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| Pearl Cohen Zedek Latzer Baratz LLP<br>Given Imaging Ltd.<br>1500 Broadway, 12th Floor<br>New York, NY 10036 |             |                      | SANTOS RODRIGUEZ, JOSEPH M |                  |
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* PASCAL AMIT<sup>1</sup>

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Appeal 2014-006857  
Application 11/723,500  
Technology Center 3700

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Before DONALD E. ADAMS, JEFFREY N. FREDMAN, and  
JACQUELINE T. HARLOW, *Administrative Patent Judges*.

*PER CURIAM*

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) involving claims to a narrow band in-vivo imaging device. The claims are rejected as obvious. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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<sup>1</sup> According to Appellant, the Real Party in Interest is Given Imaging, Ltd. (App. Br. 1).

STATEMENT OF THE CASE

The Specification describes a narrow band in-vivo imaging device that captures more than one narrow band image (Spec. ¶ 1). Claims 1, 5–7, 9–13, and 17–32 are on appeal. Claim 1 is illustrative and reads as follows (emphasis added):

1. An in-vivo imaging device for providing at least first and second narrow band images of an in-vivo target area, the in-vivo imaging device comprising:

a first type and a second type of narrow band illumination sources of light radiation for simultaneously illuminating the target area and giving rise to reflected radiation therefrom, the first and second types of illumination sources having non-overlapping first and second illumination spectra; and

an imager to simultaneously capture said at least first and second images based on simultaneously receiving the radiation reflected from the target area by illumination from the first and second types of illumination sources, *the imager comprising an array of a first and a second types of light sensitive elements covered by wavelength sensitive filters and having differing first and second sensitivity spectra, the first and the second types of light sensitive elements being responsive to the first and the second illumination spectra, respectively,*

wherein values of full width half maximum (FWHM) of the first and the second illumination spectra are less than values of FWHM of the first and the second sensitivity spectra, respectively,

wherein values of center wavelength and of FWHM of the first illumination spectrum are such that an overlap between the first sensitivity spectrum and the first illumination spectrum is larger than an overlap between the first sensitivity spectrum and the second illumination spectrum,

and wherein values of center wavelength and of FWHM of the second illumination spectrum are such that an overlap between the second sensitivity spectrum and the second illumination spectrum is larger than an overlap between the second sensitivity spectrum and the first illumination spectrum.

The claims stand rejected as follows:

- I. Claims 1, 5–7, 9, 17–20, and 25 stand rejected under 35 U.S.C. § 103(a) as being obvious based on Refael,<sup>2</sup> Glukhovsky,<sup>3</sup> and Yaron.<sup>4</sup>
- II. Claims 1, 5–7, 9, 17–20, 25, 26, 31, and 32 stand rejected under 35 U.S.C. § 103(a) as being obvious based on Refael, Glukhovsky, Yaron, and Gardiner.<sup>5</sup>
- III. Claims 10, 11, 21–23, 27, and 28 stand rejected under 35 U.S.C. § 103(a) as being obvious based on Refael, Glukhovsky, Yaron, Gardiner, and Rotolante.<sup>6</sup>
- IV. Claims 12, 13, 24, 29, and 30 stand rejected under 35 U.S.C. § 103(a) as being obvious based on Refael, Glukhovsky, Yaron, Gardiner, Rotolante, and Adler.<sup>7</sup>

I.

The Examiner has rejected claims 1, 5–7, 9, 17–20, and 25 under 35 U.S.C. § 103(a) as being obvious based on Refael, Glukhovsky, and Yaron. We focus our discussion on independent claims 1 and 25.

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<sup>2</sup> Refael, US 2003/0208107 A1, published Nov. 6, 2003.

<sup>3</sup> Glukhovsky et al., US 2003/0120130 A1, published June 26, 2003.

<sup>4</sup> Yaron, US 2001/0017649 A1, published Aug. 30, 2001.

<sup>5</sup> Gardiner, US 2004/0158300 A1, published Aug. 12, 2004.

<sup>6</sup> Rotolante et al., US 4,290,844, issued Sept. 22, 1981.

<sup>7</sup> Adler, US 6,659,940 B2, issued Dec. 9, 2003.

We agree with Appellant that the Examiner erred in rejecting claims 1 and 25 as obvious over Refael, Glukhovsky, and Yaron.

*Claim 1*

Claim 1 recites an imager that includes an array of light sensitive elements that exhibit particular characteristics. Relevant to this appeal, the claimed array includes “a first and a second types of light sensitive elements covered by wavelength sensitive filters and having differing first and second sensitivity spectra, the first and the second types of light sensitive elements being responsive to the first and the second illumination spectra, respectively” (claim 1).

Claim 1 further defines the characteristics of the above-described array, reciting:

wherein values of full width half maximum (FWHM) of the first and the second illumination spectra are less than values of FWHM of the first and the second sensitivity spectra, respectively,

wherein values of center wavelength and of FWHM of the first illumination spectrum are such that an overlap between the first sensitivity spectrum and the first illumination spectrum is larger than an overlap between the first sensitivity spectrum and the second illumination spectrum,

and wherein values of center wavelength and of FWHM of the second illumination spectrum are such that an overlap between the second sensitivity spectrum and the second illumination spectrum is larger than an overlap between the second sensitivity spectrum and the first illumination spectrum.

(Claim 1.)

In view of the plain language of claim 1, read in light of the Specification, we agree with Appellant that the wavelength properties of the

illumination sources and the light sensitive elements are structural, rather than functional limitations, because they define what the claimed elements are, and therefore, define the array (App. Br. 8). We also agree with Appellant that “an illumination source emitting light in a certain wavelength region will not be able to emit light in another wavelength region, or will have first to undergo structural change” and that “adjusting the sensitivity spectra of the light sensitive elements in order to achieve the required overlapping requires using physically different filters” (*id.*; *see also* Reply Br. 4).

Accordingly, we conclude that the Examiner erred in determining that [t]he limitation of how the light sensitive elements are responsive to illumination spectra having spectral regions being overlapped fails to set forth a structural limitation and is not given patentable weight” (Ans. 3). We likewise conclude that the Examiner erred in determining that “[t]he limitation of modifying the values of center wavelength and of full width half maximum (FWHM) have obtained a specific overlap between the illumination and sensitivity spectrum fails to set forth a structural limitation and is not given patentable weight” (*id.* at 3–4).

Therefore, because the Examiner does not give patentable weight to the above-described claim limitations (Ans. 14–15), and does not identify any disclosure in the cited art of an array with light sensitive elements and filters in which the light sensitive elements are responsive to spectra having values of center wavelength and FWHM as claimed, we reverse the rejection of claim 1 based on Refael, Glukhovsky, and Yaron. We likewise, reverse the rejection of claims 5–7, 9, and 17–20, as those claims depend from claim 1.

*Claim 25*

Claim 25 recites

*A method* for providing a plurality of narrow band images of an in-vivo target area by an in-vivo imaging device, the *method* comprising: . . . capturing the plurality of narrow band images simultaneously based on simultaneously receiving radiation reflected from the target area by an imager comprising an *array* of a plurality of light sensitive elements covered by wavelength sensitive filters and having differing corresponding sensitivity spectra, . . . (emphasis added).

Claim 25 further recites

wherein each of the plurality of light sensitive elements is responsive to a corresponding illumination spectra,

wherein values of full width half maximum (FWHM) of each of the plurality of illumination spectra are less than the corresponding values of FWHM of sensitivity spectra, respectively, and

wherein values of FWHM of each of the plurality of illumination spectra are such that for each pair of corresponding illumination source and light sensitive element, an overlap between sensitivity spectrum of the light sensitive element and the corresponding illumination spectrum is larger than overlaps of the sensitivity spectrum and illumination spectra of other illumination sources.

The Examiner relies on the same determinations discussed above with regard to claim 1 in rejecting claim 25 (*id.* at 3–4). We are not persuaded for the reasons discussed above. We also note that claim 25 is directed to a method instead of an apparatus, and therefore, we agree with Appellant that the Examiner has not established an evidentiary basis on this record to support a conclusion that Refeal, Glukhovsky, and Yaron render obvious the

claimed method (App. Br. 10). Accordingly, we reverse the rejection of claim 25.

## II.

The Examiner has rejected claims 1, 5–7, 9, 17–20, 25, 26, 31, and 32 under 35 U.S.C. § 103(a) as being obvious based on Refael, Glukhovsky, Yaron, and Gardiner. We focus our discussion on independent claims 1 and 25.

We agree with Appellant that the Examiner erred in rejecting claims 1 and 25 as being obvious over Refael, Glukhovsky, Yaron, and Gardiner.

The Examiner asserts that Gardiner teaches controlling the center wavelength, and that the spectral bandwidth of the illumination light spectrum would inherently provide a desired overlapping between the illumination spectrum and the sensitivity spectrum (Ans. 7).

We are not persuaded. We agree with Appellant that Gardiner does not teach adjusting wavelength of light sources to conform to the above-described limitations of claims 1 and 25 (App. Br. 14). Accordingly, because the Examiner does not point to any clear or specific teachings in Gardiner that addresses the deficiencies discussed above of Refael, Glukhovsky, and Yaron, we reverse the rejection of claims 1 and 25. We likewise reverse the rejection of claims 5–7, 9, 17–20, 26, 31, and 32, which depend, respectively, from claims 1 and 25.

III.

The Examiner has rejected claims 10, 11, 21–23, 27 and 28 under 35 U.S.C. § 103(a) as being obvious based on Refael, Glukhovsky, Yaron, Gardiner, and Rotolante. Because the Examiner has pointed to no clear or specific teaching in Rotolante that addresses the deficiencies discussed above of Refael, Glukhovsky, Yaron, and Gardiner, with respect to claim 1 or claim 25, from which claims 10, 11, 27, and 28 respectively depend, we reverse the rejection of these claims.

Akin to independent claims 1 and 25, independent claim 21 recites, in pertinent part:

an imager comprising a plurality of light sensitive elements covered by wavelength sensitive filters and having differing corresponding sensitivity spectra arranged in a mosaic array for capturing a plurality of narrow band images simultaneously,

wherein each of the plurality of light sensitive elements is responsive to a corresponding illumination spectra,

wherein values of full width half maximum (FWHM) of each of the plurality of illumination spectra is less than the corresponding values of FWHM of sensitivity spectra, respectively, and

wherein values of FWHM of each of the plurality of illumination spectra are such that for each pair of corresponding illumination source and light sensitive element, an overlap between sensitivity spectrum of the light sensitive element and the corresponding illumination spectrum is larger than overlaps of the sensitivity spectrum and illumination spectra of other illumination sources.

The Examiner relies on the same assertions concerning the disclosures of Refael, Glukhovsky, Yaron, and Gardiner, discussed above with regard to

claims 1 and 25 in rejecting claim 21 (Ans. 10–12). Because the Examiner has pointed to no clear or specific teaching in Rotolante that addresses the above-identified deficiencies of Refael, Glukhovsky, Yaron, and Gardiner, we reverse the rejection of this claim for the reasons set forth above. Because they depend from claim 21, the rejection of claims 22 and 23 is also reversed.

#### IV.

The Examiner has rejected claims 12, 13, 24, 29, and 30 under 35 U.S.C. § 103(a) as being obvious based on Refael, Glukhovsky, Yaron, Gardiner, Rotolante, and Adler. Because the Examiner has pointed to no clear or specific teaching in Adler that addresses the deficiencies discussed above of Refael, Glukhovsky, Yaron, Gardiner, and Rotolante with respect to claim 1, claim 21 or claim 25, from which claims 12, 13, 24, 29, and 30 respectively depend, we also reverse the rejection of these claims.

#### SUMMARY

We reverse the rejection of claims 1, 5–7, 9, 17–20, and 25 under 35 U.S.C. § 103(a) based on Refael, Glukhovsky, and Yaron.

We reverse the rejection of claims 1, 5–7, 9, 17–20, 25, 26, 31, and 32 under 35 U.S.C. § 103(a) based on Refael, Glukhovsky, Yaron, and Gardiner.

We reverse the rejection of claims 10, 11, 21–23, 27 and 28 under 35 U.S.C. § 103(a) based on Refael, Glukhovsky, Yaron, Gardiner, and Rotolante.

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We reverse the rejection of claims 12, 13, 24, 29, and 30 under 35 U.S.C. § 103(a) based on Refael, Glukhovsky, Yaron, Gardiner, Rotolante, and Adler.

REVERSED