

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SEOUL SEMICONDUCTOR CO., LTD and
NORTH AMERICA SEOUL SEMICONDUCTOR INC.,
Petitioner,

v.

ENPLAS CORPORATION,
Patent Owner.

Case IPR2014-00605
Patent 7,348,723 B2

Before HOWARD B. BLANKENSHIP, JAMES B. ARPIN, and
JAMES A. TARTAL, *Administrative Patent Judges*.

BLANKENSHIP, *Administrative Patent Judge*.

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

I. BACKGROUND

Seoul Semiconductors Co., Ltd and North America Seoul Semiconductor Inc. (collectively, “Petitioner”) filed a request for *inter partes* review of claims 1–17 of U.S. Patent No. 7,348,723 B2 (Ex. 1001,

“the ’723 Patent”) under 35 U.S.C. §§ 311-319. Paper 1 (“Petition” or “Pet.”). On September 22, 2014, we instituted an *inter partes* review of claims 1–17 on asserted grounds of unpatentability for anticipation and obviousness. Paper 9 (“Dec. on Inst.”).

Subsequent to institution, Enplas Corporation (“Patent Owner”) filed a Patent Owner Response (*see* Paper 18, “PO Resp.”). Petitioner filed a Reply to the Patent Owner Response (*see* Paper 31, “Pet. Reply”). Patent Owner filed a Motion to Exclude Evidence (Paper 45, “Mot. To Excl.”), Petitioner opposed (Paper 46, “Pet. Opp.”), and Patent Owner replied (Paper 48, “PO Reply”). Patent Owner filed a Motion for Observation on Cross-Examination (Paper 37) and Petitioner opposed (Paper 44).

Oral hearing was held on June 10, 2015.¹

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 that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–17 of the ’723 Patent are unpatentable.

A. *The ’723 Patent*

The ’723 Patent relates to structures for attaining uniform brightness in a LCD display. Ex. 1001, col. 1, ll. 7–14, col. 2, ll. 41–45.

Figure 3 of the ’723 Patent is reproduced below.

¹ The record includes a transcript of the oral hearing. Paper 51 (“Tr.”).

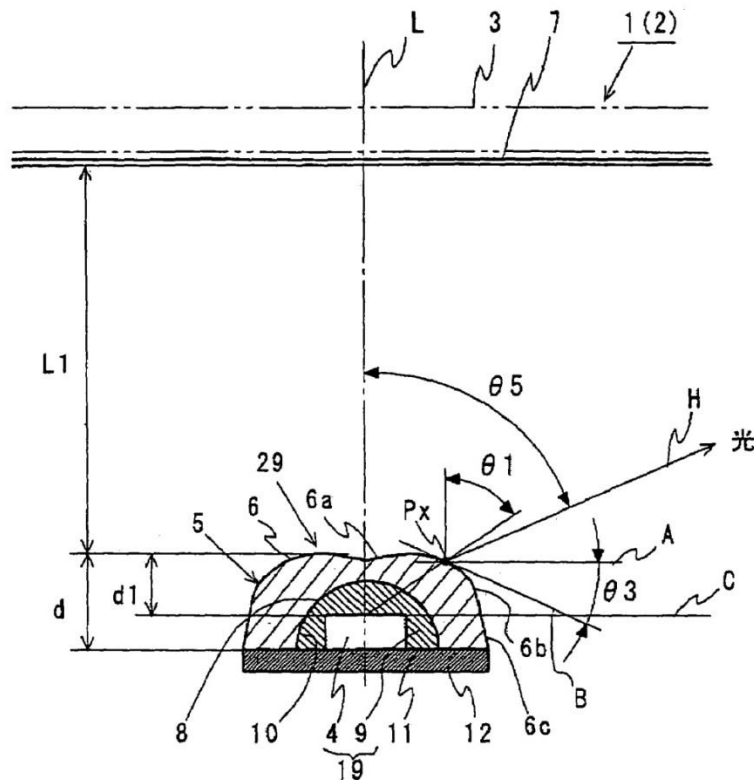


FIG. 3

Figure 3 is a partial, cross-sectional view of a surface light source device and display. Ex. 1001, col. 4, ll. 17–25. Reference plane C is defined as a horizontal plane perpendicular to optical axis L of light emitting element 4. Line A is defined as a line that extends parallel with reference plane C, so as to pass position Px at which light beam H is emitted from light control emission face 6 after travelling within light flux control member 5. *Id.* at col. 6, ll. 31–37. Emission angle $\theta 5$ is defined as the angle of light beam H emitted from light control emission face 6 with respect to optical axis L. Light emitting element 4 has the maximum emission intensity direction along optical axis L, with emission intensity of light emitting element 4 falling gradually according to an increasing angular

deviation from the maximum emission intensity direction. *Id.* at col. 6, ll. 42–52. Angle θ_1 is defined as an emission angle of any light being emitted from the light emitting element. *Id.* at col. 7, ll. 1–4. The configuration of light control emission face 6 satisfies certain, claimed conditions for θ_5 with respect to θ_1 . *Id.* at col. 6, ll. 57–67, col. 12, ll. 4–23 (independent claim 1), col. 14, ll. 3–23 (independent claim 17).

B. Illustrative Claim

Claims 1 and 17 are independent claims. Claims 2–16 depend from independent claim 1. Claim 1 is illustrative and is reproduced below with certain significant limitations emphasized:

1. An emission device comprising a light flux control member provided with a recess and an light control emission face, and a light emitting element accommodated in said recess, said light emitting element emits light which is emitted from said light control emission face after travelling within said light flux control member,

wherein said light control emission face is configured so as to satisfy the following Conditions 1 and 2 for at least light which is emitted toward within a half-intensity-angular-range around a maximum-intensity-emission-direction from said light emitting element;

Condition 1: Relation $\theta_5/\theta_1 > 1$ is satisfied except for light emitted toward within an angular-neighborhood of a standard optical axis of said emission device;

Condition 2: Value of θ_5/θ_1 decreases gradually according to increasing of θ_1 ;

where θ_1 is an emission angle of any light at being emitted from said light emitting element, and θ_5 is an emission angle of that light of θ_1 at then being emitted from said light control emission face of said light flux control member.

C. Applied References

Parkyn, Jr. <i>et al.</i> , (“Parkyn”) (Ex. 1002)	US 5,577,493	Nov. 26, 1996
Amano <i>et al.</i> , (“Amano”) (Ex. 1006)	US 2004/0070989 A1	Apr. 15, 2004

D. Asserted Grounds of Unpatentability

We instituted *inter partes* review on the following asserted grounds of unpatentability against claims 1–17 (Dec. on Inst. 12):

Reference	Basis (35 U.S.C.)	Claims
Parkyn	§ 102(b)/103(a)	1–9 and 11–17
Parkyn and Amano	§ 103(a)	9–16

II. ANALYSIS

A. Claim Interpretation

In an *inter partes* review, we construe claim terms in an unexpired patent using their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012). The claim language should be read in light of the specification, as it would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). There is a “heavy presumption” that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002).

The “ordinary and customary meaning” is that which the term would have to a person of ordinary skill in the art in question. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

1. Condition 1 and Condition 2

Each of the independent claims (1 and 17) sets forth two conditions defining how light emitted by a light emitting element within a specified (“half-intensity”) angular range is bent by the light flux control member. Petitioner does not propose that any of the claim terms should be interpreted differently from their ordinary and customary meaning. *See* Pet. 14–16. Correspondingly, Patent Owner submits “there is no reason to apply any different term, meaning or definition for the plain language of the claims, nor any basis for substituting a different measure for the unambiguous requirements of claimed Conditions 1 and 2.” Prelim. Resp. 7.

We agree with the parties that the claimed “conditions” do not require express construction beyond applying the plain and ordinary meaning of the terms to define “Condition 1” and “Condition 2,” consistent with the Specification of the ’723 Patent.

B. Legal Principles — Patent Drawings as Prior Art

Patent drawings not designated as being drawn to scale cannot define the precise proportions of the elements and cannot be relied upon to show particular sizes if the specification is completely silent on the issue.

Hockerson-Halberstadt, Inc. v. Avia Grp. Int’l, 222 F.3d 951, 956 (Fed. Cir. 2000). That does not mean, however, “that things patent drawings show clearly are to be *disregarded*.” *In re Mraz*, 455 F.2d 1069, 1072 (CCPA

1972). A drawing is evaluated on the basis of what it reasonably discloses and suggests to a person of ordinary skill in the art. *In re Aslanian*, 590 F.2d 911, 914 (CCPA 1979). It has long been the case that “[d]escription for the purposes of anticipation can be by drawings alone as well as by words.” *In re Bager*, 47 F.2d 951, 953 (CCPA 1931).

In *Mraz*, the claims at issue required that mating portions of roll members (for removing edge burrs from thin metal strips) define a strip-receiving peripheral groove with inwardly converging inclined surfaces at an angle, with respect to a plane perpendicular to the axis of the roll member, “not exceeding 15°.” *Mraz*, 455 F.2d at 1070. The principal reference (Wilson) disclosed “edge rolls” that were provided for removing the burrs from side edges of thin metal strips. *Id.*

Figure 3 of Wilson, as depicted in *Mraz*, is reproduced below.

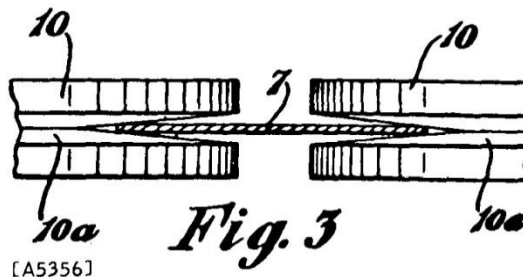


Figure 3 from *Mraz* depicts “edge rolls” 10 and thin metal strip 7. *Id.* at 1071. Without reference to expert testimony, the Court found that “[t]he half-angle of the V-shaped groove 10a measures about 6° on this drawing,” although noting that the specification “says nothing about the angle.” *Id.* The Court further found that the Wilson reference “focuses on the edge rolls, showing them with great particularity and showing the grooves thereon to have an angularity well within the range recited in appellant’s claims.” *Id.* at 1072. In other words, although patent drawings are not working drawings,

that does not mean that “things patent drawings show clearly are to be *disregarded.*” *Id.*; but see Tr. 21:18–22:2.

C. Asserted Grounds of Unpatentability

1. Parkyn

Parkyn relates to a total internal reflection (“TIR”) lens having a central axis toward which light from a light source is directed, with a light ray deviator positioned along the light path for deviating rays toward portions of the lens spaced from the axis, to distribute light flux evenly at the output of the TIR lens. Ex. 1002, Abstract.

Figure 15a of Parkyn is reproduced below.

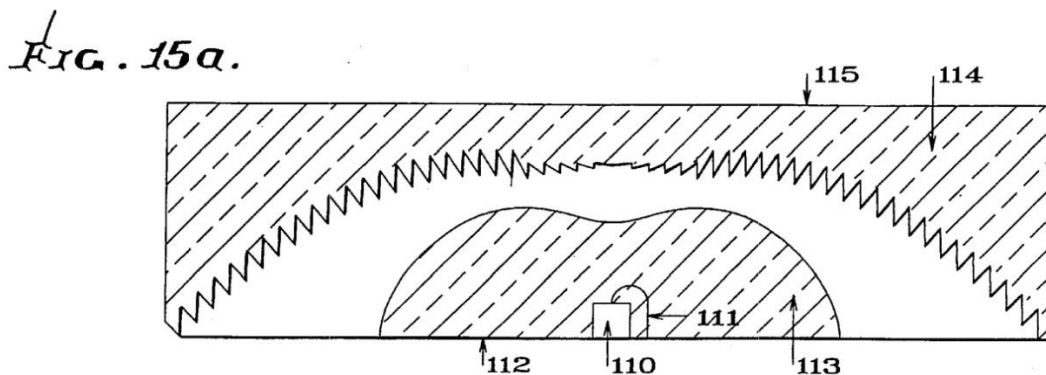


Figure 15a is a cross-section of a mushroom lens for a light emitting diode. Ex. 1002, col. 2, ll. 40–41. Mushroom lens 113 has a hemispherically concave inner surface of greater curvature (smaller radius) than the varying curvatures of the convex outer surface, such curvatures decreasing at regions toward the central axis of TIR lens 114 and becoming concave (demagnifying) at the central outer surface. LED 110 is embedded in mushroom lens 113, with the mushroom lens being shaped to cause TIR lens

114 to have uniform light output at exit face 115. *Id.* at col. 5, ll. 46–55; col. 6, ll. 57–62.

2. Anticipation by Parkyn — Claims 1–9 and 11–17

As we noted above, each of the independent claims (1 and 17) sets forth two conditions defining how light emitted by a light emitting element within a specified angular range is bent by the light flux control member. Illustrative claim 1 sets forth an emission device comprising a light flux control member that satisfies those conditions.

Petitioner submits that Parkyn anticipates claim 1, relying on the Declaration of Dr. Jose Sasian. Pet. 17–45; Ex. 1008 (“Sasian Decl.”). “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). Dr. Sasian submits that the clauses that set forth the conditions “use many words to describe two simple and straightforward lens concepts.” *Id.* ¶ 53. Condition 1 “merely means that the outer surface of the lens causes light rays emitted from the light source to be deviated away from the central axis of the lens.” *Id.* Condition 2 “is directly related to the amount of deviation, where the amount of deviation . . . will be greatest near the central axis of the lens and will decrease at increasing angles from the optical axis.” *Id.* Dr. Sasian explains why, in his opinion, the claimed “Condition 1” and “Condition 2” are broad relations that are met by structures described by Parkyn that include mushroom lens 113 (*see* Ex. 1002, Fig. 15a). Sasian Decl. ¶¶ 53–66.

Patent Owner responds that Dr. Sasian relies “on a naked eye comparison of the specific shape and size of the curves of the Figures of Parkyn, and not on any express disclosure of the reference.” PO Resp. 22.² Patent Owner’s allegation is incorrect, as we pointed out in the Decision on Institution. Dr. Sasian’s analysis is based, in part, on specific text in Parkyn. Dec. on Inst. 8. In particular, Parkyn provides a textual description of the curvatures of mushroom lens 39 (Fig. 7), depicted as mushroom lens 113 in Parkyn’s Figure 15a. Sasian Decl. ¶ 54; Ex. 1002, col. 5, ll. 46–51, col. 6, ll. 59–62. We do not find any persuasive argument in the Patent Owner Response that addresses the text in Parkyn, upon which Dr. Sasian relies.

In its arguments in response to the asserted ground of anticipation, Patent Owner appears to focus on Condition 2 of the claims. PO Resp. 22–25. With respect to Condition 2, in addition to referring to the text of Parkyn (Sasian Decl. ¶ 54), Dr. Sasian refers also to the shape of Parkyn’s light flux control member and explains how the claimed “Condition 2” relationship between θ_5 and θ_1 is met by the reference (*id.* ¶ 61). Indeed, Patent Owner’s expert, Dr. Timothy J. Drabik, testifies that “Sasian correctly notes at ¶ 61 [that Condition 2] requires the degree of deviation of light induced by the lens through which it is directed, to decrease over distance from the central axis.” Ex. 2002 ¶ 55. Dr. Drabik acknowledges that Dr. Sasian’s Declaration (Ex. 1008) references the figures of Parkyn for a showing of Condition 2, but submits that the feature “is nowhere taught in Parkyn” and “nowhere specified in Parkyn as a condition to be observed.” *Id.* Although

² We observe that the Patent Owner Response alleges there are 54 material facts not in dispute. PO Resp. 4–14. The majority of the allegations are, however, disputed and denied by Petitioner. Pet. Reply 17–19.

Patent Owner appears to fault Parkyn for not setting out the Conditions in the same terms as used in the claims, anticipation is not an “ipsissimis verbis” test. *In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990). Dr. Sasian expresses in words what the Conditions express in mathematical terms. Moreover, the Conditions are not equations but appear to be, simply, broadly recited relationships (expressed as ratios) between two light emission angles, consistent with Dr. Sasian’s verbal description of the Conditions. Sasian Decl. ¶ 53. We, therefore, credit Dr. Sasian’s testimony over that of Dr. Drabik with respect to what the text and drawings of Parkyn actually convey to one of ordinary skill in the art.

Patent Owner received notice in this proceeding that we considered Parkyn’s description of the mushroom lens to be, at the least, material to patentability, because we instituted trial on the basis of the text and drawings that provide that description. *See* Dec. on Inst. 9 (finding that the Sasian Decl. ¶¶ 53–66 is sufficient to show, to a reasonable likelihood, that Parkyn anticipates claim 1— and, thus, no need to address Patent Owner’s arguments regarding hand drawings and computer simulations submitted as confirmation of anticipation). Yet, Patent Owner does not address directly the text and drawings in Parkyn upon which Dr. Sasian bases his opinion, nor submits how the claimed Conditions might distinguish over Parkyn’s relied-upon description.

Dr. Drabik, instead, submits that the “deviator lens” described by Parkyn “is dictated or controlled by the shape of the TIR lens it is to complement,” and depending on “the TIR profile selected” the resulting deviator lens “may or may not satisfy Condition 1 or Condition 2.” *Id.* ¶ 56. That one might be able to follow the teachings of Parkyn and construct a

mushroom lens that is outside the scope of the claimed Conditions is of little import when the claims set forth an apparatus, as opposed to setting forth methods of making the apparatus.

With respect to Parkyn's drawings, Patent Owner argues that the case of *Nystrom v. Trex Co.*, 424 F.3d 1136, 1149 (Fed. Cir. 2005), is “[p]articularly apt.” PO Resp. 23. According to Patent Owner, “where the party challenging the validity of the patent prepared certain models and simulation based on a figure of a prior art patent to demonstrate not a quantitative value, but a relationship between two curved surfaces,” the “Court of Appeals for the Federal Circuit rejected the models and simulations.” *Id.*

In *Nystrom*, the Federal Circuit found that the district court was incorrect in accepting a model based on a reference patent, and not on drawing dimensions or a written disclosure of dimensions contained directly in the patent itself. *Nystrom*, 424 F.3d at 1149. As we have noted, however, we do not find any satisfactory response in the Patent Owner Response that addresses the particular text and drawings in Parkyn upon which Dr. Sasian relies in explaining why Parkyn describes the general relationships set out in the Conditions. Even if Patent Owner were to demonstrate error in the drawings and computer simulations that might be based on drawing dimensions in Parkyn, that would not demonstrate error in Petitioner's position with respect to what Parkyn's description conveys to one of ordinary skill in the art. As we noted in the Decision on Institution, Petitioner refers to Dr. Sasian's testimony based on hand drawings and computer simulations (Sasian Decl. ¶¶ 87–92) only as *confirmation* that the claims are anticipated by Parkyn. Dec. on Inst. 9.

Patent Owner also challenges an analysis of Parkyn's mushroom lens (Ex. 2001) that Dr. Sasian provided in a Japanese invalidity proceeding. Even if Patent Owner were to show error in those computer-based simulations, however, that would not rebut Petitioner's correspondence of the ratios of the claimed Conditions to Parkyn's description of the mushroom lens. *See* Tr. 31:16–32:13.

In its Petition, Petitioner set forth a detailed challenge to independent claim 1 and to the other independent claim (claim 17) based on anticipation over Parkyn (Pet. 35–38, 42), as well as the anticipation challenges directed to the dependent claims 2–9 and 11–16 (*id.* at 38–42). With respect to claims 2–9 and 11–16, we note that Patent Owner does not respond directly to the arguments and evidence regarding these dependent claims presented in the Petition.³ *See* PO Resp. 22–25. Based on the argument and evidence presented in the Petition, and the insufficiency of the responsive argument and evidence presented in the Patent Owner Response, as discussed above, we are persuaded that Petitioner has established, by a preponderance of the evidence, that claims 1–9 and 11–17 are anticipated by Parkyn.

3. Obviousness over Parkyn — Claims 1–9 and 11–17

Because we are persuaded that Petitioner has established, by a preponderance of the evidence, that claims 1–9 and 11–17 are anticipated by Parkyn, we do not reach the ground of obviousness over Parkyn asserted against these same claims.

³ In our Scheduling Order, we cautioned Patent Owner “that any arguments for patentability not raised in the response will be deemed waived.” Paper 10, 3.

4. *Obviousness over Parkyn and Amano — Claims 9–16*

Petitioner contends that claims 9–16 are rendered obvious by the combination of the teachings of Parkyn and Amano. Pet. 55–58. Claim 9 depends from claim 1 and adds the further limitation that the “light emitting element is sealed by a sealing material so that light emitted from said light emitting element impinges on said light flux control member after transmitting through said sealing material.” Claim 10 depends from claim 9 and further requires that the concave surface of the recess be in contact with an outer surface of the sealing material. Claim 11, which depends from claim 9, sets forth a further limitation with respect to the sealing material, but claims 12 through 16 do not specify any limitation of the sealing material apart from that set forth in intervening claim 9 or intervening claim 11. Petitioner sets forth a detailed analysis of how Amano teaches the limitations of claim 9–11 (Pet. 55–56), as well as why a person of ordinary skill in the art would have reason to modify the teachings of Parkyn in view of the teachings of Amano to achieve the devices recited in claims 9–11 (*id.* at 57–58). Each of claims 12–16 depends from claims 9, 10, or 11 and repeats the limitations of claims 4 or 5, or both; which, Petitioner argues, are taught by Parkyn. Pet. 58; *see also id.* at 30–31 (discussing the teachings of Parkyn regarding claims 4 and 5).

Patent Owner argues that Amano “teaches away” from the Conditions because the reference “[looks] at internal reflection of light rather than distribution of the light as it passes through the flux or lens.” PO Resp. 32. That allegation, however, is not responsive to the asserted ground of

obviousness because Amano is not relied upon as teaching lenses but as teaching a sealing material for use with lenses.

In view of Amano's teachings with respect to using sealing plastic or resin to seal a light emitting element in a lens, as further supported by Dr. Sasian's testimony, we are persuaded that Petitioner has established, by a preponderance of the evidence, that the subject matter of claims 9–16 would have been obvious over the combination of Parkyn and Amano. Pet. 55–58; Sasian Decl. ¶¶ 118–124.

D. Patent Owner's Motion to Exclude

Patent Owner moves to exclude, under 37 C.F.R. § 42.64(c), the entirety of Exhibits 1008 (Dr. Sasian's Declaration) and 1013 (Dr. Sasian's Reply Declaration). Mot. To Excl. 1–5.

Petitioner responds that the objections were untimely, citing 37 C.F.R. § 42.64(b)(1), which requires that any objection to evidence submitted during a preliminary proceeding (e.g., Sasian Decl.) must be served within ten business days of the institution of the trial and, for evidence submitted during trial (e.g., Ex. 1013), within five business days. Pet. Opp. 1–3. Patent Owner does not dispute that the objections were untimely in view of the rule, but submits that the objections did not arise until Dr. Sasian's cross-examination and that "an objection cannot be raised until the evidence that supports it becomes evident. *Stanton v. Dahlen*, 2005 WL 596769 *2 (BPAI)." PO Reply 2. To the contrary, the Board's decision on motion in the interference case of *Stanton v. Dahlen* does not stand for the proposition that an objection cannot be raised until the evidence that supports it becomes

apparent; the decision merely paraphrased an argument from counsel.
Stanton v. Dahlen, 77 USPQ2d 1415, 1416 (BPAI 2005) (unpublished).

The Board's rules provide that a party relying on evidence to which an objection is timely served may respond to the objection by serving supplemental evidence within ten business days of service of the objection. 37 C.F.R. § 42.64(b)(2). Patent Owner appears to allege that it served the objection to Exhibit 1008 on April 27, 2015. PO Reply 5. If so, the objection was almost seven months late; trial was instituted on September 22, 2014. Patent Owner's late objection to Dr. Sasian's Declaration was, thus, prejudicial to Petitioner because Petitioner could have responded with supplemental evidence to cure alleged deficiencies. Perceived deficiencies in Exhibit 1008 should have been addressed in the context of the weight to give the testimony in view of Patent Owner's cross-examination of Dr. Sasian, in the Patent Owner Response — not as arguments presented in an evidentiary motion.⁴

Patent Owner's Motion to Exclude Exhibit 1008 is *dismissed* as untimely. Because this Final Written Decision does not rely on Exhibit 1013, Patent Owner's Motion to Exclude that exhibit is *dismissed* as moot.

⁴ We note also that the parties disagree that a joint stipulation allowed late objection. *E.g.*, PO Reply 4–5. We need not resolve that dispute because the applicable rule with respect to timing of an objection (37 C.F.R. § 42.64(b)(1)) does not authorize any change by joint stipulation. Nor did we authorize any such departure from the rule.

E. Patent Owner's Motion for Observation on Cross-Examination

Patent Owner's Motion for Observation on Cross-Examination (Paper 37) does not affect our decision because this Final Written Decision does not rely on Dr. Sasian's Reply Declaration (Ex. 1013).

III. CONCLUSION

Upon review of the Petition and supporting evidence, as well as the Patent Owner Response and supporting evidence, we are persuaded that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1–9 and 11–17 are anticipated by Parkyn and that claims 9–16 are obvious over Parkyn and Amano.

IV. ORDER

In consideration of the foregoing, it is
ORDERED that claims 1–17 of the '723 Patent are *unpatentable*;
FURTHER ORDERED that Patent Owner's motion to exclude
evidence is *dismissed*; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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