

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CIMBRIA SRL,
Petitioner,

v.

3U VISION SRL,
Patent Owner.

PGR2024-00018
Patent 11,666,947 B2

Before KEVIN W. CHERRY, CYNTHIA L. MURPHY, and
RYAN H. FLAX, *Administrative Patent Judges*.

CHERRY, *Administrative Patent Judge*.

DECISION
Granting Institution of Post-Grant Review
35 U.S.C. § 324

I. INTRODUCTION

A. Background and Summary

Cimbria SRL (“Petitioner”) filed a Petition requesting post-grant review of claims 1–15 (“the challenged claims”) of U.S. Patent No. 11,666,947 B2 (Ex. 1001, “the ’947 patent”). Paper 1 (“Pet.”). 3U Vision SRL (“Patent Owner”) did not file a Preliminary Response to the Petition.

Under 35 U.S.C. § 324(a), a post-grant review may be instituted only if “the information presented in the petition . . . demonstrate[s] that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable.” Post-grant review is available for patents that issue from applications that at one point contained at least one claim with an effective filing date on or after March 16, 2013. *See Leahy-Smith America Invents Act*, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), §§ 3(n)(1), 6(f)(2)(A).

After considering the briefing and the evidence of record, for the reasons set forth below, we determine that Petitioner has shown that the ’947 patent is eligible for post-grant review, and has shown it is more likely than not that at least one challenged claim of the ’947 patent is unpatentable under § 324(a). Accordingly, we institute a post-grant review of the challenged claims of the ’947 patent.

B. Real Parties in Interest

The parties identify themselves as real parties-in-interest. Pet. 1; Paper 4, 2. Petitioner further states that “AGCO Corporation, Cimbria’s ultimate parent, participated in the preparation of this Petition and is also a real party in interest with respect to this Petition.” Pet. 1.

C. Related Matters

Petitioner does not identify any related matters. Pet. 2. Patent Owner identifies two Italian actions that are pending “for Italian Patent No. 202020000005884 (filed October 21, 2020), for which US Patent No. 11,666,947 claims priority.” Paper 4, 2; *see* Ex. 1001, code (30).

D. Overview of the '947 Patent

The '947 patent is titled “Selector Machine.” Ex. 1001, code (54). The '947 patent was filed as Application No. 17/505,866 on October 20, 2021, which claims priority to Italian application 202020000005884, filed October 21, 2020. *Id.* at codes (21), (22), (30).

The '947 patent regards “machines for the sorting of products, which are advantageously employed for identifying, within a bulk product, specific solid elements to be separated.” *Id.* at 1:6–9. Specifically, the '947 patent states that machine is:

intended to be employed in the agricultural industry, for example in order to separate dried fruit from the corresponding shells before packaging, in the waste recovery and recycling industry, for example in order to separate waste made with plastic materials that are different from each other, or in any other field in which it is necessary to separate solid elements from each other in a bulk product on the basis in particular of their external appearance and/or of their chemical-physical properties.

Id. at 1:10–19.

The '947 patent acknowledges that automated selector machines are “[k]nown on the market.” *Id.* at 1:23–26. The '947 patent explains that it was known that “selector machines are generally provided with a conveyance system on which a flow of a bulk product is made to advance.” *Id.* at 1:27–31. Also, it was known that “[s]elector machines also comprise an optical detection system arranged for acquiring and analyzing images of

the flow of bulk product, so as to distinguish, in the bulk product, the solid elements to be separated or discarded.” *Id.* at 1:41–44. The ’947 patent states that “[s]uch detection system is adapted to send control signals, based on the information obtained from the acquired images, to an expulsion device (such as a solenoid valves) actuatable to remove the selected solid elements from the bulk product, for example through the emission of compressed air jets.” *Id.* at 1:45–49. The ’947 patent describes that, in the known selector machines,

the optical detection system comprises optical emitters (e.g. constituted by LEDs) adapted to emit electromagnetic radiations towards the bulk product, and one or more optical sensors arranged for receiving the radiations reflected from the bulk product in order to obtain images of the product on the basis of which, by means of suitable thresholding algorithms, an electronic control unit determines which are the elements to be removed. In order to be able to distinguish, in the bulk product, solid elements substantially having the same color in the visible light spectrum, it is known to employ emitters and optical sensors that also operate in the near infrared spectrum.

Id. at 1:50–61.

The ’947 patent’s Figure 2 is reproduced below.

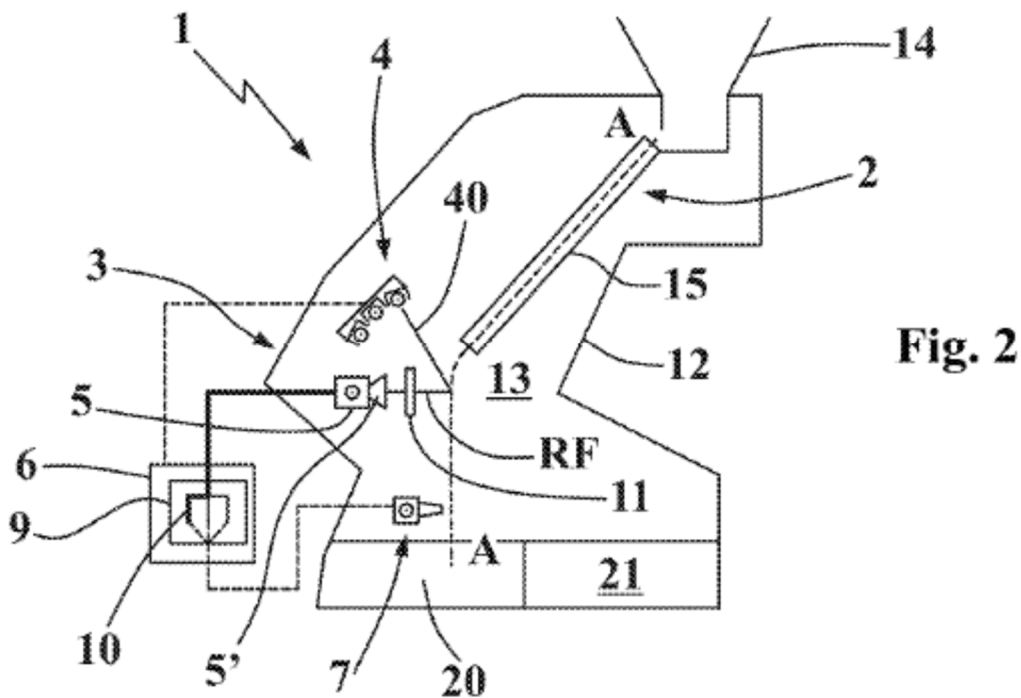


Figure 2 shows a schematic view of a selector machine. *Id.* at 3:5–6.

The '947 patent describes selector machine 1 that includes conveyance system 2 that arranged to advance a bulk product including solid elements to be selected. *Id.* at 3:48–51. Conveyance system 2 includes “hopper 14, through which the product is provided to the selector machine 1,” and slide 15, along which the product descends. *Id.* at 3:57–64. Selector machine 1 includes at least one first collection space 20 to receive the product and at least one second collection space 21 to receive solid elements selected from the product flow. *Id.* at 3:65–4:3.

Selector machine 1 further includes optical detection system 3 to identify elements in the product to be selected. *Id.* at 4:9–10. Optical detection system 3 includes optical sensor 5 and emitter device 4 to emit electromagnetic radiations 40 at product. *Id.* at 4:12–15. The '947 patent describes emitter 4 as including three or more IR sources 8. *Id.* at 5:10–14.

Electronic control unit 6 receives measurement signals from optical sensor 5 and is arranged to emit control signals to expulsion device to remove selected elements from the product. *Id.* at 4:21–26. Electronic control unit includes processing module 9 that is provided with three chromatic channels 10 of a RGB color space. *Id.* at 5:26–28. The '947 patent explains that “[t]he processing module 9 is arranged for associating the measurement signals corresponding to each IR source 8 with a corresponding chromatic channel 10 in order to compose a false color synthesis image of the product.” *Id.* at 5:30–34.

According to the '947 patent, “electronic control unit 6 is adapted to generate the control signals, and then identify the elements to be selected, as a function of the aforesaid synthesis image.” *Id.* at 5:35–37. The '947 patent explains that “electronic control unit 6 turns on in a first time interval T_{ON} a first of the IR sources 8 with the other IR sources 8 inactive, such that the bulk product is only irradiated with electromagnetic radiations 40 at the spectral band 80 of the aforesaid IR source 8.” *Id.* at 5:38–42. The '947 patent describes irradiated product as reflecting reflected radiations RF having wavelength in the corresponding spectral band 80, which are received by optical sensor 5. *Id.* at 5:42–47. The “measurement signal is mapped on a first of the chromatic channels 10 of the processing module 9.” *Id.* at 5:56–58.

The '947 patent states that “[i]n a successive second time interval T_{ON} , the first of the IR sources 8 is deactivated by the electronic control unit 6 and a second of the aforesaid IR sources 8 is turned on” to irradiate the product and optical sensor 5 generates a second measurement signal that is associated by processing module 9 with a second of the chromatic channels

10. *Id.* at 5:60–6:2. The '947 patent describes repeating this process with a third of IR source 8 so that optical sensor 5 generates a measurement signal that is mapped by processing module 9 with a third of chromatic channels

10. *Id.* at 6:2–6.

With regard to the expulsion of selected elements from the product, the '947 patent describes electronic control unit 6 as having at least one thresholding software that “defines the criteria with which the electronic control unit 6 determines, based on the synthesis images, the elements to be selected and, consequently, the control signals to be sent to the expulsion device 7.” *Id.* at 6:9–15.

E. The Challenged Claims

Petitioner challenges claims 1–15 of the '947 patent. Pet. 4. Of the challenged claims, claim 1 is independent. Claim 1, reproduced below with Petitioner's added identifiers for the claim limitations included, is illustrative of the subject matter recited in the challenged claims:

- 1. [preamble]** A selector machine, comprising:
 - [1a]** a conveyance system, which is arranged for advancing, along an advancement path, at least one bulk product comprising multiple solid elements to be selected;
 - [1c]** an optical detection system comprising:
 - [1d]** an emitter device arranged for emitting, towards said advancement path, electromagnetic radiations adapted to hit said at least one product;
 - [1e]** an optical sensor directed towards said advancement path and arranged for receiving reflected radiations coming from said at least one product irradiated by said electromagnetic radiations, **[1f]** and for transducing said reflected radiations into corresponding measurement signals;
 - [1g]** an electronic control unit operatively connected to said optical sensor in order to receive said

measurement signals, and arranged for emitting control signals;

[1h] an expulsion device connected to said optical detection system in order to receive said control signals, which are adapted to drive said expulsion device to eliminate from said advancement path, specific solid elements of said at least one product;

[1i] wherein:

said emitter device comprises at least three IR sources each of which is arranged for emitting electromagnetic radiations in a corresponding separate spectral band in the infrared spectrum;

[1j] said electronic control unit is operatively connected to said emitter device and is arranged for alternately turning on said IR sources one after the other, in corresponding and separate time intervals;

[1k] said optical sensor is arranged for detecting, in each said time interval, corresponding said reflected radiations coming from said at least one product irradiated by the corresponding said IR source, and to generate corresponding said measurement signals;

[1l] said electronic control unit comprises a processing module, [1m] which is provided with at least three chromatic channels of a RGB color space and [1n] is arranged for associating the measurement signals corresponding to each said IR source with a corresponding chromatic channel of said chromatic channels and [1o] for composing a false color synthesis image of said at least one product by means of three said measurement signals acquired every three successive said time intervals; [1p] said electronic control unit being configured to generate said control signals as a function of said synthesis image.

Ex. 1001, 11:2–48; Pet. 42–61.

F. Evidence

Petitioner submits, *inter alia*, the following evidence in support of its patentability challenges:

Evidence	Exhibit No.
ElMasry et al., <i>Recent Applications of Multispectral Imaging in Seed Phenotyping and Quality Monitoring—An Overview</i> , 19 Sensors 1090 (March 2019) (“ElMasry”)	1002
Lane, U.S. Patent No. 4,558,786 (issued Dec. 17, 1985, filed June 15, 1983) (“Lane”)	1003
Gerken et al., GB 2578180 A (published Apr. 22, 2020, filed Apr. 12, 2019) (“Gerken”)	1004
Adams et al., US 9,795,996 B2 (issued Oct. 24, 2017, filed Jan. 15, 2016) (“Adams”)	1005
Gray et al., US 5,508,512 (issued Apr. 16, 1996, filed Jan. 24, 1995) (“Gray”)	1006
Hagiwara et al., U.S. Pub. No. 2018/0020200 A1 (published Jan. 18, 2018, filed Sept. 26, 2017) (“Hagiwara”)	1007
Darty et al., U.S. Pub. No. 2020/0088580 A1 (published Mar. 19, 2020, filed Sept. 12, 2019) (“Darty”)	1008
Declaration of David Schaafsma, Ph.D. (“Schaafsma Decl.”)	1009

G. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–15 are unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §¹	Reference(s)/Basis
1–15	112	Indefiniteness
1–3, 6, 10	103	ElMasry

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 112. Because the challenged claims of the ’947 patent have an effective filing date after the effective date of the applicable AIA amendment, we refer to the AIA version of 35 U.S.C. §§ 112, 103.

Claim(s) Challenged	35 U.S.C. §¹	Reference(s)/Basis
4, 7, 8	103	ElMasry, Lane
5	103	ElMasry, Lane, Gerken
9	103	ElMasry, Adams
11, 12, 15	103	ElMasry, Gray
13	103	ElMasry, Gray, Hagiwara
14	103	ElMasry, Gray, Darty

Pet. 4–5.

H. *Eligibility for Post-Grant Review*

The post-grant review (“PGR”) provisions of the Leahy-Smith America Invents Act (“AIA”)² apply only to patents subject to the first inventor to file provisions of the AIA. AIA § 6(f)(2)(A). Specifically, the first inventor to file provisions apply to any application for patent, and to any patent issuing thereon, that contains or contained at any time a claim to a claimed invention that has an effective filing date on or after March 16, 2013. AIA § 3(n)(1). Furthermore, “[a] petition for a post-grant review may only be filed not later than the date that is 9 months after the date of the grant of the patent or of the issuance of a reissue patent (as the case may be).” 35 U.S.C. § 321(c); *see also* 37 C.F.R. § 42.202(a) (setting forth the same). Petitioner has the burden of demonstrating eligibility for post-grant review. *See Mylan Pharms. Inc. v. Yeda Res. & Dev. Co.*, PGR2016-00010, Paper 9 at 10 (PTAB Aug. 15, 2016).

The ’947 patent issued from U.S. Application No. 17/505,866, filed on October 20, 2021 (“the ’866 application”). Ex. 1001, codes (21), (22). The ’866 application claims priority to Italian Application No.

² Pub L. No. 112-29, 125 Stat. 284 (2011).

202020000005884, filed on October 21, 2020 (“the ’884 application”). *Id.* at code (30).

Petitioner certifies that the ’947 patent is available for post-grant review. Pet. 2. The Petition was filed on February 26, 2024, which is within nine months of the June 6, 2023 issue date of the ’947 patent. Ex. 1001, code (45). On this record, we determine that the ’947 patent is eligible for post-grant review.

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art “would have a B.S. degree in Electrical Engineering, Physics, Chemistry, or an equivalent field, and at least 2-3 years of academic or industry experience in engineering related to optical sorting systems.” Pet. 17 (citing Ex. 1009 ¶ 21). Patent Owner did not file a Preliminary Response to the Petition and, therefore, at this point, does not contest Petitioner’s definition for one of ordinary skill in the art.

Petitioner’s proposed definition appears to be consistent with the disclosure of the ’947 patent, and we adopt it for purposes of this Decision. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (explaining that the prior art itself may “reflect[] an appropriate level” of ordinary skill in the art) (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985)).

B. Claim Construction

Petitioner asserts that the term “electronic control unit,” of claims 1 and 10, should be construed under 35 U.S.C. § 112(f) as a means-plus-function limitation. Pet. 20. Petitioner argues that “[e]lectronic control

unit’ includes the nonce term ‘unit’ recited with functional terms ‘electronic control,’ and would not have conveyed definite structure” to one of ordinary skill in the art. *Id.* at 20–21, 27–29. Petitioner asserts that “[c]laim 1 does not otherwise recite definite structure for ‘electronic control unit,’” the ’947 patent does not define this term, and the ’947 patent describes an “electronic control unit 6” that performs various operations. *Id.* at 21–23. According to Petitioner,

“electronic control unit” should be construed to be at least one electronic processor implemented in a circuit board and programmed with software/firmware with a synchronized control module, a processing module, and thresholding software to perform the functions outlined above, including turning on and off IR sources, receiving and processing measurement signals to generate a false color synthesis image, identifying solid elements of the false color image to be removed, and generating and emitting control signals to an expulsion device to remove the selected elements.

Id. at 23.

Petitioner also asserts that the term “process module,” appearing in claims 1 and 10, should be construed under 35 U.S.C. § 112(f) as a means-plus-function limitation. *Id.* at 23. Petitioner argues that this term also includes a nonce term, “module,” which is paired with “processing” as a functional term and would not have conveyed definite structure to one of ordinary skill in the art. *Id.* Petitioner asserts that “[c]laim 1 does not otherwise recite definite structure for ‘processing module,’” the ’947 patent does not define this term, and the ’947 patent describes a “processing module 9” that performs various operations. *Id.* at 23–25. Petitioner contends that

“processing module” should be construed to be software or firmware executed by an electronic processor to associate

measurement signals corresponding to each IR source with a chromatic channel of the RGB color space, and generate a false color synthesis image employing image processing typical of RGB color spaces.

Id. at 25.

Patent Owner did not file a Preliminary Response to the Petition and therefore, at this time, does not contest Petitioner’s proposed constructions.

Having considered the record, we determine that no express claim construction is necessary for any claim terms for the purposes of rendering a decision to institute trial. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (holding that only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). At this stage, we find it unnecessary to resolve whether “electronic control unit” and “processing module” should be construed as mean plus function limitations under § 112(f), because it is possible to address the obviousness grounds presented whether or not these limitations are so construed, and even if the claims were indefinite in the manner Petitioner contends. *See Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 813 (Fed. Cir. 2021) (noting indefiniteness of a means-plus-function limitation does not always render it impossible to adjudicate a prior-art challenge).

We direct the parties to address the construction of these claim terms and Petitioner’s interpretation during trial.

C. Obviousness of Claims 1–3, 6, and 10 over ElMasry

Petitioner contends that claims 1–3, 6, and 10 of the ’947 patent are unpatentable under 35 U.S.C. § 103 as obvious over ElMasry. Pet. 37–69.

1. *ElMasry (Ex. 1002)*

ElMasry is titled “Recent Applications of Multispectral Imaging in Seed Phenotyping and Quality Monitoring—An Overview.” Ex. 1002, 1. ElMasry reviews the fundamental configurations of systems for “the acquisition, processing and reproduction of multispectral images for various applications in seed quality assessment and seed phenotyping issues.” *Id.*

ElMasry’s Figure 3 is reproduced below.

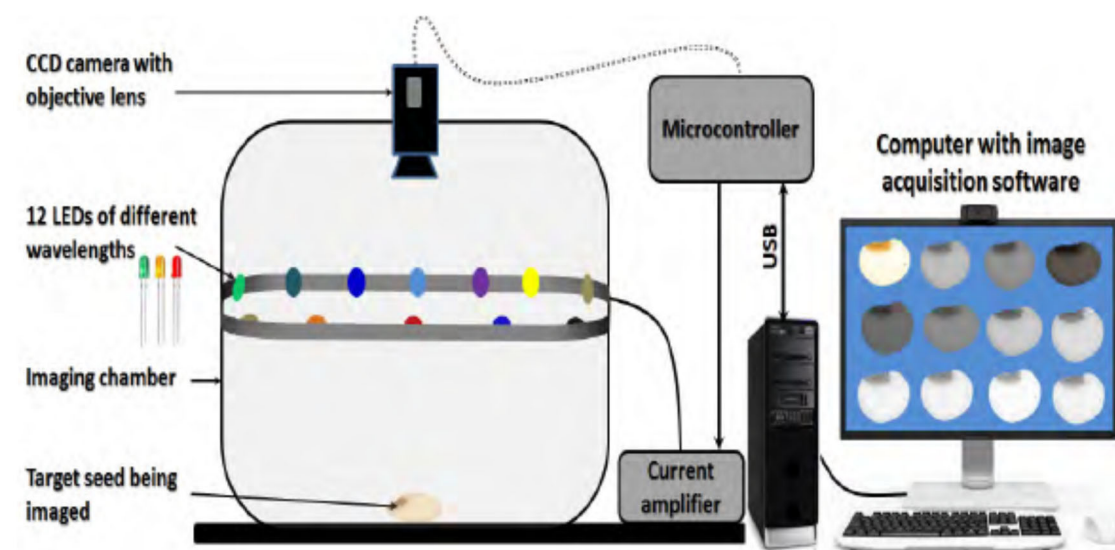


Figure 3 depicts an illumination-based multispectral imaging system having an array of 12 LEDs with different nominal emission wavelengths. *Id.* at 12.

ElMasry states that “[f]igure 3 shows a schematic representation of the key components of a multi-LED multispectral imaging system configuration.” *Id.* According to ElMasry, “[t]his demonstrative system is supported with an array of 12 LEDs of different nominal emission wavelengths” and “[e]ach LED is sequentially switched on for a definite period during image acquisition and synchronized with the camera trigger using a pre-programmed microcontroller.” *Id.* ElMasry states that, “[a]s a result of turning on the LEDs one after another, a total of 12 greyscale images were

acquired by the monochromatic camera (as shown in the computer screen in Figure 3) which combined altogether to form one multispectral image.” *Id.*

ElMasry further discloses exemplary systems that used “an illumination-based multispectral imaging system supported with eight LEDs operating in the 360–950 range (360, 370, 400, 470, 524, 626, 875 and 950 nm)” and “three visible and three near-infrared LEDs with peak emission wavelengths at 470, 527, 624, 850, 940 and 1070 nm for sorting wheat kernels.” *Id.* at 17–18. According to ElMasry, “it is extremely important to develop a computer-integrated system that has the ability to deliver a large amount of seeds to the imaging system (e.g., through a conveying system) and subsequently sort the seeds into different fractions using robotic picking or some kind of pneumatic or mechanical gate system.” *Id.* at 25.

ElMasry’s Figure 2 is reproduced below.

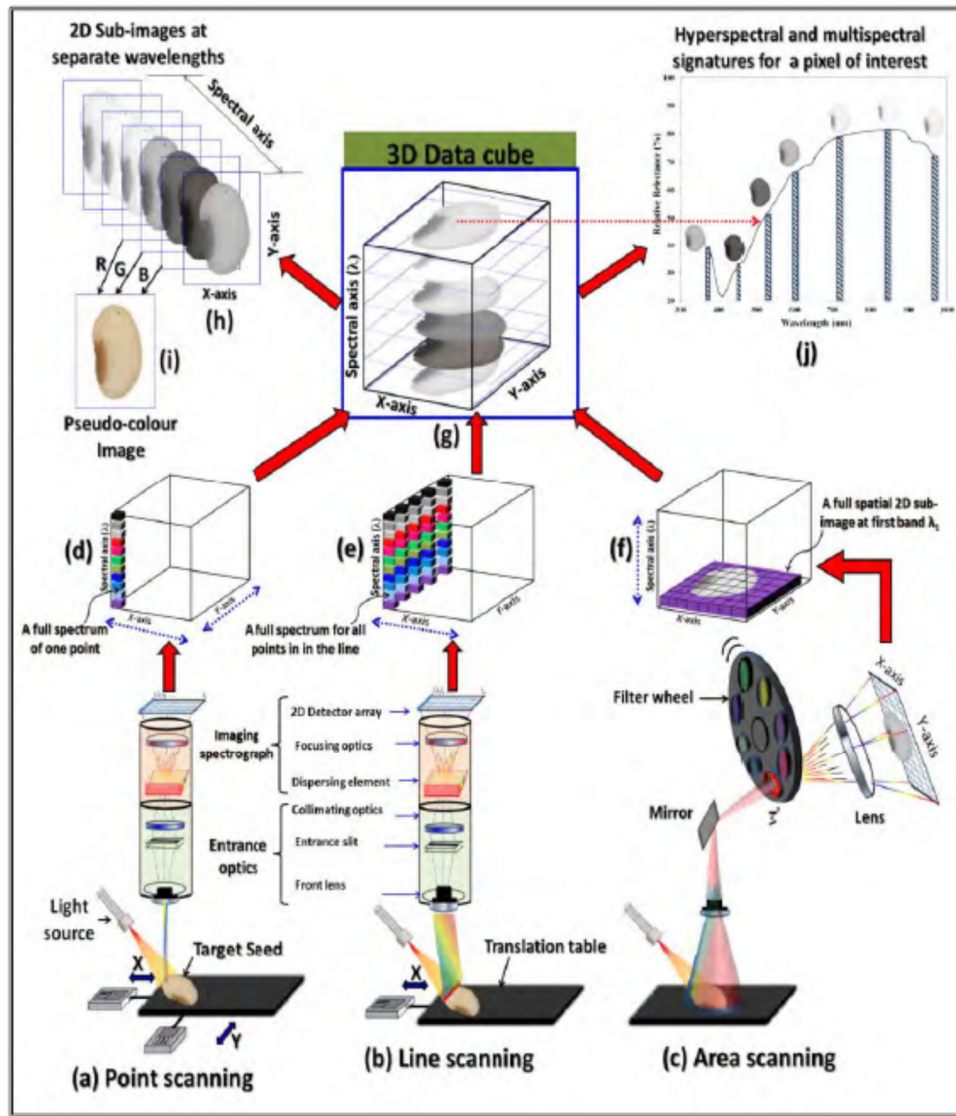


Figure 2 is a schematic representation of three approaches for constructing spectral image cubes. *Id.* at 8.

ElMasry explains “there are three methods of acquiring spectral imaging data sequentially, namely point-scanning (whiskbroom scanning), line-scanning (push-broom scanning) and wavelength-scanning (area of plane scanning),” as shown in Figures 2(a), 2(b), 2(c). *Id.* Each method results in “a three-dimensional block of data called ‘data cube’ or ‘spectral cube,’” as depicted in Fig. 2(g). *Id.* at 9 (emphasis omitted). ElMasry explains that the acquired spectral image and formed data cube can be viewed either in the

spatial or spectral domain. *Id.* For instance, “[a]s shown in Figure 2h, a data cube could be viewed as separate 2D greyscale sub-images (slices) showing the same target object at different wavelength bands.” *Id.* ElMasry further states that, “[s]imilar to the usual RGB image which composed of a cube with only three greyscale slices (i.e., R, G and B color channels) in the wavelength dimension, the spectral image is composed of many greyscale slices.” *Id.* at 9–10. ElMasry explains that “[t]he number of these greyscale slices is equivalent to the number of wavelength bands used during image acquisition” and “any three of these grey sub-images (slices) could be easily concatenated one after another (one slice for each color channel) to form a pseudo-color image for target samples as shown in Figure 2i.” *Id.* at 10.

ElMasry describes using data extracted from images “to describe differences among samples (e.g., variety discrimination and/or seed health detection) or to predict quality parameters such as chemical combustion (proteins, lipids, moisture, etc.).” *Id.* at 13. ElMasry discloses “independent multispectral imaging systems with different designs have been used successfully in different sort[s] of applications in detection and identifying numerous quality features of different seed cultivars.” *Id.* at 14.

2. *Claim 1*

Petitioner asserts that ElMasry, as evidenced by the admissions in the Specification of the '947 patent itself, teaches a “[a] selector machine,” Pet. 42–43 (citing Ex. 1002, 18, 25–26; Ex. 1001, 1:23–26 (the Specification acknowledging that selector machines were known)), and “a conveyance system, which is arranged for advancing, along an advancement path, at least one bulk product comprising multiple solid elements to be selected,” *Id.* at 43–45 (citing Ex. 1002, 8–9, 18, 25, Fig. 2b; Ex. 1001, 1:27–31

(acknowledging that known selector machines had conveyance systems for advancing bulk products)).

Petitioner asserts that ElMasry, further supported by the admissions in the Specification of the '947 patent, teaches “an optical detection system,” *Id.* at 45–46 (citing Ex. 1002, 10, 12, Fig. 3; Ex. 1001, 1:41–44 (admitting that known selector machines included optical detection systems)), “an emitter device arranged for emitting, towards said advancement path, electromagnetic radiations adapted to hit said at least one product,” *Id.* at 46–47 (citing Ex. 1002, 11, 18; Ex. 1001, 1:41–44, 1:50–52 (acknowledging that known selector machines included emitter devices); Ex. 1009 ¶ 32), “an optical sensor directed towards said advancement path and arranged for receiving reflected radiations coming from said at least one product irradiated by said electromagnetic radiations,” *Id.* at 47–49 (citing Ex. 1002, 9–12, 18; Ex. 1001, 1:42–44, 1:50–57 (noting that known selector machines included optical sensors)), “and for transducing said reflected radiations into corresponding measurement signals,” *Id.* at 49 (citing Ex. 1002, 11; Ex. 1001, 1:50–57, 5:42–48).

Petitioner argues that ElMasry, supported by the admissions in the Specification of the '947 patent, teaches “an electronic control unit operatively connected to said optical sensor in order to receive said measurement signals, and arranged for emitting control signals,” *Id.* at 49–51 (citing Ex. 1002, 12, 18, 25, Fig. 3; Ex. 1009 ¶¶ 27–29; Ex. 1001, 1:45–57 (noting known selector machines included electronic control units)).

Petitioner asserts that ElMasry, supported by the admissions in the Specification, teaches “an expulsion device connected to said optical detection system in order to receive said control signals, which are adapted

to drive said expulsion device to eliminate from said advancement path, specific solid elements of said at least one product,” *Id.* at 51–52 (citing Ex. 1002, 18, 25, Fig. 3; Ex. 1009 ¶ 33; Ex. 1001, 1:45–49 (noting known selector machines included expulsion devices that receive control signals from optical detection systems to eliminate specific elements of a solid product)).

Petitioner also argues that ElMasry, supported in part by the admissions in the Specification, teaches the “wherein” clauses of claim 1. Specifically, Petitioner alleges that ElMasry teaches “wherein said emitter device comprises at least three IR sources, each of which is arranged for emitting electromagnetic radiations in a corresponding separate spectral band in the infrared spectrum,” *Id.* at 52–54 (citing Ex. 1002, 11–12, 23; Ex. 1001, 1:60–65), and said electronic control unit is operatively connected to said emitter device and is arranged for alternately turning on said IR sources one after the other, in corresponding and separate time intervals,” *Id.* at 54–55 (citing Ex. 1002, 10–12, Fig. 3). Petitioner contends that ElMasry teaches “said optical sensor is arranged for detecting, in each said time interval, corresponding said reflected radiations coming from said at least one product irradiated by the corresponding said IR source, and to generate corresponding said measurement signals,” *Id.* at 55 (citing Ex. 1002, 11).

As for the claimed processing module, Petitioner relies on ElMasry for teaching “said electronic control unit comprises a processing module, Pet. 55–56 (citing Ex. 1002, 5, 12, Fig. 3). Petitioner also relies on ElMasry for teaching the requirements that the “[processing module] is provided with at least three chromatic channels of a RGB color space,” *Id.* at 57–58 (citing Ex. 1002, 10, 12, Fig. 2i), “[the processing module] is arranged for

associating the measurement signals corresponding to each said IR source with a corresponding chromatic channel of said chromatic channels,” *Id.* at 58–60 (citing Ex. 1002, 13, 21–22, Figs. 2h–2i), and “for composing a false color synthesis image of said at least one product by means of three said measurement signals acquired every three successive said time intervals,” *Id.* at 60–61 (citing Ex. 1002, 8–10, 26; Ex. 1009 ¶¶ 26, 53).

Petitioner cites ElMasry, supported by the admissions in the Specification, as teaching the limitation that “said electronic control unit being configured to generate said control signals as a function of said synthesis image,” *Id.* at 61–63 (citing Ex. 1002, 10, 12–13, 25; Ex. 1009 ¶¶ 27–31; Ex. 1001, 6:9–15 (noting that thresholding software was known), 1:41–57 (acknowledging that known selector machines included electronic control units that determine which elements of a bulk product are to be removed by applying thresholding algorithms to images of the bulk product obtained by the optical sensors))).

We have reviewed Petitioner evidence and citations and, on the current record, we find that Petitioner has shown that it is more likely than not that ElMasry teaches all the limitations of claim 1, without need for any modification. Thus, we find that Petitioner has shown that it is more likely than not that claim 1 would have been unpatentable as obvious over ElMasry.

3. Remaining Claims

Petitioner provides a detailed mapping of how ElMasry accounts for the limitations of claims 2, 3, 6, and 10. We have reviewed Petitioner’s contentions regarding claims 2, 3, 6, and 10 and determine that they show

that it is more likely than not that Petitioner will prevail with respect to the obviousness of claims 2, 3, 6, and 10 over ElMasry.

4. Summary as to Ground 1

We find that Petitioner has shown that it is more likely than not that claims 1–3, 6, and 10 would have been obvious over ElMasry.

D. Remaining Grounds

As we preliminarily find that Petitioner demonstrates that it is more likely than not that it will prevail on its challenge to claims 1–3, 6, and 10 based on obviousness in view of ElMasry, we institute review on all challenged claims on all grounds set forth in the Petition, including Petitioner’s indefiniteness challenge to claims 1–15 under § 112(b) and obviousness challenges to claims 4, 5, 7–9, and 11–15 under § 103. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1354 (2018); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018).

III. CONCLUSION

After considering the arguments presented in the Petition and the evidence of record, we determine that Petitioner has demonstrated that it is more likely than not that at least one of the claims challenged in the Petition is unpatentable.

At this stage of the proceeding, the Board has not made a final determination as to the construction of any claim term or the patentability of any challenged claim.

Our determinations at this stage of the proceeding are based on the evidentiary record currently before us. We will base any final decision on the full record developed during trial.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 324(a), a post-grant review of claims 1–15 of the '947 Patent is *instituted* with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 324(c) and 37 C.F.R. § 42.4(b), post-grant review of the '947 Patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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