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

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TOSHIBA CORPORATION,

OPINION and ORDER

Plaintiff,

v. 09-cv-305-slc

IMATION CORP.; MOSER BAER INDIA LTD.;
GLYPHICS MEDIA, INC.;
CMC MAGNETICS CORP.; HOTAN CORP.;
KHYPERMEDIA CORP.; RITEK CORP. and
ADVANCED MEDIA, INC.,

Defendants.

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Plaintiff Toshiba Corporation owns 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[1] technology. Plaintiff contends that the recordable and rewritable DVDs manufactured, used, sold, offered for sale and imported by defendants Imation Corp.; Moser Baer India Ltd.; Glyphics Media, Inc.; CMC Magnetics Corp.; Hotan Corp.; Kyphermedia Corp.; Ritek Corp. and Advanced Media, Inc. infringe the three patents. Defendants contend that plaintiff's patents relate only to pre-recorded –ROM optical discs, and thus, none of the accused products infringe the patents. The case currently is before the court on the parties' cross motions to construe several terms in each patent. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998) (claim construction is first step of patent infringement determination). The court held a claims construction hearing on March 10, 2010.

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[1] Like the parties, I am spelling "disc" with a "c" except when quoting a contrary spelling in a patent.

The parties dispute the meaning of 14 terms found in the three patents. From the parties' arguments at the hearing, their prehearing briefs, the patent claims, the patent specification and the prosecution history, I conclude that the jury would benefit from having the following terms construed:

- the term "**pit**" in the '651 patent means "**depression in the surrounding land area, where the depth is the principal factor creating a difference in reflected light intensity for encoding information**"

- the term "**reflecting layer formed on said substrate**" in the '651 patent means "**reflecting layer coated directly on the substrate**"

- the term "**track pitch**" in the '651 patent means "**the distance between the center of adjacent tracks, as measured in the radial direction**"

- the term "**said information being reproduced by projecting a light beam via an objective lens**" in the '651 patent means "**the information on the disc is capable of being reproduced by projecting a light beam via an objective lens**"

- the term "**pit**" in the '751 patent means "**an area which creates a difference in reflected light to represent information**"

- the term "**number-of-recording planes identifying information**" in the '966 patent means "**information whose purpose is to identify the number of recording planes on the recording medium**"

- the term "**recording-plane identifying information that uniquely identifies that recording plane**" in the '966 patent means "**information whose purpose is to identify the recording plane being reproduced**"

At this juncture I am declining to construe the other terms for which the parties seek construction because the parties have failed to show that they would benefit from their proposed constructions. These are the terms: "when wavelength of said light beam is λ μm and numerical aperture of said objective lense is NA, said track pitch is in the range of (0.72 to

0.8)x(λ/NA)/1.14 μm;" "land;" "physical sector;" "header;" "test pattern;" "recording plane;" and "management region."

OPINION

The construction of the claims at issue in a patent infringement case is a legal determination to be made by the court. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996); *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996). In interpreting an asserted claim, the court should look first to the so-called intrinsic evidence of record: the claims themselves, the patent specification and the prosecution history. *Teleflex, Inc. v. Ficosa North America Corp.*, 299 F.3d 1313, 1324-25 (Fed. Cir. 2002). Construction of the disputed terms begins with the language of the claims. Generally, claim terms are given their "ordinary and customary" meaning, which is the meaning the term would have to a person of ordinary skill in the art as of the filing date of the patent application. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005); *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001). In addition to considering the ordinary meaning of a claim term, the court must consider the context of the surrounding words of the claim when construing the term. *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003).

Although the ordinary and customary meaning of some claim language may be readily apparent even to judges, in many instances this is not so, and the court must proceed beyond the bare language of the claims to examine the patent specification. *Phillips*, 415 F.3d at 1314-15. It is in the specification that the patentee provides a written description of the invention

that allows a person of ordinary skill in the art to make and use the invention, *Markman*, 52 F.3d at 979, and at times even "set[s] forth an explicit definition for a claim term that could differ in scope from that which would be afforded by its ordinary meaning." *Rexnord*, 274 F.3d at 1342; *Vitronics*, 90 F.3d at 1582.

In this case, many of the parties' disputes regarding claims construction relate to whether the patent specification should be used to define the meaning of the claims. With several terms, one side–usually defendants–seeks to use the specification to define the claim while the other side argues that this would be improper. One the one hand, it is a "bedrock principle" that a patent's claims define the scope of the invention and that examples or limitations present in the specification may not be read into the claims. *E.g.*, *Ventana Medical Systems, Inc. v. Biogenex Laboratories, Inc.*, 473 F.3d 1173, 1181 (Fed. Cir. 2006); *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988). On the other hand, it is equally well established that the specification is the "single best guide to the meaning of a disputed term." *E.g.*, *MBO Laboratories, Inc. v. Beckton, Dickinson & Co.*, 474 F.3d 1323, 1329 (Fed. Cir. 2007); *Semitool, Inc. v. Dynamic Micro Systems Semiconductor Equipment GmbH*, 444 F.3d 1337, 1347 (Fed. Cir. 2006); *Vitronics*, 90 F.3d at 1582 (when term is not specifically defined in claims, it is necessary to review specification to determine whether inventor uses term inconsistently with its ordinary meaning). The Court of Appeals for the Federal Circuit has recognized "that the distinction between using the specification to interpret the meaning of a claim and importing limitations from the specification into the claim can be a difficult one to apply in practice." *Phillips*, 415 F.3d at 1323. When interpreting the specifications at issue in this case, I have

borne in mind the Federal Circuit's instruction that the "manner in which the patentee uses a term within the specification and claims usually will make the distinction apparent." *Id.*

After considering the claim language and the specification, a court may consider the final piece of intrinsic evidence, the patent's prosecution history. *Vitronics*, 90 F.3d at 1582. "[S]tatements made during the prosecution of a patent may affect the scope of the invention." *Rexnord*, 274 F.3d at 1343. Finally, a court may consult extrinsic evidence, such as dictionaries, treatises and expert testimony for background information and to "shed useful light on relevant art." *Phillips*, 415 F.3d at 1317 (internal quotations omitted). In general, this type of evidence is less reliable than intrinsic evidence in determining the meaning of claim terms and is "unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id.* at 1318-19.

## I. The '651 Patent

"Optical Disk Having Reduced Track Pitch and
Optical Disk Playback Apparatus Containing Same"

The invention in the '651 patent describes optical discs on which information is recorded as "pits." The invention seeks to increase the density of information on an optical disc, thereby increasing the total amount of information that can be stored on a disc. '651 patent, 2:24-30. The patent suggests that greater disc capacity can be achieved by making the pits smaller and closer together. This enables the disc to have more pits and more spiral tracks, thereby encoding more information. *Id.* The patent discusses the relationship between laser light wavelengths, objective lens numerical aperture, track pitches, radial tilts, substrate thickness and pits and how specific combinations of value ranges for these properties will reduce the amount of "cross-talk,"

which is information that is read improperly by the laser beam from more than one adjacent track at a time. *Id.*, 4:36-44. With less cross-talk, tracks can be closer together and more data can be recorded on a disc.

The parties dispute the meaning of the following terms used in the '651 patent: "pit," "track pitch," "reflecting layer formed on said substrate," "said information being reproduced by projecting a light beam via an objective lens" and "wherein when wavelength of said light beam is $\lambda$ $\mu$m and numerical aperture of said lens is NA, said track pitch is in the range of (0.72 to 0.8) $\times$ ($\lambda$ /NA)/1.14 $\mu$m." The terms appear in claim 1 of the patent (disputed claims are bolded):

> 1. 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 $\lambda$ $\mu$m and numerical aperture of said lens is NA, said track pitch is in the range of (0.72 to 0.8) $\times$ ($\lambda$ /NA)/1.14 $\mu$m**, 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.

I construe the terms as follows:

**A. "Pit"**

**Plaintiff's construction:** an area which creates a difference in reflected light to represent information

**Defendants' construction:** depression in the surrounding land area, where the depth is the principal factor creating a difference in reflected light intensity for encoding information

The parties' dispute boils down to whether the "pits" referenced in claim 1 and dependent claim 2 of the '651 patent should be limited to actual physical depressions in the disc. Defendants argue in favor of this limitation, contending that the language of the patent is directed at pre-recorded optical discs that have stamped or embossed pits. Defendants rely heavily on the '651 patent specification and preferred embodiment. Plaintiff disagrees that the patent claim or specification requires the term "pit" to be so limited and provides examples of intrinsic and extrinsic evidence in support of its theory that the ordinary meaning of "pit" at the time the patent application was filed included non-stamped "pits" formed on recordable and rewritable discs by color change, laser ablation or phase-change technology.

The "ordinary and customary" meaning of "pits" is not apparent from the claim language itself. Thus, I turn to the patent specification for guidance in construing the term. The abstract, written summary of the invention and description of the figures in the patent support defendants' proposed construction of the term because only pits that are physical depressions comport with the descriptions provided in the patent. The patent teaches that the shape and depth of embossed pits in the substrate of the disc affects a disc player's ability accurately to read pits. '651 patent, 5:58-65. The specification depicts examples of pits having a depth "hm." *Id.*, Fig. 4 (showing range of depths from 2/32 to 8/32); Fig. 6 (depth = 0.2 $\mu$m); Fig. 7 (depth = 0.2 $\mu$m); Fig. 8 (depth = 0.2 $\mu$m); Fig. 9 (depth = 0.2 $\mu$m); Fig. 16 (depicting perspective view of pits and lands, showing depths of pits).

In the abstract and in numerous places throughout the specification, the inventors describe "the present invention" as a disc on which information is recorded as "trapezoidally shaped" pits whose upper width, lower width and angle of inner walls fall within a certain range of values. *Id.*, Abstract, 2:40-44, 55-59; 3:1-4. Specifically, the patent teaches that the "ideal"

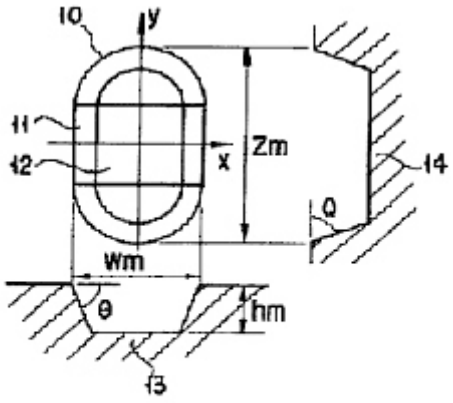
pits should be trapezoidally shaped, with a wide top, inclining walls and a narrower bottom. *Id.*, Fig. 13. When describing the basic concept of the invention, the inventors state that:

> According to the present invention, there is provided an optical disk which enables the track pitch to be made much smaller in order to achieve a much higher density and greater capacity . . . by optimizing the pit shape . . . . Hereinafter, the pit shape in the present invention will be described in detail.

*Id.*, 5:58-65. The inventors go on to describe the shape of the pit in detail by referring to Figure 1 in the patent:

> FIG. 1 is an explanatory diagram of the shape of a pit in an optical disk *according to the present invention.* As shown in the figure, the shape of a pit 10 *is approximated by a shape with a trapezoidal cross section. The inner wall 11 of the pit 10 is inclined downward and its bottom portion 12 is almost flat.* Numerical 13 indicates the cross section of the pit 10 along the radius of the optical disk (the track width direction); Wm the size of the top of the pit 10 across the track width (hereinafter the upper width); Wi the size of the bottom of the pit 10 across the track width (hereinafter the lower width); *hm the depth of the pit 10,* Zm the length of the pit 10 along the track; and Θ represents the angle of the inner wall of the pit 10 (the angle that the inner wall forms with respect to the surface of the optical disc).

*Id.*, 5:66-67; 6:1-14 (emphasis added).




F I G. 1

As the inventors explain in the written description of the invention, "[b]y setting various parameters of the pit shape at the above-described values, the amount of crosstalk between adjacent tracks is suppressed . . . ." *Id.*, 3:21-24. Later in the patent, the inventors explain Figure 4, stating that "[t]o minimize a decrease in the push-pull signal level and obtain the maximum playback signal level, it is desirable from FIG. 4 that the pit depth should be approximately λ/5, preferably in the range of λ/4.2 to λ/5.2." *Id.*, 6:55-59. When explaining Figure 6, the inventors state that "it can be seen that crosstalk changes greatly with the pit shape." Finally, in explaining Figure 16B, the inventors state that in an "optical disk *according to the present invention* . . . [o]ne surface of each transparent substrates . . . is *embossed with pits* . . .." *Id.*, 8:48-51 (emphasis added).

These myriad references to embossed, trapezoidal-shaped pits, pit depth and angled pit-walls support defendants' argument that a person of ordinary skill in the art of optical discs, considering the context of the claim language and patent specification, would understand "pit" as used in the patent to mean a pit that is three-dimensional and depressed into the substrate of the disc. Only a pit that is a physical depression could have trapezoidal shape, depth, a wide top, a narrower bottom and angled walls. Further, only a pit that has a depth can create the best combination of push-pull signal and minimal cross-talk to increase the capacity of the disc. There is no evidence that pits formed by ablation, color change or phase change would enable a disc manufacturer to optimize cross-talk, playback signal and track capacity.

Plaintiff raises several arguments in opposition to defendants' proposed construction, but none is persuasive. First, plaintiff contends that the language of claim 1 shows that the inventors deliberately claimed a broad set of "pits" so as to not limit the scope of the invention to stamped

or embossed pits that have depth in prerecorded discs. In particular, plaintiff contends that although claim 1 includes an equation with values or variables for track pitch, light beam wavelength, lens numerical aperture, radial tilt and substrate thickness, claim 1 does not include a variable for pit dimensions.

Plaintiff points to related patents to support their argument: U.S. Patent No. 5,592,464 (the '464 patent) and U.S. Patent No. 5,459, 712 (the '712 patent). The '464 patent is the "parent" of the '651 patent and claims pits of certain depths and dimensions. Marshall Decl., Ex. A, dkt. 73, '464 patent, claim 1. Similarly, the "grandparent" of the '651 patent, the '712 patent, claims a trapezoidal-shaped pit having specific upper and lower widths and inner walls of a specific angle. *Id.*, Ex. B, '712 patent, claims 1 and 2. Plaintiff contends that the fact that the inventors claimed specific pit dimensions in the parent and grandparent patents but did not do so in the '651 patent indicates that the inventors wanted the '651 patent to have a broader scope than the previous patents. In other words, the patentees knew how to write claims so that they would cover a specific type of pit, and although the inventors discuss pit depth and size in the '651 specification, they intentionally declined to include such values in the claim so as to broaden the scope of the invention to include pits formed by laser ablation, color change or phase change. This argument is unpersuasive.

Plaintiff's argument ignores the fact that all three patents refer to a pit as a trapezoidally-shaped depression in the substrate. Given that the pits in the '464, '712 and '651 patents are all similar, it stands to reason that the '651 pits should be given a meaning that would make sense for all three patents. That meaning is that pits that are physical depressions. As plaintiff notes, the parent and grandparent patents claim specific pit dimensions (*e.g.*, '464 patent, claim

1, dkt. 73, at 11:1-5), while the '651 patent does not; because of this, I agree with plaintiffs up to this point: in drafting the '651 patent, the patentees were claiming a broader set of pits than in the previous patents. But it is an illogical and off-target to infer that this difference expands the '651 patent to include pits without depths. Rather, this choice expands the patent to cover embossed pits with depths other than those specifically claimed in the parent and grandparent patents.

Plaintiff's second argument is based on the doctrine of "claim differentiation." Claims 1 and 2 state only that there are a "plurality of pit trains" including a "plurality of pits." Claim 6, which is part of an apparatus claim in the patent and not asserted in this lawsuit, claims:

> An optical disk apparatus according to claim 5, wherein said sensing means produces a push-pull signal and a playback signal, said push-pull signal representing a difference between signals sense in at least two areas along a track of said optical disk, and wherein *each of said pits has a depth to enable both said push-pull signal and said playback signal to have large levels*.
>
> '651 patent, 12:3-9 (emphasis added).

Plaintiff contends that because claim 6 requires pits to have a depth, the pits in claim 1 and 2 encompass pits without depth because they have no such limiting language. Plaintiff cites *Intamin Ltd. v. Magnetar Technologies, Corp.*, 483 F.3d 1328, 1335 (Fed. Cir. 2007), in which the court of appeals concluded that the claim term "intermediary" was not limited to "non-magnetic" intermediaries, in part because a dependant claim specifically claimed an embodiment in which the intermediary was non-magnetic. *Id.* The court explained that the "dependant claim show[ed] both that the claim drafter perceived a distinction between magnetic and non-magnetic intermediaries and that independent claim 1 impliedly embraced magnetic intermediaries." *Id.*

However, claim differentiation does not apply in this case. Claim 6 of the '651 patent does not differentiate pits with depth from pits without depth. Instead, it claims pits with a depth sufficient "to enable both said push-pull signal and said playback signal to have large levels." '651 patent, 12:8-9. Thus, the pits in claim 6 are differentiated from pits that do not have sufficient depth for this particular playback purpose.

Plaintiff's third argument is that restricting "pit" to only embossed or stamped pits would import a limitation from one embodiment into the claims. Plaintiff points to language in the specification stating that "the invention in its broader aspects is not limited to the specific details, and representative devices shown and described herein." *Id.*, 10:46-48. Similarly, the Court of Appeals for the Federal Circuit has warned repeatedly against confining claims to specific embodiments of the invention. *E.g.*, *Phillips*, 415 F.3d at 1323. This warning applies even where, as here, there is only one embodiment described in a specification. *Id.*

Duly noted. But that is not what this court is doing. Many of the cited passages from the specification arose in the context of explaining "the present invention," not merely an embodiment. The specification makes clear that embossed and stamped pits have been tested to optimize disc capacity and work with the invention. Therefore, it is appropriate to apply this limitation to the invention as a whole. *Verizon Services Corp. v. Vonage Holdings Corp.,* 503 F.3d 1295, 1308 (Fed. Cir. 2007) ("When a patent thus describes the features of the 'present invention' as a whole, this description limits the scope of the invention."); *Honeywell International, Inc., v. ITT Industries, Inc.*, 452 F.3d 1312, 1318 (Fed. Cir. 2006) (written description discussing "this invention" and "the present invention" may limit claim scope); *C.R. Bard, Inc. v. United States Surgical Corp.*, 388 F.3d 858, 864 (Fed. Cir. 2004) ("Statements that describe the

invention as a whole, rather than statements that describe only preferred embodiments, are more likely to support a limiting definition of a claim term.") Further, although the patentees refer to other types of embodiments, this does not mean that the claim can be applied to embodiments without embossed pits, it means that the claim could be applied to discs with embossed pits whose dimensions are different from those illustrated in the patent.

Fourth, plaintiff contends that prior art cited in the patent indicates that "pit" covers multiple types of physical changes. In the '651 patent, the inventors identify as prior art U.S. Patent No. 4,587,648 (the '648 patent), which was issued on May 6, 1986. In the discussion of its invention, an "Optical Disk," the '648 patent identifies multiple ways to form pits, including pits formed by high intensity laser beams. Hesselink Decl., Ex. F, dkt. 78, 1:16-21, 65-66. The '651 patent also cites as prior art U.S. Patent No. 5,274,623 (the '623 patent), which was issued on December 28, 1993. Hesselink Resp. Decl., Ex. G, dkt. 85. The '623 patent's specification discusses recordable and rewritable media and how "pits" are formed through chemical or physical changes on that media. *Id.*, Abstract.

It's true that if a patent applicant cites to prior art, then the use of a term in the prior art is intrinsic evidence that "can have particular value as a guide to the proper construction of the term, because it may indicate not only the meaning of the term to persons skilled in the art, but also that the patentee intended to adopt that meaning." *Arthur A. Collins, Inc. v. Northern Telecom Ltd.*, 216 F.3d 1042, 1045 (Fed. Cir. 2000). However, it "is rare that references that were submitted with a disclosure document, but not even cited by the examiner, are probative of an intent to depart from the plain technical meaning of terms used in the specification and claims." *Osram GmbH v. International Trade Commission*, 505 F.3d 1351, 1358 (Fed. Cir. 2007). In this

case, there is no evidence that the patentee or patent examiner discussed or cited the '648 or '623 patents.

As discussed above, the '651 patent specification provides a clear and consistent meaning for the term "pit" by referring repeatedly to pits as having depth and shape, consistent with the pits in pre-recorded optical discs. It would be improper to use the '623 and '648 patents to construe the meaning of the term pit in a manner contrary to the teachings of the patent itself. *Vitronics*, 90 F.3d at 1584-85 ("Once again, however, reliance on such [prior art] evidence is unnecessary, and indeed, improper, when the disputed terms can be understood from a careful reading of the public record. Nor may it be used to vary claim terms from how they are defined, even implicitly, in the specification or file history.") (internal citations omitted).

Finally, plaintiff cites several examples of extrinsic references that existed at the time the '651 application was filed, including patents, patent applications and a computer science doctoral dissertation, in which the authors use the term "pit" in discussing multiple types of physical changes to record information on optical discs. Plf.'s Resp. Br., dkt. 84, at 13-16. Plaintiff also points to the testimony of its expert, Professor Hesselink, to explain the knowledge of a person of ordinary skill in the art at the time of the invention. There is no dispute that at the time, the term "pit" *could* have had a broader meaning than that endorsed by this court, but in the '651 patent it *didn't*, as is clear from the unequivocal language throughout the patent specification. Thus, it is unnecessary to evaluate extrinsic references and expert testimony to discern a meaning. *Vitronics*, 90 F.3d at 1584-85. Plaintiff simply cannot overcome the evidence in the patent itself regarding the term pit.

Defendants' proposed construction of the term "pit" captures the meaning of pits as used in the patent and applied by the inventors. *See Kinetic Concepts, Inc. v. Blue Sky Medical Group, Inc.*, 554 F.3d 1010, 1019 (Fed. Cir. 2009) (rejecting broad construction of "wound" because "[a]ll of the examples described in the specification involve skin wounds" and a broader construction would "expand the scope of the claims far beyond anything described in the specification"); *Decisionmaking.com, Inc. v. Federated Department Stores, Inc.*, 527 F.3d 1300, 1311 (Fed. Cir. 2008) (construing the term "remote interface" to exclude personal computers in part because the features of the remote interface, as set forth in the specification, "do no evoke the use of consumer-owned personal computers."); *Phillips*, 415 F.3d at 1316 ("Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim.").

As detailed above, the patent specification repeatedly illustrates and describes the "pit" as a three-dimensional depression that is embossed in the substrate of the disc. This depth creates a difference in reflected light that allows the player to read information from the disc. Thus, the phrase "depression in the surrounding land area" in defendants' construction captures the physical characteristics of the pits, without limiting the construction with details regarding the specific size or shape of the pits. The phrase "where the depth is the principal factor creating a difference in reflected light intensity for encoding information" captures the function of the pits because the depth of the pits creates a difference in the intensity of light reflected between the pits and the lands. This difference in light intensity enables the sensor in a disc player to determine if a pit or land is being read and then reproduce the encoded information. In sum,

I agree with defendants that "pits" as used in the '651 patent means pits that are actual physical depressions on the substrate of the disc where the depth is the principal factor creating a difference in reflected light intensity for encoding information.

> **Court's construction:** depression in the surrounding land area, where the depth is the principal factor creating a difference in reflected light intensity for encoding information

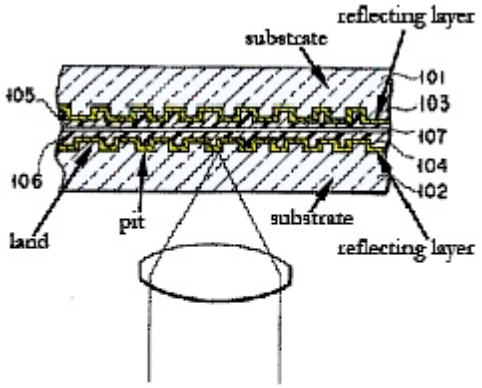
**B. "Reflecting layer formed on said substrate"**

> **Plaintiff's construction:** reflecting layer formed directly on or indirectly on the substrate
>
> **Defendants' construction:** reflecting layer coated directly on the substrate

Like the term "pit," the crux of the parties' dispute regarding this term is whether the '651 patent claims rewritable and recordable discs or whether it is limited to pre-recorded discs. In a pre-recorded disc, the pits are stamped on the substrate and coated directly with a reflective layer. This is different from recordable or rewritable discs, which contain an intervening layer of dye or alloy between the substrate and the reflecting layer. Plaintiff contends that this term should be construed broadly to cover discs where the reflecting layer is formed directly on the substrate (pre-recorded discs) and discs where the reflecting layer is indirectly on the substrate, such as on the dye or alloy layer (recordable and rewritable discs). Plaintiff contends that its construction is accurate because the specification and figures in the patent do not preclude the presence of intermediate layers between the reflecting layer and the substrate. Defendants contend that this term should be limited to cover only pre-recorded discs for which the reflecting layer is directly on the substrate layer. I agree with defendants.

Claim 1 discloses an optical disc that has a reflecting layer *formed on* the substrate. The inventors describe the disc in Figure 16B:

> [T]he structure of an optical disk *according to the present invention* will be described. FIGS. 16A and 16B are a perspective view and sectional view of a double-sided optical disk 100, respectively. *One surface of each transparent substrates 101 and 102 is embossed with pits* made of light-transmitting resin such as polycarbonate or acrylic resin *and is coated with a reflecting film 103 and a reflecting film 104 (e.g., of aluminum*), respectively.
>
> '651 patent, 8:47-55 (emphasis added).




F I G. 16B

This is a description of a pre-recorded disc in which the pits are stamped on the substrate and directly coated with a reflective layer. I concluded above that "pits" as used in the '651 patents means depressions in the substrate. In order for the player to detect the difference in reflected light between the pits and the surrounding substrate, there must be a reflecting layer coated directly on the substrate that conforms to the shape of the pits and lands. There are no intervening layers. Thus, defendants' construction captures the meaning of this claim term.

Plaintiff attempts to rebut defendants' argument with general statements about the importance of avoiding the importation of a single preferred embodiment into the claim

language. However, the description of Figure 16B is a disc according to "the present invention." *Id.* Thus, it is appropriate to apply this description to the invention as a whole, especially because there is no language or figure in the '651 patent that even hints at extra layers between the reflecting layer and the substrate. *Verizon Services*, 503 F.3d at1308; *Honeywell*, 452 F.3d at 1318; *C.R. Bard*, 388 F.3d at 864. Plaintiff's attempt to analogize *AFG Industries, Inc. v. Cardinal IG Co.,* 239 F.3d 1239 (Fed. Cir. 2001), doesn't change things. In *AFG Industries*, the court of appeals interpreted a patent related to window coating technology and construed the term "formed on" to mean formed "directly or indirectly on." There, the patent claimed a five-layered transparent window coating in which each layer was "formed on" the next layer. *Id.* at 1243. The court ruled that the patent covered a product with "interlayers" formed between the five claimed layers. The court reasoned that although the claim itself did not disclose interlayers, the patent specification discussed the use of interlayers, interlayers were insignificant to the final product and interlayers routinely were not disclosed in descriptions of the product. *Id.* at 1243-47.

The court's analysis leading to its construction of "formed on" in *AFG Industries* is not helpful in this case because nothing in the '651 patent suggests the presence of a layer between the substrate and the reflecting layer. The '651 patent discloses only reflecting layers coated directly on the substrate. Moreover, the dye and alloy layers that plaintiff seeks to encompass with its construction are not, like the interlayers in *AFG Industries*, "insignificant" to the finished product; they are essential features of recordable and rewritable discs.

Because I conclude that defendants' construction captures the meaning of "reflecting layer formed on said substrate" as used in the '651 patent, I will adopt their proposed construction.

**Court's construction:** reflecting layer coated directly on the substrate

**C. "When wavelength of said light beam is λ μm and numerical aperture of said objective lense is NA, said track pitch is in the range of (0.72 to 0.8)x(λ/NA)/1.14 μm"**

**Plaintiff does not seek construction**

**Defendants' construction:** when the wavelength of the light beam projected onto the substrate is λ μm and the objective lens has a numerical aperture of NA, then the track pitch is in the range of (0.72 to 0.8) x (λ/NA)/1.14 μm

The parties seek construction of this term in order to resolve their dispute regarding the elements required to satisfy the limitations in claim 1. Plaintiff contends that the invention in claim 1 relates to an optical disc with certain characteristics that is *capable* of being played by a disc apparatus that emits a light beam of certain wavelength (λ) using an objective lens that has a certain numerical aperture (NA). According to plaintiff, an actual lens and beam of light are not necessary for infringement.

In contrast, defendants contend that the invention is an apparatus consisting of a disc with pits, reflecting layer and track pitch, a light beam having a wavelength and an objective lens having a numerical aperture. In other words, defendants contend that the "apparatus" in claim 1 is formed only in the moment when "a disc with the claimed track pitch is inserted in a drive shining a light beam with the claimed wavelength through a lens with the claimed aperture," and

that given the wide variation allowed by the two-variable equation, a disc's track width might fall within the claim when used in one drive but would not on another. Therefore, ask defendants, how would a manufacturer know whether the track pitch on its discs infringes the patent until it is played on a drive? Defendants contend that absent limitations, the claim is "indefinite," and therefore invalid under 35 U.S.C. § 112. *See IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005) (claim must be "sufficiently precise to provide competitors with an accurate determination of the metes and bounds of protection involved.") (internal quotations omitted). Defs.' Reply Br., dkt. 81, at 24-25.[2] Plaintiffs reject this argument, claiming that it improperly reads into claim 1 requirements from a player, thereby morphing it into a hybrid methods claim . Transcript, dkt. 92, at 48-53.

Understanding the nature of the parties' dispute concerning this claim, it remains unclear to me how defendants' proposed construction bestows the benefits they tout or inflicts the improper transmogrification feared by plaintiff. Therefore, I am not prepared to construe this claim at this time. I remain willing to provide a construction if necessary and if the parties provide sufficient information in a summary judgment motion or motion in limine. To the same effect, the parties remain free to revisit defendants' assertion of indefiniteness if and when they deem it appropriate.

**Court's construction:** no construction necessary at this time.

---

[2] Although the patent's two-variable equation theoretically allows an infinite range of values, as a practical matter the range of useable values is limited by the available technology (which continues to improve), *see, e.g.*, '651 Patent at 4:36-44. I understand defendants' indefiniteness accusation to be directed at the uncertainty generated within this range.

**D. "Track pitch"**

**Plaintiff's construction:** the distance between adjacent track centerlines, as measured in the radial direction

**Defendants' construction:** the distance between pits in the adjacent tracks (represented in FIG. 3 as Pt)

The parties dispute whether "track pitch" should be defined in terms of "pits" or "tracks." This dispute seems to be less about the actual construction of the term and more about trying to predict what the other side will argue in the context of an infringement or invalidity analysis. Although the parties argue vigorously in favor of their own proposed definitions, the parties' proposed constructions are not very different. The parties agree that the distance "Pt" in Figures 3 and 5 of the '651 patent illustrates the track pitch:

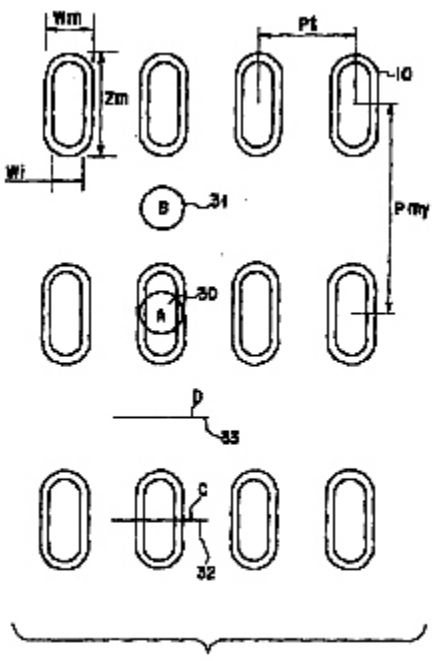



FIG. 3

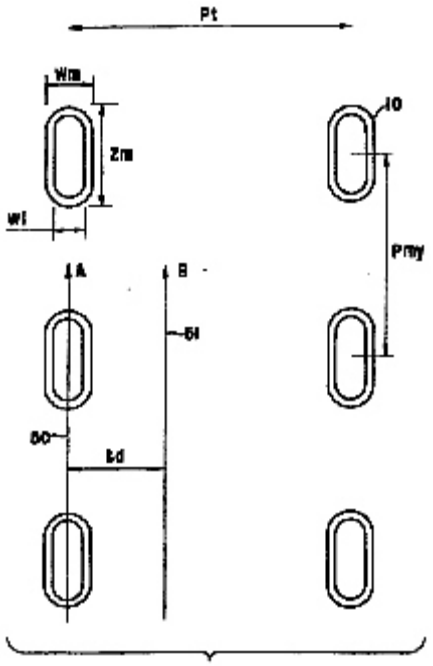



FIG. 5

Defendants' construction is ambiguous as proposed because it is unclear whether the track pitch should be measured from the outside edge of the pits, the center of the pits or somewhere else. At the claims construction hearing, defendants clarified that they are satisfied with measuring track pitch from the center of the pits; indeed, they even are willing to embrace the term "centerline" so long as it is clear where to place it. Transcript, dkt. 92, at 105. Plaintiff, however, hews to its position that we're talking about the pitch between tracks, not pits, so that pits should not be the frame of reference. *Id.* at 44-47.

Plaintiff has the better argument; my only concern is its use of the word "centerline," which is not used in the '651 patent. Although the meaning of "centerline" may be inferred from Figure 3 of the patent, it will avoid confusion by changing the definition to "the distance between the center of adjacent tracks, as measured in the radial direction."

> **Court's construction:** the distance between the center of adjacent tracks, as measured in the radial direction

> **E. "Said information being reproduced by projecting a light beam via an objective lens"**
>
> **Plaintiff's construction:** the information on the disc is capable of being reproduced by projecting a light beam via an objective lens
>
> **Defendants' construction:** [not seeking construction]

Plaintiff requests that this term be construed to clarify that this apparatus claim requires no action by a player or additional apparatus for infringement to occur. In other words, plaintiff contends that claim 1 does not require the act of actively reproducing information from the optical disc, but only requires that the information on the disc be *capable of* being reproduced.

In their brief, defendants take the position that construction of this phrase is not necessary. Nonetheless, defendants provide a construction, suggesting that "being reproduced" means "that the information is *actually* being reproduced (read) from the disc." Defs.' Br., dkt. 71, at 34.

Room for dispute exists because the inventors used an awkward verb construction to explain a concept in their patent: their use of "being," with the past participle "reproduced" puts the concept in the passive voice, so that the action described could be interpreted either as currently occurring or to occur in the future.[3] Plaintiff contends that "being" means "capable of" and defendants contend that it means "actually." This dispute can be resolved by considering the context of the phrase in claim 1. *ACTV, Inc.*, 346 F.3d at 1088 ("[T]he context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms"). The patent explains that additional advantages and modifications "will readily occur" to those skilled in the art; therefore, the invention is not limited to the specific details and representative devices and examples actually described in the patent. '651 patent, claim 1, 10:45-48. Obviously, the patent envisions future action. Thus, it seems clear enough that the inventors used "being reproduced" to explain how or in what matter information will be reproduced on the optical disc. There is no indication that in the second paragraph the inventors are describing an action or method of the disc or a disc player.[4] Plaintiff's construction captures the correct meaning of the phrase because it clarifies that the

[3] For instance, to say "Kurosawa's *Rashomon* is being shown on HBO" could mean either that the movie is being shown right now or that it will be shown in the future.

[4] As noted above, however, it remains an open question whether the third paragraph of claim 1 requires that a disc player actually be projecting a light beam.

information is not actually being reproduced (within this phrase), but that the manner in which information is reproduced is by projecting a light beam via an objective lens.

> **Court's construction:** the information on the disc is capable of being reproduced by projecting a light beam via an objective lens.

## II. The '751 Patent

"Optical Disk Having an Evaluation Pattern for Evaluating the Optical Disk"

The invention in the '751 patent is a test pattern for evaluating and minimizing errors on an optical disc. '751 patent, Abstract. According to the patent, a specific test pattern of data is recorded as a series of pits and lands on an optical disc. The pattern can detect errors on the disc and create a signal to minimize error rates and make adjustments to correct errors if necessary. The parties dispute the meaning of the following terms in the '751 patent: "pits," "land," "test pattern," "header" and "physical sector." The terms appear in claim 1 of the patent (disputed claims are bolded).

1. 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].

**A. "Pit"**

**Plaintiff's construction:** an area which creates a difference in reflected light to represent information

**Defendants' construction:** depression in the surrounding land area, where the depth is the principal factor creating a difference in reflected light intensity for encoding information

The parties' dispute regarding "pits" is the same dispute they had with respect to the '651 patent. That is, the parties dispute whether "pits" referenced in claim 1 of the '751 patent should be limited to actual physical depressions in the disc. Defendants contend that it should be so limited, and plaintiff disagrees. Both parties contend that the term "pit" should be construed the same for both the '651 and '751 patents, each side championing its own definition. While this *could* be the appropriate outcome, it is not ineluctable, and neither party has convinced the court that it is correct on this point.

Plaintiff contends only that it is "clear that both patents cover a broader array of discs" and thus should be construed the same. Transcript, dkt. 92, at 10. But as noted in the previous section, the '651 patent defines "pit" much more narrowly than plaintiff advocates.

Defendants contend that "there is no indication in the '751 patent that Toshiba meant something different than what it meant in the '651 patent." Defs.' Br., dkt. 71, at 34. "Toshiba," however, was not the inventor of the '651 or '751 patented inventions. In fact, although both patents are assigned to plaintiff, the patents have different inventors. When queried at the claims construction hearing, defendants suggested that the term "pit" should be construed the same for both patents because the patent applications were filed in 1994 and 1995 by the same law firm, the applications were examined by the same patent examiner and the inventors were colleagues. Hrg. Tran., dkt. 92, at 61-63. These are not persuasive reasons to construe terms in separate patents in the same way; indeed they border on non sequiturs. It's

not surprising that inventors in the same field would be colleagues and would retain the same law firm for patent applications; this tells us nothing about their actual inventions. As always, the best way to determine the meaning of the term "pit" as used in the '751 patent is to consider the claim language, patent specification and other evidence.

The meaning of "pit" is not readily apparent from claim 1 itself, which sheds little light on what type of pits can form the test pattern. Therefore, I turn to the patent specification to determine the meaning of the term as it is used in the '751 patent. Unlike the '651 patent specification, the '751 patent specification does not describe the figures or descriptions contained with as depicting "the present invention." Instead, the specification states that the examples are "embodiments" of the invention. '751 patent, 9:8-9. The section entitled "Detailed Description of the Preferred Embodiments" states:

> As is know[n], the optical disk 10 can have various structures. This optical disk 10 may be a read only disk on which data is recorded at a high density as shown in Figure 3.
>
> * * *
>
> [In] the data recording area . . . reproduction information, video data, sub-picture data and audio data are recorded as pits (i.e. physical changes) . . . . For the read only optical disk 10, rows of pits are previously formed on the transparent substrate 14 by a stamper, a reflection layer is vapor-deposited on the pits-formed transparent substrate 14, and this reflection layer is formed as the recording layer 16. In the read only optical disk 10, normally, grooves as tracks are not provided but pit rows formed on the transparent substrate 14 are specified as tracks.

'751 patent, 9:63-67; 10:39-43.

This excerpt from the specification provides useful insight into the inventor's concept of "pits."

Defendants are correct that the process described for forming pits on a substrate is used only for pre-recorded discs and creates pits that are actual physical depressions. Thus, it is clear that the inventors chose to use a pre-recorded optical disc as an example to explain its test

pattern invention. However, the statement also indicates that the inventors knew that optical discs come in other forms, including discs that are not pre-recorded, read-only discs. The specification states that the disc "may be" a read only disc, not that it "is" or that it "must be." Also, the inventors reference discs that have "grooves as tracks," explaining that normally, read only discs do not have grooves. Recordable discs do have grooves. Immink Decl., dkt. 79, at 13. Further, the specification states that data is recorded as "pits (i.e. physical changes)," and then says that in read only discs, these pits are formed by a stamper. Notwithstanding the grammatical awkwardness noted above, courts still presume when construing claims that inventors choose their words carefully. *Phillips*, 415 F.3d at 1313-14. Here, the inventors could have said "pits (i.e. depressions)" or "pits (i.e. stamped data points)." Instead, they used the broad phrase "physical changes," indicating that there is more than one possible type of physical change that could create a pit, especially in discs that are not read only discs.

Later in the specification, the inventors describe the process for creating the "read only disk 10." In particular, the specification states that

> [A] description will now be given of *a method* of recording evaluation data together with picture data and management data for reproducing the picture data on the optical disk, and a recording system to which this recording method is adapted.
>
> '751 patent, 18:6-9 (emphasis added).

The inventors then describe the process for creating a read-only disc 10. *Id.*, 18; 19. The inventors describe how the test pattern invention can be used to evaluate the disc that "was manufactured by the above-described method." *Id.*, 20:47-49. The test pattern can determine whether the pits were formed correctly and whether there is enough of a difference between the pits and surrounding land that a player can distinguish between the two and reproduce the recorded information. *Id.*, 20:64-65.

At the claims construction hearing, defendants contended that this discussion in the patent specification regarding the creation and evaluation of a read-only disc makes it clear that the test pattern invention was directed solely at evaluating pits in prerecorded –ROM discs. Transcript, dkt. 92, at 80-87. However, as I noted above, the specification does not describe this process as *the invention.* The specification says this recording process is "*a* method" of recording evaluation data, and the resulting disc is an "embodiment." '751 patent, 18:7, 20:36. There is no evidence that the test pattern claimed in the patent would not evaluate data that was recorded on discs through other *methods* or *embodiments*. Presumably, it is important for data areas ("pits" or "marks") on recordable and rewritable discs to be distinguishable from the land area so that a player may read and reproduce the information.

A description of one preferred embodiment cannot be read into the claim unless the specification makes it clear that the description relates to the invention as a whole rather than to one example. *Phillips*, 415 F.3d at 1323. Defendants have not shown this for the '751 patent. These inventors did not use the phrase "the present invention" when describing pits, nor did they otherwise state that depressed pits are "required" or necessary. Rather, the '751 specification refers to the optical disk 10 in Figures 3 and 4 as one "embodiment." This makes sense because unlike the '651 patented invention, the invention in the '751 patent is not related to or affected by pit depth or dimensions.

Further, defendants point to nothing in the specification suggesting that the inventors used Figures 3 and 4 as anything more than a simplified form of what an optical disc may look like for purposes of demonstration. Because the '751 patent is not related to pit shape and size, it makes sense that the inventors would not find it necessary to describe every type of possible pit, disc structure or method of manufacturing optical discs. The inventors describe only one type of disc in order to explain the test pattern invention.

As already noted above in construing "pit" for the '651 patent, the Court of Appeals for the Federal Circuit has "repeatedly warned" against limiting the scope of a claim on the basis of a preferred embodiment. *Phillips*, 415 F.3d at 1323. An embodiment may serve to limit a claim only if it is clear that the patentee intends the claims and embodiments to be strictly coextensive, *id.*, or the examples used make it clear that a limitation was intended. *On Demand Machine Corp. v. Ingram Industries, Inc.*, 442 F.3d 1331, 1339-40 (Fed. Cir. 2006) (limitation warranted because specification used the term "customer" repeatedly in specialized context); *Nystrom v. TREX Co., Inc.*, 424 F.3d 1136, 1144-45 (Fed. Cir. 2005) (limitation warranted because written description and prosecution history consistently used the term "board" to refer to wood decking materials cut from a log). Nowhere else in the '751 patent is there any indication that this embodiment represents the only type of pits used in the invention as a whole.

Although I conclude that the '751 specification does not limit the term "pit" to physical depressions, nothing in the claim terms or the specification of the '751 patent provides an adequate definition for the term. Therefore, I must turn to other evidence to determine whether plaintiff's or defendants' proposed construction is accurate. The parties rely on a number of extrinsic reference documents and dueling expert opinions to support their arguments. As for the latter, this case presents a clear example of why expert evidence may be of limited value in claim construction. Plaintiff's expert states that "a person of ordinary skill in the art would consider 'pit' as referenced in the '651 and '751 patents to be any area which creates a difference in reflected light to represent information." Hesselink Decl., dkt. 78, at 10. Defendants' expert takes the opposite position, asserting that at the time the '751 patent was filed "a person of ordinary skill in the field of optical data storage, having read these patents, would have understood the term 'pit' to refer to a depression in the land area of the disc substrate . . .." Mansuripur Decl., dkt. 71, at 14; Immink Decl., dkt. 79, at 20.

More useful are the extrinsic documents. Plaintiff points to a number of extrinsic documents indicating that the meaning of "pit" covers multiple types of physical changes. For example, U.S. Patent No. 4,190,843 issued in 1980, entitled "Recording Methods for a Multilayer Optical Record," states that when a recording laser is focused on an optical disc, "the peak intensity of the focused light sufficient to cause *ablation* of the absorbative layer, an information track is formed as a succession of spaced *pits* in which the reflecting layer is effectively exposed." Hesselink Decl., Ex. B, dkt. 78, at 2 (emphasis added). Similarly, in a computer science doctoral dissertation published by the University of California at Berkeley in 1995, the author discusses the process of data storage on recordable discs, stating that

> During writing, in response to an electrical input signal, a highly-charged focused laser beam can melt a small region of the metal layer, opening a hole or 'pit.' Later, during reading, a lower-intensity, unmodulated laser beam is reflected off the surface of the disk. A photodetector interprets information stored on the disk by detecting differences in reflectivity between pits and the surface of the thin metal layer, called the 'land.' Data are encoded and stored as alternating regions of pits and land.
>
> *Id.*, Ex. C, at 39.

Plaintiff points to several other extrinsic references that refer to "pits" as being created by various methods, all of which amount to a data area that creates a difference in reflected light to represent information. *E.g.*, U.S. Patent No. 4,551,413, *id.* at ¶ 21; U.S. Patent No. 5,084,370, *id.*, Ex. E; Japanese patent application number S60-79227, *id.*, Ex. G; U.S. Patent No. 6,156,482, Hesselink Resp. Decl., Ex. A, dkt. 85; U.S. Patent No. 5,325,351, *id.*, Ex. B; and U.S. Patent No. 5,495,466, *id.*, Ex. C.

Defendants attempt to rebut this evidence with examples of patents that use the term "pit" to describe pits with depth. Mansuripur Decl., dkt. 82, at 8-11. However, the fact that another patent that covers pre-recorded discs describes a pit as having depth does not mean that a person of ordinary skill in the art would conclude that pits in the '751 patent must have depth.

Defendants do not dispute that technology, such as color change, laser ablation and phase change, existed in 1994 and was used for encoding data on other products. It is clear from the extrinsic evidence provided by plaintiff that people in the optical disc field were using "pit" to describe information recorded by various methods. The recorded information creates a difference in reflected light that can be read by a player to reproduce information. Thus, I conclude that plaintiff's definition of "pit" is appropriate for the '751 patent.

**Court's construction:** an area which creates a difference in reflected light to represent information

**B. "Land"**

**Plaintiff's construction:** [not seeking construction]

**Defendants' construction:** flat surface of the substrate into which the pits are formed

Defendants seek construction of the term "land" in order to limit the '751 patent to pre-recorded discs in which pits are stamped "into" the substrate. However, I concluded above that "pits" in the '751 patent are not limited to embossed or stamped pits and may include pits formed by a variety of techniques. Thus, defendants' proposed construction of "land" is unduly restrictive because it would make sense only in the context of a pre-recorded disc where pits are formed by stamping depressions.

Plaintiff contends that the term "land" does not require further construction. I agree. The only discernable reason for defendants' proposed construction is to limit the '751 patent to pre-recorded discs with depressed pits. I have already concluded that it is not so limited. Thus, there is no reason to construe "land."

**Court's construction:** no construction necessary

**C. "Physical sector"**

**Plaintiff's construction:** [not seeking construction]

**Defendants' construction:** pre-formed segments of the spiral track

Claim 1 includes "a physical sector having a header . . . and a data section" and "a header in which a physical sector address is described . . . ." Defendants have requested construction of this term, while plaintiff believes that the claim does not require further definition. I agree with plaintiff.

Claim 1 describes two elements that are part of a physical sector, a data section and a header. The identification of these component parts of the "physical sector" is consistent with the '751 patent specification. For example, Figure 15 illustrates that the "physical sector" is comprised of "header" (66) and "evaluation data" (68). The '751 patent specification describes how physical sectors may be structured as a series of pits and lands "recorded as repeated evaluation data 68 in one physical sector in the lead-in area 27 following a header 66." '751 patent, 16:55-61. This is precisely what the claim recites. Defendants have provided no satisfactory reason for looking beyond the claim for further elaboration or definition.

Further, defendants have not explained satisfactorily why their proposed definition is helpful, necessary or correct. They simply state in a conclusory fashion that their construction is "accurate and will be helpful to a lay jury." It has become clear that defendants want this claim construed as a "pre-formed" segment not because the parties actually disagree about the meaning of "physical sector" or because a jury would be confused by the meaning, but so the defendants can argue that the '751 patent is limited to pre-recorded or "preformed" discs. The

patent specification does not describe "preformed" segments, and it is unclear what "preformed" could mean other than a pre-recorded ROM-type disc.

**Court's construction:** no construction necessary

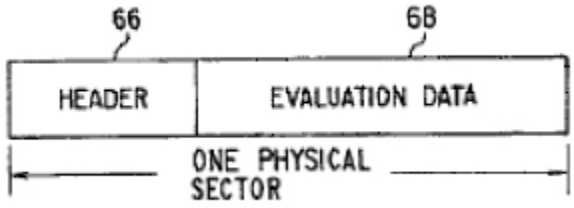
**D. "Header"**

**Plaintiff's construction:** [not seeking construction]

**Defendants' construction:** sequence of pits and lands at the beginning of each physical sector

As with "physical sector," defendants request construction "header" while plaintiff believes that the claim does not require further definition. Again, I agree with plaintiff. Defendants' construction does not clarify the term and is not supported by the patent. Claim 1 already describes the composition of a header as containing a "physical sector address." Defendants have not explained why identification of this component part is insufficient or why adding "sequence of pits and lands" is a useful or necessary addition. Also, defendants' contention that *each* physical sector *must* have a header is not supported by the patent.

Figure 15 in the specification illustrates a physical sector with a header at the beginning:




However, defendants have pointed to no evidence suggesting that a physical sector must have

a header. At the claims construction hearing, defendants stated that "that's just the way the sectors work. The header has the information that's about the rest of the sector." Transcript, dkt. 92, at 114. This may be true, but defendants have provided no evidence to support this and I do not see any in the patent. Thus, I will decline to construct "header" at this time.

**Court's construction:** no construction necessary

**E. "Test pattern"**

**Plaintiff's construction:** any pattern of data that is capable of use for testing

**Defendants' construction:** a pattern of pits and lands used to measure the byte error rate

"Test pattern" is another term that does not require construction by the court. Claim 1 already limits the patent to a particular test pattern, providing that "said test pattern [has] a repetition of predetermined pits and lands in succession, each arrangement comprising: a first pit with a pit length of one 3T, mT, and nT; a first land with a land length of one of 3T, mT, and nT" and so on. '751 patent, 22:16-21. Further, when I asked counsel at the hearing about the necessity of construing this claim term, defendants' counsel admitted that he was "not sure if there is a disagreement between the parties" on the definition of test pattern, but that construction "would make it easier for the jury" because the jury would not have to look at the "3T, mT, and nT" language. This is not a sufficient reason for construction of the claim. If the parties disagree about the meaning of "3T, mT, and nT," they can raise these arguments at summary judgment or trial.

- **Court's construction:** no construction necessary

## III. The '966 Patent

"Recording Layer Identifying Data in a Multi-Layer Recording Medium"

The '966 patent teaches how to optimize "management information" on a recording medium, such as an optical disc. '966 patent, 2:6-27. Management information manages data recorded on a disc and can be used to identify the size of a disc, its contents, the types of files on a disc and the position each file is located. *Id.*, 1:13-21. The '966 patent provides for management information that distinguishes the type of recording medium being played and the recording plane that is being reproduced. *Id.*, 2:33-36. In particular, a recording medium according to the '966 patent contains information to identify whether the recording medium is single-sided or double-sided and which side of a double-sided recording medium is in use at any given time. The parties dispute the meaning of the following terms in the patent: "recording plane," "management region" and "recording-plane identifying information that uniquely identifies that recording plane." These terms appear in claims 1 and 2 of the patent:

1. 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**.

### A. Recording plane"

**Plaintiff's construction:** a recording layer of a disc

**Defendants' construction:** [not seeking construction]

Plaintiff requests construction of "recording plane," contending that this term must be construed to clarify that "recording plane" can mean "layers" of a disc and does not refer exclusively to a "side" of a disc. Defendants do not seek construction of this term, contending that plaintiff's proposed construction unnecessarily limits the term to a "disc." I agree with defendants. By limiting "recording plane" to a layer of a "disc," plaintiff's construction is too narrow. Claim 1 recites specifically "a recording medium" rather than a disc. The parties agree that a "recording medium includes, but is not limited to, any single-sided or double-sided disc having any number of recording layers." Defs.' Mot., dkt. 69, at 4; Busey Decl., dkt. 76-2, at 4. The patent specification states that "[t]he present invention relates to a recording medium, *such as* an optical disc . . .," '966 patent, 1:9-10 (emphasis added), and throughout the "Summary of the Invention," the inventors repeatedly use the term "recording medium" rather than "optical disc." The words "such as" indicate that the present invention could be applied to recording mediums that are not optical discs. Although the figures in the specification depict an optical disc, the specification states that it is depicting only "an embodiment" of the invention.

In addition, plaintiff's proposed construction is not necessary to clarify the meaning of "recording plane" because the claim itself provides a meaning. Claim 1 states that a recording plane is a construct on which "data is recorded." '966 patent, 16:23-24. Defendants have not argued that a recording plane cannot include a layer of a disc. Dfts.' Resp. Br., dkt. 81, at 33 ("The defendants are not arguing that a recording plane must be limited to a side of a disc.") In fact, defendants state in their brief that recording planes include "the number of recording sides/layers on a disc." Dfts.' Br., dkt. 71, at 50. Because plaintiff's proposed construction is too narrow and is unnecessary to clarify the meaning of "recording plane," I conclude that construction of this term is unwarranted.

**Court's construction:** no construction necessary

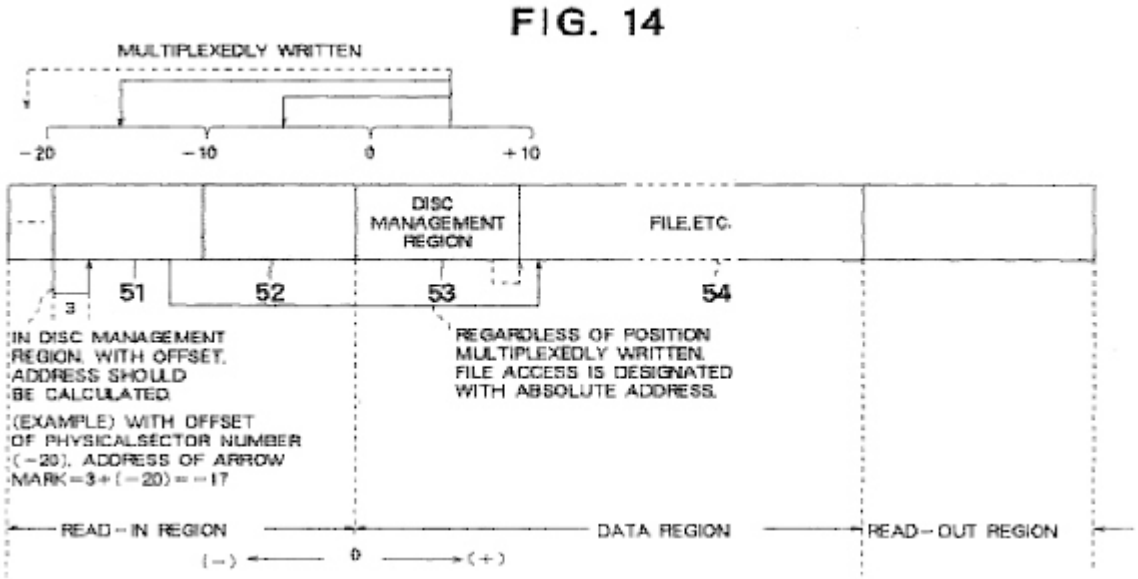
## B. "Management region"

**Plaintiff's construction:** an area of the disc containing information about the disc capable of use when reading from or writing to the disc

**Defendants' construction:** area of the recording medium separate from the data region, for management information

Both parties seek construction of the term "management region." They dispute the location of the management region and the type of information contained within the region. Defendants' construction takes the position that (a) the management region must be separate from the data region and (b) that it must contain "management information." Plaintiff disagrees, contending that the management region may overlap with the data region and that the type of information contained within is not limited to "management information."

Figures 1 and 14 in the patent specification illustrate the location of the management region: These figures describe an optical disc as an example of "an embodiment" of the '966 invention. '966 patent, 5:58-59. The specification provides that "[t]he record space of the disc is divided into a read-in region, a management region, a data region, and a read-out region." *Id.* at 5:64-66. The embodiment depicted by Figure 1 shows these regions as separate and distinct regions. The management region precedes the set of files stored in the data region. Figure 14 also illustrates a disc containing a management region and a data region:



The parties dispute the meaning of the arrow at the bottom of Figure 14. Plaintiff alleges that the arrow is intended to show that the management region can be contained within the data region. Defendants disagree, alleging that the arrow does not show the boundary of the data region, but actually explains how to find the addresses in a region. The patent itself does not explain the meaning of the arrow.

I do not need to resolve the parties' dispute at this time because even if I were to agree with defendants' interpretation of Figure 14, I would not adopt their proposed construction. One thing that *is* clear from Figure 14 is that the description offered for Figure 1, dividing the disc into a "read-in region, a management region, a data region, and a read-out region," does not mean that these regions cannot overlap. Although it is unclear whether the "management region" can overlap with the "data region," it is clear that the "management region" can overlap with the "read-in region." Figure 14 depicts two "spare management region[s]" 51 and 52 that are contained within the read-in region. It makes sense that "spare" management regions are located in various regions of the disc because the information contained in the management region is so important. As the patent specification explains:

> [I]f the management information is damaged, the entire information on the disc will be lost. To prevent such a problem, the same management information is recorded in another region as a spare. To further improve the safety of the management information . . . the spare management information is recorded in a multiplexed fashion at multiple regions on the disc.
>
> *Id.* at 1:30-36.

Nowhere does the patent specification state that these spare management regions are recorded only in the read-in region or that they must be separate from the data region. Defendants point only to Figures 1 and 14 in support of this contention, but these figures are examples of "an embodiment," and the specification does not suggest that this structure is required by the invention.

As for the dispute over the type of information contained in the management region, several places in the patent specification discuss this. In particular, the patent specification states that the management region includes "management information [to] manage[] data (files) recorded on the optical disc," including "ID information and size of each disc, the number and reproducing order of discs that correlate, and the ID information, the record position, and the size of each file recorded as structural elements." *Id.*, 1:13-21. Later, the specification states that the "management region includes a system area, a PVD (Primary Volume Descriptor) table, a VTD (Volume Terminate Descriptor) table, a PT (Path table), and a DR (Directory Record). *Id.*, 5:65-67, 6:1-2. Claim 1 itself states that the management region includes "number-of-recording-planes identifying information" and "recording-plane identifying information." *Id.* at 16:25-29. The patent also states that the management region may contain "medium identifying formation" and "file identifying information." *Id.* at 2:31-35.

Neither parties' proposed construction is very useful on this topic. Defendants state simply that "management information" is contained in the management region. This suggests but does not answer the question of what type of information qualifies as "management information." Plaintiff suggests that "information about the disc" is contained in the region, but this definition might exclude information about the contents of the disc, such as the "size of each file" that has been recorded on the disc.

Ultimately, I do not think it is necessary at this point to identify every type of information that may be contained within the management region. The '966 patent relates to information that identifies the number of recording planes and the recording plane that is being used at any given time. Claim 1 makes it clear that this information is required in the management region. The parties have not explained why it is relevant whether the management region contains other information in addition to that disclosed specifically in the patent, or why defining the management region in terms of "management information" or any other type of

information would be helpful for resolving disputes in this case. Because I conclude that both parties have failed to propose an appropriate construction, I will decline to construe "management region" at this time.

**Court's construction:** no construction necessary.

**C. "Number-of-recording planes identifying information"**

**Plaintiff's construction:** any information capable of indicating the number of recording layers

**Defendants' construction**: information intended for use in identifying the number of recording planes on the recording medium

The parties have two disputes with respect to this term. First, they dispute whether "number-of-recording planes identifying information" is limited to information whose *purpose* is to identify recording planes. Defendants argue that this limitation is supported by the purpose of the patent, the language of the specification and the prosecution history.

Plaintiff disagrees, contending that the claim is broad enough to encompass *any* information that is *capable of* indicating the number of recording planes. The parties' second dispute is whether the "recording planes" should be defined as "recording layers," as plaintiff suggests. I already have rejected plaintiff's attempt to construe "recording planes" as "recording layers" and will not address this issue again.

With respect to the first dispute, I will adopt defendants' construction because it is supported by the patent specification and prosecution history. Claim 1 does not provide a clear meaning for "number-of-recording planes identifying information." However, in the specification, the inventors discuss shortcomings of the prior art, noting that "conventional management information does not include information that distinguishes [various] disc types,"

including "specific discs, single-sided discs, and double-sided discs." *Id.* at 1:24-27. During prosecution, the patentee's attorney explained that such information is useful because it allows a recording or reproducing device to determine whether it can "record or reproduce from another plane of the medium once it has finished with the current plane." Marshall Decl., Ex. C, dkt. 73, at 5. In explaining why he allowed an amendment to the '966 patent, the patent examiner explained that the number-of-planes identifying information identifies the "number of recording planes on the disk:"

> none of the cited prior art shows or teaches an optical recording and reproducing apparatus comprising a disk having at least one recording plane wherein each recording plane includes a data recording region and a management region including the number of recording planes *identifying the number of recording planes on the disk* . . ..
>
> *Id.*, Ex. C, at 2.

Thus, according to the patent specification, a purpose of the '966 patent is to provide information in the management region of a recording medium that "determines the types of a recording medium," "the number of recording sides" and the "recording surface" of the medium. '966 patent, 2:8-13. To fulfill this purpose, claim 1 of the '966 patent requires two pieces of information in the management region of the disc: (1) number-of-planes identifying information, and (2) recording-plane-identifying information that uniquely identifies that recording plane. The number-of-planes identifying information is used to identify the total number of recording planes on the recording medium. This is illustrated in Figure 2 of the specification, which states that "The number-of-disc-sides identifier 2 represents whether the disc is a double-sided disc or a single-sided disc." *Id.*, 6:20-30.

Therefore, in light of the purpose of the patent, defendants' construction makes sense. The inventors did not include information in the management region that *may* identify the number of recording planes; rather, they included information with the specific purpose of

identifying the number of recording planes. Thus, I will adopt defendants' construction, with a slight modification, substituting "intended" with "purpose."

> **Court's construction:** information whose purpose is to identify the number of recording planes on the recording medium

> **D."Recording-plane identifying information that uniquely identifies that recording plane"**

> **Plaintiff's construction:** any information capable of identifying the recording layer

> **Defendants' construction:** information intended for use in identifying the recording plane being reproduced

Similar to the previous dispute, the parties dispute whether "recording-plane identifying information that uniquely identifies that recording plane" is limited to information that the inventors intended for use in identifying the recording plane being used, or whether it includes *any* information *capable of* identifying the recording plane. Again, I am persuaded that defendants' proposed construction is more accurate in the context of the '966 patent.

"Recording-plane identifying information that uniquely identifies that recording plane" is illustrated in Figure 2 in the patent specification. Figure 2 uses an optical disc as an example and refers to the "recording-plane identifying information" as the "disc side identifier." The "disc side identifier 3 represents whether side A or side B of a double-sided disc is being reproduced." During the prosecution of the '966 patent, the patentee's attorneys explained that the purpose of the "recording-plane identifying information" was to identify uniquely to the player which side of the disc (or recording plane) was being reproduced:

> Specifically, the specification clearly states that the medium according to the present invention has number of disc sides identifying information and recording side identifying information that represents the recording side. (See, e.g., Specification at 3, 4-5, 12-13, 15; Original Claims 2, 16; Original Abstract; and FIG. 2.) As illustrated in FIG. 2 and described in the Specification at 12-13, a number-of-disc-sides identifier 2 and a disc side identifier 3 are recorded in the application system region of a PVD table of the disk. *It is clear that this information must be provided on each side of the disc.* - i.e., each recording plane - *in order for the disc side identifier 3 to serve its purpose of identifying which side is being recorded/reproduced*. For example, the disc side identifier 3 for side A is set to 00H so that, *when a reproducing device reads that disc side identifier 3, it can identify the side that it is reproducing as side A.* Similarly, the disc side identifier 3 for side B is set to 01H so that, when a reproducing device reads that disc side identifier 3, it can identify the side that it is reproducing as side B.
>
> Marshall Decl., Ex. B, dkt. 73, at 3-4 (emphasis added).

Plaintiff points to no evidence suggesting that the "recording-plane identifying information" is anything other than the information whose purpose is to identify which recording plane is in use, as discussed in the specification and during the patent prosecution. On the other hand, defendants' construction is true to the claim language, which provides explicitly that the "recording-plane identifying information . . . *uniquely identifies*" the recording plane. Further, I agree with defendants that their construction will assist the finder of fact because it clarifies that this information is designed for the player to determine which recording plane it is reproducing. In other words, using the example in the patent, this information is used by the player to determine if the laser beam is directed at side A or side B or a double-sided disc.

> **Court's construction:** information whose purpose is to identify the recording plane being reproduced

ORDER

It is ORDERED that the following terms are construed as follows:

(1) from the U.S. Patent No. 5,708,651:

"***pit***" means "depression in the surrounding land area, where the depth is the principal factor creating a difference in reflected light intensity for encoding information"

"***reflecting layer formed on said substrate***" means "reflecting layer coated directly on the substrate"

"***track pitch***" means "the distance between the center of adjacent tracks, as measured in the radial direction"

"***said information being reproduced by projecting a light beam via an objective lens***" means "the information on the disc is capable of being reproduced by projecting a light beam via an objective lens"

(2) from the U.S. Patent No. 5,892,751:

"***pit***" means "an area which creates a difference in reflected light to represent information"

(3) from the U.S. Patent No. 5,831,966:

"***number-of-recording planes identifying information***" means "information whose purpose is to identify the number of recording planes on the recording medium"

"***recording-plane identifying information that uniquely identifies that recording plane***" means "information whose purpose is to identify the recording plane being reproduced."

Entered this 10th day of May, 2010.

BY THE COURT:

/s/

STEPHEN L. CROCKER
Magistrate Judge