United States District Court,
C.D. California.

SIEMENS,
v.
SEAGATE TECHNOLOGY.

No. SACV 06-788 JVS(ANx)

Aug. 30, 2007.

Attorneys Present for Plaintiffs, Not Present.

Attorneys Present for Defendants, Not Present.

Proceedings: (In Chambers) Order re Claim Construction

Present: The Honorable JAMES V. SELNA**, J.**

Karla J. Tunis, Deputy Clerk.

Not Present, Court Reporter.

I. *BACKGROUND*

In this patent infringement action, plaintiff Siemens AG ("Siemens") alleges that read heads used in hard disk drives manufactured by defendant Seagate Technology ("Seagate") infringe U.S. Patent No. 5,686,838 ("the '838 patent"). The '838 patent claims a magnetoresistive sensor FN1 that utilizes a multi-layer system FN2 to increase stability and sensitivity. Specifically, the ' 838 patent discloses a magnetoresistive sensor comprised, in part, of a layer system, which includes at least five layers:

FN1. The electrical resistance of ferromagnetic transition metals, such as nickel, iron, and cobalt, varies depending upon the magnitude and direction of the magnetic field the material is permeated by. This is referred to as anisotropic magnetoresistance ("AMR"). A magnetoresistive sensor measures changes in electrical resistance that result from exposure to an applied magnetic field.

FN2. Multi-layer systems utilizing a plurality of ferromagnetic layers separated by interlayers are constructed to display giant magnetoresistance ("GMR"), which is a considerably larger effect than AMR.

1. A measuring layer, whose magnetization changes direction in response to an applied magnetic field;
2. A bias layer, whose magnetization is approximately constant in the measuring range of the applied

magnetic field;

3. An interlayer, which magnetically exchange-decouples the measuring layer from the bias layer;

4. A magnetic layer; and

5. A coupling layer, which anti-ferromagnetically couples the bias layer to the magnetic layer.

(*See* '868 Patent, 10:60-11:14.) FN3 The bias layer, coupling layer, and magnetic layer collectively form an "artificial anti-ferromagnet."
FN3. Claim 1 discloses:

A magnetoresistive sensor comprising:
a) a layer system, wherein said layer system includes:
a1) at least one measuring layer which, in the plane of said measuring layer, has a magnetization which at least in one. direction depends reversibly on an applied magnetic field, and in the absence of said magnetic field, said magnetization corresponds to a predefined ground state magnetization;
a2) at least on one side of the measuring layer, a bias layer having a magnetization in the plane of said bias layer, said magnetization being at least approximately constant in the measuring range of the magnetic field;
a3) an interlayer, disposed between the bias layer and the measuring layer, by which interlayer the bias layer is at least approximately magnetically exchange-decoupled from the measuring layer; and
a4) a magnetic layer which is coupled anti-ferromagnetically to the bias layer through a coupling layer, said coupling layer being disposed between the bias layer and the anti-ferromagnetically coupled magnetic layer; and
b) measuring contacts at the layer system to detect a resistance signal which is a measure for the applied magnetic field.

('838 Patent, 10:60-11:17.) The remaining claims at issue in this action, Claims 7, 14, 15, 19, and 20, are dependent upon Claim 1 and are discussed more thoroughly *infra*.
The instant claim construction hearing involves five disputed terms in the ' 838 patent. The parties have reached agreement as to four other terms which were originally disputed. (*See* Pl.'s Opening Brief at 17-18; Def.'s Opening Brief at 2.) The Court adopts the parties' agreed-upon constructions as to those four terms and discusses the five disputed terms in Section III, below.

II. *LEGAL STANDARD*

It is well settled that claim construction is "exclusively within the province of the court." Markman v. Westview Instruments, Inc., 517 U.S. 370, 372 (1996). Such construction "begins and ends" with the claim language itself, Interactive Gift Express, Inc. v. Compuserve, Inc., 256 F.3d 1323, 1331 (Fed.Cir.2001), but extrinsic evidence may also be consulted "if needed to assist in determining the meaning or scope of technical terms in the claims." Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1216 (Fed.Cir.1995).

In construing the claim language, the Court begins with the principle that "the words of a claim are generally given their ordinary and customary meaning." Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed.Cir.2005) (internal quotation marks omitted). Further, this ordinary and customary meaning "is the meaning that the [claim] term would have to a person of ordinary skill in the art in question at the time of

the invention, i.e., as of the effective filing date of the patent application." Id. at 1313. "[T]he person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id*.

"In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words. In such circumstances general purpose dictionaries may be helpful." *Id*. at 1314. In other cases, "determining the ordinary and customary meaning of the claim requires examination of terms that have a particular meaning in a field of art." *Id*. In those cases, "the court looks to those sources available to the public that show what a person of skill in the art would have understood the disputed claim language to mean." *Id*. These sources include "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id*. (internal quotation marks omitted).

The claim terms are not presumed to have the meaning that a person of ordinary skill in the relevant art would ordinarily attribute to them if (1) the patentee acts as his own lexicographer, or (2) the claim term is too vague for an accurate meaning to be ascertained from the language used. Novartis Pharms. Corp. v. Abbott Labs., 375 F.3d 1328, 1334 (Fed.Cir.2004). All that is required for a patentee to act as his own lexicographer is that a different meaning is set out in the specification in a manner sufficient to provide notice of the meaning to a person of ordinary skill in the art. In re Paulsen, 30 F.3d 1475, 1480 (Fed.Cir.1994).

With these principles in mind, the Court now turns to the construction of the claim language at issue.

III. *DISCUSSION*

A. *Predefined Ground State Magnetization*

Claim 1 of the '838 patent discloses a magnetoresistive sensor comprising a layer system, which includes:

at least one measuring layer which, in the plane of said measuring layer, has a magnetization which at least in one direction depends reversibly on an applied magnetic field, and in the absence of said magnetic field, said magnetization *corresponds to a predefined ground state magnetization* [.] FN4

FN4. Unless otherwise indicated, the disputed claim language is marked with underlined text.

('838 Patent at 10:62-67.)

Siemens' Construction	Seagate's Construction
corresponds to a predetermined magnetization state in the absence of an applied magnetic field.	corresponds to a single predetermined magnetization state if no magnetic field is applied from outside the layer system.

The parties agree that the predefined ground state magnetization ("PGSM") is a "predetermined magnetization state." The parties' dispute focuses on two points of difference-first, whether there can be only

one PGSM, and second, whether the PGSM must be determined independent of all magnetic fields outside the layer system.

Seagate contends that a given sensor can only have a single PGSM because the plain meaning of "a" in the phrase "corresponds to a predefined ground state magnetization" is "a singular." (*See* Def.'s Opening Brief at 15, 16). Siemens argues that Seagate's construction would read out the preferred embodiment set forth in Figure 5 of the specification. The Court agrees. As used in Claim 1, the PGSM is that of the *measuring layer* as opposed to that of the *sensor*. (*See* '838 Patent at 10:62-67 (sensor includes "at least one measuring layer which ... has a magnetization [that in the absence of an applied magnetic field] corresponds to a predefined ground state magnetization").) The '838 patent expressly contemplates an embodiment that has multiple measurement layers and multiple PGSMs. (*See* id. at 10:24-26 ("In an embodiment in accordance with Fig. 5, at least one measuring layer 6 has been replaced by two measuring layers 2' and 2". The *ground state magnetizations* $M_{MO'}$ and $M_{MO''}$ of these two measuring layers 2' and 2" are now aligned antiparallel with respect to one another ...." (emphasis added)).) Thus, although any given measuring layer will only have a single PGSM, a sensor with multiple measuring layers could have more than one PGSM.

The second issue is whether the measuring layer's PGSM is determined in the absence of all magnetic fields outside of the layer system or only in the absence of the applied magnetic field.FN5 Siemens argues that the plain language of the claim makes clear that the PGSM is the measuring layer's magnetization state in the absence of the applied magnetic field. The Court agrees. Claim 1 describes a measuring layer which has a magnetization which "at least in one direction depends reversibly on *an applied magnetic field,* and in the absence *of said magnetic field,* said magnetization corresponds to a predefined ground state magnetization." (Id. at 10:63-67 (emphasis added) .) In this context, "said magnetic field" clearly refers to the applied magnetic field described earlier in the claim.

FN5. The parties have not raised "applied magnetic field" as a term that requires construction. Claim 1 makes clear that the term refers to the magnetic field which is being measured by invention. (*See* '838 Patent at 11:15-17 (the claimed magnetoresistive sensor includes "measuring contacts at the layer system to detect a resistance signal *which is used as a measure for the applied magnetic field* " (emphasis added)).)

Seagate argues that the patentee acted as his own lexicographer and defined PGSM to mean the magnetization state in the absence of *all* external magnetic fields. During the prosecution history, the patent examiner rejected proposed Claim 22 (which was substantially similar to Claim 1 of the '838 Patent as issued) under 35 U.S.C. s. 112 for indefiniteness. Among other concerns, the examiner stated that "[i]n claim 22, the phrase[ ] ... 'corresponding to a predetermined ground state' [is] not clearly understood." (Grimsrud Decl., Exh. G at 124, SIEMENS0000243.) In response, the patentee asserted that the term did not require correction because it was a term of art that was understood by those of ordinary skill in the field of magnetic materials and magnetic field sensors and were adequately defined in the specification. (Id. at 138, SIEMENS0000257.) Specifically, the patentee stated that the term was sufficiently defined at page 7, line 11, to page 8, line 19 of the specification.FN6 (Id. at 139, SIEMENS0000258.) That section of the specification begins by stating that "[i]n the ground state, i.e., if no magnetic field is applied, a ground state magnetization M_{MO} of the measuring layer is established." ('838 Patent at 3:62-64.) Thus, Seagate argues that the patentee explicitly relied upon a definition of PGSM that required "no magnetic field" to overcome the indefiniteness rejection and therefore disclaimed any sensor in which the PGSM of the measuring layer depends on any sort of magnetic field applied from outside the claimed layers.

FN6. These pages and lines correspond to column 3, line 62 through column 4, line 32 of the '838 Patent as issued.

Neither the language of Claim 1 nor the specification, however, exclude the incorporation of other magnetic fields in the sensor. The section of the specification cited by Seagate does not refer to any and all magnetic fields outside of the measuring layer. It is clear from earlier in the specification that this refers to the applied magnetic field, *i.e.*, the field to be measured. (*See* id. at 3:1-7 ("The sensor has at least one measuring layer having a magnetization M_M oriented in the plane of the layer. This magnetization assumes a predefined ground state M_{MD} in the absence of an external applied magnetic field. When such an external field is applied, the magnetization of the measuring layer reversibly depends upon the intensity and direction of the external field.").) The entire point of the sensor is to measure the applied magnetic field.

The Court therefore concludes that Siemens' interpretation is appropriate. Accordingly, the Court adopts the following construction for "corresponds to a predefined ground state magnetization" as used in Claim 1: "corresponds to a predetermined magnetization state in the absence of an applied magnetic field."

The briefing following oral argument reinforces the Court's conclusion that the patentee did not intend to exclude the use of external fields to establish the PGSM. While the parties debate whether there is any reference in the specification to the use of external fields (*compare* Seagate Supplemental Brief, pp. 3-4 *with* Siemens Response, pp. 3-4), the Court cannot say that the patentee clearly stated a limited definition of the PGSM at odds with the meaning one skilled in the art would give the term. Vidtronics Corp. v. Conceptronic, Inc. 90 F.3d 1576, 1582 (Fed.Cir.1996). This is true even if one assumes that there are no references in the specification to the use of an external field. Moreover, the patentee's contention in responding the examiner's rejections that the specification adequately defined the PGSM did not amount to a disavowal of the use of an external field. What one skilled in the art would understand would be the concept of the PGSM, and not a limitation on how one established it. That the invention is intended to measure an "applied" field does not rule out the use of other applied but stationary fields to implement Claim 1.

B. *Preferred Axis*

Claim 19 of the '838 patent discloses "[t]he magnetoresistive sensor of claim 1, wherein the measuring layer is magnetized in the direction of a *preferred axis* in the absence of an external applied magnetic field." (Id. at 12:28-30.) Similarly, Claim 20 of the '838 patent discloses "[t]he magnetoresistive sensor of claim 1, wherein each magnetic layer is magnetized along a *preferred axis*." (Id. at 12:31-32.) FN7

FN7. Ordinarily, the same word in a patent has the same meaning. *See* Phillips, 415 F.3d at 1314.

Siemens' Construction	Seagate's Construction
an imaginary line that indicates a preferred direction.	an imaginary line that indicates a specific axis for each layer.

The parties generally agree that an axis is an imaginary line, but dispute whether a preferred axis indicates a specific direction. Siemens argues that the claim and specification dictate that a preferred axis indicates a preferred direction. Seagate asserts that an axis indicates two possible directions, neither of which is necessarily preferred.

Seagate's position is consistent with the normal definition of "axis" (*e.g.,* rotational axis or x-y coordinate axis). The preferred embodiments also support this position. Figure 3, for example, shows the measuring layer with magnetization M_{MO} aligned parallel to a magnetic preferred axis A_M. The preferred axis points in two directions. (*See id.,* Fig. 3.) The portions of the specification cited by Siemens do not affect this understanding. For example, the specification describes the following embodiment: "The measuring layer 2 has a ground state magnetization M_{MO} along a preferred axis, which is indicated by A_M and runs in the plane of the layer of measuring layer 2." (*Id.* at 7:2-5.) This is entirely consistent with the common meaning of "axis."

Seagate's proposed definition is only marginally useful, however, because it uses the disputed term in the definition. In addition, inclusion of "for each layer" would be duplicative because the claims describe the specific layer or layers to which the term applies. Accordingly, the Court construes the disputed term to mean "an imaginary line that indicates a favored alignment."

C. ***Measuring Contacts***

1. ***Measuring Contacts at the Layering System***

Claim 1 of the '838 patent discloses a magnetoresistive sensor comprising, in part, " *measuring contacts at the layer system* to detect a resistance signal which is a measure for the applied magnetic field." (Id. at 11:15-17.)

Siemens' Construction	Seagate's Construction
No interpretation required. Alternatively: conductive regions that are areas of measurement.	measuring contacts in contact with but not part of the layer system.

The primary point of dispute between the parties is whether the measuring contacts can be part of the layer system. Seagate argues that they cannot, because the plain language of Claim 1 specifies that the measuring contacts are "at" the layer system. In addition, Seagate contends that the structure of Claim 1, *i.e.* that the layer system is described in subpart (a) and the measuring contacts are described in subpart (b), requires that the claimed magnetoresistive sensor be comprised of two distinct components: a layer system and measuring contacts.

Siemens argues that no interpretation is required and emphasizes that nothing in the '838 patent precludes the measuring contacts from being a part of the layer system. The Court agrees. First, Claim 1 merely discloses a magnetoresistive sensor that has both a layering system and measuring contacts. Nothing in the language or structure of the claim requires that they be separate and distinct components.FN8 Second, nothing in the patent specification disavows or precludes an embodiment where the measuring contacts are a part of the layer system. Seagate argues that Figure 3 shows the measuring contacts as being distinct from the layer system. Indeed, Figure 3 depicts a preferred embodiment that shows the measuring contacts 11A and 11B as separate structures attached to the measuring layer (and thereby the layer system). (*See* id., Fig. 3; id. at 9:39-46.) However, this does not appear to be required for proper functioning of the invention, and the scope of a claim is not limited to the preferred embodiment. *See* Tate Access Floors, Inc. v. Maxcess Techs., Inc., 222 F.3d 958, 966 (Fed.Cir.2000). Although not expressly described by the patent, one could easily envision an embodiment where the measuring contacts were also a functional part of the layer system. FN9

FN8. In contrast, the hypothetical claim structure described in Seagate's responsive brief under the heading "Siemens' attempt to rewrite claim 1" (*See* Def.'s Responsive Brief at 10), would require that the measuring contacts *always* be part of the layer system.

FN9. Contrary to Siemens' assertions, however, none of the preferred embodiments appear to describe a measuring contact that is a functional part of the layer system. The embodiments cited by Siemens appear to describe measuring contacts that are attached to or embedded in the layering system, but they do not function as part of the layer system.

The claim language is clear and does not preclude an embodiment where the measuring contacts are a part of the layer system. Seagate's proposed construction imparts a limitation that is neither supported by the claim language nor required by the specification. Accordingly, the Court finds that no interpretation is required under *Phillips*.

2. *Measuring Contacts Arranged at a Predetermined Distance From the Edges of Said Layer System*

Claim 14 of the '838 patent discloses "[t]he magnetoresistive sensor of claim 1, wherein the *measuring contacts are arranged at a predetermined distance from the edges of said layer system*." ('838 Patent at 12:4-6.)

Siemens' Construction	Seagate's Construction
No interpretation required. Alternatively: measuring contacts, as defined above, are located at a set spacing from the edges.	the measuring contacts are located a preset distance inward from the edges of the layer system but are not part of the layer system.

As with the previous term, the primary point of contention between the parties is whether the measuring contacts can be a part of the layer system. In addition, the parties dispute whether the phrase "predetermined distance from the edges" requires that the measuring contacts be located inward from the edges of the layer system.

For the reasons discussed above, the Court finds that the claim language and specification do not preclude the measuring contacts from being a part of the layer system. Seagate argues that the preferred embodiment depicted in Figure 3 shows the measuring contacts 11A and 11B as being located inward from the edges of the measuring layer. (*See id.,* Fig. 3; *id*. at 9:40-44 ("two measuring contacts 11A and 11B ... are moved inwards in the longitudinal direction by a distance a and b").) However, the scope of a claim is not limited to the preferred embodiment. *See* Tate Access, 222 F.3d at 966. Because the claim language is sufficiently clear, the Court finds that no interpretation is required under *Phillips*.FN10

FN10. The Court questions, however, whether the measuring contacts could ever be located outward from the edge of the layering system. Siemens cites to the specification, which describes the typical thickness of the layer system as a whole as "preferably between 3 nm and 400 nm" ('838 Patent at 8:25-26) while the typical distance between the measuring contacts is "preferably in the range from 3 nm to 1 mm" (*id*. at 8:27) as "evidence[of] an intent that the measuring contacts have a set distance that is outward of the layer system." (Pl.'s Opening Brief at 15.) However, the Court reads the cited section of the specification as

applying collectively to both the "current-in-planes" embodiment where two measuring contacts are disposed "preferably on the uppermost layer of the layer system, at a distance from each other which is preferably considerably greater than the thickness of the layer system" ('838 Patent at 8:18-20) and the "current-perpendicular-to-planes" embodiment where two measuring contacts are disposed "on the upper side and the underside of the layer system [such that t]heir distance apart then corresponds to the thickness of the layer system." (*Id*. at 8:22-24.) This section does not appear to have any relevance to the measuring contacts' distance from the edges of the layer system.

3. *Measuring Contacts Arranged on an Outer Layer*

Claim 15 of the '838 patent discloses "[t]he magnetoresistive sensor of claim 1, wherein *said measuring contacts are arranged on an outer layer* of said sensor." ('838 Patent at 12:7-9.)

Siemens' Construction	Seagate's Construction
No interpretation required.	measuring contacts are in contact with a single outer layer of, but are not a part of, the layer system.

As with the previous term, the primary point of contention between the parties is whether the measuring contacts can be a part of the layer system. Here, however, the patentee uses the term "on" rather than "at" in describing the location of the measuring contacts. Ordinarily, different words in a patent have different meanings. *See* Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1119-20 (Fed Cir.2004). The fact that the patentee used the word "on" in Claim 15 suggests that the measuring contacts claimed therein must be separate and distinct from the layer system. This also conforms to manner in which the term is used in the specification. (*See, e.g.*, '838 Patent at 9:44-46 (describing Figure 3, which shows measuring contacts separate and distinct from the layer system and stating "[t]he measuring contacts 11A and 11B are preferably positioned *on* the measuring layer 2, but may alternatively be positioned *on* a bias layer or an interlayer" (emphasis added)).) Accordingly, the Court construes the disputed term to mean "said measuring contacts, which are not a functional part of the layer system, are in contact with an outer layer."

IV. *CONCLUSION*

The following summarizes the Court's construction:

Disputed Term	Court's Construction
corresponds to a predefined ground state magnetization	corresponds to a predetermined magnetization state in the absence of an applied magnetic field.
('838 Patent, Claim 1)	
preferred axis	an imaginary line that indicates a favored alignment.
('838 Patent, Claims 19 and 20)	
measuring contacts at the layer system	No interpretation required.
('838 Patent, Claim 1)	
the measuring contacts are arranged at a predetermined distance from the edges of said layer system	No interpretation required.
('838 Patent, Claim 14)	

said measuring contacts are arranged on an outer layer

('838 Patent, Claim 15)

said measuring contacts, which are not a functional part of the layer system, are in contact with an outer layer

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