and did not return to or solve the problem until 1997.

Dr. Singer's testimony is fatal for the asserted claims of the '635 patent. Dr. Singer conceded that four years *after* the filing of the patent application he was unable to fully implement the '635 patent's method on disk drives. Dr. Singer further testified that he took up the disk drive issue again in 1997, and that it was only after applying his alleged trade secrets that he was able to solve the earlier problems. In other words, Dr. Singer was unable to implement his own method on disk drives until almost nine years after the filing date of the patent. Convolve fails to provide any evidence that would create a genuine dispute of material fact on these points.

Convolve also fails to provide any evidence that causes us to question the district court's fact finding that long seeks were, and are, necessary for hard drive functionality. Convolve, for example, contends that Seagate's expert, Dr. Gene Franklin "admitted" that it was possible to implement the method of the asserted claims of the '635 patent on "many disk drives." As the district court found, however, Dr. Franklin testified that the method might be implemented "to the extent that you have a simplified model of the dynamic motion of the disk drive." J.A. at 3597, Tr. 217:21–218:5. We agree. The district court did not err in finding that long seeks are critical to the fundamental workings of these particular physical systems, i.e., disk drives.

Convolve's argument that the record evidence from 1992 does not establish that the '635 patent was not enabling for disk drives in 1988 is illogical. First, if the inventor himself was unable to implement the method in disk drives in 1992, it necessarily means that he would not have been able to implement the method four years earlier. Also, Convolve's bald assertion that long seeks were not a necessary component of functional disk drives in 1988 is undercut by Dr. Singer's own attempts to perform long seeks on disk drives. If long seeks were not relevant, it is unlikely Dr. Singer would have testified that his drives were a failure or to set aside the project involving those drives until 1997. Convolve provides no more than attorney argument that long seeks were a mere commercial requirement. Attorney argument alone cannot preclude summary judgment on this issue.

Convolve's reliance on *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333 (Fed. Cir. 2003) is misplaced. Convolve contends that *CFMT* compels us to reverse the district court's finding because long seeks are a commercial embodiment for certain drives, and thus irrelevant to enablement. In *CMFT*, we found that the fact that a claimed method failed to meet the specific commercial

requirements of a client did not mean the patent was nonenabling. *Id.* at 1339. The record evidence here, however, as demonstrated by Dr. Singer's own testimony, is that the claimed method required functioning long seeks in the disk drives and these seeks were not simply a preference of a single customer. Again, Dr. Singer conceded that the failure to implement long seeks caused him to put aside attempts to implement the method in disk drives for over five years. That testimony is unrebutted. As such, *CMFT* does not apply to these facts.

By choosing such broad claim language, Convolve put itself "at the peril of losing any claim that cannot be enabled across its full scope of coverage." *Magsil Corp. v. Hitachi Global Storage, Techs., Inc.*, 687 F.3d 1377, 1381 (Fed. Cir. 2012). Dr. Singer's testimony that his later advancement allowed him to figure out why the '635 patent method was not working for disk drives is a strong indication that the patent was not enabling when it was filed. Indeed, "[t]he enablement doctrine's prevention of over broad claims ensures that the patent system preserves necessary incentives for follow-on or improvement inventions." *Id.* at 1384. Here, the inventor himself concedes that he was unable to fully implement the claimed method in disk drives for nine (9) years after the filing date. As such, we affirm the district court's finding of invalidity regarding claims 1–4 and 7 of the '635 patent.

III. COMPAQ'S OTHER ARGUMENTS

Compaq incorporated by reference all of Seagate's arguments into its own brief. Compaq, nevertheless, also discusses a series of issues, spanning nearly seventy pages, two of which were not considered, or even mentioned, by the district court in its summary judgment order. Compaq argues that: (1) the district court's noninfringement finding regarding the '473 patent should be affirmed because Convolve failed to demonstrate that the

relationship between acoustic noise and seeks is "inherently" inversely related; (2) the district court's judgment that Compaq did not misappropriate Convolve's trade secrets was correct; and (3) despite the district court not reaching any damages issues, Convolve has waived any objection regarding damages for non-Seagate drives or misappropriation damages accrued after Convolve allegedly disclosed its trade secrets.

We agree with Compaq, as explained above, that the district court properly entered judgment on Convolve's trade secret misappropriation claims. Regarding Compaq's claims on the '473 patent and damages, however, we decline the opportunity to rule on the new issues it raises on the current record. While Compaq is correct that we may rely on "any ground supported by the record for affirmance of the judgment," *see Granite Mgmt. Corp. v. United States*, 416 F.3d 1373, 1378 (Fed. Cir. 2005), the record and briefing on these issues are insufficient for us to rule at this time. Compaq's arguments regarding the '473 patent and damages are issues the district court did not reach. As such, if these issues continue to be of relevance, the district court, and the parties, should be afforded the first opportunity to develop the record on Compaq's assertions before we conduct our review.[7]

IV. CONCLUSION

For the foregoing reasons, we affirm the district court's findings that Seagate and Compaq did not misappropriate Convolve's trade secrets and that the '635 patent is non-enabling and, thus, invalid under 35 U.S.C. § 112. We reverse and vacate the district court's finding

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[7] We express no opinion on any defenses asserted as to the '473 patent other than non-infringement. We leave those questions, which the trial court deemed mooted by its non-infringement finding, to the trial court in the first instance.

that Seagate and Compaq do not infringe the '473 patent and remand for further proceedings.

AFFIRMED IN PART, VACATED IN PART, AND REMANDED

No Costs.