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Conversant Wireless Licensing Ltd. 5830 Granite Parkway #100-247 Suite 247 Plano, TX 75024			BECK, LERON	
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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* KEMAL UGUR, JANI LAINEMA, and ANTTI HALLAPURO

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Appeal 2019-002321  
Application 15/370,127  
Technology Center 2400

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Before ERIC S. FRAHM, CATHERINE SHIANG, and BETH Z. SHAW,  
*Administrative Patent Judges.*

FRAHM, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellant<sup>1</sup> appeals under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1–14, which are all the claims pending and rejected in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. “The word ‘applicant’ when used in this title refers to the inventor or all of the joint inventors, or to the person applying for a patent as provided in §§ 1.43, 1.45, or 1.46.” 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Conversant Wireless Licensing S.a.r.l. (Appeal Br. 1).

## STATEMENT OF THE CASE

### *Introduction*

Appellant’s invention is “relate[d] generally to signal processing and video encoding technology and, more particularly, relate[s] to a method, apparatus and computer program product for providing fast motion estimation in a video encoding system” (Spec. ¶ 1). More specifically, Appellant disclose and claim a method (claim 1) and encoder for encoding video frames (claim 8) for performing motion estimation using an algorithm that “achieve[s] faster encoding speeds while maintaining image quality” (Spec. ¶ 4) “by reducing the number of candidate pixel locations for interpolation” (Spec. ¶ 10; see Figs. 4A–H, 5A–H, 9; claims 1, 8). Independent claim 1 is exemplary, and is reproduced below with emphases, formatting, and bracketed lettering added to disputed portions of the claim:

1. A method of performing motion estimation for video encoding, comprising:

processing an input video sequence to determine a motion vector between a first video frame and a reference frame, comprising *determining a best candidate pixel location in the reference frame at a first level of accuracy*;

refining the motion vector at a second level of accuracy higher than the first level of accuracy, comprising determining a best candidate pixel location at the second level of accuracy among a plurality of pixel locations including the best candidate pixel location at the first level of accuracy;

[A] *selecting*, with a selection element, *a subset of candidate pixel locations* proximate to the best candidate pixel location at the second level of accuracy, and between:

the best candidate pixel location at the first level of accuracy, and

the best candidate pixel location at the second level of accuracy other than the best candidate pixel location at the first level of accuracy; and

[B] determining the motion vector at a third level of accuracy *using only the subset of candidate pixel locations*.

Appeal Br. 11, Claims Appendix (emphases, formatting, bracketed lettering added). Remaining independent claim 8 recites an encoder and a motion estimation element for performing similar motion estimation operations using “candidate block locations” (claim 8), instead of “a subset of candidate pixel locations” as in claim 1.

#### *Examiner’s Rejections*

(1) Claims 1, 3–8, and 10–14 are rejected under 35 U.S.C. § 103 as being unpatentable over Lee et al. (US 2004/0252766 A1; published Dec. 16, 2004) (hereinafter, “Lee”) and Karczewicz et al. (US 2003/0112864 A1; published June 19, 2003) (hereinafter, “Karczewicz”).<sup>2</sup> Final Act. 3–6; Ans. 3–6.

(2) Claims 2 and 9 are rejected under 35 U.S.C. § 103 as being unpatentable over Lee, Karczewicz, and Hatano et al. (US 6,091,460; issued July 18, 2000) (hereinafter, “Hatano”). Final Act. 6–7; Ans. 6–7.

#### *Appellant’s Contentions*

With regard to the obviousness rejections of claims 1–7, Appellant primarily argues the merits of independent claim 1 (*see* Appeal Br. 4–8; Reply Br. 1–3), and makes similar, as well as additional, arguments as to the patentability of remaining independent claim 8 and claims 9–14 depending

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<sup>2</sup> We note the Examiner failed to list claims 3–8 and 10–14 in the heading of the statement of this rejection in both the Final Rejection (*see* Final Act. 3) and Examiner’s Answer (*see* Ans. 2). However, because the Examiner then discusses the merits of claims 3–8 and 10–14 in the body of the rejection (*see* Final Act. 4–6; Ans. 5–6), and Appellant recognized and argued the rejection of claims 3–8 and 10–14 in the Appeal Brief (*see* Appeal Br. 4, 8–10), we consider this to be harmless error.

therefrom (*see* Appeal Br. 8–10). As to independent claim 1, Appellant contends (*see* Appeal Br. 4–8; Reply Br. 1–3) that the Examiner erred in rejecting claim 1 under 35 U.S.C. § 103, because the base combination of Lee and Karczewicz, and specifically Lee (relied on by the Examiner for the disputed limitations), fails to teach or suggest determining best candidate pixel locations at first and second levels of accuracy, and then using that information to select a subset of candidate pixel locations as recited in limitation A, and determine a motion vector using the subset as recited in limitation B.

*Principal Issue on Appeal*

Based on Appellant’s arguments in the Appeal Brief (Appeal Br. 5–9), the following issue is presented on appeal:

Did the Examiner err in rejecting claims 1–14 as being unpatentable over the base combination of Lee and Karczewicz, because Lee fails to teach or suggest determining best candidate pixel locations at first and second levels of accuracy, and then using that information to perform limitations A and B as recited in claim 1, and as similarly recited in claim 8?

ANALYSIS

We have reviewed the Examiner’s rejections (Final Act. 2–7; Ans. 3–6) in light of Appellant’s contentions (Appeal Br. 4–10; Reply Br. 1–4), and evidence of record, in light of the Examiner’s response to Appellant’s arguments in the Appeal Brief (Ans. 7–9).

Regarding claim 1, we concur with Appellant’s contentions (*see* Appeal Br. 4–8) that the Examiner erred in finding the base combination of Lee and Karczewicz, and specifically Lee (relied on by the Examiner for the

disputed limitations), teaches or suggests determining best candidate pixel locations at first and second levels of accuracy, and then using that information to select a subset of candidate pixel locations as recited in limitation A, and determine a motion vector using the subset as recited in limitation B. We agree with Appellant’s assertions that Lee fails to teach or suggest limitations A and B, because the Examiner erred in interpreting “best candidate pixel” when construing the claim term “best candidate pixel location” (*see* Reply Br. 1–3; claim 1).<sup>3</sup>

Under the broadest reasonable interpretation standard, and absent any special definition, claim terms are given their ordinary and customary meaning, as would be understood by a person 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). Any special definition for a claim term must be set forth with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). “When the specification explains and defines a term used in the claims, without ambiguity or incompleteness, there is no need to search further for the meaning of the term.” *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1478 (Fed. Cir. 1998).

In the instant case, the Examiner’s finding that “[A]ppellant never specifies a criteria of what is meant by ‘best candidate’” (Ans. 7) is in error. We agree with Appellant’s contentions that (i) “the term ‘best candidate pixel location’ as used in the claims has a definite meaning, when properly interpreted in light of the [S]pecification” (Reply Br. 1); and (ii) “[t]he

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<sup>3</sup> Although neither Appellant nor the Examiner discuss the similar interpretation of the term “best candidate block location” used in claim 8, the Examiner’s interpretation of claim 8 suffers similarly.

[S]pecification provides ample guidance on the meaning of the claim term ‘best candidate pixel location’ as well as criteria for determining such a ‘best candidate’” (Reply Br. 2). Specifically, we agree with Appellant (*see* Reply Br. 2) that (i) paragraph 37 of the Specification describes determining a “block that most closely matches the original block (i.e., block of the original pixel locations 80)” (Spec. ¶ 37); and (ii) paragraph 40 of the Specification describes a best candidate in a similar manner, as “[a] candidate block at any given accuracy level that most closely matches the original block may be considered a best candidate block at the given accuracy level” (Spec. ¶ 40). Therefore, Appellant’s Specification sufficiently explains and describes the terms “best candidate pixel location” (claim 1) and “best candidate block location” (claim 8) used in the claims without ambiguity or incompleteness, and there is no need to search further for the meaning of the term. *See Multiform Desiccants, Inc.*, 133 F.3d at 1478.

As a result, we agree with Appellant “that the proper interpretation of the claim term ‘best candidate pixel location’ means the best of the candidate pixel locations, in the superlative sense, in matching an original location in the first video frame” (Reply Br. 3), and thus the Examiner erred in finding that Lee teaches or suggests limitations A and B recited in claim 1, which operate on best candidate pixel locations to determine a motion vector, and the commensurate limitations recited in claim 8.

Although Lee describes, in one embodiment, only using three of the quarter pixels for motion estimation operations (*see* ¶¶ 34–36), the cited portions of Lee are silent as to selecting a subset of candidate pixel locations based on determinations of best candidate pixel locations for first and second

accuracy levels as set forth in limitation A of claim 1. Similarly, the cited portions of Lee are silent as to selecting candidate block locations based on determinations of best candidate block locations at first and second levels of accuracy as set forth in claim 8.

Because the Examiner erred in interpreting the recited “best candidate pixel location” (claim 1) and “best candidate block location” (claim 8) as encompassing Lee’s triplet of quarter pixels, there is not sufficient evidence or reasoning to support the rejection. Therefore, we are constrained by the record to reverse the Examiner’s rejection of claims 1 and 8, as well as claims 2–7 and 9–14 depending respectively therefrom.

Finally, we note that the Examiner has not made a prima facie case of obviousness as to claim 8.

The USPTO “must examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made.” *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (internal quotation marks and citation omitted); see *Synopsys, Inc. v. Mentor Graphics Corp.*, 814 F.3d 1309, 1322 (Fed. Cir. 2016) (stating that, as an administrative agency, the PTAB “must articulate logical and rational reasons for [its] decisions” (internal quotation marks and citation omitted)). This is done by presenting, for obviousness, a prima facie case.

The Examiner has the initial burden to set forth the basis for any rejection so as to put the patent applicant on notice of the reasons why the applicant is not entitled to a patent on the claim scope that he seeks – the so-called “prima facie case.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984) (the initial

burden of proof is on the USPTO “to produce the factual basis for its rejection of an application under sections 102 and 103”) (quoting *In re Warner*, 379 F.2d 1011, 1016 (CCPA 1967)).

In addition, the Examiner is required to provide Appellant reasonable notice as to the basis of a rejection. The notice requirement is set forth by 35 U.S.C. § 132:

[T]he PTO carries its procedural burden of establishing a prima facie case when its rejection satisfies 35 U.S.C. § 132, in “notify[ing] the applicant ... [by] stating the reasons for [its] rejection, or objection or requirement, together with such information and references as may be useful in judging of the propriety of continuing the prosecution of [the] application.” 35 U.S.C. § 132. That section “is violated when a rejection is so uninformative that it prevents the applicant from recognizing and seeking to counter the grounds for rejection.” *Chester v. Miller*, 906 F.2d 1574, 1578 (Fed. Cir. 1990).

*See In re Jung*, 637 F.3d 1356, 1362 (Fed. Cir. 2011).

Here, regarding claim 8, which has different language and different scope than claim 1, the Examiner has stated that the “analyses are analogous to those presented for claim 1 and are applicable for claim 8” (Final Act. 5; Ans. 6) (emphasis omitted). Further, Appellant presents different and separate arguments (*see* Appeal Br. 8–10) reflecting this differing language and scope, with no response by the Examiner in the Examiner’s Answer (*see generally* Ans. 7–9).

In this light, Appellant’s argument that the rejection of claims 8 through 14 as being unpatentable over the base combination of Lee and Karczewicz “is in error, as not supported by a proper *prima facie* determination of obviousness” (Appeal Br. 9–10), is persuasive.

### CONCLUSION

Based on the record before us, we are constrained to reverse the Examiner's decision rejecting claims 1–14 under 35 U.S.C. § 103 as being unpatentable over the base combination of Lee and Karczewicz.

### DECISION SUMMARY

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1, 3–8, 10–14	103	Lee, Karczewicz		1, 3–8, 10–14
2, 9	103	Lee, Karczewicz, Hatano		2, 9
<b>Overall Outcome</b>				<b>1–14</b>

REVERSED