IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN

TOSHIBA CORPORATION,

Plaintiff,

v.

IMATION CORP., *et al.*,

Defendants.

OPINION and ORDER

09-cv-305-slc

In this lawsuit, plaintiff Toshiba Corporation contends that defendants are infringing its United States Patents Nos. 5,708,651 (the '651 patent), 5,892,751 (the '751 patent) and 5,831,966 (the '966 patent), relating to optical disc technology. Plaintiff contends that defendants Ritek, Moser Baer India Ltd and CMC Magnetics Corp. manufacture recordable and rewritable DVDs that infringe their patents and the remaining defendants sell and distribute those DVDs. Now before the court are the parties' cross motions for summary judgment and several related motions. Plaintiff has moved for partial summary judgment of infringement of the '751 and '966 patents, while defendants have moved for summary judgment of noninfringement of all three patents (except for a nominal claim of direct infringement against Imation's testing lab) and of limitation of damages.

For the reasons stated below, I am denying plaintiff's motion for summary judgment of infringement and I am granting defendants' motion for summary judgment of noninfringement. Because virtually nothing remains of this case after granting defendants' motion, I am denying the motion for summary judgment of limitation of damages as unnecessary.

PRELIMINARY MATTERS

As is routine during summary judgment practice in patent lawsuits, the parties seek to supplement the filings allowed by this court's summary judgment procedure and to strike opposition material that allegedly violates the court's procedures. Plaintiff requests leave to file a supplement, dkt. 193 and supplemental proposed findings of fact, dkt. 208, while defendants seek leave to file a surreply brief. I will grant these motions because plaintiff's motions are unopposed and defendants are entitled to address the new matters that appear in plaintiff's reply brief. In their proposed surreply, defendants submit briefing on a new case from the Federal Circuit. Plaintiff objects to this briefing, but also submits its own briefing on the matter. Rather than ignore the arguments because they were filed without leave of the court, I will take a more inclusive approach and consider both sides' arguments.

That inclusive approach, however, does not include accepting the continually-evolving report of plaintiff's expert, Dr. Hesselink. Defendants urge the court to disregard those of plaintiff's proposed findings of fact that rely on the testimony Dr. Hesselink provided after he filed his expert report. Defendants are correct: Dr. Hesselink's supplemental affidavits in support of plaintiff's summary judgment filings are a nullity. Frankly, plaintiff should not be surprised at this outcome. As the party who chose to file in this small, obscure district court, plaintiff must have scouted this court's longstanding practices and peccadillos. Pursuant to F.R. Civ. Pro. 1 and to implement the clear anti-sandbagging intent of Rule 26(a)(2), this court always has kept tight reins on expert witnesses and their reports, particularly in patent lawsuits. *See, e.g., Eugene Baratto, Textures, LLC v. Brushtrokes Fine Art, Inc.*, 08-cv-657, March 24, 2010 order, dkt. 70 at 2-7 (also at 701 F. Supp.2d 1068, 1070-71); *Z Trim Holdings, Inc. v. Fiberstar,*

Inc., 07-cv-161-bbc, Sept. 26, 2007 order, dkt. 57, (also found at 2007 WL 546414); *Innogenetics. N.V. v. Abbott Laboratories*, 578 F. Supp.2nd 1079, 1092-93 (W.D. Wis. 2007). This case is no different, and the court clearly warned both sides that it would not tolerate attempts at late supplementation by experts, *see* Aug. 26, 2009 preliminary pretrial conference order, dkt. 37 at 3. This tight control of expert disclosures clearly is within this court's power. *See, e.g., Fiskars Inc. v. Hunt Mfg. Co.*, 221 F.3d 1318, 1326 (Fed. Cir. 2000) (trial court has authority to limit a party's presentation of evidence pursuant to reasonable trial management procedures and orders).

Plaintiff contends that Dr. Hesselink's declarations merely "clarify" what was already in Dr. Hesselink's original expert report, if only implicitly. I agree with this contention on just one point: Dr. Hesselink says he performed "Disc at Once" testing originally. Although he did not say so then, he described tests that required such testing or comparable "finalization" to achieve the results he did. Defendants' expert assumed that he had finalized, and he addressed those findings in light of this assumption. Although there is a difference between finalization and "Disc-at-Once," it does not seem to have affected defendant's expert's ability to assess Dr. Hesselink's testing. Therefore, I will consider the facts that simply describe in greater detail the testing Dr. Hesselink already performed for his original expert report.

Other than this, plaintiff is whistling past the graveyard. Most of Dr. Hesselink's new assertions relate to matters far beyond the scope of his original expert report. In his summary judgment declarations, he includes new testing not performed previously, on lens-shaped "pits" (providing a diametric new opinion in an attempt to evade this court's unfavorable construction of that term) and on the effects of incremental and multi-session recording. Dr. Hesselink also

adds new doctrine of equivalents theories. Plaintiff and Dr. Hesselink defend this gambit on the ground that they unilaterally "reserved the right" to add a doctrine of equivalents theory later. They may as well have reserved the right to suspend the law of gravity. Rule 26 and this court's orders trump any party's bald assertion that it intends to supplement its expert report at some undisclosed time in the future without permission of the court. In addition, Dr. Hesselink includes new assertions related to market share, the availability of certain products in the United States, the presence of a lead-out area on certain discs at the time of manufacture and the intended use of certain products. Many of these statements are mere *ipse dixit*. In short I am disregarding all of these new assertions by Dr. Hesselink because they violate Rule 1, Rule 26 and this court's announced procedures.

From the parties' proposed findings of fact and the record, I find the following facts to be material and undisputed:

UNDISPUTED FACTS

A. **Parties**

Plaintiff Toshiba Corporation owns intellectual property, including United States Patents Nos. 5,708,651 (the '651 patent), 5,892,751 (the '751 patent) and 5,831,966 (the '966 patent), and is member of a patent licensing pool known as the DVD6C Licensing Group, which licenses the members' patents relating to various DVD technologies.[1]

Defendant Ritek Corp. is an optical media manufacturer that makes DVD optical discs. Defendant Advanced Media, Inc. is a subsidiary of ART Management Ltd., which is a subsidiary

[1] Plaintiff also manufactures and markets electronic and electrical products, but it has not manufactured or sold products implementing the technology at issue in this case in the United States since at least May 14, 2003, so its only relevant role in this case is as an owner of intellectual property.

of Ritek. Advanced Media is the North and South American marketer and distributor of Ritek's RiDATA brand of recordable CD and DVD media and it distributes Ritek discs in the United States.

Defendant Moser Baer India, Ltd. is another optical media manufacturer. Moser Baer manufactures the entire spectrum of optical media storage products, including recordable and rewritable DVD discs. Defendant Glyphics Media, Inc. used to sell discs manufactured by Moser Baer, but it no longer conducts business.

Defendant CMC Magnetics Corp. is a CD-ROMs and DVD replicator and optical disc manufacturer. CMC produces various DVD storage media products, including recordable DVD-R, DVD-RW, DVD+R and DVD+RW discs. Defendant Hotan Corp. is a subsidiary of CMC that sells and distributes media produced by CMC. Defendant Khypermedia Corp. is a distributor for optical media manufactured by CMC and used to be partly owned by CMC.

Defendant Imation Corp. develops and markets products designed to store digital information, including optical media such as recordable DVDs. Imation sells or has previously sold recordable and rewritable DVD discs in the United States. This includes discs manufactured by Ritek, CMC and Moser Baer.

B. **DVD Standards**

DVDs are made in several formats: DVD-ROM, which is read-only; DVD-R and +R, which are recordable; DVD-RW and +RW, which are rewriteable; and DVD-RAM, which is random-access memory.[2] Each of the DVD disc formats is governed by an applicable technical

[2] DVD now stands for "Digital Versatile Disc"; formerly it stood for "Digital Video Disc."

standard. The DVD-Forum publishes standard for the "minus" formats, including DVD-ROM, -R, -RW, and –RAM. The DVD+RW Alliance publishes standards for the "plus formats," including DVD+R and +RW. Ecma International publishes freely available standards that track those of the DVD-Forum and DVD+RW Alliance and are frequently used by professionals in the industry in lieu of the official standards.

C. **The '651 patent**

1. **Claim language**

Claim 1 of the patent discloses:

> An optical disc comprising:
>
> a circular substrate having information recorded thereon with a track pitch, said information being recorded as a plurality of pit trains, each of said pit trains including a plurality of pits; and
>
> a reflecting layer formed on said substrate, said information being reproduced by projecting a light beam via an objective lens,
>
> wherein when wavelength of said light beam is λ μm and numerical aperture of said lens is NA, said track pitch is in the range of (0.72 to 0.8) $\times$ (λ /NA)/1.14 μm, radial tilt is not more than 9.5 mrad, thickness of said substrate is 0.6 mm, and diameter of said circular[] substrate is 120 mm.

2. **Accused Products**

The products accused of infringing claim 1 of the '651 patent are defendants' DVD-R, DVD-R DL, DVD-RW and DVD-RAM discs.

a. "**reflecting layer**"

The accused products contain several different layers, including a substrate and a metal reflecting layer, typically a precious metal such as silver or gold. The metal reflecting layer acts as a mirror, reflecting back almost all the light that reaches it to the optical pick-up head. In addition, each of the accused products contain additional layers located between the substrate and the metal reflecting layer that are involved in facilitating recording to the disc. In defendants' DVD-R discs, this intervening layer is a dye and in defendants' DVD-RW and DVD-RAM products there are two intervening layers, a dielectric layer and an alloy layer. Each layer of the accused products is made of different materials and are joined with the other layers during separate manufacturing steps.

The standards governing the different accused DVD formats require that the disc have a reflectivity of 45 to 85% for proper readout. A lower-limit estimate of the amount of light reflected from the dye or buffer layer of a recordable disc is about 4%. However, a dye layer on a DVD-R disc may have reflectivity as high as 10-25%.

b. "**pit**"

Recordable DVD discs with DVD-R and +R formats use an organic dye to allow recording. Organic dyes darken when exposed to a recording laser beam, which heats the dye on the disc in specific areas. The heat permanently changes the color of the dye in the heated areas. When a recordable disc is read, the sensor detects less reflected light intensity from darker areas than from lighter areas.

Rewritable DVD discs with DVD-RW, DVD+RW and DVD-Ram formats use a layer of "phase change alloy" such as tellurium to allow recording. A phase change is created by a laser that heats the alloy in an area of the disc's recording layer, causing it to change from a crystalline state to an amorphous state with different reflectivity. When the disc is read, the sensor detects less reflected light intensity from the amorphous areas than from the crystalline areas.

Another way to affect the amount of light reflected back to the sensor is by the use of "pits" and "lands." The sensor sees more light when it is on a "land" than when it is on a "pit." A pit in the form of a flat-bottomed depression with a depth of approximately 105 nm would reflect approximately 12-13% of the light of a laser wavelength of 650 nm, given a refractive index n=1.56, which is standard for DVD-R. The difference between the light returned from a land and the light returned from a 105 nm flat-bottomed depression is approximately 75% of the total light. All other things being equal, a shallow flat-bottomed depression affects the light intensity less than a deeper one. A flat-bottomed depression that is only 10 nm deep (which is $\lambda/(42n)$ deep) will create only a 2% difference in light intensity compared to total light.

Plaintiff's expert, Lambertus Hesselink, found regular trains of depressions of approximately 70 nm depth formed in the surrounding land area in the accused DVD-RW and DVD-RAM products that are "comparable in appearance, form, and depth to the embossed pits in pre-recorded DVD-ROM discs."

In the accused DVD-R discs, testing showed bowl-shaped depressions formed in the surrounding land area. Dr. Hesselink states that, "[u]sing the basic formula for calculating the strength of a lens," he finds that the depth of an exemplary curved depression found in the accused DVD-R discs made it "quite a strong lens, with a focal length of about one micrometer,"

which "causes the depression to bend some of any subsequent reading light sharply enough to reduce the amount of light reflected into the pickup head." (The parties dispute whether these depressions are formed regularly on recordable DVDs and dispute whether Dr. Hesselink's calculations were proper in light of the tiny nature of the "lens.")

C. **The '966 patent**

1. **Claim language**

Claim 1 of the '966 patent discloses

> A recording medium comprising:
>
> at least one recording plane, wherein each recording plane on which data is recorded includes:
>
> a data region in which data is recorded; and
>
> a management region including number-of-recording-planes identifying information that represents the number of recording planes of the recording medium and recording-plane identifying information that uniquely identifies that recording plane.

2. **Accused products**

Plaintiff contends that defendants directly infringe claim 1 of the '966 patent by manufacturing or selling single-sided, single-layer DVD-R, -RW and -RAM discs.

DVD Forum and Ecma standards for DVD-R, -RW and –RAM discs state that these DVDs must have "Physical format information" prerecorded in the "Control Data Zone," which is located in the "Lead-in Zone" of the disc. The standards describe the requirements for certain bits located in the Control Data Zone, bits b6 and b5 of Byte 2 of the first 16 Bytes of the first

error-correcting code block of the first physical data sector and bit 24 of a four byte field called the "ID field."

a. b5 and b6

The standards require that bits b6 and b5 be set to "00" in the case of a single layer disc. For example, the Ecma specification for DVD-R and –RW discs state that "Bits b5 and b6 shall specify the Number of recorded layers. These bits shall be set to 00." Likewise, the DVD-Forum specification for DVD-R discs provides that the bits "shall specify the Number of layers" and "shall be set to 00b." The specification adds that the bits "shall be assigned according to the following rule:

00b : Single

01b : Dual

Others : Reserved.

The Ecma specification for DVD-RAM states that these bits "shall specify the number of recording layers accessible through an Entrance surface" and that they "shall be set to 00, indicating a single layer." The Ecma specifications for each of the accused products describe both single-sided discs and double-sided discs, explaining that single-sided discs have one "entrance surface" and double-sided discs have two. Double-sided, single-layer discs have a total of two recording planes, although only one recording plane is accessible from an entrance surface. The specifications state that on double-sided discs the values of bits b5 and b6 shall be set to "00" on either side of the disc. (Each side of the disc has its own b5 and b6 bits.) In fact,

everything is the same on both sides of a double-sided disc – even the physical sector addresses restart rather than continuing from one side to another.

It was unnecessary to design bits b5, b6 and b24 to operate with double-sided discs. Conventional DVD devices do not read both sides of double-sided discs simultaneously, and virtually all such devices lack the ability to read both sides of a double- sided disc without manual intervention. Thus, there generally is no need for a device to know that there are multiple sides of a disc available to it. On the other hand, single-sided, dual layer discs have multiple layers available for recording at any given time without manual intervention.

b. **b24**

The standards for the accused products require that bit b24 of the Identification Layer be a "Layer Number" bit for identifying the recording plane on which the Identification Data is recorded. The Ecma specifications covering those products provide that "Bit b24 shall be set to ZERO, indicating that through an entrance surface only one recording layer can be accessed." The standards require that bit b24 of a single layer disc be set to "0." If the disc is dual layer, bit b24 in layer 0 of the disc must be set to "0" and bit b24 in layer 1 of the disc must be set to "1."

Every one of defendants' accused single-layer, single-sided discs has bits b5, b6 set to "00" and b24 set to "0." Defendants' dual layer discs (which are not accused products) have bit b6 set to "0" and b5 set to "1." For defendants' single-layer double-sided discs (also not accused products), bit b24 has the same value of "0" for each of the two recording planes.

D. **The '751 patent**

1. **Claim language**

Claim 1 of the '751 patent discloses:

> An optical disc comprising:
>
> a lead-in area defined in an inner peripheral region of the optical disk;
> a lead-out area defined in an outer peripheral region of the optical disk, and
>
> a data area which is defined between said lead-in area and said lead-out area, and on which data is recorded as pits and lands on said optical disk . . .
>
> wherein said lead-in area includes a test pattern area composed of at least one physical sector having a header in which a physical sector address is described and a data section in which a test pattern having a pattern of said pits and land is recorded, said test pattern having a repetition of predetermined arrangements of said pits and lands in succession, each arrangement comprising [a series of pits and lands of predetermined sizes].

Claims 2 and 4 are dependent from claim 1 and disclose additional limitations on the length and pattern of pits and lands. (The parties raise no issue related to the specific length or pattern of the pits and lands on the accused products.)

2. **Accused Products**

The products accused in infringing claims 1, 2 and 4 of the'751 patent are DVD-R, -RW, +R, +RW and –RAM discs.

a. Finalization

The Ecma specifications for DVD-R and DVD-RW define "finalization" as the action in which the Lead-in Zone and the Lead-out Zone are recorded. For DVD-R, DVD-RW and DVD+R format discs, finalization is an optional step. More on this below. Information can be recorded onto these discs without finalizing them and without creating the test pattern. If a disc is not finalized, the user retains the option to add more data to the disc at a later time, and in such cases, the lead-out will not be created. If a DVD+RW disc is not finalized, the user retains the option to add more data to the disc at a later time. Recordable and rewriteable DVDs can be played in the drive in which it was recorded without finalization, but not on other recorders or conventional DVD players.

b. Lead-in area

DVD standards for the DVD-R, -RW and –RAM formats define the lead-in area as: "The area consisting of sectors adjacent to the inside of the Data area." The standards require that when a lead-in area is recorded to a disc, it be located in an inner peripheral region of the disc. According to the standards, the lead-in area is to be identified in a field called "Area type" in bits b27 and b26 of the Identification Data field (the first byte). When the lead-in area is present, those bits should be given the value "01." Plaintiff's expert tested samples of each of defendants' accused products after recording data on the discs with "Disc-at-once." The testing was performed using seven DVD drives from seven different manufacturers; each contained "Area type" information at bits b27 and b26 of the Identification Data field (the first byte) with the value "01."

c. **Lead-out area**

The DVD-Forum standards for DVD-R, -RW and –RAM define the Lead-out area as "The area consisting of sectors adjacent to the outside of the Data area." The Ecma Specifications describe the Lead-out Zone of DVD-R, -RW, +R and +RW discs as the zone comprising physical sectors outside of the Data Zone. DVD Recorders do not write a lead-out area unless and until a DVD-R, -RW or +R disc is finalized or Disc-at-Once recording is performed. DVD-R, -RW and +R discs recorded to by a DVD drive but not "finalized" by one of these two methods do not have a lead-out area.

Information recorded to DVD-R, -RW and +R discs can be reproduced even if a lead-out area is not present on such discs. DVD recorders can record and playback a movie on a DVD-R, -RW or +R disc without creating a lead-out area on the disc. When a DVD-R, -RW, +R or +RW disc is finalized, the lead-out area created may not necessarily be created at the outer edge of the disc.

The specific location of a lead-out area for DVD-R, -RW, +R, and +RW cannot be determined before the user records information on the disc. When 4 gigabytes of data are recorded on a 4.7 gigabyte disc, the amount of data dictates that the lead-out area be created at the outer edge of the disc. Depending on the amount of data recorded to a DVD-R, -RW or +R disc, a lead out area may be created on an inner, middle or outer region of the disc.

Standards for DVD+RW and DVD-RAM discs require lead-out areas to be defined in a certain area on the disc. The proprietary DVD+RW standard requires that the discs contain a single "Lead-out Zone" at the outer most part of the Information Zone, starting at a radius of

58.000 mm and a Physical Sector Number of 260540. The proprietary DVD-RAM standard requires that the lead-out area for those discs always extends to the absolute outermost part of the disc bearing a track, and the lead-out area always begins at the outer diameter of the data area. The standard requires the lead-out area to fall between radii of 57.889 and 58.493 mm.

d. Test Pattern Area and Test Pattern

Ecma specifications state that when the 3T-6T-7T test pattern is written to a disc, it will be located in the Reference Code Zone of the lead-in area. Defendants' DVD-RAM discs contain the claimed 3T-6T-7T test pattern pre-recorded, but their DVD-R, -RW, +R and +RW discs do not. After data was recorded on samples of each of the accused discs using a Disc-at-Once operation, those discs were found to contain the 3T-6T-7T test pattern and the Test Pattern Area composed of at least one physical sector and containing the test pattern. When the 3T-6T-7T test pattern is written to a disc, it is located in the Reference Code Zone of the lead-in area.

DVD-R, -RW or +R discs recorded by certain DVD recorders but not finalized do not have the 3T-6T-7T test pattern or a lead-out area. (Plaintiff attempts to dispute whether non-finalized discs recorded by a DVD recorder have the test pattern, but the only evidence it has is the late declaration of plaintiff's expert, Dr. Hesselink, in which he reports new testing that was not included in his original expert report. As explained above, the court is disregarding this testimony).

e. Substantial non-infringing uses

Defendants and companies selling DVD recorders recommend finalization in their marketing materials. For example:

- A manual states under "Important Notes for Recording" that "The disc must be finalized after recording" and "All DVD-R, etc. discs recorded on this unit must be finalized before they can be played on other DVD players."

- A video recorder recommends that the discs be finalized, and will automatically display a warning advising a user that "Finalizing is necessary to enable playback of the disc on compatible DVD players."

- A manual states under "Information on DVD Recording" and "Making discs playable on other DVD Players (Finalize)," that "for DVD-RW/-R, it is necessary to finalize the disc on other DVD players" and "for DVD+RW/+R, it is recommended to finalize the disc to make the disc more compatible to other DVD player."

- A manual instructs the user that "In order to improve the DVD playback and overall compatibility, choose the 'DVDROM' setting" and that "For the best compatibility with Data DVD's, do not use the multisession option."

- Packaging for DVD-R discs states "IMPORTANT: Please Read . . . Discs must be finalized for playback in DVD players."

- A manual advises that "it is necessary to finalize [a DVD-RW/-R] disc after recording, in order to play back the disc on other DVD players" and that "unfinalized disc[s]" will not play back on the unit.

- A document states that "[a]fter recording, the disc must be finalized" to use the disc with a software product called "DVD-MovieAlbumSE."

- A manual advises that "[f]or the best compatibility with Data DVD's, do not use the multisession option" and instead allow the disc to be finalized. The software allows multisession recording but notes in the help files that "[b]y default DVDs are burned using the disc-at-once method."

The parties' websites also recommend finalization, usually in the context of frequently asked questions:

- Defendant Ritek's website:

> Why can't a replicated disc play in player?
> …
> After replicating by Recorder or Handy CAM, please remember to run finalizes action. The finalized disc can be played in other [DVD] player.

- Defendant Moser Baer's website:

> What is a multi-session disc?
>
> A session is a recorded segment that may contain one or more tracks of any type. The CD recorder does not have to write the entire track at once --- you can write in single track and come back and write another --- but the session must be "closed" [elsewhere defined to mean "finalized"] before a standard audio CD or CD-ROM player will be able to use it . . ."

- A website linked from defendant CMC's website:

> What's an unfinalized disc and why won't it play in my player? Many DVD recorders can record onto DVD-R and DVD+R in *unfinalized* form, where temporary directory information is recorded after the last recorded section instead of at the beginning of the disc in the normal places. . . . When a disc is *finalized*, the directory information is written in the normal place, allowing standard DVD players to recognize and play the disc.

- Imation's website:

> DVD+R and DVD-R are both write once media and are used for permanent storage of your data. Once written the media can be read on most DVD recorders and players.

- Another Imation website:

> Why is [it] my optical media that I've recorded cannot play from my home or car stereo?
> . . .
> Disc not closed --- You can't play an audio optical disc on a common optical player (usually older model) until the Disc session has been closed. You might however be able to play it back with the optical rewriter.

DISCUSSION

A. The '651 Patent

Defendants have moved for summary judgment of noninfringement of the '651 patent, contending that the asserted claim requires both "pits" and a "reflecting layer" formed directly on the substrate but their DVD-R discs have neither of these features and their DVD-RW and DVD-RAM discs do not have the claimed "reflecting layer." Plaintiffs have not moved for summary judgment with respect to their claims of infringement of the '651 patent.

This issue must be resolved in defendant's favor in light of the court's construction of these terms. In a May 10, 2010 order, the court construed the term "pit" to mean "depression in the surrounding land area, where the depth is the principal factor creating a difference in reflected light intensity for encoding information" and "reflecting layer formed on said substrate" to mean "reflecting layer coated directly on the substrate." Dkt. 98, at 44. Plaintiff has failed to adduce evidence that the depth of any of the depressions found on the accused products is the "principal factor" creating a difference in reflected light intensity or that any of the accused products have a reflecting layer coated directly on the substrate.

1. **Pit**

As defendants point out, plaintiff's position has changed since it sought construction of the term "pit" as used in the '651 patent. At first, plaintiff asserted that the depressions formed during recording of a recordable disc were "relatively minor," insignificant and "[n]ot the principal factor creating a difference in reflected light intensity for encoding information." This court rejected plaintiff's proposed construction, which undermined plaintiff's claim that defendants' DVD-R discs infringed the '651 patent. Plaintiff however, has not conceded the point, instead propounding a new theory from its expert that the depth of the shallow depressions found on defendants' DVD-R discs was the "principal factor" creating a difference in reflected light intensity.

Dr. Hesselink, however, fails to support his new assertions with any analysis. An expert must base his opinion on sufficient facts or data adduced through the reliable application of reliable principles and methods. F.R. Ev. 702; *United States v. Lupton*, 620 F.3d 790, 798-99 (7th Cir. 2010). Dr. Hesselink's explanation fails to support his opinion. He says that the depth of the depression is what made the depression "quite a strong lens," which he discovered by "[u]sing the basic formula for calculating the strength of the lens." However, he does not describe that calculation or explain how the depth of the lens and other features interact. There is no question that depth is not the sole reason for the formation of the light-absorbing "lens"; it is undisputed that shallow flat-bottomed depressions absorb very little light and it is the *curvature* of the depressions found in the accused products that makes them light-absorbing lenses at all. By failing to describe the calculations he performed, Dr. Hesselink has hidden away

the evidence that could support his assertion that depth, not shape, is the "principal factor" in the reflected light intensity of the depressions found on the accused products.

This segues to the timing problem: even if Hesselink had "shown his work," defendants would have been prejudiced because they had no time to question Dr. Hesselink about his new theory or to have their own experts prepare and present their own opinions on this. Defendants obviously were caught off guard by all this, thinking the '651 claim against their DVD-R discs abandoned in light of the court's claim construction and plaintiff's original position on the matter.

2. **Reflecting layer**

Even if Dr. Hesselink's conclusory "opinion" that DVD-Rs have "pits" could be accepted, plaintiff fails to show that DVD-Rs or the other accused products have a "reflecting layer formed on [the] substrate" as required by the claim language. The court construed this term to require that the "reflecting layer" must be "coated directly on the substrate," meaning there could be no intervening layers between the reflecting layer and the substrate.

It is undisputed that the *metal* reflecting layer found in the accused products is not "coated directly on the substrate" because a layer of dye or buffers and alloy is located between the metal layer and the substrate. Nonetheless, plaintiff now contends that this claim element is met because the layers that are "coated directly on the substrate," the dye and buffers, are "reflecting." As plaintiff points out, the claim language says "a reflecting layer," not "the reflecting layer"; more importantly, nothing about the claim language or the specification

suggests there can be only one such layer. Thus, although the metal layer is certainly *a* "reflecting layer," there may be other layers as well.

Even so, the term "reflecting layer" cannot be read so broadly as to mean "any layer that reflects light" because that would be an empty limitation. *Most* materials reflect *some* light. Instead, a "reflecting layer" must be capable of reflecting enough light to be useful. DVD standards require 45-85% reflectivity. It would make sense that a "reflecting layer" should be able to reflect enough to perform the job for which it was named. Even assuming the layer is not required to do all the required reflecting by itself (a big assumption in light of the patent's silence on multiple layers of reflective materials), at the very least, a given layer should do almost all the reflecting work, or more reflecting than other layers. None of the layers coated directly on the substrates of the different accused products come anywhere close to doing this sort of "reflecting." At most, a dye layer *may* reflect 25%, although the low estimate of its reflection capabilities is 4%, as it is for a layer of buffer. These are not "reflecting layers" and thus the accused products fail to satisfy this claim language.

Next, plaintiff argues that the claim element is met because the "combined stack of layers" including the dye or buffers and the metal reflecting layer, can be considered a "reflecting layer." This argument is nothing more than a futile attempt to avoid the requirement that the reflecting layer be coated directly on the substrate. Plaintiff has no explanation for why "a reflecting layer" could mean "a combined stack of layers," and does not attempt to support its position with references to intrinsic or extrinsic evidence. Even if that undeveloped argument is not waived, it is unpersuasive. If "reflecting layer" could mean "a combined stack of layers,"

the limitation would be no limitation at all; any placement of a reflecting layer would suffice once "combined" with intervening layers.

In short, plaintiff's claims on the '951 patent were mortally wounded by the court's claims constructions, but only now are being laid to rest. Defendants are entitled to summary judgment on these claims.

B. The '966 Patent

Plaintiff seeks summary judgment in its favor on its claim that defendants' DVD-R, -RW and –RAM discs infringe claim 1 of the '966 patent, while defendants have moved for summary judgment of noninfringement. Again, the parties' disputes hinge on the court's claim construction. The court construed the term "number-of-recording planes identifying information" to mean "information *whose purpose* is to identify the number of recording planes on the recording medium" and "recording-plane identifying information that uniquely identifies that recording plane" to mean "information *whose purpose* is to identify the recording plane being reproduced." Dkt. 98, at 44, emphasis added. In so construing the claims, I rejected plaintiff's proposed construction that substituted "capability" for "purpose," finding that this broader construction did not accurately capture the inventors' intent or the claimed improvements offered by the invention. *Id*. at 40-43. As with the dispute over the term "pit" noted above, the court's construction of these terms might have been viewed as disposing of plaintiff's infringement contentions, but plaintiff has soldiered on, conceding nothing.

Plaintiff continues to contend that defendants' single-sided, single layer discs meet the claim language because these discs indicate the total number of planes on the disc (one) and

which plane is reproduced (the only one). However, as defendants point out, even though this may be literally true, it is only because plaintiff has carefully circumscribed the accused products to those where a single side of the disc is the entire disc. The DVD specifications require b5, b6 and b24 to identify the number of planes and which plane is being recorded *of the current side*, without regard to any planes on the other side of the disc. At least one of the Ecma specifications explicitly states that the information is with respect to the "Entrance surface," meaning "side." Moreover, all specifications cover two-sided discs without requiring the b5, b6 or b24 of the second side to change in value. Indeed, testing shows defendants' two-sided discs have the same values in the bits from one side to the next.

Plaintiff contends that the reason that the patent specifications don't address the proper role of bits in dual-sided discs is because it was unnecessary to design those bits to operate in double sided discs and because there was simply no reason to provide identifying information about the entire disc rather than about the current side. This argument only hurts plaintiff: it suggests that plaintiff's invention is not very useful because it requires information related to the whole "recording medium" instead of focusing on a single side. It does not show that the "purposes" of assigning single-sided bits b5, 6 and 24 to "0" were to provide information about the number of layers and to provide a layer identification number in relation to the entire disc rather than only the current side. With respect to the accused products, it just so happens that there is no second side to consider.

The identifying information on the accused products does not provide information about the total number of sides, nor does this identifying information ensure that the recording plane identifying information is "unique" from all others on the recording medium, only on that side

of the disc. Plaintiff's argument–that the numerical values of the bits are the same as if the information were designed to identify the number of sides and ensure unique identification across all sides of the disc because the accused discs are one-sided–is just a way for plaintiff to reargue its proposed construction that the number-of-layer identifying information merely be "capable" of identifying the number of recording layers, and that the "recording-plane identifying information" merely be "capable" of uniquely identifying the recording layer. As I explained in the order construing claim terms (dkt. 98 at 41), one purpose of the invention is to "determin[e] the types of a recording medium," so as to improve on prior art which failed to "include information that distinguishes [various] disc types," '966 pat., 1:24-27. Figure 2 of the specification includes as an example an identifier describing the number of discs of the recording medium. *Id.*, Fig. 2. The accused products fall short of doing so because the bits used to identify the current layer and total layers are not capable of differentiating two-sided discs, which is the purpose of the patent.

The fact that the bits on the accused discs happen to have the same information as they would if the standards properly distinguished two-sided discs does not establish that these bits satisfy the required claim elements. Because it is undisputed that the purpose of the bits on the accused products is merely to identify the number of planes and the recording plane on a given *side* of a disc, these bits do not serve the purpose of identifying the number of recording planes and the current recording plane of the recording medium as a whole. Therefore, the accused products do not meet these claim elements. Defendants' motion for summary judgment will be granted as to this claim and plaintiff's motion denied.

C. The '751 Patent

Plaintiff's principal theory of liability under the '751 patent is that defendants' products indirectly infringe the asserted claims because the claimed features are present after end users record to defendants' blank discs. I will address this theory in a moment.

Plaintiff also asserts that defendant Ritek's DVD-RAM drives directly infringe because they contain all the claimed features at the time of manufacture. This claim can be jettisoned quickly: plaintiff relies on Dr. Hesselink's conclusory, late-filed assertion that the lead-out area is present on those discs at the time of manufacture. This testimony is inadmissible, therefore this claim cannot survive.

Plaintiff finally asserts that defendant Imation directly infringes the asserted claims by performing tests on certain discs at a small facility in Minnesota. Imation's testing is not a part of any motion for summary judgment. Defendants suggest that this issue is not worth taking to trial because total damages for the alleged violation hover around $100. That's not the court's decision to make. If the parties cannot agree on a side deal disposing of this *de minimis* claim in light of this summary judgment decision, then perhaps a Rule 68 offer of judgment would help the parties determine the over/under value of Imation's Minnesota operation.

Defendant challenges plaintiff's principle theory of liability in several respects, arguing that plaintiff has not established any underlying instance of direct infringement and has failed to establish contributory infringement or inducing infringement because there is: (1) no evidence that the product has no substantial non-infringing uses, (2) no evidence of defendants' knowledge of the patent or test pattern, and (3) no evidence of encouragement to write the claimed test pattern. It is not necessary to consider the latter two arguments because I conclude

the evidence establishes that recording DVDs without finalizing them is a non-infringing use, and there is no evidence that this use is not substantial.

Both theories of "indirect infringement"–that is, contributory and inducing infringement–fail if there are any "substantial" non-infringing uses. *Dynacore Holdings Corp. V. United States Phillips Corp.*, 363 F.3d 1263, 1275 (Fed. Cir. 2004) (citing *Sony Corp. Of Am. V. Universal City Studios, Inc.*, 464 U.S. 417, 441 (1984)). A noninfringing use is substantial when it is not "unusual, far-fetched, illusory, impractical, occasional, aberrant, or experimental." *i4i Limited Partnership v. Microsoft Corp.*, 598 F.3d 831, 851 (Fed. Cir. 2010). Whether a use is "substantial" may depend on the use's frequency and practicality, the intended purpose of the invention, and the intended market. *Id; see also Ricoh Co., Ltd. v. Quanta Computer Inc.*, 550 F.3d 1325, 1336-40 (Fed. Cir. 2008) (glossing the substantial noninfringing use exception to 35 U.S.C. § 271(c)).

It is a plaintiff's burden to show that there are no substantial non-infringing uses of the accused products. *Golden Blount, Inc. V. Robert H. Peterson Co.*, 438 F.3d 1354, 1363 (Fed. Cir. 2006) (citations omitted); *cf. Fujitsu. Ltd. v. Netgear, Inc.*, 620 F.3d 1321, 1331 (Fed. Cir. 2010)(because the undisputed facts established that the accused software did not have substantial non-infringing uses, the appellate court could not affirm summary judgment of noninfringement on that basis).[3] As defendants point out, even after recording, their discs do

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[3] As the Supreme Court has noted,

> "[I]n contributory infringement cases arising under the patent laws the Court has always recognized the critical importance of not allowing the patentee to extend his monopoly beyond the limits of his specific grant. These cases deny the patentee any right to control the distribution of unpatented articles unless they are unsuited for any commercial noninfringing use."
>
> *Sony Corp. Of America v. Universal City Studios, Inc.*, 464 U.S. 417, 441 (1984).

not always include the claimed lead-in area, lead-out area or test pattern. In particular, DVD recorders will record data on the accused products without including any lead-in area, lead-out area or test pattern so long as the disc is not finalized (or recorded using the disc-at-once process), and there is evidence of a commonsensical and efficient reason not to finalize a disc: that way, the consumer can continue recording new material to the disc, and as long as the consumer keeps the disc in the same machine, s/he can play all this recorded material without finalizing the disc.

Plaintiff responds that defendants and the companies that manufacture DVD video recorders "teach finalization of the discs" to make them readable in other DVD players and recorders. According to plaintiffs, this means that use of non-finalized discs is not substantial because it is not a "recommended use," citing *Hoffman-LaRoche v. Promega Corp.*, 33 U.S.P.Q. 2d 1641 (N.D. Cal. 1994); *Cordis Corp. V. Medtronic Ave., Inc.*, 194 F. Supp. 2d 323, 350-51 (D. Del. 2002), *rev'd on other grounds*, 339 F.3d 1352 (Fed. Cir. 2003); *Medtronic Xomed, Inc. v*. Gyrus Ent LLC, 440 F. Supp. 2d 1300, 1312-13 (M.D. Fla. 2006). But none of these cases support treating evidence that finalization *is* recommended as evidence that other uses are not substantial, which is what plaintiff is proposing. In *Hoffman-LaRoche*, 33 U.S.P.Q. 2d at 1648-49, the court concluded that a claim for indirect infringement could proceed in light of expert testimony that use of certain chemical kits for uses other than polymerase chain reactions were not "commercially viable, efficient, or recommended uses of the kit." In this case, there is no evidence that playback of DVDs in the same DVD recorder that recorded it would not be "commercially viable" or "efficient." Although *most* of the marketing materials do not expressly recommend the noninfringing usage, even this is not *entirely* the case; Imation's website notes that playback with the same recorder remains an option before finalization.

In *Cordis*, 194 F. Supp. 2d at 350-51, the court found that an FDA-approved labeling stating that the product was to be used "*only* for 'improving coronary lumen diameter'" could be considered evidence that there was no substantial noninfringing use. In other words, *Cordis* involves a recommendation *against* noninfringing uses; the instant case involves a recommendation *for* infringing use when the use wishes to achieve particular but nonexclusive purposes (namely the ability to use the recorded disc in other DVD drives and recorders). Recommendations *for* finalization fail for the given purpose do not suggest that instances of non-finalization would be merely "aberrant" or "occasional."

Finally, in *Medtronic*, 440 F. Supp. 2d at 1312-13, marketing materials stated that the accused product was "designed exclusively" for a use that was infringing, suggesting that the product had a specialized use. In this case, the marketing materials and other statements recommending finalization do not suggest that this is the only proper way to use the product; they simply explain that if the consumer is going to play back the disc on other DVD recorders, s/he will have to finalize the disc. Only one of the marketing statements that plaintiff presents suggests that a disc that is not "finalized" is not "written," but even this statement does not suggest that a disc that is not "finalized" would not "work." More important, however, *Medtronic* found a basis for allowing an indirect infringement claim to proceed only after considering the parties' sales figures for the products and determining that they did not show as a matter of law that non-infringing use was "substantial." In this case, plaintiff does not offer sales figures (except the inadmissible, conclusory and late-filed statement of Dr. Hesselink's in which he "estimates" the market share of DVD recorders). Indeed, plaintiff does not even adduce evidence that playback in other DVD recorders or drives is a use preferred over playback in the same DVD recorder (which does not require finalization). (The presence of "frequently asked

questions" on the matter suggests that such out-of-recorder playback is of interest to users, but not that it is the predominant use for recorded DVDs.)

Even assuming that there were evidence that users prefer to play recordable and rewriteable DVDs in drives or other recorders, the mere fact that a use is less popular than an infringing use does not show it is "aberrant," "occasional" or otherwise not a "substantial" use of a product. Because plaintiff has failed to adduce any evidence that would support a finding that playback of non-finalized discs in the same DVD recorder is not a "substantial" non-infringing use, plaintiff's indirect infringement claims must fail. Therefore, defendants' motion for summary judgment of noninfringement will be granted with respect to this claim as well, and plaintiff's motion for summary judgment of infringement will be denied.

D. **Limitation of Damages**

Defendant has moved for limitation of damages. However, because I am granting defendant's motion for summary judgment, all that remains is what defendants describe as a $100 dispute between plaintiff and Imation over whether Imation's testing of certain DVDs directly infringed the '751 patent. There is no reason to untangle the parties' disagreements over notice if the case has been reduced to such a minor issue. Moreover, it is not clear how the notice issue would affect the parties' remaining dispute at all because the record leaves unclear when the alleged testing occurred. Rather than decide this issue, perhaps needlessly, I will take the parties' silence on the details of Imation's alleged direct infringement as an admission that they do not need a resolution of this issue.

Because one disputed issue remains, the case remains set for trial on Imation's Minnesota test site. Since the cost of the trial appears to dwarf the value of the lingering dispute, the court would be surprised if the parties did not promptly resolve this matter without putting it to a jury.

ORDER

It is ORDERED that

(1) The Motion for Leave to File a Supplement to plaintiff's opposition to defendants' motion for summary judgment, dkt. 193, is GRANTED.

(2) Defendants' motion for leave to file a sur-reply brief, dkt. 197, is GRANTED.

(3) Plaintiff's motion for leave to file supplemental responses to defendants' proposed findings of fact, dkt. 208, is GRANTED.

(4) Defendant motion for summary judgment of noninfringement, dkt. 124, is GRANTED.

(5) Plaintiff's motion for summary judgment, dkt. 117, is DENIED.

(6) Defendants' motion for summary judgment of limitation of damages period, dkt. 125, is DENIED as unnecessary.

Entered this 28th day of December, 2010.

BY THE COURT:

/s/

STEPHEN L. CROCKER
Magistrate Judge