

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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EIZO CORPORATION,  
Petitioner,

v.

BARCO N.V.,  
Patent Owner.

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Case IPR2014-00358  
Patent RE43,707 E

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Before KALYAN K. DESHPANDE, JAMES B. ARPIN, and  
DAVID C. McKONE, *Administrative Patent Judges*.

DESHPANDE, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
35 U.S.C. § 318(a); 37 C.F.R. § 42.73

## I. INTRODUCTION

### *A. Background*

Eizo Corporation (“Petitioner”) filed a corrected Petition requesting an *inter partes* review of claims 36, 46, 54, 64, 65, 77–79, 93, 94, 101–104, and 107 of U.S. Patent No. RE43,707 E (Ex. 1001; “the ’707 patent”). Paper 4 (“Pet.”). Barco N.V. (“Patent Owner”) timely filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). Pursuant to 35 U.S.C. § 314, we instituted *inter partes* review on July 23, 2014, as to claims 101–104 of the ’707 patent under 35 U.S.C. § 103(a) as obvious over Greene<sup>1</sup> and Kamada.<sup>2</sup> Paper 11 (“Dec.”).

Patent Owner filed a Response (Paper 16, “PO Resp.”), and Petitioner filed a Reply (Paper 17, “Pet. Reply”).

Oral hearing was held on April 1, 2015, and the hearing transcript has been entered in the record (Paper 20, “Tr.”).

The Board has jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed below, we are not persuaded that Petitioner has shown by a preponderance of the evidence that claims 101–104 of the ’707 patent are unpatentable.

### *B. Related Proceedings*

Petitioner indicates that the ’707 patent is the subject of a Federal district court case: *Barco, N.V. v. Eizo Nanao Corp.*, 11-cv-00258 (N.D. Ga). Pet. 1.

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<sup>1</sup> U.S. Patent No. 6,271,825 B1 (Ex. 1008, “Greene”).

<sup>2</sup> U.S. Patent Publication No. 2005/0093798 A1 (Ex. 1004, “Kamada”).

Additionally, the '707 patent is the subject of *Inter Partes* Reexamination No. 95/002,047 and was the subject of *Ex Parte* Reexamination No. 90/020,037 (“the '037 Reexam.”).<sup>3</sup> Pet. 1.

*C. The '707 Patent*

The '707 patent is directed to a system and method for noise reduction in medical images being viewed on display systems. Ex. 1001, 4:14–16. Scientific studies indicate that even a “slight increase of noise in medical images can have a significant negative impact on the accuracy and quality of medical diagnosis.” *Id.* at 1:30–33. Accordingly, the '707 patent provides a noise reduction system and method that addresses non-uniformity of pixel behavior present in matrix-addressed electronic display devices. *Id.* at 4:36–41.

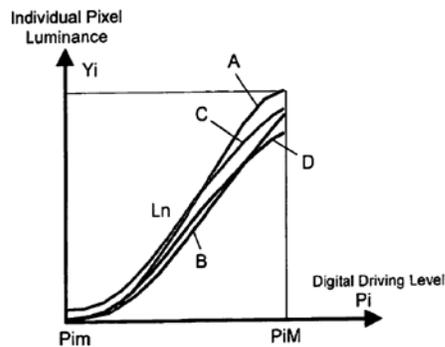
The '707 patent includes a range of embodiments, including a vision measurement system — a set-up for automated, electronic vision of individual pixels of a matrix-addressed display. *Id.* at 6:10–17. The vision measurement system includes an image capturing device, a movement device for moving the image capturing device, and/or a display. *Id.* at 6:17–20. Each of the embodiments reaches the same result of outputting an electronic image of pixels. *Id.* at 6:20–23. “[A] process is run to extract pixel characterization data from the electronic image.” *Id.* at 7:4–7. Algorithms are used to assign a luminance value to each pixel, where the algorithm includes a first task of identifying a location of each of the matrix display pixels and relating the pixels to the pixels of the electronic image, and a second task of calculating and assigning one light-output value for

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<sup>3</sup> The Office issued a reexamination certificate, U.S. Reexamination Certificate No. RE43,707 C1, on March 31, 2014. Ex. 2005.

each pixel. *Id.* at 7:8–13, 8:52–54. A test image may be generated by driving each of the pixels with the same drive signal or drive level, and the light-output of each pixel can be calculated from the test image. *Id.* at 9:25–39. The next task of the algorithm is to define a drive function, thereby providing a correction principle to generate a required light-output response curve for an individual pixel and, thus, equalizing the response of all of the pixels in a display. *Id.* at 10:29–42.

An example of equalizing the behavior of the pixels is illustrated in Figure 10 as follows:



**Fig. 10**

Figure 10 illustrates that pixels with curves A–C are equalized to that of curve D. *Id.* at 12:3–5. A specific transfer curve for each pixel may be used to compensate for the behavior of each pixel’s characteristic luminance response, thereby modifying or curing any unequal luminance behavior over a display area. *Id.* at 12:19–28.

#### *D. Illustrative Claims*

We instituted *inter partes* review, on July 23, 2014, as to claims 101–104 of the ’707 patent. Subsequent to the filing of the Petition, a Reexamination Certificate issued in the ’037 Reexam., amending claim 101. *See Ex. 2005.* Claim 101, which depended from independent claim 100,

now is written in independent form to include all of the limitations of cancelled claim 100. *Id.* Claims 102–104 depend, directly or indirectly, from independent claim 101.

Independent claim 101 is illustrative of the claims at issue and is reproduced below:

101. An image processing apparatus comprising:

an array of logic elements configured to generate a display signal based on a map and an image signal that represents at least one physical and tangible object

wherein the display signal is configured to cause a display to depict a display image of the at least one physical and tangible object, and

wherein the map comprises correction data configured to correct for pixel non-uniformity only when the pixel non-uniformity is outside of a tolerance level, and

wherein the tolerance level varies among pixels of the display.

#### *E. Claim Construction*

The Board interprets claims of an unexpired patent using the broadest reasonable interpretation in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, No. 2014-1301, slip op. at 16–19 (Fed. Cir. July 8, 2015) (“Congress implicitly approved the broadest reasonable interpretation standard in enacting the AIA,” and “the standard was properly adopted by PTO regulation.”). Under the broadest reasonable interpretation standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire

disclosure. *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

1. “*tolerance level*”

Independent claim 101 recites the term “tolerance level” with respect to pixel non-uniformity. Ex. 2005, 2:55–3:2. Neither Petitioner nor Patent Owner sets forth a construction for “tolerance level.” See Tr. 7:22–8:2, 11:18–21, 24:10–12; Pet. 10. The ’707 patent does not provide a specific definition for “tolerance level,” but discloses that in measuring a color shift “small deviations in color go unnoticed. This means that there is a certain tolerance on differences in luminosity relationships of sub-pixel elements which still provide an apparently uniform display.” Ex. 1001, 12:65–13:1. The ordinary and customary definition for “tolerance” is “[l]eeway for variation from a standard” and “[t]he permissible deviation from a specified value of a structural dimension, often expressed as a percent,”<sup>4</sup> and the ordinary and customary definition for “level” is “[r]elative position or rank on a scale.”<sup>5</sup> Accordingly, we determine that the ordinary and customary meaning of “tolerance level” is a permissible deviation or variation from a position on a scale. This meaning of “tolerance level” is consistent with its usage in the ’707 patent specification. See Ex. 1001, 12:65–13:1.

Accordingly, based on its ordinary and customary meaning and its usage in the ’707 patent specification and claims, we construe “tolerance level” to

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<sup>4</sup> See *tolerance*, THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE (2011) (available at <http://search.credoreference.com/content/entry/hmdictenglang/tolerance/0>).

<sup>5</sup> See *level*, THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE (2011) (available at <http://search.credoreference.com/content/entry/hmdictenglang/level/0>).

mean the permissible amount of deviation in luminosity that still provides an apparently uniform display.

## II. ANALYSIS

### *A. Timeliness of Petition*

Patent Owner contends that the Petition is time-barred under 35 U.S.C. § 315(b) because the Petition was filed more than one year after the date on which Petitioner was served a complaint alleging infringement of the patent. PO Resp. 10–25; Prelim. Resp. 2–15. Patent Owner specifically argues that it served a complaint alleging infringement of U.S. Patent No. 7,639,849 B2 (“the ’849 patent”) upon Petitioner on October 7, 2011. PO Resp. 10–11; Prelim. Resp. 2; *see* Ex. 2002. Subsequent to this service, the ’849 patent was reissued on October 2, 2012, as the ’707 patent. PO Resp. 11; Prelim. Resp. 2. The instant Petition was filed on January 17, 2014, more than two years after the date of service of the complaint. *Id.* Accordingly, Patent Owner argues that the Petition is untimely under Section 315(b). PO Resp. 10–25; Prelim. Resp. 2–15.

We are not persuaded by Patent Owner’s arguments. 35 U.S.C. §§ 251, 252 recite, respectively, that

[w]henver any patent is, through error, deemed wholly or partly inoperative or invalid, . . . the Director shall, on the *surrender of such patent* . . . , reissue the patent for the invention disclosed in the original patent” and that “[t]he *surrender of the original patent* shall take effect upon the issue of the reissued patent” (emphasis added).

The reissue patent is a distinct property right that “does not simply replace an original patent *nunc pro tunc*.” *Intel Corp. v. Negotiated Data Solutions, Inc.*, 703 F.3d 1360, 1364 (Fed. Cir. 2012) (citing *Spectronics Corp. v. H.B.*

*Fuller Co.*, 940 F.2d 631, 637–38 (Fed. Cir. 1991)). 35 U.S.C. § 315(b) recites that

[a]n inter partes review may not be instituted if the petition requesting the proceeding is filed more than 1 year after the date on which the petitioner, real party of interest, or privy of the petitioner is served with a complaint alleging infringement *of the patent* (emphasis added).

Here, Patent Owner served upon Petitioner a complaint alleging infringement of the '849 patent. *See* Ex. 2002. Patent Owner acknowledges that this original complaint does not allege infringement of the '707 patent. Tr. 35:22–23. The reissuance of the '849 patent as the '707 patent did not *continue* the '849 patent, but rather resulted in the *surrender* of the '849 patent and the *issuance* of a new patent, the '707 patent. Patent Owner served Petitioner with an *amended* complaint alleging infringement of the '707 patent on January 17, 2013. *See* Ex. 2004. The Board accorded the instant Petition a filing date of January 17, 2014. *See* Paper 3. Patent Owner acknowledges that the claims challenged in the Petition were not in the original '849 patent. Tr. 36:18–20. Accordingly, Section 315(b) is not applicable here because the Petition was not filed more than one year after Petitioner was served with the *amended* complaint first alleging infringement of the '707 patent.

We also are not persuaded by Patent Owner's argument that the claims of the '849 patent are substantially identical to the claims of the '707 patent. Therefore, under Section 252, the '849 patent is not the same as the '707 patent for the purposes of Section 315(b). Prelim. Resp. 6–8, 12–14. 35 U.S.C. § 315(b) requires that “the petitioner . . . is served with a complaint alleging infringement of *the patent*” (emphasis added).

Accordingly, we are not persuaded by Patent Owner's argument and determine that the Petition is not barred under Section 315(b).

*B. Obviousness of Claims 101–104 over Greene and Kamada*

*1. Overview*

Petitioner argues that Greene and Kamada render obvious claims 101–104 of the '707 patent. A patent claim is obvious under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are “such that the subject matter[,] as a whole[,] would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

*2. Greene (Ex. 1008)*

Greene teaches methods for correcting spatial non-uniformities in the brightness of electronic displays. Ex. 1008, 1:8–13. Greene describes “several methods for keeping a resultant luminance substantially constant using active control means.” *Id.* at 8:45–47. “The correction methods incorporate the measurement of brightness characteristics of the display” and “can be applied to selected pixels or all of the pixels.” *Id.* at 4:34–36. The measured data is stored and then “selectively retrieved during the operation of the display and used to scale and/or interpolate drive signals in real-time.” *Id.* at 4:39–44. Corrections are made with respect to a chosen reference

system such that any remaining gradual and abrupt brightness non-uniformities over the selected pixels fall below the human eye's detectable luminance threshold under intended viewing conditions. *Id.* at 4:51–55. The luminance correction method is illustrated in Figure 4, reproduced below:

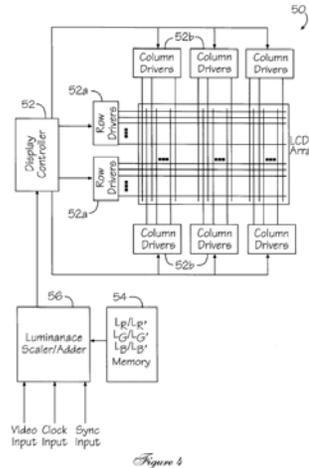


Figure 4 is a block diagram of the luminance correction method, which includes data input, luminance scaler/adder 56, central random access memory 54, display controller 52, row drivers 52a, and column drivers 52b. Ex. 1008, 10:48–58. Luminance scaler/adder 56 receives data input, such as video data, and recomputes the color coordinates of the received data input based on luminance ratios stored in central random access memory 54. *Id.* at 10:53–58. As a result of this recomputing, the color coordinates are normalized for the intended light display. *Id.* at 10:59–61. Then, display controller 52, which is operatively connected to row drivers 52a and column drivers 52b, receives the normalized data. *Id.* at 10:53–56. A modified pixel stream then is output to drivers 52a and 52b. *Id.* at 11:8–11.

3. Kamada (Ex. 1004)

Kamada teaches a display correction circuit and a display apparatus that correct uneven image appearance caused by the display apparatus. Ex. 1004 ¶ 2. Kamada describes a memory that stores first data indicative of size and position of a rectangular region on the display screen and second data indicative of gray level changes in a surrounding region around the rectangular region in an isometric manner with respect to a horizontal and vertical direction. *Id.* ¶ 19. An image processing unit adjusts gray level of image data in response to the first data and second data. *Id.* The image processing apparatus is illustrated in Figure 1, reproduced below:

FIG.1

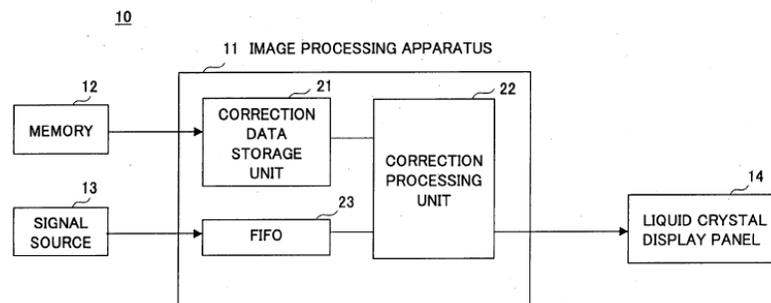


Figure 1 is a diagram of the liquid crystal display apparatus that includes image processing apparatus 11, memory 12, signal source 13, and liquid crystal display panel 14. Ex. 1004 ¶¶ 41–42. Signal source 13 supplies image data signals for display on liquid crystal display panel 14. *Id.* ¶ 42. Image processing apparatus 11 corrects the image data signals based on correction data stored by memory 12 and supplies the corrected image data signals to liquid crystal display panel 14. *Id.*

An area to be corrected is specified by two points corresponding to the top left corner and the bottom right corner of a rectangular region. *Id.* ¶ 45.

Constant correction value  $k$ , which corresponds to an amount of shift by which a gray level is changed, is applied to the rectangular region. *Id.* Constant correction value  $k$  is decreased gradually in a region surrounding the rectangular region, where the surrounding region has a specified width surrounding the rectangular region. *Id.* Thus, the correction value is  $k$  at the edge of the rectangular region and decreases to zero at the edge of the surrounding region. *Id.*

#### 4. Analysis

Petitioner argues that Greene teaches all of the limitations of independent claim 101, except for the limitation “wherein the tolerance level varies among pixels of the display.” Pet. 38–42. Petitioner argues that Kamada teaches that a constant correction value is applied to a rectangular region, and the correction value gradually decreases in the surrounding region until it becomes zero. Pet. 40 (citing Ex. 1004 ¶ 45). Petitioner further argues that both Greene and Kamada are directed to suppressing non-uniformity or unevenness of light-output in pixel displays and that a person with ordinary skill in the art would have had reason to combine the teachings of Greene and Kamada in order to reduce the size of correction data that needs to be stored, an advantage taught by Kamada. Pet. 40–41 (citing Ex. 1004 ¶ 47).

Patent Owner contends that Kamada fails to teach that “the tolerance level varies among pixels of the display.” PO Resp. 6–9. Patent Owner specifically argues that Kamada teaches correcting an uneven appearance, but fails to teach a “different ‘tolerance level’ of one pixel versus another.” PO Resp. 6.

We are persuaded by Patent Owner that Kamada fails to teach that “the tolerance level varies among pixels of the display.” As discussed above, we construe the term “tolerance level” to mean the permissible amount of deviation in luminosity that still provides an apparently uniform display. *See supra* Section I.E.1. As argued by Petitioner, Kamada teaches the application of a constant correction value in a specified region and the decrease of the constant correction value in the region surrounding the specified region. *See* Pet. 40 (citing Ex. 1004 ¶ 45). The correction value corresponds to an amount of shift by which a gray level is changed. Ex. 1004 ¶ 45. That is, the correction value defines the amount of gray level shift applied to each pixel. *See* Tr. 12:17–24. Therefore, the correction value and “tolerance level” are independent values, and, accordingly, we are not persuaded that Kamada’s teaching of a correction value meets the limitation “the tolerance level varies among pixels of the display.”

Petitioner acknowledges that the constant correction value and tolerance levels are not the same values. Tr. 12:10–16. Petitioner, however, contends that the correction value and tolerance level are related, such that, for example, the lower the tolerance, the more correction that will be applied. *Id.* Petitioner also argues that “reducing the correction for pixels located in the surrounding region at the edge of the display implicitly recognizes that the threshold or tolerance level for pixels depends on the position of the pixel in the display.” Pet. 40. We are not persuaded that this can be inferred from Kamada. As discussed above, Kamada teaches the application of a constant correction value to pixels, and Kamada is silent as to the application of the correction value based on a “tolerance level.” *See* Ex. 1004 ¶ 45. Although Kamada teaches the application of the constant

correction value based on the location of the pixel, Kamada applies the same correction value regardless of the luminosity of the pixel. Ex. 1004 ¶ 45; *see* Tr. 12:17–24. As such, Kamada’s constant correction value is applied regardless of any “tolerance value,” and, therefore, we do not infer that an increase or decrease in the correction value would be based on a “tolerance value.”

In addition, Patent Owner objects to Petitioner’s discussion of paragraph 69<sup>6</sup> of Kamada with respect to the limitation “wherein the tolerance level varies among pixels of the display” because Patent Owner argues that Petitioner raises this argument for the first time at the hearing, and did not present this rationale in the Petition. Tr. 25:19–23; *see* PO Resp. 3; Tr. 19:21–25, 20:6–8. We have reviewed Petitioner’s arguments with respect to claim 101 in the Petition, and we agree with Patent Owner that Petitioner did not present an analysis in the Petition that relies on paragraph 69 of Kamada as teaching “wherein the tolerance level varies among pixels of the display.” Instead, the Petition focused on the applicability of paragraphs 45 and 47 of Kamada to the limitation “wherein the tolerance level varies among pixels of the display.” *See* Pet. 39–40. Accordingly, Petitioner’s argument that paragraph 69 teaches this limitation is a new argument, and we will not consider it for the purposes of this Decision. *See* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756,

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<sup>6</sup> Paper 20 identifies Patent Owner’s objection as to paragraph 49. Tr. 25:19–23. However, we recognize this to be a typographical error. During oral hearing, Patent Owner clearly identified paragraph 69, and, therefore, we address Patent Owner’s objection as to paragraph 69.

48,768 (Aug. 14, 2014) (“No new evidence or arguments may be presented at oral argument.”).

### III. CONCLUSION

We are not persuaded that Petitioner has demonstrated by a preponderance of the evidence that claims 101–104 would have been obvious over Greene and Kamada.

### IV. ORDER

Accordingly, it is hereby:

ORDERED that, based on the grounds under review, claims 101–104 of U.S. Patent No. RE43,707 E have not been shown by a preponderance of the evidence to be unpatentable; and

FURTHER ORDERED that this is a Final Written Decision of the Board under 35 U.S.C. § 318(a), and parties to the proceeding seeking judicial review of this decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2014-00358  
Patent RE43,707 E

For PETITIONER:

Lead Counsel  
Marc Weinstein  
QUINN EMANUEL URQUHART & SULLIVAN LLP  
[marcweinstein@quinnemanuel.com](mailto:marcweinstein@quinnemanuel.com)

FOR PATENT OWNER:

Lead Counsel  
Kerry T. Hartman  
HARTMAN PATENTS PLLC  
[khartman@hartmanpatents.com](mailto:khartman@hartmanpatents.com)

Back-up Counsel  
Jeffrey Morgan  
BARNES & THORNBURG LLP  
[jeff.morgan@BTlaw.com](mailto:jeff.morgan@BTlaw.com)