

**United States Court of Appeals  
for the Federal Circuit**

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**AMKOR TECHNOLOGY, INC.,**  
*Appellant,*

v.

**INTERNATIONAL TRADE COMMISSION,**  
*Appellee,*

AND

**CARSEM (M) SDN BHD, CARSEM  
SEMICONDUCTOR SDN BHD (also known as Re-  
cams Sdn Bhd), AND CARSEM, INC.,**  
*Intervenors.*

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2010-1550

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On appeal from the United States International Trade  
Commission in Investigation No. 337-TA-501.

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Decided: August 22, 2012

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gued for appellant. With him on the brief were STEVEN R.  
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Before NEWMAN, PLAGER, and LINN, *Circuit Judges*.

LINN, *Circuit Judge*.

Complainant-Appellant, Amkor Technology, Inc. (“Amkor”), appeals the determination of the International Trade Commission (“Commission”) that Amkor’s U.S. Patent No. 6,433,277 (“277 Patent”) is invalid under 35 U.S.C. § 102(g)(2). The respondents in the Commission investigation below, Carsem (M) Sdn Bhd, Carsem Semiconductor Sdn Bhd, and Carsem, Inc. (collectively, “Carsem”), intervene. Because the Commission applied an erroneous legal standard, this court reverses the Commission’s determination on prior invention under § 102(g)(2). This court also declines to affirm the Commission’s invalidity determination on the alternative grounds raised by Carsem.

## I. BACKGROUND

On December 19, 2003, Amkor initiated Commission Investigation No. 337-TA-501 (“Investigation”), *In re Certain Encapsulated Integrated Circuit Devices and Products Containing the Same*, alleging that Carsem violated section 337 of the Tariff Act of 1930, as amended in 19 U.S.C. § 1337 (“section 337”), based on the importation, sale for importation, and sale within the United States after importation of certain encapsulated integrated circuit devices that allegedly infringed claims 1-4, 7, 17, 18, and 20-23 of the ’277 Patent, and other claims of two related patents not on appeal.

### A. ’277 Patent

The ’277 Patent, titled “Plastic and Integrated Circuit Package and Method and Leadframe for Making the Package,” was filed on July 13, 2000, and issued on August 13, 2002. The invention relates to smaller and “more reliable” integrated circuit packages. ’277 Patent col.2 l.2. Integrated circuit die—small blocks of semiconducting material that contain a circuit—are conventionally enclosed in a plastic package, or “encapsulant.” *Id.* col.1 ll.19-22. A metal leadframe serves as the central support structure for the package. *Id.* col.1 ll.23-31. In the prior art, part of the leadframe was completely surrounded by encapsulant, and part of the leadframe extended outside of the package to connect the package externally. *Id.* col.1 ll.31-35. The internal structure of the leadframes in the prior art limited the ability of those in the art to further reduce the package size. *Id.* col.1 ll.42-60.

The claimed packages are “near chip-scale” packages, meaning that the finished package is only marginally larger than the semiconductor chip itself. The smaller size is achieved by encapsulating only a top portion of the package. *See id.* col.2 ll.21-30. Fig.2 from the '277 Patent depicts the invention:

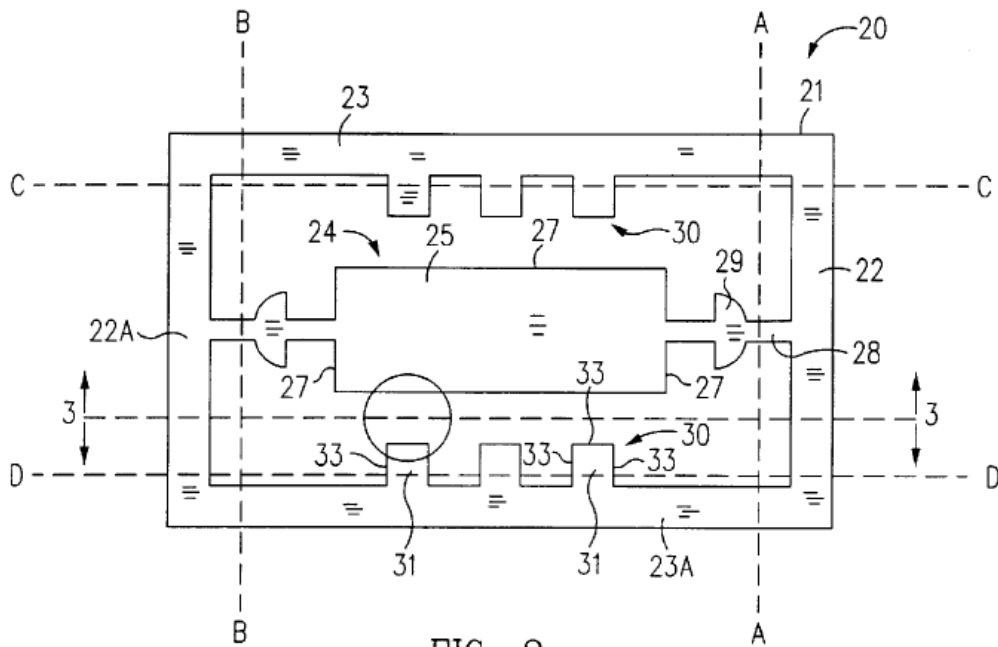


FIG. 2

The invention involves structurally simple contacts (30), which extend inwards from the leadframe (20) towards an adjacent surface on the die pad (24), and are ultimately severed from the leadframe along the cut lines C—C and D—D. *Id.* col.4 ll.20-27, Fig.2. The leadframe includes disposable connectors (28), or “tie bars,” which are also severed from the leadframe along the cut lines A—A and B—B. *Id.* col.3 ll.65-67, col.4 ll.16-19, Fig.2. After severing the contacts, the package is placed on a flat surface with the die pad facing upwards, and viscous encapsulant is poured onto the top surface, covering the top surface of the die pad, the contacts, and all other parts of the lead-

frame around the die pad. *Id.* col.2 ll.21-30. “[R]eentrant portions and asperities [present on] the side surfaces of the die pad and contacts function as encapsulant fasteners or lead locks,” and thus the encapsulant material, rather than the leadframe, securely connects the die pad and contacts to the package. *Id.* col.2 ll.53-59.

Claims 1 and 2 of the '277 Patent cover:

1. A package for an integrated circuit die comprising:

a metal die pad and a plurality of metal contacts, wherein said die pad has a first surface, and each said contact has a first end facing the die pad, a second end opposite the first end, a first surface, a second surface opposite the first surface, and a lip at the first surface of the contact fully around a circumference of the contact except at the second end[;]

an integrated circuit die on the die pad;

a plurality of conductors each electrically connected between the die and the first surface of a respective one of the contacts; and

a package body formed of an encapsulant material, said encapsulant material covering the die and underfilling the lip of the contacts, wherein the second surface of each said contact is exposed at a horizontal first exterior surface of the package body.

2. The package of claim 1, wherein the die pad includes a first surface upon which the die is mounted and *a lip at the first surface fully around a circumference of the die pad.*

'277 Patent col.12 ll.2-22 (emphasis added). Claim 1 is not at issue in this appeal. The dispute in this appeal relates to the limitation directed to the lip at the first surface and the meaning of the expression “fully around a circumference of the die pad.”

### B. Procedural History

On February 11, 2004, the Administrative Law Judge (“ALJ”) issued a subpoena to third parties ASAT, Inc., ASAT Holdings, and ASAT Limited (collectively, “ASAT”), seeking certain documents related to ASAT’s leadless plastic chip carrier package invention (“ASAT invention”) described in U.S. Patent 6,229,200 (“ASAT ’200 Patent”) that Carsem asserted were critical to its defense. ASAT failed to comply with the subpoena. On November 18, 2004, prior to receiving the ASAT documents, the ALJ issued a first Initial Determination finding no violation of section 337. The ALJ determined: (1) that some or all of Carsem’s accused micro leadframe package products infringed claims 1, 7, 17, and 20 of the ’277 Patent; (2) that claims 1, 7, 17, 18, and 20 of the ’277 Patent were invalid as anticipated; and (3) that claims 2-4 and 21-23 of the ’277 Patent, which require a lip that runs “fully around a circumference of the die pad” (claims 2-4) and “fully around the die pad” (claims 21-23) were indefinite because it was unclear whether the lip ran under the connectors that connect the die pad to the leadframe, or was actually interrupted by the connectors. Initial Determination on Violation of Section 337, Inv. No. 337-TA-501, at 57, 61, 106, 194 (Nov. 18, 2004) (“*First ID*”).

On review, the Commission modified the ALJ’s claim construction, construing “fully around a circumference of the die pad” and “fully around the die pad” to mean that “the lip must run fully around the sides of the die pad, but not underneath or through the tie bars,” and remanded. Commission Op., Inv. No. 337-TA-501, at 11, 16 (Apr. 13,

2005) (“*Claim Construction Remand*”). On November 9, 2005, the ALJ issued a second Initial Determination finding, based on the Commission’s claim construction, that: (1) some or all of Carsem’s micro leadframe package products infringed claims 2-4 and 21-23 of the ’277 Patent; (2) that claims 2-4 and 21-23 of the ’277 Patent are not invalid as anticipated or obvious; and (3) that Carsem violated section 337. Initial Determination on Violation of Section 337, Inv. No. 337-TA-501, at 12-24, 50-57, 64-72, 77-81, 114 (Nov. 9 2005) (“*Second ID*”). The new claim construction did not change the ALJ’s finding that claims 1, 7, 17, 18, and 20 were invalid as anticipated. *Id.* at 48-64.

On July 1, 2009, after the Commission finally obtained the ASAT documents (following two enforcement petitions in district court), the Commission remanded the Investigation to the ALJ to determine whether the ASAT invention qualified as prior art to the ’277 Patent under 35 U.S.C. § 102(g)(2). On October 30, 2009, the ALJ issued a first Supplemental Initial Determination finding that: (1) the co-inventor of the ASAT invention conceived of the ASAT invention in a foreign country sometime during April or May; and (2) Amkor’s ’277 Patent technology was conceived sometime during May through August, or on December 10, of that same year. Supplemental Initial Determination on Violation of Section 337, Inv. No. 337-TA-501, at 16-17 (Oct. 30, 2009) (“*First Supp. ID*”). Accordingly, the ALJ concluded that the ASAT invention is not prior art under § 102(g)(2) because “Carsem [] failed to prove by clear and convincing evidence that the April/May [] date of invention [for the ASAT invention] . . . is prior to the [May through August] date of invention accorded the asserted claims of the patents-in-suit.” *First Supp. ID* at 18. On review, the Commission reversed and remanded, holding that the ASAT invention is § 102(g)(2) prior art because, under *Oka v. Youssefye*, 849 F.2d 581, 584 (Fed. Cir. 1998), the earliest possible priority date of

the '227 Patent must be the last date in the range of dates, or December 10, which falls after the April/May date of invention for the ASAT invention. Commission Op., Inv. No. 337-TA-501, at 12 (July 27, 2010) (“*Commission Op.*”). On remand, the ALJ issued a second Supplemental Initial Determination holding all disputed claims of the '277 Patent invalid under § 102(g)(2) in view of the ASAT invention. Supplemental Initial Determination on Violation of Section 337, Inv. No. 337-TA-501, at 23-31 (Mar. 22, 2010) (“*Second Supp. ID*”). Amkor appeals the Commission’s holding that the ASAT invention qualifies as § 102(g)(2) prior art. As alternative grounds for affirmance, Carsem argues that this court should reverse the Commission’s determination that claims 2-4 and 21-23 of the '277 Patent are not invalid as anticipated or obvious, and asks the court to affirm the Commission’s ultimate invalidity determination on this basis. This court has jurisdiction pursuant to 28 U.S.C. § 1295(a)(6).

## II. DISCUSSION

### A. Standard of Review

This court reviews the Commission’s legal determinations de novo and factual determinations for substantial evidence. *Gemstar-TV Guide Int’l, Inc. v. Int’l Trade Comm’n*, 383 F.3d 1352, 1360 (Fed. Cir. 2004). “Priority of an invention is a question of law to be determined based upon underlying factual determinations.” *Innovative Scuba Concepts, Inc. v. Feder Indus., Inc.*, 26 F.3d 1112, 1115 (Fed. Cir. 1994) (citing *Price v. Symsek*, 988 F.2d 1187, 1190 (Fed. Cir. 1993)). Anticipation is a question of fact, and obviousness is a question of law based on underlying factual determinations. *In re NTP, Inc.*, 654 F.3d 1279, 1297 (Fed. Cir. 2011).



## B. 35 U.S.C. § 102(g)(2)

1. Domestic Disclosure Under *Scott*

The American Inventors Protection Act of 1999 (“AIPA”) divided § 102(g) into subsections (1) and (2), eliminating the “made in this country” requirement under subsection (1) governing interferences, and retaining the “made in this country” requirement under subsection (2) governing prior invention generally. The post-AIPA version of § 102(g), which governs this appeal, provides in pertinent part:

A person shall be entitled to a patent unless:

...

(g)(1) during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes . . . that before such person’s invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person’s invention thereof, the invention was *made in this country by another inventor* who had not abandoned, suppressed, or concealed it. . . .

35 U.S.C. § 102(g) (2006) (emphasis added). Prior to the passage of the AIPA, § 102(g) did not distinguish interferences from prior invention generally, and provided that a person shall be entitled to a patent unless “before the applicant’s invention thereof *the invention was made in this country by another* who had not abandoned, suppressed, or concealed it.” § 102(g) (1994) (emphasis added).

Applying the pre-AIPA version of § 102(g) in an interference case, this court stated in *Scott v. Koyama*, 281 F.3d 1243 (Fed. Cir. 2001), that “the inventor of an invention of foreign origin may rely on the date that the invention was disclosed in the United States[] as a conception

date for priority purposes.” *Id.* at 1247 (citing *Thomas v. Reese*, 1880 Off. Gaz. Pat. Office 196, 198 (“If [an inventor], having conceived [the invention] and reduced it to practice in a foreign country . . . communicates it to an agent in the United States for the purpose of obtaining letters patent or of introducing it to public use in the United States, he may, in an interference, carry the date of his invention back to the day in which it was fully disclosed to such agent in the United States.”)). Because nothing in the legislative history indicates that Congress attempted to abandon this court’s interpretation of the “made in this country” language of the pre-AIPA version of § 102(g) when it amended the statute and retained the language in § 102(g)(2), this court holds that the court’s interpretation of this language in *Scott* governs this non-interference, prior invention case under § 102(g)(2). See *Lorillard v. Pons*, 434 U.S. 575, 581 (1978) (“[W]here . . . Congress adopts a new law incorporating sections of a prior law, Congress normally can be presumed to have had knowledge of the interpretation given to the incorporated law, at least insofar as it affects the new statute.”). This court’s interpretation of the “made in this country” language of § 102(g) (1994) in *Scott* is consistent with how both parties in this appeal and district courts have interpreted the “made in this country” language of § 102(g)(2) (2006) as it applies to prior invention, outside of the interference context. See *Solvay S.A. v. Honeywell Specialty Materials LLC*, 827 F. Supp. 2d 358, 363-64 (D. Del. 2011) (“[N]o authority indicat[es] that the language of § 102(g)(2) should be interpreted differently than that same language had been interpreted before the 1999 amendment.”), *on remand from* 622 F.3d 1367 (Fed. Cir. 2010); *Therasense, Inc. v. Becton, Dickinson & Co.*, 560 F. Supp. 2d 835, 865 n.26 (N.D. Cal. 2008) (“[F]or an invention conceived outside the United States, the date of conception for purposes of priority for a United States patent is the date the invention is first reported to the

inventor's agent within the United States.” (citing *Scott*, 281 F.3d at 1247)).

## 2. Sufficiency of Disclosure

Amkor accepts *Scott* as binding—and thus does not contest that domestic disclosure and reduction to practice may be sufficient to satisfy the “made in this country” requirement of § 102(g)(2)—but argues that *Scott* requires a full disclosure of the invention *in writing* for a foreign invention to be deemed “made in this country” under § 102(g)(2). According to Amkor, “[t]he Commission’s new broad and lax standard” permitting “any U.S. disclosure—oral or otherwise—of a foreign conception to qualify as a U.S. conception date” “would lead to absurd results and would effectively eliminate the ‘made in this country’ requirements from § 102(g)(2).” Appellant’s Br. 32-33.

The Commission counters that *Scott* does “not in any way limit the disclosure of the invention to the written form.” Appellee’s Br. 28. According to the Commission, the word “communicate” in the domestic disclosure rule, by definition, includes oral and written conveyances. Carsem contends, relying on *Sandt Tech., Ltd. v. Resco Metal & Plastics Corp.*, 264 F.3d 1344, 1350 (Fed. Cir. 2001), that the only difference between written and oral disclosure is that “[w]hen an inventor, foreign or domestic, orally discloses an invention in the United States, *independent* corroboration is required.” Intervenor’s Br. 23 (emphasis in original). Both the Commission and Carsem argue that to be “made in this country” under § 102(g)(2), a foreign invention need only be disclosed in the United States in a manner sufficient to show *conception*, *i.e.*, “the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice,” *Burroughs Wellcome Co. v. Barr Labs. Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994) (citing *Hybritech Inc. v. Monoclonal*

*Antibodies, Inc.*, 802 F.2d 1367, 1376 (Fed. Cir. 1986), which may occur orally or in writing.

The domestic disclosure rule cited in *Scott*, first articulated in *Thomas*, provides that an inventor who “communicates [his invention] to an agent in the United States . . . may . . . carry the date of his invention back to the day in which it was fully disclosed to such agent in the United States.” 281 F.3d at 1247 (citing *Thomas*, 1880 Off. Gaz. Pat. Office at 198). Under this rule, domestic disclosure is satisfied by a “communication” that “fully disclose[s]” the invention. *Id.* It is generally understood that a “communication” may occur orally or in writing. See, e.g., Oxford English Dictionary (3d ed. 2009) (defining “communicate” as “[t]o impart (information, knowledge, or the like) . . . ; to convey, express”); Webster’s Third New International Dictionary, Unabridged (2002) (defining “communicate” as to “speak, gesticulate, or write to another to convey information”).

While this court’s limited precedent on this issue establishes that writings *can* satisfy the full domestic disclosure requirement, the cases do not establish any *per se* requirement that such disclosure must be in writing. See *Scott*, 281 F.3d at 1246-47 (finding prior conception in the United States where both parties conceded that “a full description of the process of the count was contained in written materials disclosed to persons at ICI Americas,” but articulating the requirement only as “disclos[ure] in the United States”); *Holmwood v. Sugavanam*, 948 F.2d 1236, 1238-40 (Fed. Cir. 1991) (finding prior reduction to practice in the United States based on domestic testing of a foreign fungicide, proof of which was established through oral testimony and test results); *Mortsell v. Laurila*, 301 F.2d 947, 951 (CCPA 1962) (finding prior conception in the United States based solely on the oral testimony of the applicant’s United States patent attorney and his employee, where the oral testimony established

that the patent attorney's secretary made a complete English language translation of a German patent application fully disclosing the invention). These cases require a domestic disclosure sufficient to establish conception.

Amkor is incorrect that the failure to import a writing requirement leads to a "broad and lax standard" where effectively any domestic disclosure would establish domestic conception. The content of the domestic disclosure must be *specific enough* to encompass the "complete and operative" invention, *see Hybritech*, 802 F.2d at 1376 (Fed. Cir. 1986), and an inventor's oral testimony to this extent is a question of proof, *see Sandt*, 264 F.3d at 1350-51 and *Price*, 988 F.2d at 1194.

Amkor argues that Carsem failed to submit sufficient evidence to corroborate the ASAT inventor's testimony that he fully disclosed the invention to his colleague in the United States prior to the critical date. However, even if the ASAT inventor's domestic disclosure was sufficient—and this court is not persuaded that it was—the Commission erred in its priority date determination with respect to Amkor for the reasons explained below.

### 3. The Commission's Application of Oka was Legal Error

In *Oka*, the junior party in an interference submitted a range of dates of possible conception in an attempt to prove prior invention under § 102(g). *Oka*, 849 F.2d at 584. This court held:

Because *Oka* is the senior party, Youssefyeh was required to establish reduction to practice *before* *Oka*'s filing date, or conception before that date coupled with reasonable diligence from just before that date to Youssefyeh's filing date. The Board's finding that Youssefyeh initiated preparation of a 5-inadanyl compound "in the last week of October 1980" supports the conclusion that Youssefyeh

failed to establish conception, much less a reduction to practice, of that class of compounds earlier than October 31, 1980. In dealing with a reduction to practice, the court in *Haultain v. DeWindt*, 254 F.2d 141[, 142] (CCPA 1958), stated [that] . . . “where testimony merely places the acts within a stated time period, the inventor has not established a date for his activities earlier than the last day of the period.” That rule is equally appropriate in establishing a date of conception, nor does Youssefyeh dispute Oka’s position that “the last week in October” means October 31.

Thus Youssefyeh’s conception and Oka’s filing date are the same, *i.e.*, October 31, 1980. Oka, as the senior party, is presumptively entitled to an award of priority, and Youssefyeh, as the junior party in an interference between pending applications, must overcome that presumption with a preponderance of the evidence. In the event of a tie, therefore, priority must be awarded to the senior party. Because Youssefyeh, the junior party, failed to show a conception date earlier than Oka’s filing date, Oka is entitled to priority. We reverse the Board’s award of priority to Youssefyeh.

849 F.2d at 584-85 (internal citations omitted).

Amkor argues that the *Oka* rule—*i.e.*, according the last possible conception date to a party who can only provide a range of dates—applies only to the party with the burden of persuasion on the issue of prior invention. Amkor further contends that because Carsem bore the burden of persuasion, the *Oka* rule applies only to the ASAT invention, not Amkor’s invention. Amkor argues under *Oka* that the ASAT invention is entitled to the last possible conception date in its April/May range, or May

31, which is later than Amkor's May 1 through August 31 range of conception dates, "or at most a tie." Appellant's Br. 66.

Carsem counters that "the *Oka* rule applies to any party with a burden to prove a date of invention, whether that party is junior or senior [or] has the ultimate burden of persuasion." Intervenor's Br. 48-49. Similarly, the Commission argues that "it [] would make no sense to have two different rules for determining the date of conception . . . one applicable to a party that has the burden of persuasion, and another applicable to a party without such a burden." Appellee's Br. 25-26.

The *Oka* rule does not apply to patent owners like ASAT in validity disputes. This is not an interference, and the standards that apply to interferences do not necessarily apply to disputes over validity. An issued patent is entitled to a presumption of validity under 35 U.S.C. § 282, which can be overcome only with clear and convincing evidence. *Microsoft Corp. v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2241 (2011); *Sandt*, 264 F.3d at 1350. The presumption of validity and the clear and convincing burden associated with it did not apply in the interference in *Oka*. In *Oka*, the question of entitlement to priority did not carry any presumption and was determined based on preponderant evidence. *See Oka*, 849 F.2d at 584. In *Oka*, even under the preponderant evidence standard, the junior party could not prove prior invention by presenting a range of dates that primarily predated but overlapped by one day with the senior party's conception date. *Id.* at 584-85.

To invalidate Amkor's '277 Patent under § 102(g)(2), Carsem bore the burden of persuasion and was required to submit not just preponderant evidence but clear and convincing evidence that the ASAT invention was conceived in the United States before the invention of the

'277 Patent. Carsem could only show a range of dates of possible United States disclosure, the first 30 days of which pre-dated Amkor's possible conception date, and the last 31 days of which overlapped with Amkor's possible conception dates. Such a showing, at best, establishes that the ASAT inventor *might have* conceived of the invention first. Evidence establishing that there might have been a prior conception is not sufficient to meet the clear and convincing burden needed to invalidate a patent. Accordingly, the ALJ was correct in his *First Supp. ID* when he concluded that "Carsem [] failed to prove by clear and convincing evidence that the April/May [] date of invention . . . is prior to the [May through August] date of invention accorded the asserted claims of the patents-in-suit." *First Supp. ID* at 18. The Commission committed legal error in reversing this determination based on an erroneous application of the *Oka* rule to the patent holder. Because Carsem failed to prove prior invention in the United States by clear and convincing evidence, this court reverses the Commission's determination that the '277 Patent is invalid under § 102(g)(2).

### C. Alternative Grounds for Affirmance

Carsem argues that, if this court reverses the Commission's invalidity determination with respect to § 102(g)(2) as we have, this court should nevertheless affirm the Commission's determination on the alternative grounds that the '277 Patent is invalid as anticipated and obvious because: (1) the Commission erred in construing of the term "fully around a circumference of the die pad" to exclude "tie bars" but not "fused leads" from the circumference of the die pad; (2) under the proper claim construction, Japanese Patent Application No. HEI 1[1989]-106456 ("JP-456") anticipates claims 2-4 and 21-23 of the '277 Patent; and (3) under either claim construction, JP-456 alone, or JP-456 in view of Japanese Patent Application No. SHO 63[1988]-188964 ("JP-964"), Japa-



nese Patent Publication No. 96-4284 (“JP-284”), or both renders claims 2-4 and 21-23 of the ’277 Patent invalid as obvious. Carsem’s arguments in the alternative should not and need not be asserted as a cross-appeal. *Krupp Int’l, Inc. v. U.S. Int’l Trade Comm’n*, 626 F.2d 844, 846 (Fed. Cir. 1980) (holding that “the risk of reversal” created by an appeal is not an “adverse effect” sufficient to sustain a cross-appeal). “All questions bearing on the issue of whether there exists a section 337 violation . . . [are] before the court.” *Id.*

1. “fully around”

On appeal, Carsem argues for the first time that “fully around” means “that the lip is present on every exposed side edge of the die pad where a connector of some type is not present.” Intervenor’s Br. 53. Before the ALJ, Carsem argued that the ’277 Patent claim limitations requiring a lip to run “fully around a circumference of the die pad” (claims 2-4) and “fully around the die pad” (claims 21-23) were indefinite under 35 U.S.C. § 112. *First ID* at 49. **[JA22101]** Carsem argued below that “if these words are read literally, ‘fully around a circumference’ . . . incorporates those portions of the die pad where it is connected to the lead frame by a tie bar, fused lead, or other structure, which is not physically possible and therefore renders the claim indefinite.” *Id.* On review before the Commission, Carsem argued that that the claim limitation “fully around” requires that a lip “essentially cut through the tie bar thus leaving the claimed invention inoperable.” *Claim Construction Remand* at 16. Amkor, not Carsem, argued that the limitation “fully around” should be “satisfied even where features other than the tie bars (*e.g.*, the fused leads) may interrupt the lip on the die pad.” *Id.* Before the ALJ and the Commission, Carsem argued against Amkor’s proposed construction, and urged a construction requiring the lip to “essentially cut through the tie bar thus leaving the

claimed invention inoperable.” *Id.*; *First ID* at 49, 51. Carsem switches positions on appeal, now arguing in support of the position it opposed below. Carsem waived its new claim construction argument by failing to raise it below. *See Conoco Inc. v. Energy & Env'tl. Int'l, L.C.*, 460 F.3d 1349, 1358-59 (Fed. Cir. 2006) (“[A] party may not introduce new claim construction arguments on appeal or alter the scope of the claim construction positions it took below.”).

Even if Carsem had preserved the argument, the Commission properly construed the claims, as both parties’ experts agreed that one of skill in the art would read the claim terms to mean that the lip “goes fully around the die pad except at those regions where the tie bars contact.” *Commission Op.* at 14 (citing the testimony of Dr. Patrick McCluskey (“McCluskey”), Trial Tr. 1418:22-24, July 14, 2004 (“[Y]ou can see that [the lip around the die pad] goes fully around the die pad except at those regions where the tie bars contact.”), and Dr. Gerald K. Fehr, Trial Tr. 3656:7-17, July 23, 2004 (“[A] person of ordinary skill would understand the phrases . . . as used in the claims to refer to the exposed side edges of the die pad and not to include the portions of the die pad where the die pad and tie bars are integrally connected.”)). “While claim construction primarily relies on intrinsic evidence, extrinsic evidence, such as expert testimony, may also be used when given the appropriate weight by the trial court.” *Spansion Inc. v. Int’l Trade Comm’n*, 629 F.3d 1331, 1344-45 (Fed. Cir. 2010) (“Experts for both Tessera and Appellants testified that one of ordinary skill in the art would have been able to determine the boundaries of the claims. . . . This court does not find persuasive Appellants’ arguments that the ALJ misinterpreted the expert testimony.”). The Commission did not err in concluding that “no features (other than tie bars) may interrupt the lip on the die pad,” *Claim Construction Remand* at 16, because the ’277 Patent only discloses tie

bar connectors, not fused leads, and no expert testimony establishes that one of skill in the art would read the '277 Patent to contemplate the possibility of fused leads. Accordingly, the court affirms the Commission's claim construction as to these terms.

## 2. JP-456, Alone or in Combination

Carsem conceded below that, under the Commission's claim construction, JP-456 does not anticipate the asserted claims because it discloses a fused lead interrupting the lip of the die pad, and thus "lacks a lip fully around the die pad." *Second ID* at 53. Because we have now affirmed the Commission's claim construction, this court affirms the Commission's determination on anticipation.

Carsem also argues that claims 2-4 and 21-23 of the '277 Patent are obvious in view of JP-456 alone, or JP-456 in view of JP-964, JP-284, or both. Amkor argues that Carsem waived the right to argue obviousness based on JP-456 alone and the combination of JP-456 with both JP-284 and JP-964 because it never made these arguments before the Commission. Amkor's waiver argument is not supported by the record, which reveals that the obviousness issues were raised, albeit briefly. *See Second ID* at 77-79 (explaining that Carsem's obviousness argument in view of JP-456 alone was already addressed in the anticipation analysis, and considering Carsem's obviousness arguments "in light of JP[-]456 as modified by the JP[-]964 . . . [and] JP[-]284 . . . references"). We, therefore, decline to find waiver and turn next to the merits.

According to Carsem, JP-456 discloses a lip on all four sides of the die pad, only interrupted by a fused lead. Carsem asserts that the ALJ's conclusion that JP-456 discloses a lip on only two sides of the die pad is unsupported by substantial evidence and should be reversed.

Even if JP-456 discloses a lip on only two sides, Carsem argues that extending the lip “fully around” the die pad was an “obvious solution” to the known problem of “delamination between the plastic encapsulant material and the metal leadframe components.” Intervenor’s Br. 60. With respect to JP-456 in combination with either JP-964 or JP-284, Carsem argues that these references (1) teach die pads with lips extending “fully around” the die pad and (2) do not include fused leads, and thus “clearly demonstrate[] that, in a top-encapsulated bottom-exposed type package, a fused lead such as the one shown in the exemplary figures of JP-456 is optional.” Intervenor’s Br. 65.

Amkor counters that even if JP-964 and JP-284 disclosed a lip running fully around the die pad—which it does not concede—it would be of no consequence because “one of ordinary skill had no reason to discard the fused lead [of JP-456] because of the ‘special purpose’ it served in ‘smart cards.’” Appellant Reply Br. 29, 31; *Second ID* at 80 (“Dr. McKluskey testified that smart cards often use fused leads to ensure that the cards remain grounded. Therefore, the evidence suggests that one of ordinary skill in the art at the time of the ’277 invention would not wish to discard the fused lead.”).

We are not persuaded by Carsem’s argument, which fails to point to any evidence of a motivation or reason to remove the fused lead from the JP-456 reference. Amkor’s expert testimony establishes a purpose for fused leads in the art:

[T]he fused leads are often used in order to ground to the substrate for devices where the contacts are made to the top, in order to make sure the substrate stays grounded, and this is true in many cases for smart cards, they want to ground the backside as well, so they . . . often use a fused lead there. They also use them . . . in power devices

when they want to make contact to the backside of the device, so those are reasons why you would use fused leads.

Trial Tr. 4615:4-15 (McCluskey testimony). Because the fused lead attached to the die pad in JP-456 prevents the lip from extending “fully around the circumference of a die pad” or “fully around the die pad” as required by the claims, Carsem was required to present evidence that one of ordinary skill in the art at the time of the invention would have been motivated or found reason to remove the fused lead from the JP-456 reference, or that common sense would have led one of skill in the art to remove the fused lead based on a known problem, design need, or market pressure. *KSR Int’l v. Teleflex*, 550 U.S. 398, 418-20 (2007).

Carsem points the court only to the references themselves to support its contention that a fused lead is optional. Carsem argues that both parties’ experts admitted that JP-456 does not require a fused lead. We disagree. Amkor’s expert merely admitted that the only time a fused lead is not present in the JP-456 reference is when there is no die pad at all. Trial Tr. 4618:8-17 (McCluskey testimony). Thus, the ALJ properly found that JP-456, on its face, does not indicate that the fused lead on the die pad is optional. The court is not persuaded that either JP-284 or JP-964 provides a motivation or reason to remove the fused lead from JP-456. In brief, this court finds no basis to conclude that one of ordinary skill in the art, upon considering these references, would, in fact, find any reason to remove the fused lead from the die pad in the JP-456 reference. Accordingly, this court declines to affirm the Commission’s invalidity determination on these alternative grounds.

### III. CONCLUSION

For the foregoing reasons, this court reverses the Commission's determination that the '277 Patent is invalid under 35 U.S.C. § 102(g)(2), declines to affirm the Commission's invalidity determination on the alternative grounds raised by Carsem, and remands for further proceedings consistent with this opinion.

**REVERSED AND REMANDED**