United States District Court
Northern District of California

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

TESSERA, INC.,

Plaintiff,

v.

UTAC (TAIWAN) CORPORATION,

Defendant.

Case No. 5:10-cv-04435-EJD

CLAIM CONSTRUCTION ORDER

Re: Dkt. No. 215

Plaintiff Tessera, Inc. ("Tessera") filed this breach of contract case against Defendant UTAC (Taiwan) Corporation ("UTC") alleging that UTC failed to pay all of the royalties it owes under a license agreement with Tessera. Because the court previously found that payment of royalties under the license agreement is dependent upon whether or not a product embodies the invention disclosed in Tessera's patents, a technology tutorial and "claim construction hearing" was held in order to resolve the parties' dispute over the scope of patent claims.

Federal jurisdiction arises under 28 U.S.C. § 1332(a)(2). Having considered the claims, specifications, prosecution histories, and other relevant evidence along with supplemental briefing filed by the parties, and having heard the arguments made at the hearing, the court construes the contested language of the patents as set forth below.

I. BACKGROUND

Tessera is a company with its principal place of business in San Jose, California. See Dkt. No. 300 at 1. Tessera is a patent holding company and developer of semiconductor packaging technology, which is sometimes referred to as "microBGA technology." See Dkt. No. 138, Ex. 1 at 1-2. Semiconductor packages serve as the electrical interface between semiconductor chips and the systems in which they operate. See Dkt. No. 300, at 1. They also protect delicate chips from damage, contamination, and stress resulting from repeated heating and cooling. See id. Tessera has developed semiconductor technologies and owns a portfolio of hundreds of patents on these technologies. See id. Many of the companies in the semiconductor and electronics industries have obtained patent license agreements from Tessera, which grants limited licenses under specified circumstances to practice certain Tessera patents and other technology, including Tessera's proprietary technical know-how related to semiconductor packaging. See id. Tessera's technology allows companies around the world to meet the growing demand for smaller, faster, less expensive and more reliable electronic products. See id.

UTC is a Taiwan-based provider of assembly services for semiconductor packages. See Dkt. No. 185, at 6. It is a subsidiary of United Test and Assembly Center Ltd., which in turn is owned by TPG Capital, a leading global private investment firm headquartered in San Francisco, and Affinity Equity Partners, a leading Asian private investment firm, and their respective affiliates. See id. In particular, UTC manufactures semiconductor packages by encasing integrated circuits in protective coating, supporting the integrated circuit's electrical contacts so that it can connect to a printed circuit board, and testing the product to make sure that it is functional. See id. at 1-2.

In 2001, UTC began manufacturing a small-format ball grid array package, which it called "window BGA" or "wBGA." See Dkt. No. 138, Ex. 10 at 24:14-20; Ex. 12. By March 2001, a third party named Computer Technology System Corporation ("CTS") had approached UTC regarding a potential patent infringement claim it believed it had against UTC's wBGA package. See Dkt. No. 138, Ex. 9. Shortly thereafter, UTC met with Tessera and raised its concern over a

potential patent infringement suit by CTS. On April 27, 2001 Tessera's counsel, Christopher Pickett, sent a letter to UTC's President, C.C. Tsai, addressing UTC's concern and particularly noting that, should UTC take a license under Tessera's MicroBGA Technology and patents, and in particular Tessera's U.S Patents 5,950,304 ("the '304 patent") and 6,133,627 ("the '627 patent"), it could continue to manufacture the packaging using methods that would likely not be held to infringe CTS's patents. Id. In May 2001, Tessera faxed a license term sheet "TCC License Agreement" to UTC. See Dkt. No. 138, Ex. 11.

A. The License Agreement

The parties met in person in Taiwan on June 20, 2001 and August 9, 2001 to discuss terms of the licensing agreement, Tessera's willingness to introduce UTC to potential customers, and the parties' interest in working together on future technology development. See Dkt. No. 138, Exs. 12-13. After these meetings, on August 22, 2001, UTC's legal and intellectual property manager Wei-Heng Shan emailed Mr. Pickett to express UTC's willingness to enter into a licensing agreement provided the parties could agree on a licensing fee and royalties. See Dkt. No. 138, Ex. 15. In that email, Mr. Shan also noted that UTC executives were "impressed" by Tessera's presentation of its "business cooperation plan" and that they hoped to meet with Tessera's "strategic partners" during an upcoming trip to the United States. Id. Tessera and UTC entered into a License and Joint Cooperation Agreement on December 3, 2001 (the "Agreement"). See Dkt. No. 300, at 2.

The Agreement defines the term "TCC" as "an acronym for Tessera Compliant Chip, a type of integrated circuit ('IC') package which is the subject matter of certain Tessera Patents licensed hereunder." See Dkt. No. 49, at 2-3. The Agreement further states that UTAC Taiwan shall pay a certain amount "per Billable Pin for TCC packages made by UTC hereunder, whether sold, transferred or used internally." See id.

In August 2002, UTC contacted Tessera regarding a Taiwanese tax issue it faced as a result of the Agreement. See Dkt. No. 138, Ex. 22. To remedy the issue, UTC requested a change in wording of two provisions of the Agreement to make clear that the Agreement involved a transfer

of technology. Accordingly, the parties executed the First Amendment to TCC License Agreement and Joint Cooperation Agreement (the "Amended Agreement") on September 24, 2002. See Dkt. No. 138, Ex. 24.

Following the parties' execution of the Agreement, UTC began to accrue and pay royalties on its wBGA package. UTC asserts that the royalties covered its use of the Tessera '627 and '304 patents, which are part of a patent family known as the Khandros patents. The Khandros patents expired on September 24, 2010. See Dkt. No. 142, Exs. 17, 18. The day before the expiration date, UTC notified Tessera that it considered the Khandros patents to be the only basis for its royalty payments under the Agreement and that it would cease making payments once those patents expired. See Dkt. No. 138, Ex. 42.

B. Technology Overview

The patents at issue are U.S. Patent Nos. 5,477,611 ("the '611 patent"); 5,659,952 ("the '952 patent"); 5,966,587 ("the '587 patent"); 6,169,328 ("the '328 patent"); 6,521,480 ("the '480 patent"); 6,870,272 ("the '272 patent"); and 7,091,820 ("the '820 patent"). In addition, there are several foreign patents: European Patent No. 0,552,382 ("the EP '382 patent"); European Patent No. 1,353,374 ("the EP '374 patent"); Canadian Patent No. 2,091,438 ("the CA '438 patent"); Japanese Patent No. 2,924,923 ("the JP '923 patent"); and Korean Patent No. 1997-0005709 ("the KR '709 patent").

The patents generally relate to the art of semiconductor packaging. See Dkt. No 229, at 3. A semiconductor chip is a widely-used miniaturized electronic circuit that has been manufactured in the surface of semiconductor material. Spansion, Inc. v. Int'l Trade Com'n, 629 F.3d 1331, 1337 (Fed. Cir. 2010). A semiconductor chip package includes both the casing, which protects the chip, and the electrical connections (sometimes called "terminals" or "contact pads"), which allow the chip to be attached to a printed circuit board ("PCB"). See id. The printed circuit board, in turn, can be connected to other components of an electrical device. See id.

Semiconductor devices generate heat during operation and subsequently cool when operation ceases. See id. at 1338. The electrical interconnections within the package (between the

semiconductor chip and the backing element) and between the package and the PCB are subjected to substantial strain resulting from expansion and contraction caused by these changes in temperature. See id. Since the components are ordinarily formed by different materials having different coefficients of thermal expansion ("CTE"), the chip, the backing element, and the PCB expand and contract by different amounts with each power cycle. See id. This difference, called the differential thermal expansion, causes the electrical contacts on one component to move relative to the contacts of another component to which it is attached as the temperatures of the different components change. See id. For instance, a semiconductor chip has a much lower coefficient of thermal expansion than either the backing element or the PCB. See id. During heating, the backing element beneath the chip tends to be constrained by the chip and expands much less than the board on which it is mounted, causing relative movement between the two components. See id. This relative movement causes mechanical stress on the solder balls because the bottoms of the solder balls get pulled outward relative to the tops, causing distortion. See id. Repeated cycles of heating and cooling can ultimately lead to permanent damage to the solder balls and breakage of the electrical interconnections. See id.

Prior to the invention described in the patents at issue, the differential thermal expansion problem was known. See id. at 1340. Several design strategies to address the problem also were known. See id. In particular, the patents at issue address certain problems due to stress caused by mismatches in CTE between the various materials, e.g., the semiconductor chip, the package substrate, and/or the printed circuit board, used in a semiconductor assembly. See, e.g., the '272 patent at "Background of the Invention."

II. LEGAL STANDARD

"[T]he court has the power and obligation to construe as a matter of law the meaning of language used in the patent claim." Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), aff'd 517 U.S. 370, 577 (1996). This tenet of patent jurisprudence "follows . . . from the general rule applicable to written instruments" since a patent is a fully integrated writing. Id. at 978.

In construing disputed terms, the court looks first to the claims themselves, for "[i]t is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (internal quotation marks omitted). Generally, the words of a claim should be given their "ordinary and customary meaning," which is "the meaning that the term[s] would have to a person of ordinary skill in the art in question at the time of the invention." Id. at 1312-13. In some instances, the ordinary meaning to a person of skill in the art is clear, and claim construction may involve "little more than the application of the widely accepted meaning of commonly understood words." Id. at 1314.

In many cases, however, the meaning of a term to a person skilled in the art will not be readily apparent, and the court must look to other sources to determine the term's meaning. Id. Under these circumstances, the court should consider the context in which the term is used in an asserted claim or in related claims, bearing in mind that "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." Id. at 1313. Indeed, the specification is "'always highly relevant' "and "'[u]sually [ ] dispositive; it is the single best guide to the meaning of a disputed term.'" Id. at 1315 (quoting Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

The court may also consider the patent's prosecution history, which consists of the complete record of proceedings before the United States Patent and Trademark Office and includes the cited prior art references. The court may consider prosecution history where it is in evidence, for the prosecution history "can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it otherwise would be." Id. at 1317 (internal citations omitted).

Finally, the court is also authorized to consider extrinsic evidence in construing claims, such as "expert and inventor testimony, dictionaries, and learned treatises." Markman, 52 F.3d at

980 (internal citations omitted). Although the court may consider evidence extrinsic to the patent and prosecution history, such evidence is considered "less significant than the intrinsic record" and "less reliable than the patent and its prosecution history in determining how to read claim terms." Id. at 1317-18 (internal quotation marks and citation omitted). Thus, while extrinsic evidence may be useful in claim construction, ultimately "it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." Id. at 1319.

III. DISCUSSION[1]

A. "said pads providing a standoff between said structure and said terminals"

Tessera	UTC
Plain and ordinary meaning; OR "the pads providing a separation distance between the structure and the terminals." Furthermore, "said pads" refer to "compliant pads," which is proposed below. A construction of "terminal" is also proposed below.	"The compliant pads disposed between the terminals and the structures provide a standoff, which is an empty space having a controlled height between adjacent pads, to accommodate for the thermal coefficient of expansion mismatch between the chip and the supporting substrate thereby alleviating much of the stress on the connections therebetween."

This disputed term appears in Tessera's '272 patent, Claims 1 and 21. Claim 1 reads:

1. An assembly comprising:

(a) A structure;

(b) A plurality of terminals; and

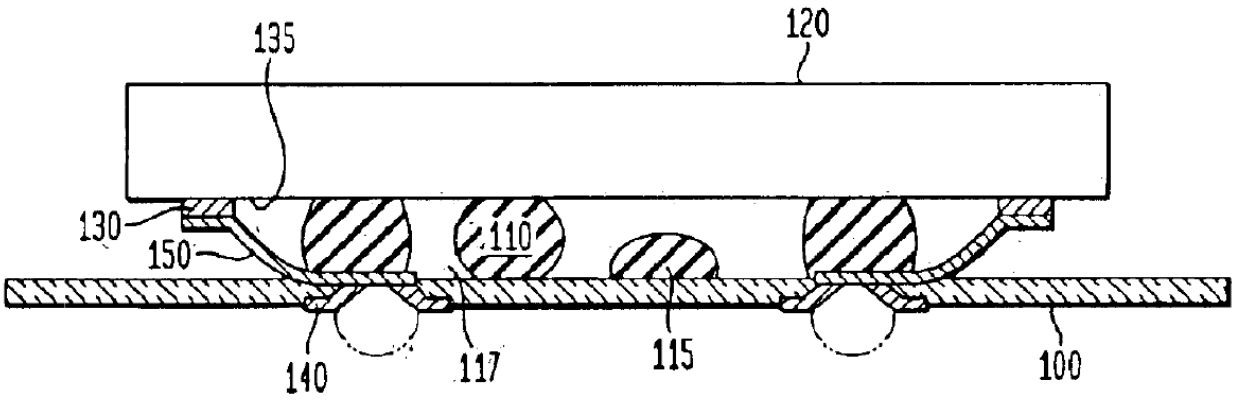
(c) A plurality of non-conductive, compliant pads disposed between said terminals and said structure, said terminals being aligned with at least some of said pads, said pads providing a standoff between said structure and said terminals.

Here, the claim terms and the specification do not provide a clear definition of the term.

[1] Claim terms related to the foreign patents are not construed in this order. Thus, the court does not construe the terms "flexible" or "terminals are/being movable with respect to said chip," both of which would require the Court to construe one or more of the foreign patents. The court also does not construe the term "connecting at least some of said contacts with at least some of said bonding terminals by a plurality of flexible leads while supporting said bonding terminals against vertical movement towards said front surface of said element to facilitate said connection" because it requires construction of the term "flexible."

For example, other than the abstract and the claims, "standoff" appears in only one sentence in the patent, which explains that "[i]t is important to understand that the function of the compliant pads is to provide a uniformly supported, planar standoff between the chip and the dielectric film, while allowing the compliant filler to be injected between the adjacent pads 100 to create a compliant encapsulation layer having a controlled thickness." See Dkt. No. 215, at 3; '272 patent, at 7:19-24.

Tessera proposes adoption of the plain and ordinary meaning because the language describes "an arrangement in which pads are placed between the structure and the terminals to create separation between the structure and the terminals." See Dkt. No. 215, at 3. For example, as illustrated in the figure below, a semiconductor chip (120) is separated from the terminals (140) by the height of the tallest compliant pads (110) placed between the chip and terminals.



See 272 patent, at Figure 1.

UTC argues that "standoff" should be clarified to mean "empty" because "if it was not empty, it would be impossible to 'allow[] the compliant filler to be injected' into the space." See Dkt No. 218, at 9. However, as seen in the figure, the "standoff" is not "empty" because in addition to the compliant pads (110), there are contacts (130), terminals (140), and leads (150).

Again, the specification adds little to the definition of "standoff." However, in support of its claim construction, Tessera point to several extrinsic sources - specifically, dictionary definitions - to support its argument that "standoff" refers to a "separation distance." See Dkt. No. 215, at 3-4. For example, Tessera cites to dictionary definitions that establish the meaning of

"standoff" as: (1) "to keep or cause to keep at a distance;" (2) "to hold at a distance;" or (3) "used for holding something at a distance from a surface." See id.

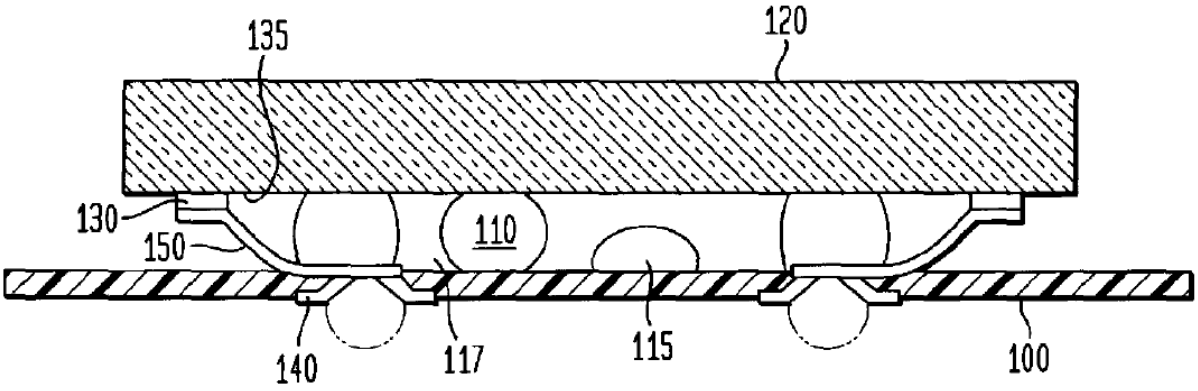
As a legal matter, extrinsic evidence is often less useful to claim construction than intrinsic evidence. Phillips, 415 F.3d at 1317. However, in light of the lack of intrinsic evidence in the record to guide the construction of this term, the court finds the extrinsic evidence provided by Tessera is a useful tool in understanding the meaning of "standoff." From the extrinsic evidence, the court finds that "standoff" refers to a "separation distance."

Accordingly, the Court construes "said pads providing a standoff between said structure and said terminals" as "the compliant pads providing a separation distance between the structure and the terminals." The terms "compliant pads" and "terminals" will be construed below.

B. "compliant pad"

Tessera	UTC
Plain and ordinary meaning; OR "pad yielding to an applied force"	"A compliant pad is a discrete, non-sheetlike body of vertically compressible material which is placed between a chip and a supporting structure or terminals in order to create an empty space, to accommodate for the thermal coefficient of expansion mismatch between the chip and a supporting substrate thereby alleviating much of the stress on the connections therebetween. A compliant pad is distinct from a 'compliant layer.'"

This disputed term appears in Tessera's '272, '328, '480, and '952 patents. See Dkt. No. 215, at 21. For example, Claim 1 of the '328 patent recites "a substrate having a first and a second surface," "one or more compliant pads . . . juxtaposed with said first substrate surface," and "a chip unit . . . being attached to said one or more compliant pads." Also, illustrated in the figure below is a plurality of dielectric compliant pads (110), typically made of a curable liquid elastomer material and where the height of the compliant pads is nominally uniform, as defined by the measurement from the base of the pads. See '328 patent, at 5:1-9. However, exact uniformity in height is not critical. See id.



See '328 patent, at Figure 1.

Tessera proposes the court adopt the plain and ordinary meaning to the term "compliant pad" or "pad yielding to an applied force" based on the dictionary definition of "compliant." See Dkt. No. 215, at 22-23. UTC, for its part, contends that "compliant pad" must have "a discrete, non-sheetlike body." See Dkt. No. 218 at 14. This, however, is contrary to the intrinsic evidence. The '328 patent specification expressly teaches that "[t]he size or shape of the compliant pads is not critical and will be dictated by the desirable results achieved in particular chip package designs" ('328 patent, at 12:45-48), and that compliant pads having "a ratio of width to height of each pad (110) is desirably about two to one (2:1) or greater in order to maintain good pad structural integrity." See id. at 5:10-13. A person having skill in the art could include other bodies based on the preferred ratio to be sheet-like (e.g., a very flat structure having a width that is many multiples of its height). See Dkt. No. 229 at 40.

Next, UTC proposes that compliant pads be "placed between a chip and a supporting structure or terminals in order to create an empty space to accommodate for the thermal coefficient of expansion mismatch between the chip and a supporting substrate thereby alleviating much of the stress on the connections therebetween." See Dkt. No. 218, at 13. This proposed construction improperly injects structural limitations into the definition that are contrary to the plain claim language and the specification. Thus, UTC's proposed construction is inconsistent with the definition of "compliant pad" and with the disclosure of the patent, and will lead to disputes about what it really means.

Moreover, another judge of this district, Judge Claudia Wilken, construed "compliant" to

mean "yielding to an applied force" in a patent case involving both Tessera and similar packages. Samsung Elecs. Co., Ltd. v. Tessera Techs., Inc., No. C 02-5837 CW, 2004 U.S. Dist. LEXIS 31074, at *24, 2004 WL 5644704 (N.D. Cal. Jan. 8, 2004) ("The Court construes 'compliant' to mean 'yielding to an applied force.'"). Similarly, Tessera's construction here is also consistent with the use of the term in the specification as a "pad yielding to an applied force":

> Typically, the first surface of the chip is pressed against the pads to compress them, thus ensuring the chip is uniformly supported across its first surface and further ensuring the planarity of the first support structure, or flexible dielectric film, with respect to the first surface of the chip.

See '272 patent, at 3:38-43.

Accordingly, the Court adopts Tessera's proposed construction of "compliant pad" to mean "pad yielding to an applied force."

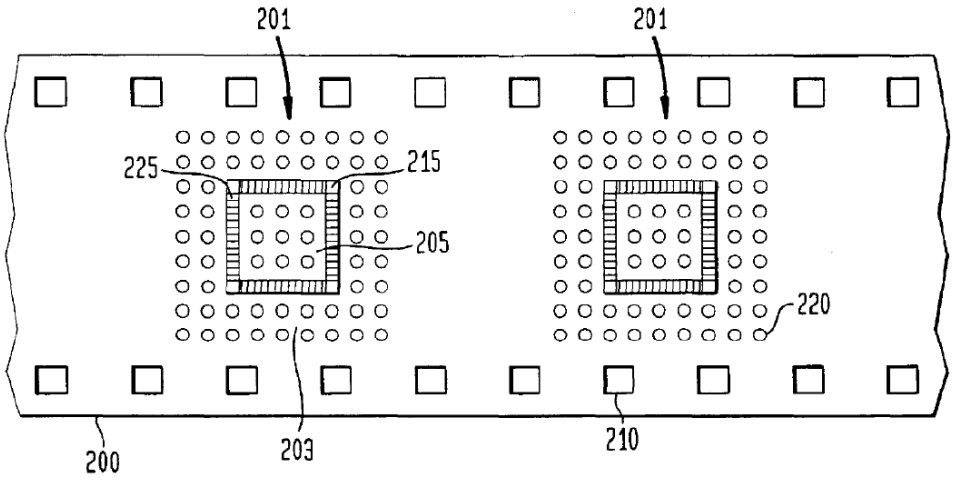
C. "compliant pads defining/define channels/at least one channel therebetween"

Tessera	UTC
Plain and ordinary meaning; OR "pads yielding to an applied force that are arranged so that there are channels between them" "pads yielding to an applied force that are arranged so that there is at least one channel between them"	"A channel is a conduit between the chip and the support structure defined by adjacent compliant pads through which liquid may be directed to provide for a compliant encapsulation layer having a controlled thickness, to accommodate for the thermal coefficient of expansion mismatch between the chip and the supporting substrate thereby alleviating much of the stress on the connections between the chip and the supporting substrate."

These disputed terms appear in Tessera's '328, '480, and '952 patents. See Dkt. No. 215, at 24. For example, Claim 34 of the '952 patent recites "attaching a plurality of compliant pads to the first surface of the support structure, the pads defining channels therebetween; . . . and disposing a liquid between the channels."

Tessera argues that the term is used for its plain and ordinary meaning. See Dkt. No. 215, at 24- 25. Here, the plain language of the claim describes pads arranged such that there is space between adjacent pads into which liquids can be introduced. See id. An example of this is illustrated by the figure below, in which "pads 220 [are] disposed in a grid . . . so that the pads

define channels 203 therebetween" allowing "the compliant filler [to be] introduced into the channels 203 between the pads." See '480 patent, at 7:45-50, 8:18-21.



See id., at Figure 5A.

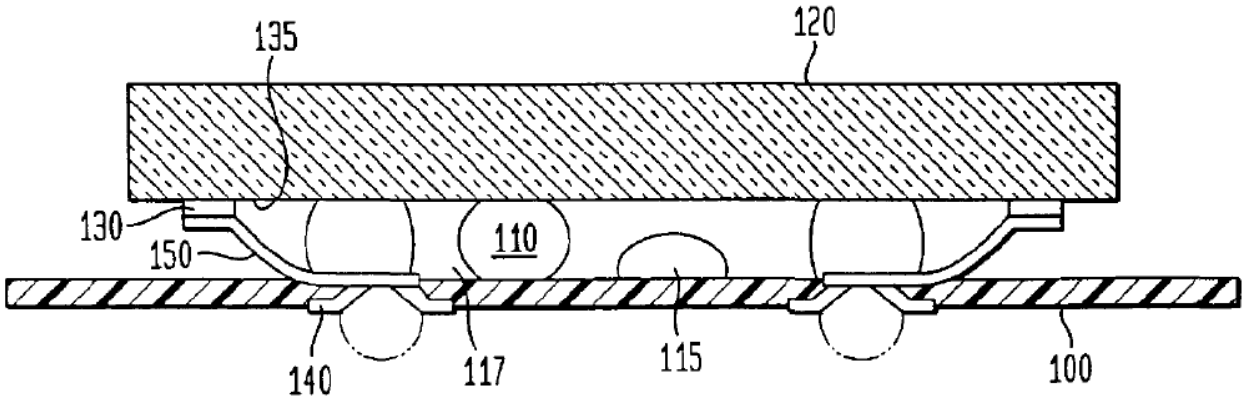
UTC does not dispute the physical structure as defined by the "channels" limitation. See Dkt. No. 218, at 14. However, UTC's proposed construction adds limitations, i.e., "liquid may be directed" through the channel and "to accommodate for the thermal coefficient of expansion mismatch . . . between the chip and the supporting substrate." See id. UTC's construction is contrary to the intrinsic evidence.

As a matter of law, where a claim term does not include a limitation, such as a "liquid may be directed" or "to accommodate for the thermal coefficient of expansion mismatch . . . between the chip and the supporting substrate," it is improper to read such a limitation into the claims. Am. Piledriving Equip., Inc. v. Geoquip, Inc., 637 F.3d 1324, 1331 (Fed. Cir. 2011) ("It is well settled that the role of a district court in construing claims is not to redefine claim recitations or to read limitations into the claims . . . but rather to give meaning to the limitations actually contained in the claims . . . . "). Accordingly, the court adopts the plain and ordinary meaning of the term.

D. "terminal"

Tessera	UTC
"an end point for connection of the package to the outside"	"A conductive structure that provides electrical connection to the outside of the package."

This disputed term appears in Tessera's '272, '328, '480, and '952 patents. See Dkt. No. 218, at 24. For example, Claim 1 of the '480 patent recites "electrically connecting the chip contacts to the terminals with leads . . . ." The arrangement is shown in the figure below, where the contacts (130) on the chip (120) are electrically connected to the terminals (140) through a flexible lead (150).



See '480 patent, at Figure 1.

UTC's proposed construction is objectionable because it "makes no mention of the terminal as an 'end point' for connecting the package to the outside" and does not consider the function of the terminals in the patented inventions or the structural relationship between the terminals and other elements of a particular claim's assembly. See Dkt. No. 215 at 19. For example, UTC's proposed construction would include other structures not intended to be terminals, such as the wires on the chip inside of a package, leads that connect the chip to the terminals, and any conductive structures attached to the outside of the packages. See id. But the specification refers to these structures as distinct from terminals. For example:

> [L]eads connect to traces on an inner substrate surface and connect to a respective terminal disposed on an outer substrate surface through a conductive via extending between the inner substrate surface and the outer substrate surface. However, the terminals could also reside on the inner substrate surface and an aperture could be created in the substrate to expose such terminals for attachment of heat activated joining units.

See '480 patent, at 13:62-14:3. The claims also treat these structures as distinct from terminals. As an example, Claim 6 of the '272 patent recites "[a]n assembly as claimed in claim 2 further comprising flexible leads extending between said terminals and said chip, said terminals being

connected to said chip through said flexible leads." See Dkt. No. 215 at 20; see also Applied Med. Res. Corp. v. U.S. Surgical Corp., 448 F.3d 1324, 1333 n.3 (Fed. Cir. 2006) (holding that "the use of two terms in a claim requires that they connote different meanings").

In addition, courts have construed "terminal" to mean "an end point for connection of the package to the outside" in the context of other Tessera patents involving similar packages. See, e.g., Tessera, Inc. v. Micron Tech., Inc., 423 F. Supp. 2d 624, 629 (E.D. Tex. 2006); In re Certain Semiconductor Chips With Minimized Chip Package Size And Products Containing Same, Investigation No. 337-TA-432; Samsung, 2004 U.S. Dist. LEXIS 31074, at *21; Tessera, Inc. v. Int'l Trade Comm'n, 646 F.3d 1357, 1361 (Fed. Cir. 2011) ("terminals serve as an endpoint for electrically connecting the package to another device, such as a printed circuit board").

Tessera's proposed construction takes into account the intrinsic and the extrinsic evidence. In contrast, UTC's proposed construction will invariably result in arguments as to whether various claimed structures are terminals as the term was used in the context of the asserted patents. Accordingly, the court adopts Tessera's proposed construction of "terminal" to mean "an end point for connection of the package to the outside."

E. "chip carrier"

Tessera	UTC
"a chip-supporting structure that includes a dielectric layer"	"A structure that, before being connected to a chip, has terminals and leads in electrical connection with the terminals."

This disputed term appears in Claim 1 of Tessera's '611 patent: "providing a flexible chip carrier having . . . terminals disposed on [it] and leads in electrical connection with said terminals. Placing said chip carrier a given distance above said chip to create a gap between said chip carrier and said chip, said bottom surface facing said chip . . . introducing a liquid into said gap, such that said liquid is disposed between said chip carrier and said chip." The '611 patent generally relates to a mounting structure for a semiconductor chip which includes placing a chip carrier above the chip to create a gap between the chip carrier and chip, and introducing a liquid into the gap, such that the liquid is disposed between the chip carrier and the chip. See '611 patent, at 1:46-50.

UTC's proposed construction requires that a chip carrier include terminals and leads in electrical connection with the terminals because Claim 1 and the specification expressly include this requirement. See Dkt. No. 218, at 18-19. This is incorrect, however, because Claim 1 recites terminals and leads in electrical connection with the terminals in addition to the chip carrier. See '611 patent, Claim 1. UTC's proposed construction "improperly repeats other language within the claim and ascribes meaning to the term that is already implicit (indeed, explicit) in the remainder of the claim" by adding "has terminals and leads in electrical connection with the terminals." Network Appliance Inc. v. Sun Microsystems Inc., No. C-07-06053 EDL, 2008 U.S. Dist. LEXIS 76713, at *82, 2008 WL 4193049 (N.D. Cal. Sept. 10, 2008). With UTC's proposed construction, the claim would read "providing a flexible structure that, before being connected to a chip, has terminals and leads in electrical connection with the terminals having . . . terminals . . . and leads in electrical connection with said terminals." Dkt. No. 228, at 12. Such a construction "would create a strange and awkward redundancy in the claim language." Network Appliance, 2008 U.S. Dist. LEXIS 76713, at *82.

Next, UTC proposes that the structure cannot be a chip carrier unless certain electrical connections have been made before the chip carrier is connected to a chip. See Dkt. No. 218, at 19. However, Claim 1 does not recite an ordering limitation and "unless the steps of a method actually recite an order, the steps are not ordinarily construed to require one." Altris , Inc. v. Symantec Corp., 318 F.3d 1363, 1369 (Fed. Cir. 2003). Finally, a person of ordinary skill in the art would know that the terminals must be separated from conductive layers by a dielectric layer. See Dkt. No. 215, at 20. For example, the specification explains that the chip carrier must contain a layer of dielectric material: "the chip carrier (26) includes a support structure or dielectric layer (28), leads (29), and terminals (30). The dielectric layer or support structure (28) is a thin sheetlike flexible dielectric material, such as polyimide." See '611 patent, at 4:24-30. If the chip carrier lacked a layer of dielectric material, the package would short circuit if the terminals were all placed in contact with an electrically conductive chip carrier. See Dkt. No. 215, at 20. Therefore, a person skilled in the art would understand a "chip carrier" in this context to include a layer of

dielectric material.

Accordingly, the court adopts Tessera's proposed construction of "chip carrier" to mean "a chip-supporting structure that includes a dielectric layer."

F. "placing said chip carrier a given distance above said chip to create a gap between said chip carrier and said chip"

Tessera	UTC
"creating a gap between the chip carrier and the chip by placing the chip carrier a given distance above the chip and substantially maintaining the gap until the terminals have been electrically connected to the chip contacts"	"Positioning the chip carrier a determined distance above the chip so that all or most of the space between the chip carrier and the chip is empty. The empty space is capable of being filled with a liquid that is resilient when cured in order to allow for movement to relieve stress and increase reliability of the chip assembly."

This disputed term also appears in Claim 1 of Tessera's '611 patent. See Dkt. No. 215, at 12. The method includes a step of providing a flexible chip carrier, and "placing said chip carrier a given distance above said chip to create a gap between said chip carrier and said chip."

A key dispute as to this clause is whether the "gap" created by placing the chip carrier a given distance above the chip is empty. See Dkt. No. 218, at 20. UTC argues that the "'gap' is an empty space that occupies the entire area between the chip carrier and the chip, which is subsequently filled with the referenced 'liquid.'" See id. Tessera argues that "gap" as it appears in the claims is a spatial term "meaning that a separation distance is created between the chip and chip carrier." See Dkt. No. 228, at 7. In addition, Tessera argues that "empty" does not appear in the claims and "nothing in the patent suggests that the area between the chip carrier and the chip must be free of all matter." See id. The court notes that in a preferred embodiment, the gap (34) can include contacts (14) and leads (29) and, as such, is not "empty." See '611 patent, at Figure 3. Furthermore, a construction that excludes a preferred embodiment described in the specification "is rarely, if ever correct and would require a highly persuasive evidentiary support." Vitronics, 90 F.3d at 1583.

Next, UTC proposes that "the empty space is capable of being filled with a liquid that is resilient when cured in order to allow for movement to relieve stress and increase reliability of the

chip assembly." See Dkt. No. 218, at 20. However, this proposal is contrary to Claim 1. See '611 patent, at Claim 1; see also Dkt No. 215, at 13. In fact, it appears UTC is attempting to import elements from Claims 2, 3, and 4 into Claim 1. For example, Claim 4, which is dependent on Claims 1 through 3, explicitly recites "curing said liquid," indicating that Claims 1 through 3 do not contain such a limitation. See id. at 14. Thus, adding curing requirements to Claim 1 would violate the doctrine of claim differentiation. Seachange Intern., Inc. v. C-COR, Inc., 413 F.3d 1361, 1368 (Fed. Cir. 2005) ("[D]ifferent words or phrases used in separate claims are presumed to indicate that the claims have different meanings and scope.").

As to Tessera's proposed construction of "substantially maintaining the gap until the terminals have been electrically connected to the chip contacts," it does not offer any support for adding this requirement. In fact, this addition might improperly inject structural limitations into the definition that are contrary to the plain claim language. Accordingly, the court modifies and adopts Tessera's proposed construction of "placing said chip carrier a given distance above said chip to create a gap between said chip carrier and said chip" to mean "creating a gap between the chip carrier and the chip by placing the chip carrier a given distance above the chip."

G. "liquid"

Tessera	UTC
Plain and ordinary meaning; OR "a substance that can flow, has no fixed shape, and is not a solid or a gas."	"A material characterized by a readiness to flow that is resilient when cured to allow movement to relieve stress so to increase reliability of the chip assembly."

This disputed term is used in Tessera's '611 and '952 patents. For example: "placing [a] chip carrier a given distance above [a] chip to create a gap between said chip carrier and said chip . . . and introducing a liquid into said gap, such that said liquid is disposed between said chip carrier and said chip." See '611 patent, at Claim 1.

Tessera argues that the term "liquid" is used in its ordinary sense in the patents and as such should be given its plain and ordinary meaning. See Dkt. No. 215, at 6. Tessera points to the '611 and '952 patents themselves, where the term "liquid" is referenced with the physical properties

that one would associate with a liquid, such as how the liquid can cover surfaces by "wetting" or can be forced into an area by "injection." See '611 patent, at 2:10-16; see also '952 patent, at 3:43-47, 3:65-6; 6:53; 6:66; 7:1-3; 7:1-7. Alternatively, Tessera proposes "liquid" to mean "a substance that can flow, has no fixed shape, and is not a solid or gas," and argues that it is consistent with the patents' claims and specification. See Dkt. No. 215, at 6.

UTC argues Tessera's proposed construction is too broad and points out that "liquid" in this context could not encompass water or "Kool-Aid, milk, and orange juice" because injecting such "liquids" would short circuit and destroy the package. See Dkt. No. 218, at 21-22. That is, "liquid" has a specialized meaning in the context of these patents and must be construed accordingly. See id. As such, UTC's proposed construction for "liquid" is that "after curing or hardening, it provides resilience, in order to allow movement to relieve stress to increase reliability of the chip package." See id.

Tessera, however, correctly argues that UTC's proposal improperly adds limitations from examples ("liquid as 'liquid elastomer,' 'liquid curable elastomer,' and 'liquid compliant filler'") in the specification. See Kara Tech. Inc. v. Stamps.com Inc., 582 F.3d 1341, 1348 (Fed. Cir. 2009) ("The patentee is entitled to the full scope of his claims, and we will not limit him to his preferred embodiment or import a limitation from the specification into the claims."). Moreover, UTC adds "resilient layer," "hardening," and "curing" limitations from Claim 2 through 4 into Claim 1. This improperly injects limitations because claim differentiation creates a presumption that independent claims are broader than dependent claims. Praxair, Inc. v. ATMI, Inc., 543 F.3d 1306, 1326 (Fed. Cir. 2008).

Finally, "to act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning and must clearly express an intent to redefine the term." See Hill-Rom Servs., Inc. v. Stryker Corp., 755 F.3d 1367, 1371 (Fed. Cir. 2014); see also Johnson Worldwide Assocs., Inc. v. Zebco Corp., 175 F.3d 985, 989 (Fed. Cir. 1999) ("General descriptive terms will ordinarily be given their full meaning; modifiers will not be added to broad terms standing alone."). Here, the term "liquid" was never redefined in the

claims or the specification. Accordingly, the court adopts Tessera's proposed construction for "liquid" to mean "a substance that can flow, has no fixed shape, and is not a solid or a gas."

H. "an encapsulant surrounding said one or more compliant pads so that said encapsulant and said one or more compliant pads form a composite layer between said chip unit and said substrate"

Tessera	UTC
Plain and ordinary meaning; OR "an encapsulant surrounding one or more pads yielding to an applied force so that the encapsulant and one or more pads yielding to an applied force form a layer made of distinct parts between the chip unit and the substrate" ('328 patent, Claim 1) "disposing an encapsulant around at least one pad yielding to an applied force and between the chip unit and the substrate so that the encapsulant and at least one pad yielding to an applied force form a layer made up of distinct parts between the chip unit and the substrate." ('480 patent, Claim 1)	"The encapsulant surrounds the circumference of one or more compliant pads in the plane of the layers, so that the cured encapsulant and pads cooperatively form a composite layer, a composite being a structural material in which two or more distinct components, one of which contains the other(s), are combined in order to produce desired structural or functional properties not present in any individual component. The composite layer allows the terminals to move during thermal cycling of the chip while controlling flexing of the leads to provide mechanical strength."

This term appears in Claim 1 of the '480 and '328 patents. See Dkt. No. 215, at 8. These claims generally describe assemblies that include a substrate, a chip, one or more compliant pads, leads, and an "encapsulant" surrounding the one or more compliant pads so as to "form a composite layer" between the chip and the substrate. A central dispute between the parties is how to define the required "composite layer." See Dkt. No. 218, at 16.

UTC argues that a "composite" layer is choosing components having differing characteristics that work cooperatively to produce desired properties not present in any individual component. See Dkt. No. 218 at 16. UTC cites to the specification which states that "the pads and the [encapsulant] filler form a composite layer including two materials of different characteristics, disposed between the chip unit and the substrate," and that "it has been found that if the package assembly is viewed as a total system, differing characteristics for the encapsulant filler and the compliant pad can facilitate total chip package reliability." See '480 patent, at 10:51-67; '328 patent, at 10:51-67; see also Dkt. No. 218 at 17. Therefore, UTC argues that "composite

layer" is not merely having two distinct materials next to each other; but rather, the two materials are to work cooperatively. See Dkt. No. 218 at 17. However, the claims do not recite limitations to particular material characteristics. For example, Claim 1 of the '480 patent specifies only particular thermal limitations; "wherein the encapsulant has a second CTE that is lower than the first CTE." The claim term requires the encapsulant to have a CTE that is lower than the CTE of the compliant pad but the claim is not limited to a particular material characteristic, although the dependent claims do recite the specific thermal limitations ("The method of claim 1, wherein the first CTE is between 50 to 400 ppm/C., and further wherein the second CTE is between 15 to 300 ppm/C."). See '480 patent, at Claim 18; see also '480 patent, at Claim 15. Similarly, UTC improperly adds limitations regarding thermal cycling of the chip which is described in the summary of the invention but not recited in Claim 1. See Dkt. No. 218, at 17-18. As such, UTC's proposed construction is inconsistent with the doctrine of claim differentiation. Virnetx, 767 F.3d at 1316 ("[T]he doctrine of claim differentiation disfavors reading a limitation from a dependent claim into an independent claim").

Next, UTC again improperly adds limitations from embodiments and dependent claims to its proposal. See Kara Tech, 582 F.3d at 1348; see also Praxair, 543 F.3d at 1326. For example, UTC adds a requirement that the encapsulant be "cured" which is not recited in Claim 1 but recited in the dependent Claim 2, which adds the limitation that "the disposing step includes disposing a curable material and curing the curable material to form the encapsulant." See Dkt. No. 215, at 9. In addition, UTC adds other limitations, such as "circumference," "terminals," "modulus," "moving" and "flexing," which are improper because they are neither a part of the claims being interpreted nor shown in the preferred embodiments. See Dkt. No. 215, at 9; see also'480 patent, at 12:12-20 ("By looking at the total package system of FIG. 8, it is desirable to allow the terminals to move . . . ."); see also '328 patent, at 12:12-20. This is not permitted. See DSW, Inc. v. Shoe Pavilion, Inc., 537 F.3d 1342, 1347 (Fed. Cir. 2008) (The Federal Circuit "has consistently adhered to the proposition that courts cannot alter what the patentee has chosen to claim as his invention . . . and that interpreting what is meant by a word in a claim is not to be

confused with adding an extraneous limitation . . . , which is improper.").

Tessera's proposed construction describes "composite" to mean "made of distinct parts," which is consistent with the claim language and the dictionary definition. See Dkt. No. 215, at 8-9.

Accordingly, the court adopts Tessera's proposed construction for Claim 1 of the '328 patent to mean "an encapsulant surrounding one or more pads yielding to an applied force so that the encapsulant and one or more pads yielding to an applied force form a layer made of distinct parts between the chip unit and the substrate," and for Claim 1 of the '480 patent to mean "disposing an encapsulant around at least one pad yielding to an applied force and between the chip unit and the substrate so that the encapsulant and at least one pad yielding to an applied force form a layer made up of distinct parts between the chip unit and the substrate."

IV. CONCLUSION

For the reasons explained, the court construes the disputed terms and phrases in the foregoing manner.

IT IS SO ORDERED.

Dated: November 30, 2015

EDWARD J. DAVILA
United States District Judge

United States District Court
Northern District of California