IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

HONEYWELL INTERNATIONAL, INC., and HONEYWELL INTELLECTUAL PROPERTIES, INC.,	:	
Plaintiffs,	:	
	:	Civil Action No. 04-1337-JJF
v.	:	(CONSOLIDATED)
NIKON CORPORATION, et al.,	:	
Defendants.	:	

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MEMORANDUM OPINION

August 12, 2009
Wilmington, Delaware

Joseph J. Farnan Jr.

Farnan, District Judge.

Pending before the Court are Objections (D.I. 662; D.I. 667)[1] to the Special Master's Report And Recommendation Regarding Supplemental Claim Construction DM17 (D.I. 656). At issue in the Report And Recommendation is the construction of the claim term "slight misalignment" in Claim 3 of U.S. Patent No. 5,280,371 ("the '371 patent").

I. BACKGROUND

The Special Master set forth the pertinent procedural background in his Report And Recommendation (see D.I. 656 at 3-9), and it will not be reiterated here. In its Memorandum Opinion on claim construction (D.I. 500), this Court tentatively construed the term "slight misalignment" to mean "a misalignment of typically 2-16 degrees between an axis of the lens array and an axis of the pixel arrangement causing moiré effects." Upon considering the Customer Defendants' objections to this tentative construction (D.I. 618), the Special Master recommended that the Court modify its tentative construction. In making this recommendation, the Special Master agreed with the Court that the term "slight misalignment" should be construed not in terms of hard numerical limits, but from a functional perspective. Specifically, the Special Master agreed that the term "slight misalignment" should be construed in light of its purpose, which is to reduce moiré. However, the Special Master

[1] Unless otherwise noted, all D.I. numbers in this Memorandum Order are D.I. numbers in Civil Action 04-1337-JJF.

concluded that "[i]n the context of what the '371 patent teaches . . . [the] 'slight misalignment' cannot be the result of any rotation, particular a rotation beyond what is absolutely necessary to eliminate residual moiré." (D.I. 656 at 16.) Thus, the Special Master further stated that the language "typically 2-16 degrees" "does not bind the construction and is potentially confusing" and should not be part of the construction. (Id. at 12.) With regard to the reference axis for the rotation, the Special Master agreed with the Court that the '371 patent was not limited to vertical luminance tailoring. However, the Special Master further noted that the specification does not specifically teach "rotating the lens arrays with respect to a diagonal axis of the LCD panel" and that Honeywell's expert had never observed a diagonal axis of the LCD to cause moiré. (Id. at 16.) Based on these considerations, the Special Master construed the term "slight misalignment" to mean "a slight misalignment resulting from a rotation of the lenslets of the lens array relative to an edge of the LCD panel by just enough, and not more, number of degrees to eliminate residual moiré." (Id. at 18.)

II. THE PARTIES' CONTENTIONS

Both Honeywell and the Customer Defendants filed objections to the Special Master's recommended construction. Honeywell objects most strenuously to the language "just enough, and not more, number of degrees to eliminate residual moiré." According to Honeywell, there is nothing in the internal record that precludes rotation

beyond what is necessary to accomplish the moiré-reducing function of the claim. (See D.I. 662 at 8-9.) Honeywell further objects to the Special Master's recommended construction as referring to the "eliminat[ion] [of] residual moiré." First, Honeywell contends that although the word "eliminate" is used in the specification, it is inappropriate and confusing language for a claim construction because both the parties and the Special Master have acknowledged that the complete elimination of moiré is not, in fact, possible. (Id. at 9-10.) Second, Honeywell objects to the word "residual" as suggesting that the claim can be used only for the purpose of reducing some small amount of moiré that remains after the bulk of the moiré is removed by some other method. In particular, Honeywell contends that the Special Master's proposed construction implicitly reads into asserted Claim 3, which pertains to the rotation method of reducing moiré, the pitch-selection method of reducing moiré that is set forth in unasserted Claim 1. (Id. at 14-15.) With regard to the Special Master's recommendation that rotations be measured with respect to the edges of the LCD panel, Honeywell contends that such a limitation is not well grounded in the internal record and that the '371 patent teaches rotations away from any moiré-producing axis, including diagonal axes of the LCD panel. (Id. at 7-8.)

The Customer Defendants seem to prefer the Special Master's proposed construction over the Court's tentative construction, stating that it "gives more meaning to 'slight misalignment' than the Court's December 9, 2008 decision." (D.I. 667 at 1.) Nevertheless,

the Customer Defendants contend that the Special Master's construction "still leaves open the possibility that large misalignments . . . could be argued to be 'slight' misalignments so long as they are the minimum misalignment that eliminates moiré effects." (Id.) Accordingly, the Customer Defendants propose that the term "slight misalignment" be construed as "a misalignment of 2 to 16 degrees plus or minus less than one degree with respect to the horizontal or vertical axis of the LCD panel." (Id.) In this regard, the Customer Defendants essentially seek to impose a hard numerical limit on the magnitude of the rotation associated with the "slight misalignment."

III. DECISION

Pursuant to Federal Rule of Civil Procedure 53(f), the Court "may adopt or affirm; modify; wholly or partly reject or reverse; or resubmit to the master with instructions." Fed. R. Civ. P. 53(f)(1). The Court reviews the Special Master's conclusions of law de novo. Fed. R. Civ. P. 53(f)(4). Findings of fact rendered by the Special Master are also reviewed de novo absent the parties' stipulation to the contrary. Fed. R. Civ. P. 53(f)(3). The Special Master's rulings on procedural matters are reviewed under the abuse of discretion standard. Fed. R. Civ. P. 53(f)(5).

On reviewing the supplemental claim construction record, the Court agrees with the Special Master that the Court's tentative claim construction does not give adequate meaning to the word "slight." Specifically, the Court acknowledges that because the term

"typically" is only a word of frequency, it does not genuinely bind the construction. In this regard, during the supplemental claim construction hearing, the following exchange took place between the Special Master and counsel for Honeywell:

> SPECIAL MASTER POPPITI: If moiré is eliminated at 14 degrees, and if it is not reintroduced, if a product is rotated to 44 degrees and the moiré could have been eliminated between 2 and 16, is that 44-degree product, is that a design-around?
>
> MR. WOODS: I think the answer to your question, your Honor, would depend upon the facts of why it was, in this case, using this scenario, "over-rotated."
>
> I hesitated because over-rotation is a term which has been used in different fashions over the course of the history of the case. But in that scenario, <u>if someone has the patent in hand and thinks that they can design around by eliminating moiré and it happens to work out at 15, but then just happens to rotate more, I would argue, we would argue, it is not a design-around</u>.

(D.I. 665, Exh. H at 48:15-49:4 (emphasis added).) Thus, according to Honeywell, rotations of just about any angle would, under the Court's tentative claim construction, fall within the scope of the claims so long as they accomplished the objective of reducing moiré. The problem with this theory is that, although it is appropriate to understand the claim limitation in light of its moiré-reducing purpose, the claims specifically require that the misalignment be only "slight." The word "slight" limits the claim mainly in a

structural way, indicating that misalignments within the scope of the claims are of limited magnitude. Certainly, the word "slight" does not contemplate superfluous excess rotations. In addition, to the extent Honeywell contends that an over-rotation may infringe depending "upon the facts of why it was . . . 'over-rotated,'"[2] the Court will not look into the question of "why" a particular rotation was included in an accused product. See Amazon.com, Inc. v. Barnesandnoble.com, Inc., 239 F.3d 1343, 1353 (Fed. Cir. 2001) (refusing to "inject subjective notions into the infringement analysis" and explaining that "[w]e are not prepared to assign a meaning to a patent claim that depends on the state of mind of the accused infringer").

Helpful here is the Federal Circuit decision Innovad, Inc. v. Microsoft Corp., 260 F.3d 1326, 1332-33 (Fed. Cir. 2001), a case that both Honeywell and the Special Master find particularly instructive. In Innovad, the Federal Circuit construed the term "small volume," which described the size of a case that enclosed a claimed telephone dialer system, to mean "comfortably portable" because the specification related "small volume" to a portability function. Id. Though the Federal Circuit explained that "the term 'small volume' does not limit the dialer to a particular size as long as it performs

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[2] In this regard, the Court further notes that Honeywell argues "[f]or any degree of rotation, including those beyond 2 to 16 degrees, the question will be why that amount of rotation was implemented, and whether it is misaligned to be 'slight' as limited by this Court's construction (i.e., misaligned to reduce moiré)." (D.I. 675 at 6 (emphasis in original).)

its function," the portability function did, as a practical matter, restrict the dialer from being too large. Id. In this regard, the Federal Circuit concluded that a "keypad" could not be part of the claimed telephone dialer because it would inhibit portability. Id. Here too, a functional understanding of the claim term is appropriate. Indeed, as in Innovad, the specification relates the rotation to a function, explaining that the "rotation of the lens array by a few degrees (Typically 2 to 16 degrees) from the horizontal axis causes a small change in the effective spatial frequency difference of the two arrays and thereby eliminates the residual moire." '371 patent at 5:21-28. Likewise, the claim itself explicitly states that the lens arrays are rotated "in order to provide a slight misalignment between said lenslets and said liquid crystal panel." Id. at 6:38-42. However, it is not enough to, as Honeywell requests, simply state that a "slight misalignment" is one that reduces moiré because, unlike Innovad, where a construction of "comfortably portable" limited the term "small volume," this alone would place no genuine limit on the magnitude of the misalignment. Here, such a limitation must be present because the patentee claimed not merely a "misalignment" but a "slight misalignment." In the Court's view, the Special Master's proposal to limit the magnitude of the rotation to only what is necessary to eliminate moiré vindicates the functional teaching of the specification, yet at the same time

gives proper meaning to the claim term "slight," which clarifies and constrains the functional teachings of the specification.[3]

To the extent Honeywell objects to the Special Master's construction as referring to the "elimination" of moiré, the Court notes that the parties acknowledge that moiré cannot be completely "eliminated" within the strictest sense of the term "eliminate." Put another way, the parties acknowledge that, within the context of the patent, the "elimination" of moiré does not refer to the total elimination of any and all moiré effects. Rather, in the context of the patent, those of skill in the art understand that the word "eliminate" is used in a looser sense to refer to the reduction of

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[3] The Special Master stated that because 2 to 16 degrees is the preferred embodiment of the invention, his proposed construction "necessarily includes the [2 to 16 degree] range of the preferred embodiment." (D.I. 656 at 17 n.10.) Honeywell contends that the Court should reject the Special Master's construction because it includes nothing to indicate that his proposed construction "necessarily" includes the 2 to 16 degree range. However, during the supplemental claim construction hearing, Honeywell explained that the preferred 2 to 16 degree embodiment had a very specific geometric requirement, including 172 pixels per inch on the LCD and 142 lenslets per inch on the lens array. (See D.I. 665, Exh. H at 40:25-41:3.) In this respect, the "typical" 2 to 16 degree rotation described in the specification appears to correspond only to an embodiment with certain LCD and lens array spatial frequencies. The Court sees no reason to require that the term "slight misalignment" be understood to encompass a rotation of 2 to 16 degrees even when the LCD and lens array spatial frequencies are chosen such that rotations within the "typical" 2 to 16 degree range are not particularly effective at reducing moiré. Indeed, as the Special Master observed, the term "typically" is merely a term of frequency that does not genuinely indicate a universal limitation on the size of moiré-eliminating rotations. Thus, under the Court's construction, it would in fact be possible for a trier of fact to conclude that a rotation within the 2 to 16 degree range does not infringe if it is, for instance, far beyond what is necessary to eliminate moiré.

moiré to visually acceptable levels. (D.I. 665, Exh. H at 32:12-17.) In these circumstances, the Court concludes that the use of the word "eliminate" in the Special Master's proposed construction is not problematic. However, the Court will not adopt the Special Master's Proposed Construction to the extent it refers to the elimination of "residual" moiré. The Court agrees with Honeywell that this limitation improperly implies that the pitch selection method of reducing moiré, which is set forth in Claim 1, is a requirement of Claim 3.

As to the reference axis for the measurement of the rotation, the Court will also not adopt the Special Master's proposal that rotations be measured relative to an edge of the liquid crystal panel. In recommending this aspect of his proposed construction, the Special Master noted that the specification does not explicitly mention diagonal axes of the LCD panel and that Honeywell's expert had never observed diagonal axes of an LCD panel giving rise to moiré. However, in its Memorandum Opinion on claim construction, this Court chose not to, as the Manufacturer Defendants requested, limit the claims to luminance tailoring along a particular axis. Rather, the Court explained that although the specification discussed the tailoring of luminance along a particular axis, this was merely an example that was used to illustrate a broader concept. Accordingly, to the extent some diagonal axis of the LCD panel genuinely leads to moiré effects, the Court concludes that the patent teaches methods of reducing those effects. Furthermore, although

Honeywell's expert may have never observed a diagonal axis causing moiré effects, this is not, in the Court's view, an adequate basis to limit the claims. Furthermore, this aspect of the Special Master's claim construction appears to encompass a factual finding that is best reserved for proceedings other than claim construction.

However, during the supplemental claim construction hearing, the Customer Defendants proposed that the Court's claim construction be modified to reflect that the axes causing moiré are those associated with the structure of the LCD panel. (See D.I. 665, Exh. H at 84-88.) The claims themselves explain that rotation is carried out to provide a "slight misalignment between said lenslets and said liquid crystal panel." ('371 patent at 6:40-42 (emphasis added).) Likewise, the specification explains that the "spatial frequency" of the display panel refers to the number of "dots or pixels per inch" and that the rotation brings about a small difference in the spatial frequency of lens array relative to the spatial frequency of the LCD panel. (See '371 patent at 4:20-25, 5:16-27.) Thus, the claim and specification confirm that moiré arises from the liquid crystal panel itself and its attendant structural features, such as its spatial frequency. (See also id. at 4:59-5:5 (explaining that the lens arrays and panel spatial frequencies should be chosen to avoid integral multiples of one another); id. at Fig. 12 (depicting rotation relative to the pixel structure of the LCD); id. at 4:17-25 (explaining that moiré arises from "interference between the lens array and the display panel" (emphasis added)).) Accordingly, the Court agrees with the

Customer Defendants that it is appropriate to clarify that the moiré arises from the structure of the LCD panel.

In light of the above, the Court will construe the term "slight misalignment" to mean "a slight misalignment resulting from a rotation of the lenslets of the lens array, relative to an axis of the LCD panel causing moiré, by just enough, and not more, number of degrees to eliminate moiré effects due to the structure of the display." The parties will no doubt take differing and nuanced views as to whether the levels of precision offered by the various aspects of this claim construction are adequate. However, the Federal Circuit has explained that "[a]fter the court has defined the claim with whatever specificity and precision is warranted by the language of the claim and the evidence bearing on the proper construction, the task of determining whether the construed claim reads on the accused product is for the finder of fact." PPG Indus. v. Guardian Indus. Corp., 156 F.3d 1351, 1355 (Fed. Cir. 1998). Likewise, the Federal Circuit has explained that "a sound claim construction need not always purge every shred of ambiguity. The resolution of some line-drawing problems . . . is properly left to the trier of fact." Acumed LLC v. Stryker Corp., 483 F.3d 800, 806 (Fed. Cir. 2007). In the Court's view, in remaining true to the intrinsic record, the current claim construction leaves some appropriate "line-drawing problems" to the trier of fact. Specifically, the claim construction leaves for the trier of fact at least the issues of (1) whether a particular rotation "eliminates" moiré, (2) whether a particular

rotation is larger than necessary to eliminate moiré and is thus not a "slight" misalignment, and (3) whether a particular reference axis is both causing moiré and associated with the structure of the display. Thus, although the Court has narrowed its original claim construction, the question of infringement remains.

IV. CONCLUSION

For the foregoing reasons, the Court modifies the Special Master's recommend claim construction as provided herein. An Order consistent with this Memorandum Opinion will be entered setting forth the meaning of the claim term "slight misalignment" in the '371 patent.

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Plaintiffs,	:	
v.	:	Civil Action No. 04-1337-JJF (CONSOLIDATED)
NIKON CORPORATION, et al.,	:	
Defendants.	:	

ORDER

At Wilmington, this 12 day of August 2009, for the reasons discussed in the Memorandum Opinion issued this date;

IT IS HEREBY ORDERED that:

1. Honeywell's Objection To Special Master's Report And Recommendation Regarding Supplemental Claim Construction DM17 (D.I. 662) is **OVERRULED**.

2. The Customer Defendants' Objection To The Special Master's Report And Recommendation Regarding Supplemental Claim Construction DM 17 (D.I. 667) is **SUSTAINED IN PART**.

3. The Special Master's Report and Recommendation Regarding Supplemental Claim Construction (D.I. 656) dated May 4, 2009, is **MODIFIED** as follows: The claim term "slight misalignment" means "a slight misalignment resulting from a rotation of the lenslets of the lens array relative to an axis of the LCD panel causing moiré by just enough, and not more, number of degrees to eliminate moiré effects due to the structure of the display."

4. With the exception of the construction for the term "slight misalignment," the tentative claim constructions that are set forth in the Court's December 9, 2008 Order (D.I. 501) are now deemed final.

Joseph J. Farnan Jr.

UNITED STATES DISTRICT JUDGE