

DAVID M. KEYZER (SB# 248585)
david@keyzerlaw.com
LAW OFFICE OF DAVID KEYZER, P.C.
5170 Golden Foothill Parkway
El Dorado Hills, CA 95762
Telephone: (916) 243-5259
Facsimile: (916) 404-0436

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
SOUTHERN DIVISION

BELL SEMICONDUCTOR, LLC,	)	Case No. 8:22-CV-02113-HDV-ADS
	)	
Plaintiff,	)	Hon. Hernán D. Vera
	)	
v.	)	Special Master David M. Keyzer
	)	
NXP USA, INC., et al.,	)	
	)	
Defendants.	)	SPECIAL MASTER
	)	REPORT AND RECOMMENDATION
	)	ON CLAIM COSTRUCTION
	)	

Pursuant to Rule 53 of the Federal Rules of Civil Procedure and the Court's May 3, 2023 Amended Order Appointing Special Master (Dkt. 66), the Special Master received claim construction briefing (Dkts. 78, 80 & 70) and held a claim construction hearing on October 10, 2023 (*see* Dkt. 86-1, Special Master Minutes). The Special Master now enters this Report and Recommendation on Claim Construction.

Table of Contents

I. THE PATENTS-IN-SUIT	2
II. LEGAL STANDARDS.....	4
III. DISPUTED TERMS	5
A. “electrically isolated”	6
B. “spatially separated”	11
C. “high speed electronic circuitry”	14
D. “low speed electronic circuitry”	19
E. “contact density”	21
F. “control differential impedance”	23
G. “first/second node”	26
H. “first/second/third inductor coil”	29
I. “communicates a/the first/second current”	32
J. “flow within the same direction” and “flow in opposing directions”	34
K. “first/second RLC section that is coupled to the first/second inductor coil”	34
L. “first polarity of the first inductor coil” and “second polarity of the second inductor coil”	37
M. “canceling at least a portion of the first and second magnetic fields by magnetic cancellation”	39
N. “interference point”	41
O. “signal traces”	46
P. “ball pad pitches”	49
Q. “metal traces”	54
R. “areas of increased stress”	56
IV. CONCLUSION.....	61

I. THE PATENTS-IN-SUIT

Plaintiff Bell Semiconductor, LLC (“Plaintiff” or “Bell”) alleges patent infringement by Defendants NXP USA, Inc., Arrow Electronics, Inc., Avnet, Inc., Advantech Co. Ltd., and Advantech Corporation (“Defendants” or “NXP”). (Dkt. 53 at 2.)

The patents-in-suit are United States Patents No. 7,345,245 (“the ’245 Patent”), 7,535,330 (“the ’330 Patent”), and 7,646,091 (“the ’091 Patent”).

The ’245 Patent, titled “Robust High Density Substrate Design for Thermal Cycling Reliability,” issued on March 18, 2008, and bears a filing date of October 8, 2003. Plaintiff submits that the ’245 Patent relates to semiconductor devices and “discloses an improved signal trace routing in the high stress area under the die corner that incorporates a range of die sizes.” (Dkt. 78 at 1.) The Abstract of the ’245 Patent states:

A semiconductor package for a die with improved thermal cycling reliability. A first layer of the package provides ball pads dispersed throughout. A second layer of the package provides signal traces. A high stress area associated with the corner of the dies is defined. Preferably the high stress area is defined as two ball pitches away from the corner of the die. Signal traces are routed away from the high stress area and in particular signal traces are routed away from the ball pads associated with the high stress to eliminate the cracks in the routed traces.

The ’330 Patent, titled “Low Mutual Inductance Matched Inductors,” issued on May 19, 2009, and bears a filing date of September 22, 2006. Plaintiff submits that the ’330 Patent relates to “circuits that could place two inductors more closely than before while minimizing the effects of the cross-coupling.” (Dkt. 78 at 3.) The Abstract of the ’330 Patent states:

Multiple inductor structures and methods for providing low mutual inductance between the inductors are described. In various embodiments of the invention, the polarities of the inductors are positioned such that parasitic mutual inductance is reduced by causing electro-magnetic fields to at least partially cancel resulting in a reduction in interference between the

inductors. The polarities of the magnetic fields produced by each inductor are opposite to each other so that at least a partial cancellation results when the fields interfere with each other.

The '091 Patent, titled “Semiconductor Package and Method Using Isolated V_{ss} Plane to Accommodate High Speed Circuitry Ground Isolation,” issued on January 12, 2010, and bears a filing date of April 6, 2006. Plaintiff submits that the '091 Patent relates to “a package routing that provided superior grounding properties enabling both high speed and low speed circuitry to be used in the same packaging substrate,” and “[t]he '091 Inventors ultimately devised a package with a dedicated high-speed ground plane that is electrically isolated from the ground plane used to ground the low-speed circuitry.” (Dkt. 78 at 4 (citations omitted).) The Abstract of the '091 Patent states:

Embodiments of the invention include a semiconductor integrated circuit package that includes a substrate which can have an integrated circuit die attached thereto. The package includes a dedicated high-speed ground plane that is electrically isolated from the ground plane used to ground the low speed circuitry of the package.

II. LEGAL STANDARDS

The Court has set forth relevant legal principles in, for example, *Spigen Korea Co. Ltd. v. Lijun Liu, et al.*, No. 2:16-CV-09185-DOC-DFM, Dkt. 215, 2018 WL 8130608, slip op. at 10–11 (C.D. Cal. Dec. 12, 2018), and *Limestone Memory Systems, LLC v. Micron Technology, Inc.*, No. 8:15-CV-00278-DOC-KES, Dkt. 242, 2019 WL 6655273, slip op. at 2–8 (C.D. Cal. Sept. 11, 2019). For example, the Court noted that “[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.” *Spigen Korea*, No. 2:16-CV-09185-DOC-DFM, Dkt. 215, slip op. at 10 (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc)). The Court also noted that “the terms must be read in the context of the entire patent.” *Id.* (citing *Phillips*, 415 F.3d at 1314).

III. DISPUTED TERMS

Before the Special Master are Plaintiff’s September 1, 2023 Opening Claim Construction Brief (Dkt. 78), Defendants’ September 15, 2023 Response (Dkt. 80), and Plaintiff’s September 27, 2023 Reply (Dkt. 82), which address the terms set forth below.

On October 2, 2023, the Special Master provided the parties with a Tentative Special Master Report and Recommendation on Claim Construction (“Tentative R&R”) with the aim of focusing the parties’ arguments and facilitating discussion during the October 10, 2023 claim construction hearing. Although the Tentative R&R is not part of the record, the Special Master herein sets forth the tentative constructions as part of discussion for each disputed term.

At the October 10, 2023 hearing, Plaintiff expressed agreement with all of the tentative constructions. Defendants presented oral arguments regarding the terms identified below as terms C, D, N, P, and R, and Plaintiff responded. The parties submitted all other disputed terms on the briefing without oral argument.

A. “electrically isolated”

“electrically isolated” (’091 Patent, Claim 1)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“not electrically connected”

(Dkt. 77 at 1.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “not electrically connected.”

(a) The Parties’ Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the patents” and that Defendants’ proposed construction “introduces unnecessary wording that is absent from the intrinsic evidence and would only serve to confuse the finder of fact.” (Dkt. 78 at 7.)

Defendants respond that “while both words, standing alone, may have well-defined meanings, the combined term utilized within Claim 1 of the ’091 patent requires construction to allow the jury to understand what electrically isolated means with respect to two ground planes in a semiconductor integrated circuit.” (Dkt. 80 at 7.) Defendants argue that their proposal “is consistent with every recitation of that phrase in the ’091 patent’s specification.” (*Id.*) Further, Defendants argue that “well-known treatises at the time of the ’091 patent use this term to mean not physically connected.” (*Id.* at 9.)

Plaintiff replies: “Even beyond the jury not being meaningfully assisted by being told that isolated means ‘not connected,’ the jury’s comprehension is not the goal of claim construction. The claim language itself, including claim 1 of the ’091 patent, informed by the specification (’091 patent at 3:6–9, 3:63–64, 4:25–27, 4:30), show that a POSITA [(person of ordinary skill in the art)] would have understood that the phrase ‘electrically isolated’ is sufficiently clear and requires no construction.” (Dkt. 82 at 2.)

(b) Analysis

Claim 1 of the ’091 Patent recites (emphasis added):

1. A semiconductor integrated circuit (IC) package which comprises:
 - a substrate having a first surface and a second surface wherein;
 - a first layer of the substrate includes,
 - a first ground plane enabling electrical connection with low speed electronic circuitry, and
 - a second ground plane that is spatially separated and *electrically isolated* from the first ground plane, the second ground plane enabling electrical connection with high speed electronic circuitry;
 - a second layer of the substrate includes,
 - a third ground plane configured for electrical connection with low speed electronic circuitry, and
 - a fourth ground plane that is spatially separated and *electrically isolated* from the third ground plane, the fourth ground plane configured for electrical connection with high speed electronic circuitry;
 - a plurality of electrical connections that electrically connect the first ground plane with solder balls mounted on the second surface of the substrate;
 - a plurality of additional electrical connections that electrically connect the second ground plane with solder balls mounted on the second surface of the substrate; and

peripheral electrical contacts arranged on the substrate and configured for connection with electronic circuitry external to the package; and

at least one reference plane associated with each layer of the substrate and the ground planes included thereon.

The Background section of the specification states:

[H]igher speed circuitry is being employed in the construction of modern IC's. Frequently, these newer IC's include both high speed and lower speed systems. This dichotomy presents a number of problems not solved by existing packaging substrates. As depicted above, existing packages generally include a single ground plane for all IC systems and grounds. When all systems operated at low frequencies or low serial data transfer rates this situation was not much of a problem. However, at high speeds a number of problems begin to occur. For one, *excessive noise* generated by the high-speed circuitry interferes with the operation of the low-speed circuitry sharing the same ground plane. At high data rates this is a serious problem. Additionally, older packaging substrates developed with lower speed circuitry in mind are configured [with] the I/O and ground contacts spaced more closely together for maximum electrical contact density. However, at high frequencies and data rates signal and ground lines that are too closely spaced exhibit large amounts of *cross talk*. Again with serious consequences.

'091 Patent at 2:1–19 (emphasis added). In the context of this disclosed problem, the

Summary of the Invention states:

In another embodiment the invention includes semiconductor integrated circuit (IC) package having a substrate with a die attachment area and having a first ground plane arranged thereon configured for electrical connection with low speed electronic circuitry. The package includes a plurality of electrical connections that electrically connect the first ground plane with electrical contacts that are to be connected with an external ground. The package includes a second ground plane that is spatially separated and electrically isolated from the first ground plane, the second ground plane configured for electrical connection with high speed electronic circuitry. The package includes a plurality of *additional electrical*

connections that electrically connect the second ground plane with electrical contacts that are to be connected with an external ground.

'091 Patent at 3:6–9 (emphasis added). The Summary of the Invention thus refers to additional electrical connections for the second ground plane. The specification discloses:

In general, the present invention encompasses semiconductor package designs and methods that include separate electrically isolated ground planes devoted specifically to the grounding of high-speed circuitry.

* * *

Returning to a discussion of FIG. 2 separate electrically isolated ground planes are used to *isolate* high-speed circuitry from low speed-circuitry. The low-speed circuitry is *electrically connected* 203 with a first ground plane 204. A second ground plane 205 is also formed on the substrate 200. The second ground plane 205 is *electrically isolated* from the first ground plane 204. The high-speed circuitry 202 is *electrically connected* 206 with the second ground plane 205. Additionally, the first and second ground planes are *electrically connected to separate external contacts*. These contacts are then grounded to external ground connections (e.g., system grounds of a system upon which the completed package is mounted).

'091 Patent at 3:61–64 & 4:25–37 (emphasis added).

The specification thus discloses ground planes being “isolated” from one another by having them “electrically connected” separately. The specification reinforces this understanding by disclosing as follows regarding Figure 3 of the '091 Patent (which is reproduced here with the relevant reference numerals highlighted):

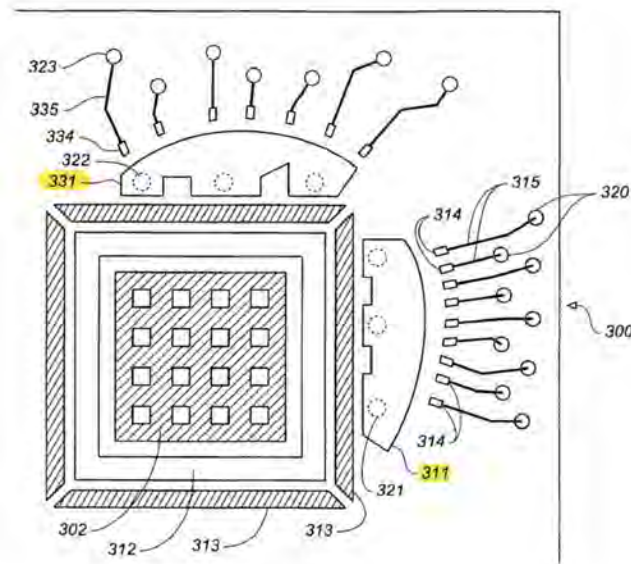


FIG. 3

Additionally, a second ground plane 331 is arranged on the substrate 300. This second ground plane 331 is dedicated to the grounding of high-speed circuitry. The high-speed ground plane 331 is *electrically and spatially isolated* from the low speed ground plane 311. This prevents much of the noise and cross-talk when the high and low speed systems share the same ground plane.

Id. at 5:45–51 (emphasis added); see *id.* at 8:26–32 (similar as to Fig. 6).

The Special Master therefore rejects Plaintiff’s argument that Defendants’ construction “would alter the plain meaning of the claim” (Dkt. 82 at 2), and although Plaintiff maintains that no construction is necessary, “some construction of the disputed claim language will assist the jury to understand the claims.” *TQP Dev., LLC v. Merrill Lynch & Co.*, No. 2:08-CV-471-WCB, 2012 WL 1940849, at *2 (E.D. Tex. May 29, 2012) (Bryson, J., sitting by designation).

The Special Master accordingly hereby construes **“electrically isolated”** to mean **“not electrically connected.”**

B. “spatially separated”

“spatially separated” (’091 Patent, Claim 1)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“physically separated so as to substantially prevent noise or cross-talk” ¹

(Dkt. 77 at 1; Dkt. 80 at 10.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “physically separated.”

(a) The Parties’ Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the patents and is sufficiently clear,” and “[t]he description of the invention details certain embodiments and specific features that are to be taken as illustrative rather than limiting.” (Dkt. 78 at 8.)

Defendants respond that their proposed construction “comes directly from the patent specification” because “[e]ach of Figs. 2–6 depict spatially separated as being not in physical contact” and because “the purpose for this spatial separation is to reduce or

¹ Defendants previously proposed: “physically separated so as to prevent noise or cross-talk.” (Dkt. 77 at 1; see Dkt. 80 at 10 n.1.)

prevent noise and cross-talk, as recited in the Background of the Invention.” (Dkt. 80 at 10 (citing ’091 Patent at 2:9–13).)

Plaintiff replies that “[t]he claim language itself, including claim 1 of the ’091 patent, and the specification (’091 patent at 3:6–9, 3:55–56) establishes that a POSITA would have understood the phrase ‘spatially separated’ with reasonable certainty; thus, no construction is necessary for this term.” (Dkt. 82 at 2.)

(b) Analysis

Claim 1 of the ’091 Patent recites (emphasis added):

1. A semiconductor integrated circuit (IC) package which comprises:
 - a substrate having a first surface and a second surface wherein;
 - a first layer of the substrate includes,
 - a first ground plane enabling electrical connection with low speed electronic circuitry, and
 - a second ground plane that is *spatially separated* and electrically isolated from the first ground plane, the second ground plane enabling electrical connection with high speed electronic circuitry;
 - a second layer of the substrate includes,
 - a third ground plane configured for electrical connection with low speed electronic circuitry, and
 - a fourth ground plane that is *spatially separated* and electrically isolated from the third ground plane, the fourth ground plane configured for electrical connection with high speed electronic circuitry;
 - a plurality of electrical connections that electrically connect the first ground plane with solder balls mounted on the second surface of the substrate;
 - a plurality of additional electrical connections that electrically connect the second ground plane with solder balls mounted on the second surface of the substrate; and

peripheral electrical contacts arranged on the substrate and configured for connection with electronic circuitry external to the package; and

at least one reference plane associated with each layer of the substrate and the ground planes included thereon.

The Background section of the specification states:

[A]t high speeds a number of problems begin to occur. For one, *excessive noise* generated by the high-speed circuitry interferes with the operation of the low-speed circuitry sharing the same ground plane. At high data rates this is a serious problem.

'091 Patent at 2:1–19 (emphasis added). To address this stated problem, the specification discloses:

The package includes a second ground plane that is *spatially* separated and electrically isolated from the first ground plane, the second ground plane configured for electrical connection with high speed electronic circuitry.

'091 Patent at 3:6–9 (emphasis added).

This disclosure involves physical configuration (as well as electrical connections), and the word “spatially” in this context can be readily understood as being physical.

This reading is also consistent with Figures 2, 3, 4, 5, and 6 of the '091 Patent, which illustrate ground planes that are physically separate (*see id.* at Figs. 2–6).

As for Defendants' proposal of “so as to substantially prevent noise or cross-talk,”

Defendants point to disclosures in the specification, such as:

Th[e] second ground plane 331 is dedicated to the grounding of high-speed circuitry. The high-speed ground plane 331 is electrically and *spatially isolated* from the low speed ground plane 311. *This prevents much of the noise and cross-talk when the high and low speed systems share the same ground plane.*

Id. at 5:45–51 (emphasis added).

Such disclosures regarding “noise” and “cross-talk,” however, relate to a purpose or intended use that should not be imported into the claim term here at issue. *See Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1301 (Fed. Cir. 2003) (“The objective described is merely one of several objectives that can be achieved through the use of the invention.”).

The Special Master therefore hereby construes “**spatially separated**” to mean “**physically separated.**”

C. “high speed electronic circuitry”

“high-speed electronic circuitry” (’091 Patent, Claims 1-2, 5-11, 13-14)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“circuitries operating at serial data rates higher than 1 Giga Bits per second”

(Dkt. 77 at 1.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “plain meaning.”

(a) The Parties’ Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the patents,” and Plaintiff argues that the limitation proposed by

Defendants is expressly recited in dependent Claim 5 and therefore should not be imported into Claim 1. (Dkt. 78 at 9.) Plaintiff argues that Defendants' proposal would improperly limit these claims to a particular disclosed embodiment. (*Id.* at 9–10.)

Defendants respond that the patentee chose to set forth a lexicography in the specification so as to define this term. (Dkt. 80 at 11 (citing '091 Patent at 4:15–20).) Defendants argue that “[t]here is no other way to interpret this phrase to prevent it from being an indefinite term of degree.” (*Id.* at 12.)

Plaintiff replies that “[e]xemplary language does not equate to a patentee acting as his own lexicographer,” and “NXP’s construction would render claim 5 superfluous and redundant.” (Dkt. 82 at 3 (citations omitted).)

At the October 10, 2023 hearing, Defendants reiterated their arguments and urged that this term fails to provide proper notice to the public regarding the scope of the claims unless the patentee’s disclosed threshold of “1 Giga Bits per second” is given effect. Defendants also argued that the doctrine of claim differentiation (as to dependent Claims 5 and 6) is not an absolute rule and that those dependent claims set forth objective boundaries that would survive once Claim 1 is held indefinite. Plaintiff responded that the terms “high speed” and “low speed” are used in relation to one another and that this relationship is implementation-specific.

(b) Analysis

Claims 1, 5, and 6 of the '091 Patent recite (emphasis added):

1. A semiconductor integrated circuit (IC) package which comprises:
 - a substrate having a first surface and a second surface wherein;
 - a first layer of the substrate includes,
 - a first ground plane enabling electrical connection with *low speed* electronic circuitry, and
 - a second ground plane that is spatially separated and electrically isolated from the first ground plane, the second ground plane enabling electrical connection with *high speed* electronic circuitry;
 - a second layer of the substrate includes,
 - a third ground plane configured for electrical connection with *low speed* electronic circuitry, and
 - a fourth ground plane that is spatially separated and electrically isolated from the third ground plane, the fourth ground plane configured for electrical connection with *high speed* electronic circuitry;
 -
5. An IC package as recited in claim 1 wherein the *low speed* electronic circuitry is defined as circuitry having serial transfer rates of less than about *1 Gigabits per second (Gb/s)*; and
 - wherein the *high speed* electronic circuitry is defined as circuitry having serial transfer rates of greater than about *1 Gb/s*.
6. An IC package as recited in claim 1 wherein the *high speed* electronic circuitry is defined as circuitry having serial transfer rates of greater than about *8.5 Gb/s*.

Because dependent Claims 5 and 6 (each of which depends from Claim 1) provide two different thresholds for “high speed,” these dependent claims provide context that weighs against limiting the term “high speed” to any particular numerical value. Defendants argue that the dependent claims do not support Plaintiff’s argument because these claims refer specifically to “serial transfer rates” whereas the patent discloses “*low frequencies or low serial data transfer rates*” (’091 Patent at 2:7–8 (emphasis added)),

but Defendants argument is unpersuasive, particularly given that Defendants are proposing to limit the term “high speed” to particular “serial data rates” in *all* of the claims.

Also, above-reproduced Claim 1 of the '091 Patent uses “high speed” and “low speed” as relative terms in relation to one another. Defendants’ argument based on *Liberty Ammunition*, regarding terms of degree, is therefore unpersuasive. *See Liberty Ammunition, Inc. v. United States*, 835 F.3d 1388, 1396–97 (Fed. Cir. 2016). This is readily understandable on the face of the claim and is reinforced by the specification, which discusses a problem in the art that “excessive noise generated by the high-speed circuitry interferes with the operation of the low-speed circuitry sharing the same ground plane” and that, in one embodiment, “[t]he high-speed ground plane 331 is electrically and spatially isolated from the low speed ground plane 311” and “[t]his prevents much of the noise and cross-talk when the high and low speed systems share the same ground plane.” ’091 Patent at 2:1–19 & 5:45–51.

Defendants argue that the specification sets forth a lexicography by using the phrases “[a]s used herein” and “[f]or purposes of this patent,” but a fair reading of the cited portion of the specification is that, as found above, “high speed” and “low speed” are relative terms being used in relation to one another and that the 1 Gb/s threshold proposed by Defendants is merely an “example”:

As used herein, high-speed circuitry refers to circuitry and electronic systems that operate at *higher data rates or higher frequencies than*

ordinary “low-speed” circuitry. For example, circuitries operating at serial data rates higher than 1 Giga Bits per second (Gb/s) are considered high-speed circuitry. Also, this particularly [sic] the case for high-speed circuitry operating at serial data rates higher than 8.5 Gb/s and higher. For purposes of this patent circuitry operating at lower data rates and frequencies are considered non-high speed circuitry or also low-speed circuitry.

Id. at 4:15–24 (emphasis added). This “example” of 1 Gb/s does not rise to the level of a lexicography. *See, e.g., Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) (“a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is *clearly* stated in the patent specification or file history”) (citations omitted; emphasis added).

The Special Master therefore expressly rejects Defendants’ proposed construction, and no further construction is necessary. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) (“Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy.”); *see also O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (“[D]istrict courts are not (and should not be) required to construe every limitation present in a patent’s asserted claims.”); *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1207 (Fed. Cir. 2010) (“Unlike *O2 Micro*, where the court failed to resolve the parties’ quarrel, the district court rejected Defendants’ construction.”); *Bayer Healthcare LLC v. Baxalta Inc.*, 989

F.3d 964, 977–79 (Fed. Cir. 2021); *PPG Indus. v. Guardian Indus. Corp.*, 156 F.3d 1351, 1355 (Fed. Cir. 1998) (“after the court has defined the claim with whatever specificity and precision is warranted by the language of the claim and the evidence bearing on the proper construction, the task of determining whether the construed claim reads on the accused product is for the finder of fact”).

The Special Master accordingly hereby construes **“high speed electronic circuitry”** to have its **plain meaning**.

D. “low speed electronic circuitry”

“low-speed electronic circuitry” (’091 Patent, Claims 1-2, 5, 7-11, 13-14)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“circuitries operating at serial data rates lower than 1 Giga Bits per second”

(Dkt. 77 at 1.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “plain meaning.”

(a) The Parties’ Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the patents,” argues claim differentiation as to dependent Claim 5, and argues that Defendants’ proposal would improperly limit this term to a particular disclosed embodiment. (Dkt. 78 at 10.)

Defendants respond by referring to their arguments as to “high-speed electronic circuitry,” which is address above. (Dkt. 80 at 13.)

Plaintiff replies that “NXP again ignores that exemplary language for a particular embodiment does not equate to a patentee acting as his own lexicographer,” and “[t]he Court should again reject NXP’s efforts to import limitations from dependent claim 5 into independent claim 1.” (Dkt. 82 at 4.)

At the October 10, 2023 hearing, Defendants argued this term together with “high speed electronic circuitry,” which is addressed above.

(b) Analysis

This term presents the same dispute as discussed regarding “high speed electronic circuitry,” above. The Special Master therefore reaches the same conclusion for the same reasons. Moreover, as Plaintiff argues, Claim 6 depends from Claim 1 and recites “wherein the high speed electronic circuitry is defined as circuitry having serial transfer rates of greater than about 8.5 Gb/s,” thus demonstrating that “low speed electronic circuitry” could have a serial transfer rate greater than 1.0 Gb/s. As discussed regarding “high speed electronic circuitry,” above, the patentee used these “low” and “high” terms in relation to one another rather than with reference to any numerical values.

The Special Master therefore rejects Defendants’ proposed construction, and no further construction is necessary. *See U.S. Surgical*, 103 F.3d at 1568; *see also O2*

Micro, 521 F.3d at 1362; *Finjan*, 626 F.3d at 1207; *Bayer*, 989 F.3d at 977–79; *PPG*, 156 F.3d at 1355.

The Special Master accordingly hereby construes **“low speed electronic circuitry”** to have its **plain meaning**.

E. “contact density”

“contact density” (’091 Patent, Claim 9)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“the number of electrical contacts per unit area” ²

(Dkt. 77 at 1; Dkt. 80 at 14.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “number of electrical contacts per unit area.”

(a) The Parties’ Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the patents,” and “[n]othing in these words themselves, nor in the way that they are strung together within the claim requires explanation to a POSITA beyond the context in which they are used.” (Dkt. 78 at 11.)

² Defendants previously proposed: “the number of traces per unit area.” (Dkt. 77 at 1; see Dkt. 80 at 14 n.2.)

Defendants respond that their proposed construction is appropriate in the context of “[t]he ’091 patent specifically discuss[ing] the problem with having too many signal and ground lines within a certain area on the semiconductor package.” (Dkt. 80 at 14 (discussing ’091 Patent at 2:13–19 & 3:64–4:3).)

Plaintiff replies that “‘contact density’ does not require construction because its plain and ordinary meaning would have been understood by a POSITA.” (Dkt. 82 at 4.)

(b) Analysis

Claim 9 of the ’091 Patent recites (emphasis added):

9. An IC package as recited in claim 1 wherein the peripheral electrical contacts include,
a first set of electrical contacts for electrical connection with low speed electronic circuitry; and
a second set of electrical contacts for electrical connection with high speed electronic circuitry; and
wherein the electrical contacts are arranged such that,
the first spacing between the contacts of the first set of electrical contacts is smaller than a second spacing between the contacts of the second set of electrical contacts, thereby enabling greater *contact density* for the first set of electrical contacts.

The specification discloses:

[O]lder packaging substrates developed with lower speed circuitry in mind are configured [with] the I/O and ground *contacts spaced more closely together* for maximum electrical *contact density*. However, at high frequencies and data rates signal and ground lines that are *too closely spaced* exhibit large amounts of cross talk.

’091 Patent at 2:13–19 (emphasis added).

This disclosure regarding “spacing” is consistent with Defendants’ proposal that “contact density” refers to the number of electrical contacts in a given area. That is, increasing the number of electrical contacts in a given area would be an increase in “contact density.” Although Plaintiff argues that a person of ordinary skill in the art would understand this term without any construction, “some construction of the disputed claim language will assist the jury to understand the claims.” *TQP*, 2012 WL 1940849, at *2.

The Special Master therefore hereby construes **“contact density”** to mean **“number of electrical contacts per unit area.”**

F. “control differential impedance”

“control differential impedance” (’091 Patent, Claims 10-11)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“impedance between two associated electrical traces” ³

(Dkt. 77 at 1; Dkt. 80 at 15.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “impedance between two contacts.”

³ Defendants previously proposed: “impedance between two complementary electrical traces.” (Dkt. 77 at 1; see Dkt. 80 at 15 n.3.)

(a) The Parties' Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the patents.” (Dkt. 78 at 11.) Plaintiff also argues that Defendants “neither contend[] that the specifications set forth an express definition for each term that differs from its ordinary meaning, nor argue that the Applicants disclaimed any subject matter in prosecution.” (*Id.* at 11–12.)

Defendants respond that “[t]he term is a technical term that is not in common usage by laypeople and needs construction in order to help the finder of fact determine the scope of the claims to make its infringement/invalidity determination.” (Dkt. 80 at 15.) Defendants argue that “[t]he ’091 patent specification supports Defendants’ proposed construction by always referring to ‘differential impedance’ as relating to the spacing between two associated traces,” and “[d]uring prosecution of the application that led to the ’091 patent, patentee echoed this usage of differential impedance as being between two associated traces” (*Id.* at 17–19.)

Plaintiff replies: “The claim language itself makes clear that a POSITA would have understood the term ‘control differential impedance’ in context. NXP’s proposed construction introduces an unnecessary word (‘associated’) that adds no clarity and would only serve to erroneously limit the claim.” (Dkt. 82 at 5.)

(b) Analysis

Claim 10 of the ’091 Patent, for example, recites (emphasis added):

10. An IC package as recited in claim 1 wherein the peripheral electrical contacts include,

a first set of electrical contacts for electrical connection with low speed electronic circuitry; and

a second set of electrical contacts for electrical connection with high speed electronic circuitry; and

wherein the electrical contacts are arranged as part of I/O lines such that,

a first spacing between the contacts of the first set of electrical contacts is sufficient to establish a *control differential impedance* of at least 50Ω *between the contacts of the first set of electrical contacts* to substantially eliminate cross-talk between I/O lines for the low speed electronic circuitry; and

a second spacing between the contacts of the second set of electrical contacts is sufficient to establish a *control differential impedance* of at least 100Ω *between the contacts of the second set of electrical contacts* to substantially eliminate cross-talk between I/O lines for the high speed electronic circuitry.

The parties agree that “differential impedance” refers to an impedance between two reference points. In above-reproduced Claim 10 of the ’091 Patent, these reference points are “the contacts of the first set of electrical contacts” for the first instance of the disputed term and “the contacts of the second set of electrical contacts” for the second instance of the disputed term. The specification is consistent with this understanding:

In one example, implementation, the low speed fingers 314 are arranged using a spacing arranged to reduce cross talk and interference between adjacent low speed fingers 314 and their associated lines. In the depicted example, the low speed fingers 314 are spaced apart a distance L of about least [sic] $70\ \mu\text{m}$ (micrometers). This results in a *control differential impedance* of about 50Ω (ohms). Tighter spacing can be achieved by introducing various dielectric materials between the low speed fingers 314 and their associated conductive lines 315 to maintain the desired level of differential impedance. Due to the increased noise and other frequency dependent effects it is important to increase the spacing between the high-speed fingers 334 and their associated conductive lines 335. In one

embodiment, a distance between the high-speed fingers 334 is increased to about double the distance for the low speed circuitry. Accordingly, the high-speed fingers 334 are spaced apart a distance H of about at least 140 μm . This results in a *control differential impedance* of about 100 Ω (ohms). Tighter spacing can be achieved by introducing various dielectric materials between the high-speed fingers 334 and their associated conductive lines 335 to maintain the desired level of differential impedance. In another embodiment, the distance H is tripled (to at least 140 μm) relative to the low speed distance L. The general idea of the invention being that for low-speed signals a *control differential impedance* of about 50 Ω and that for high-speed circuitry a control differential impedance of at least 100 Ω is desired between the high-speed fingers.

'091 Patent at 6:18–45 (emphasis added). The parties do not dispute the meaning of “impedance,” so that word can be used in the construction. Based on this context provided by surrounding claim language and by the specification, “some construction of the disputed claim language will assist the jury to understand the claims” as to the word “differential” referring to an amount of impedance between two contacts. *TQP*, 2012 WL 1940849, at *2.

The Special Master therefore hereby construes “**control differential impedance**” to mean “**impedance between two contacts.**”

G. “first/second node”

“first/second node” (’330 Patent, Claim 1)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary.	“a point of intersection for two or more electrical circuit paths”

(Dkt. 77 at 1.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “a point of connection or intersection in an electrical circuit.”

(a) The Parties’ Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the patents” and that Defendants “neither contend[] that the specifications set forth an express definition for each term that differs from its ordinary meaning, nor argue that the Applicants disclaimed any subject matter in prosecution.”

(Dkt. 78 at 12.)

Defendants respond that “[w]hile the existence of inductors is well-known, the components and areas that make up an inductor are largely unknown and not in common usage by a layperson,” and “[t]his term needs construction in order to help the finder of fact determine the scope of the claims to make its infringement/invalidity determination.” (Dkt. 80 at 19.) Defendants argue that “Defendants’ proposed construction of ‘node’ is in harmony with the recited claim language, the written description, and the drawings.” (*Id.* at 20.)

Plaintiff replies that “no construction is necessary, because a POSITA would have understood the plain and ordinary meaning of the term at the time of the patent.”

(Dkt. 82 at 5.)

(b) Analysis

Claim 1 of the '330 Patent recites (emphasis added):

1. A multiple inductor array comprising:
 - a *first node* that receives a first current and a second current;
 - a first inductor coil, coupled to the *first node* and to a *second node*, that communicates the first current in a clockwise direction and generates a first magnetic field;
 - a second inductor coil, coupled to the *first node* and to a *third node*, that communicates the second current in a counter clockwise direction and generates a second magnetic field having an opposing orientation to the first magnetic field; and
 - wherein the first magnetic field and the second magnetic field at least partially cancel at an interference point.

The specification discloses:

FIG. 4 illustrates a schematic spiral inductors design according to various embodiments of the present invention. The inductors design comprises a first inductor L_1 402 and a second inductor L_2 404 that is counter wound relative to the first inductor L_1 402. Both inductors 402, 404 have a common node A 406 with current flowing in each inductor as shown in FIG. 4. Specifically, the current flows in a first direction from node A 413 to node B_1 422 and the current flows in a second direction, which is counter to the first direction, from node A 413 to node B_2 424. As previously discussed, the currents in each inductor cause a magnetic field inside the coils of the inductors.

'330 Patent at 4:34–45. Figure 4 of the '330 Patent is reproduced here:

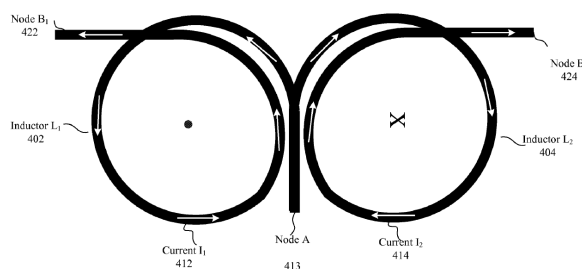


Figure 4

On balance, although “node” appears to be used in the ’330 Patent according to its ordinary technical meaning in the relevant art, “some construction of the disputed claim language will assist the jury to understand the claims.” *TQP*, 2012 WL 1940849, at *2. The above-reproduced disclosures demonstrate that a “node” is a point of connection (such as at Node B1 or Node B2 in Figure 4) or intersection (such as at Node A in Figure 4).

Finally, no dispute is apparent as to the words “first” or “second,” so for the sake of simplicity the Special Master construes only the word “node.”

The Special Master therefore hereby construes **“node”** to mean **“a point of connection or intersection in an electrical circuit.”**

H. “first/second/third inductor coil”

“first/second/third inductor coil” (’330 Patent, Claims 1-3, 11-12, 17)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“a first/second/third wound conductor designed to store energy in its magnetic field”

(Dkt. 77 at 1–2.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “plain meaning.”

(a) The Parties' Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the claims” and that Defendants “neither contend[] that the specifications set forth an express definition for each term that differs from its ordinary meaning, nor argue that the Applicants disclaimed any subject matter in prosecution.” (Dkt. 78 at 13.)

Defendants respond by submitting a portion of a technical treatise, arguing “to the extent the Court determines that ‘inductor coil’ needs to be construed to assist the finder of fact, Defendants’ proposed construction provides the well-understood definition.” (Dkt. 80 at 21.)

Plaintiff replies that “NXP does not even argue that construction of this term is necessary.” (Dkt. 82 at 6.)

(b) Analysis

Claim 1 of the '330 Patent, for example, recites (emphasis added):

1. A multiple inductor array comprising:
 - a first node that receives a first current and a second current;
 - a *first inductor coil*, coupled to the first node and to a second node, that communicates the first current in a clockwise direction and generates a first magnetic field;
 - a *second inductor coil*, coupled to the first node and to a third node, that communicates the second current in a counter clockwise direction and generates a second magnetic field having an opposing orientation to the first magnetic field; and
 - wherein the first magnetic field and the second magnetic field at least partially cancel at an interference point.

Plaintiff proposes that no construction is necessary because this term is being used in accordance with its ordinary technical meaning, and Defendants cite a technical treatise and summarize what Defendants see as the ordinary technical meaning. In the absence of a substantive dispute, however, no construction is necessary. *See, e.g., Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”). Also, Defendants’ proposed construction would tend to confuse rather than clarify the scope of the claims by summarizing a complex technical concept into just a few words and by introducing a potentially subjective element as to the “designed” purpose.

The Special Master therefore rejects Defendants’ proposed construction, and no further construction is necessary. *See U.S. Surgical*, 103 F.3d at 1568; *see also O2 Micro*, 521 F.3d at 1362; *Finjan*, 626 F.3d at 1207; *Bayer*, 989 F.3d at 977–79; *PPG*, 156 F.3d at 1355.

The Special Master accordingly hereby construes **“inductor coil”** to have its **plain meaning**.

I. “communicates a/the first/second current”

“communicates a/the first/second current” (’330 Patent, Claims 1, 11)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“allows the flow of a/the first/second electrical current”

(Dkt. 77 at 2.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “conducts [a/the] [first/second] current.”

(a) The Parties’ Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the claims” and that Defendants’ proposal “introduces unnecessary language that would serve only to confuse the finder of fact.” (Dkt. 78 at 13–14.)

Defendants respond:

To the extent the Court determines that ‘communicates a/the first/second current needs to be construed to assist the finder of fact, Defendants provide a simple definition. The term ‘communicate(s)’ is found only in the claims of the ’330 patent and is always related to allowing a current flow and the orientation of the magnetic field it generates. This is because an inductor does not generate a magnetic field unless a current is flowing through it.

(Dkt. 80 at 23.)

Plaintiff replies that “NXP improperly contends that an unwarranted restriction should be inserted into the claim term by proposing to limit ‘communicate’ to ‘allows the flow.’” (Dkt. 82 at 6.)

(b) Analysis

Claim 1 of the ’330 Patent, for example, recites (emphasis added):

1. A multiple inductor array comprising:
 - a first node that receives a first current and a second current;
 - a first inductor coil, coupled to the first node and to a second node, that *communicates the first current* in a clockwise direction and generates a first magnetic field;
 - a second inductor coil, coupled to the first node and to a third node, that *communicates the second current* in a counter clockwise direction and generates a second magnetic field having an opposing orientation to the first magnetic field; and
 - wherein the first magnetic field and the second magnetic field at least partially cancel at an interference point.

The word “communicates” does not appear in the specification.

Because the context of the claims demonstrates that “communicates” is being used in a technical sense of conducting electricity, which differs from its use in common parlance, “some construction of the disputed claim language will assist the jury to understand the claims.” *TQP*, 2012 WL 1940849, at *2.

The Special Master therefore hereby construes “**communicates [a/the] [first/second] current**” to mean “**conducts [a/the] [first/second] current.**”

J. “flow within the same direction” and “flow in opposing directions”

These terms appear in Claims 6 and 7 of the '330 Patent. (Dkt. 77 at 2.) Plaintiff argued that these terms “do[] not have any specialized meaning in the art or in the context of the claims.” (Dkt. 78 at 14.) Defendants responded that “Defendants withdraw th[ese] claim term[s] from construction.” (Dkt. 80 at 23.) Because these terms are no longer in dispute, the Special Master does not further address these terms.

K. “first/second RLC section that is coupled to the first/second inductor coil”

“first/second RLC section that is coupled to the first/second inductor coil” (’330 Patent, Claim 11)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“circuitry containing a resistor, inductor, and capacitor in series and electrically coupled to the first/second inductor coil”

(Dkt. 77 at 2.)

In the Tentative R&R, the Special Master tentatively construed “RLC section” as follows: “circuitry section having one or more resistors, one or more inductors, and one or more capacitors.”

(a) The Parties’ Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the claims” and that Defendants “neither contend[] that the specifications set forth an express definition for each term that differs from its ordinary

meaning, nor argue that the Applicants disclaimed any subject matter in prosecution.”
(Dkt. 78 at 15.)

Defendants respond that “this is a technical term that is not in common usage by a layperson,” and “[a]n RLC circuit (section) is named as such because it contains a resistor (R), an inductor (L), and a capacitor (C).” (Dkt. 80 at 23–24.) Defendants argue that “Defendants’ construction of this term is completely consistent with the understood definition of this term to a POSITA as well as with the intrinsic record.” (*Id.* at 24.)

Plaintiff replies: “Nothing in these words themselves, nor in the way that they are strung together within each claim, would have required explanation to a POSITA beyond the context of their use. NXP also adds ‘in series’ to its construction, which would not have been supported by a POSITA’s understanding or elsewhere in the patent.” (Dkt. 82 at 7.)

(b) Analysis

Claim 11 of the ’330 Patent recites (emphasis added):

11. A differential low noise amplifier comprising:
- a voltage supply that generates a first current and a second current;
 - a first inductor coil, coupled to the voltage supply and to a first transistor, that communicates the first current in a first direction and generates a first magnetic field;
 - a second inductor coil, coupled to the voltage supply, a second transistor, and in parallel with the first inductor coil, that communicates the second current in a second direction that is opposite to the first direction and generates a second magnetic field having an opposing orientation to the first magnetic field;
 - a first RLC section that is coupled to the first inductor coil;*
 - a second RLC section that is coupled to the second inductor coil; and*

an output that is coupled to the first inductor coil, the second inductor coil, the first transistor, and the second transistor.

Here, the phrase “RLC section” refers to circuitry having at least one resistor (“R”), at least one inductor (“L”), and at least one capacitor (“C”). This appears to be undisputed, and “some construction of the disputed claim language will assist the jury to understand the claims.” *TQP*, 2012 WL 1940849, at *2. By contrast, construing the phrases “first/second,” “coupled to,” and “inductor coil” would not provide the same level of assistance to the jury and might tend to confuse rather than clarify the scope of the claims. In particular, as to “inductor,” attempting to summarize this complex technical concept in just a few words would tend to confuse rather than clarify the claim, and the meaning of “inductor” is not in dispute and will be readily understood by expert witnesses who can explain it to the jury for purposes of the present case. The Special Master therefore construes only the phrase “RLC section.”

The Special Master accordingly hereby construes **“RLC section”** to mean **“circuitry section having one or more resistors, one or more inductors, and one or more capacitors.”**

L. “first polarity of the first inductor coil” and “second polarity of the second inductor coil”

“first polarity of the first inductor coil” “second polarity of the second inductor coil” (’330 Patent, Claim 12)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“a reference indicating the direction of current flow in the first inductor coil/second inductor coil”

(Dkt. 77 at 2.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “plain meaning.”

(a) The Parties’ Positions

Plaintiff argues this term “does not have any specialized meaning in the art or in the context of the claims” and that Defendants “neither contend[] that the specifications set forth an express definition for each term that differs from its ordinary meaning, nor argue that the Applicants disclaimed any subject matter in prosecution.” (Dkt. 77 at 15.)

Defendants respond that “[t]he polarity of an inductor coil is a technical term that is not in the common usage of a layperson” and “is a reference that indicates the direction of the current flow.” (Dkt. 80 at 25.) Defendants submit that “[t]he illustration in Fig. 3a . . . essentially provides this definition.” (*Id.*)

Plaintiff replies that “it is clear a POSITA would have understood the plain and ordinary meaning of the term, as NXP explains that the guidance in the ’330 patent’s specification was ‘an industry accepted practice.’” (Dkt. 82 at 7.)

(b) Analysis

Claim 12 of the ’330 Patent recites (emphasis added):

12. The amplifier of claim 11 wherein a first polarity of the first inductor coil is opposite to a second polarity of the second inductor coil.

The claim uses the word “polarity” in its ordinary technical sense in the relevant field, and no dispute is apparent. Construing the term would only tend to add unnecessary complication to this claim, and the term therefore should not be construed. *See, e.g., Vivid Techs.*, 200 F.3d at 803 (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

The Special Master therefore hereby construes “**first polarity of the first inductor coil**” and “**second polarity of the second inductor coil**” to have their **plain meaning**.

M. “canceling at least a portion of the first and second magnetic fields by magnetic cancellation”

“canceling at least a portion of the first and second magnetic fields by magnetic cancellation” (’330 Patent, Claim 17)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“interference between a portion of the first and second magnetic fields that reduces the net magnetic field”

(Dkt. 77 at 2.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “at least a portion of the first magnetic fields cancels out at least a portion of the second magnetic field.”

(a) The Parties’ Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the claims” and that “[e]ach of the terms here involves commons words that are used as they are normally understood in plain English: ‘canceling,’ ‘at least a portion,’ ‘first and second magnetic fields,’ and ‘cancellation.’” (Dkt. 77 at 16.)

Defendants respond that this term “is technical in nature and requires construction for a finder of fact,” and “[w]hile the specification above teaches why magnetic field cancelation occurs, it is important to define the result of that cancelation, *i.e.*, reduction in the net magnetic field.” (Dkt. 80 at 27 (discussing ’330 Patent at 2:36–39).)

Plaintiff replies:

A POSITA would have understood the plain and ordinary meaning of the term at the time of the patent based on the language of the claim and the portions of the specification that Defendant cites. (Resp. at 27 (citing '330 patent at 2:36–39).) As such, this term does not require construction. Further, NXP's proposed construction omits the term "at least" and would exclude embodiments of the invention that cancel more than a "portion" of the first and second magnetic fields.

(Dkt. 82 at 8.)

(b) Analysis

Claim 17 of the '330 Patent recites (emphasis added):

17. A method for reducing the amount of parasitic mutual inductance between inductors, the method comprising:

generating a first magnetic field, from a first inductor coil communicating a first current [sic, current] in a first direction;

generating a second magnetic field, from a second inductor coil communicating a second current in a second direction that is opposite to the first direction, the second magnetic field having an opposing orientation to the first magnetic field; and

canceling at least a portion of the first and second magnetic fields by magnetic cancellation resulting from the opposing orientations of the first and second magnetic fields.

The specification discloses:

The[] inductors may have a common node from which the coils begin. *Magnetic field cancellation* occurs as a result of the oppositely oriented magnetic fields created by the inductor coils.

'330 Patent at 2:36–39 (emphasis added).

Defendants argue that "it is important to define the result of that cancellation, *i.e.*, reduction in the net magnetic field" (Dkt. 80 at 27), and the mutual cancelling out of a

portion of one magnetic field by another is evident from the context provided by surrounding claim language. Claim construction in this regard will assist the jury in understanding the claim. Defendants’ proposal of introducing a “net magnetic field,” however, is unnecessary and would tend to confuse rather than clarify the scope of the claim.

Also, for the sake of clarity, the Special Master construes the entire limitation, which provides context for understanding that this limitation involves the first and second magnetic fields affecting one another (rather than some other magnetic fields affecting each of the first and second magnetic fields).

The Special Master therefore hereby construes **“canceling at least a portion of the first and second magnetic fields by magnetic cancellation resulting from the opposing orientations of the first and second magnetic fields”** to mean **“at least a portion of the first magnetic fields cancels out at least a portion of the second magnetic field.”**

N. **“interference point”**

“interference point” (’330 Patent, Claim 1)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary. Definite.	Indefinite under 35 U.S.C. §112

(Dkt. 77 at 2.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “plain meaning.”

(a) The Parties’ Positions

Plaintiff argues that “[n]othing in these words themselves, nor in the way that they are strung together within each claim, requires explanation to a POSITA beyond the context in which they are used” and “[i]t is abundantly clear from the detailed description in the specification that one of skill in the art would have understood the plain and ordinary meaning of ‘interference point.’” (Dkt. 78 at 17.)

Defendants respond that this term “has no defined meaning and neither the specification nor the prosecution history informs a POSITA of where the so-called ‘interference point’ is located.” (Dkt. 80 at 28.) Defendants urge that “Claim 1 of the ’330 patent is directed to an inductor pair wherein the magnetic fields of the two inductors cancel *at an interference point*. It is imperative that the ’330 patent teach a POSITA where that interference point is located.” (*Id.*) Defendants argue that “Plaintiff has offered no intrinsic or extrinsic evidence of its meaning.” (*Id.* at 29.)

Plaintiff replies:

A POSITA would have clearly understood from the claim language that clearly states that an inference point is any place where “the first magnetic and the second magnetic field at least partially cancel.” (’330 patent, Claim 1.) The specification further reinforces this understanding, establishing that a POSITA clearly would have understood with reasonable certainty the meaning of “interference point.” (’330 patent at 3:12–16, 4:17–19, 4:49–53, 5:3–7, 5:30–31, 5:54–55.)

(Dkt. 82 at 8.)

At the October 10, 2023 hearing, Defendants argued that adopting Plaintiff's proposal would render this disputed term redundant and therefore meaningless, which Defendants argued is strongly disfavored by the claim construction principle that every word in a claim is presumed to have meaning. *See Intel Corp. v. Qualcomm Inc.*, 21 F.3d 801, 810 (Fed. Cir. 2021). Plaintiff responded that this is a known term of art being used in accordance with its ordinary meaning in the art as demonstrated by disclosures in the specification. *See '330 Patent* at 4:17–19 & 4:49–54. Plaintiff also argued that this disputed term should be read not in isolation but rather in the context of the entire limitation in which it appears. Defendant replied that the patentee chose to include this “interface point” location in the claim but did so poorly, which Defendant argued renders the claim indefinite.

(b) Analysis

The definiteness requirement of 35 U.S.C. § 112 requires that “a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty,” otherwise the claim is indefinite. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014).

Claim 1 of the '330 Patent recites (emphasis added):

1. A multiple inductor array comprising:
a first node that receives a first current and a second current;

a first inductor coil, coupled to the first node and to a second node, that communicates the first current in a clockwise direction and generates a first magnetic field;

a second inductor coil, coupled to the first node and to a third node, that communicates the second current in a counter clockwise direction and generates a second magnetic field having an opposing orientation to the first magnetic field; and

wherein the first magnetic field and the second magnetic field at least partially cancel at an *interference point*.

Defendants argue that the location of the “interference point” must be expressly specified, but a better reading of this claim limitation is that the first magnetic field and the second magnetic field at least partially cancel one another such that one or more interference points exist. That is, the claim requires that there must be interference but does not specify any particular location. This is consistent with disclosures in the specification cited by the parties, which discuss that interference exists but which do not specify any particular location, and the accompanying figures do not illustrate any particular location for the interference:

In various embodiments of the invention, the polarities of the inductors are positioned such that parasitic mutual inductance is reduced by causing electro-magnetic fields to at least partially cancel resulting in a *reduction in interference* between the inductors.

’330 Patent at 3:12–16 (emphasis added).

The opposing orientations of the magnetic fields in each inductor cause at least a partial cancellation of magnetic field at the *points of interference*.

Id. at 4:17–19 (emphasis added); *see id.* at Fig. 3b.

Interference of the magnetic fields produced by the first inductor L1 402 and the second inductor L2 404 results in a cancellation effect at the *points*

of interference. This cancellation reduces mutual inductance between the two inductors and allows for placement of inductors in a relatively closer proximity to each other.

Id. at 4:49–54 (emphasis added); *see id.* at Fig. 4.

[C]hanges in a generated magnetic field may be compensated by changing the oppositely oriented magnetic field so that appropriate interference cancellation occurs.

Id. at 5:3–7.

The cancellation at *interference points* reduces cross talk between the two octagonal spiral inductors.

Id. at 5:30–32 (emphasis added); *see id.* at Fig. 5.

These disclosures align with the claim reciting “interference point” not in isolation but rather as part of the limitation that “the first magnetic field and the second magnetic field at least partially cancel at an interference point.” In this context, the claim language “inform[s] those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus*, 572 U.S. at 910. Although Defendants seem to demand that the claim specify a particular location, “a patentee need not define his invention with mathematical precision.” *Niazi Licensing Corp. v. St. Jude Med. S.C.*, 30 F.4th 1339, 1347 (Fed. Cir. 2022).

The Special Master therefore rejects Defendants’ indefiniteness argument. Defendants present no alternative proposal, and no further construction is necessary in light of the claim providing context in which at least one interference point must exist as a result of the first magnetic field and the second magnetic field at least partially

cancelling one another (the claim does not require the interference to occur at any particular specific location). *See U.S. Surgical*, 103 F.3d at 1568; *see also O2 Micro*, 521 F.3d at 1362; *Finjan*, 626 F.3d at 1207; *Bayer*, 989 F.3d at 977–79; *PPG*, 156 F.3d at 1355.

The Special Master accordingly hereby construes **“interference point”** to have its **plain meaning**.

O. “signal traces”

“signal traces” (’245 Patent, Claims 1, 8, 12)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“metal structures that carry an electrical signal”

(Dkt. 77 at 2.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “plain meaning.”

(a) The Parties’ Positions

Plaintiff argues that this term “does not have any specialized meaning in the art or in the context of the claims” and that “the phrase ‘signal traces’ is used throughout the ’245 patent in such context that a POSITA would clearly understand its meaning.” (Dkt. 78 at 18 (citing ’245 Patent at 1:53–54, 2:31, 2:36–39, 3:6–9, 3:32–33, 3:38–40, 3:55, 4:16, 4:46–47 & Fig. 5).)

Defendants respond that “[t]he term ‘signal traces’ is easily defined by reference to the language of the claims and the ’245 patent specification.” (Dkt. 80 at 31.)

Plaintiff replies that “[b]ecause NXP argues that the meaning of the term is clear in light of the specification and claims (Resp. at 31-32), NXP effectively concedes that the Court need not construe ‘signal traces,’ and thus NXP’s proposed construction should be rejected.” (Dkt. 82 at 9.)

(b) Analysis

Claim 1 of the ’245 Patent, for example, recites (emphasis added):

1. A semi-conductor package comprising:
 - a top layer having a die mounted thereon, said die having a corner; and
 - a plurality of layers under the top layer, said plurality of layers comprising a bottom routing layer having *signal traces* thereon, and a ball pad layer under the bottom routing layer, said ball pad layer having a plurality of ball pads, wherein none of the *signal traces* of the bottom routing layer are located over ball pads of the ball pad layer which are disposed in an area within two ball pad pitches of the corner of the die.

Defendants argue that “Fig. 5 and its accompanying description . . . defines ‘signal traces’ as being metal” (Dkt. 80 at 32), and Defendants cite the following disclosures:

A portion of layer L8 is shown in FIG. 5. Layer L8 is the bottom routing layer of the 9-layer stackup. Layer L8 includes *signal traces and other metal structure*, such as, for example, voltage bus bars, dispersed throughout the layer.

* * *

Signal traces 64 and other metal structures are provided throughout layer L8

'245 Patent at 3:32–34 & 3:39–40 (emphasis added); *see id.* at 3:55–59 (“traces 64 and other metal structures”).

These references to “signal traces and other metal structure” do not rise to the level of a lexicography (neither by express definition nor by implication). *See Bell Atl. Network Servs., Inc. v. Covad Commc’ns Grp., Inc.*, 262 F.3d 1258, 1268 (Fed. Cir. 2001) (“The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication.”) (citation and internal quotation marks omitted). Rather, these disclosures can just as well be read as referring to other structures that are metal without necessarily implying that the signal traces are metal. Moreover, the cited disclosures lack any of the “clarity, deliberateness, and precision” that are the typical hallmarks of a lexicography. *See Abbott Labs. v. Syntron Bioresearch, Inc.*, 334 F.3d 1343, 1354 (Fed. Cir. 2003) (“patentee’s lexicography must, of course, appear with reasonable clarity, deliberateness, and precision”) (citation and internal quotation marks omitted).

The Special Master therefore rejects Defendants’ proposed construction, and no further construction is necessary. *See U.S. Surgical*, 103 F.3d at 1568; *see also O2 Micro*, 521 F.3d at 1362; *Finjan*, 626 F.3d at 1207; *Bayer*, 989 F.3d at 977–79; *PPG*, 156 F.3d at 1355.

The Special Master accordingly hereby construes “**signal traces**” to have its **plain meaning**.

P. “ball pad pitches”

“ball pad pitches” (’245 Patent, Claims 1, 2)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	Indefinite under 35 U.S.C. §112

(Dkt. 77 at 2.)

In the Tentative R&R, the Special Master tentatively construed the larger term “two ball pad pitches” as follows: “twice the center-to-center distance between adjacent ball pads in the ball pad layer.”

(a) The Parties’ Positions

Plaintiff argues that “[n]othing in these words themselves, nor in the way that they are strung together within each claim, requires explanation to a POSITA beyond the context in which they are used because the claims are clearly definite,” and “[i]t is abundantly clear from the detailed description in the specification that one of skill in the art would clearly understand the meaning of ‘ball pad pitches.’” (Dkt. 78 at 18.)

Defendants respond that “[t]he term ‘ball pad pitches’ is not defined anywhere in the specification or the file history of the ’245 patent,” and Defendants submit that Plaintiff has not provided what meaning this term would have to a person of ordinary skill in the art. (Dkt. 80 at 33.) Defendants also argue that the specification sets forth “conflicting information about how to identify a high stress area defined ‘within “two

ball pad pitches” of the corner of the die.” (*Id.* at 36.) Defendants argue that the “patentee is trying to have the term ‘two ball pad pitches’ be flexible enough to encompass any shape, of any size, and positioned anywhere,” which Defendants argue “renders the term indefinite.” (*Id.* at 37.) Defendants further argue:

The ambiguity around this claim term is compounded by the fact that a common sensical meaning of the limitation -- “an area within two ball pad pitches of the corner of the die” -- would be an area *defined by a circle* with a radius of twice the ball pad pitch, centered on the die corner. And, in fact, this is exactly the way that Plaintiff has asserted this claim limitation.

(*Id.*)

Plaintiff replies that “NXP again takes exemplary language and figures and tries to read limitations into the claim from the specification based on this.” (Dkt. 82 at 9.)

Plaintiff also argues: “Figure 4 depicts the ‘high stress zone 58 is associated with the die corner 54a and a high stress zone 60 is associated with the die corner 56a in each direction. Each high stress zone is similarly shaped,’ even if not perfectly symmetrical. (’245 patent at 3:20–24).” (Dkt. 82 at 9.)

At the October 10, 2023 hearing, Defendants argued that the tentative construction reads on applicant-admitted prior art (“AAPA”) disclosed in the specification. *See* ’245 Patent at 2:6–15. Defendants urged that the claimed invention cannot be the prior art. Plaintiff responded that Defendants’ newly-raised issue regarding purported AAPA raises a dispute regarding invalidity, not indefiniteness, and is a dispute perhaps for a later stage of the case, not for claim construction. Plaintiff also argues that the purported

AAPA regarding a particular numerical measurement (one millimeter) is distinctly different from what is being claimed because Claims 1 and 2 define the distance in terms of ball pads (which are a stress-concentrating structural feature).

(b) Analysis

The definiteness requirement of 35 U.S.C. § 112 requires that “a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty,” otherwise the claim is indefinite. *Nautilus*, 572 U.S. at 910.

This disputed term appears in Claims 1 and 2 of the ’245 Patent, which recite (emphasis added):

1. A semi-conductor package comprising:
a top layer having a die mounted thereon, said die having a corner;
and
a plurality of layers under the top layer, said plurality of layers comprising a bottom routing layer having signal traces thereon, and a ball pad layer under the bottom routing layer, said ball pad layer having a plurality of ball pads, wherein none of the signal traces of the bottom routing layer are located over ball pads of the ball pad layer which are disposed in an area within *two ball pad pitches* of the corner of the die.
2. A package as recited in claim 1, wherein none of the signal traces of the bottom routing layer are located within *two ball pad pitches* of the corner of the die.

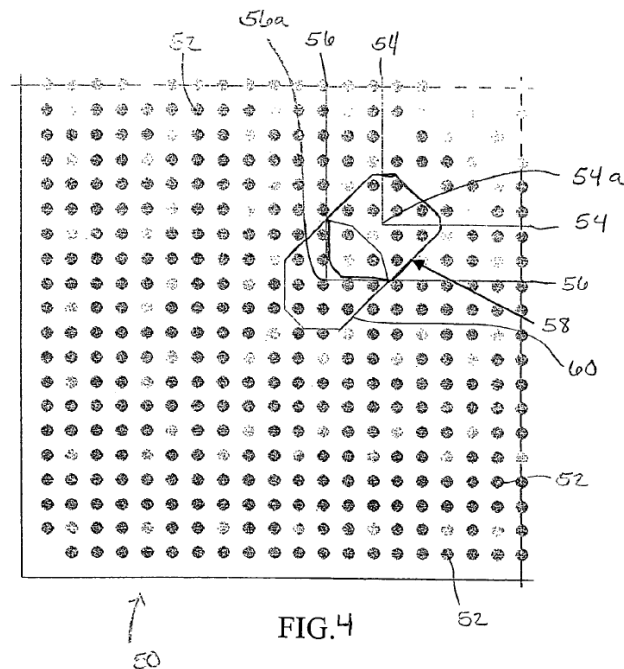
The Background of the Invention states:

[A]n improved package is needed which will reduce cracks in the signal traces and therefore avoids functional failures caused by stresses under the die corner. The present invention provides such a package.

'245 Patent at 2:16–19. The specification further discloses:

A high stress zone 58 is associated with the die corner 54a and a high stress zone 60 is associated with the die corner 56a. Each high stress zone 58, 60 is similarly shaped. A portion of high stress zone 58 overlaps a portion of high stress zone 60. The high stress zone 58 extends approximately *two ball pitches* away from the die corner 54a in each direction. The high stress zone 60 extends approximately *two ball pitches* away from the die corner 56a in each direction.

'245 Patent at 3:20–28 (emphasis added); *see id.* at Fig. 4. Figure 4 of the '245 Patent is reproduced here:

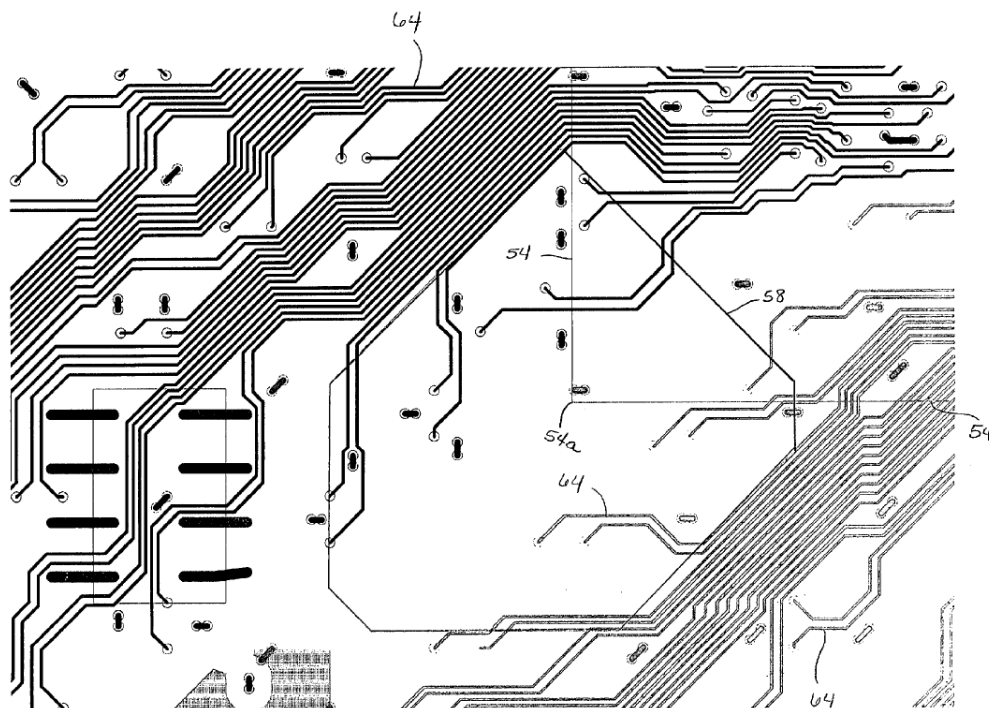


Defendants argue that Figure 4 renders this term unclear because the area drawn around die corner 54a is not the same shape as the area drawn around die corner 56a. (Dkt. 80 at 35–36.) This does not demonstrate indefiniteness, however, particularly when considering that the lines that define these areas appear to be hand-drawn.

As for Figure 5, the specification discloses:

The high stress area 58 defined in connection with layer L9, also is represented on layer L8. Signal traces 64 and other metal structures are provided throughout layer L8, however, within the high stress area 58, the signal traces 64 and other metal structures, for example, voltage bus bars, are routed away from the die corner 54a.

'245 Patent at 3:38–43. Figure 5 of the '245 Patent is reproduced here:



Defendants argue that the above-reproduced description and what is shown in Figure 5 create confusion, but the description of Figure 5 does not define any area in terms of ball pad pitches.

On balance, the claims here at issue “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus*, 572 U.S. at 910. The

Special Master therefore rejects Defendants’ indefiniteness argument, and Defendants present no alternative proposed construction. Nonetheless, “some construction of the disputed claim language will assist the jury to understand the claims.” *TQP*, 2012 WL 1940849, at *2. As reflected in the above-reproduced disclosures in the specification, “pitch” refers to the center-to-center distance from a ball pad to an adjacent ball pad (that is, the distance from the center of one ball pad to the center of an adjacent ball pad) in the recited ball pad layer, so the recital of “two pitches” refers to twice the center-to-center distance between adjacent ball pads. Finally, the claims here at issue use the term “ball pad pitches” only in conjunction with the word “two,” so for the sake of clarity the term for construction should be expanded to be “two ball pad pitches.”

The Special Master accordingly hereby construes **“two ball pad pitches”** to mean **“twice the center-to-center distance between adjacent ball pads in the ball pad layer.”**

Q. “metal traces”

“metal traces” (’245 Patent, Claim 3)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary	“metal conductor”

(Dkt. 77 at 2.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “plain meaning.”

(a) The Parties’ Positions

Plaintiff argues that this disputed term “does not have any specialized meaning in the art or in the context of the claims” and that “[t]he context in which ‘metal traces’ is used in the claims themselves and the specification make clear that the phrase here would have been readily understood by one of skill in the art at the time of the invention.” (Dkt. 78 at 19–20.)

Defendants respond, in full, as follows:

To the extent the Court determines that ‘metal traces’ needs to be construed to assist the finder of fact, Defendants’ proposed construction is simple and straightforward. A trace is a conductor. The purpose of a trace in an integrated circuit package is to conduct an electric signal.

(Dkt. 80 at 38–39.)

Plaintiff replies that “[t]he context in which ‘metal traces’ is used in the claims themselves and the specification make clear that the phrase here would have been readily understood by a POSITA.” (Dkt. 82 at 10.)

(b) Analysis

Claim 3 of the ’245 Patent recites (emphasis added):

3. A package as recited in claim 1, wherein said ball pad layer has a plurality of ball pads dispersed thereon and *no metal traces* on the ball pad layer which are connected to the ball pads.

The claim uses the word “traces” in its ordinary technical sense in the relevant field, and no dispute is apparent. Construing the term “metal traces” would only tend to add unnecessary confusion to this claim, and the term should therefore be given its plain meaning. *See, e.g., Vivid Techs.*, 200 F.3d at 803 (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

The Special Master accordingly hereby construes “**metal traces**” to have its **plain meaning**.

R. “areas of increased stress”

“areas of increased stress” (’245 Patent, Claim 7)	
Plaintiff’s Proposal	Defendants’ Proposal
No construction necessary. Definite.	Indefinite under 35 U.S.C. § 112

(Dkt. 77 at 2.)

In the Tentative R&R, the Special Master tentatively construed this term as follows: “plain meaning.”

(a) The Parties’ Positions

Plaintiff argues that “[a]s used in the context of the claim, a POSITA would clearly understand . . . the meaning of the term ‘areas of increased stress’ and as such, the term requires no construction.” (Dkt. 78 at 20.) Plaintiff also submits that “[e]ach of

the terms here involves commons words that are used as they are normally understood in plain English: ‘areas,’ ‘increased,’ and ‘stress.’” (*Id.*)

Defendants respond: “Nowhere in the language of claim 7 is this ‘area of increased stress’ defined with any particularity. It is simply defined by the corner of the die.” (Dkt. 80 at 39–40.) Defendants also argue that “[a]s discussed above with respect to the ‘two ball pad pitches’ limitation, Figs. 4 & 5 and their accompanying description in the patent provide vague and confusing information regarding an ‘area of increased stress.’” (*Id.* at 40.) “Moreover,” Defendants argue, “the language of the disputed term is comparative, or a term of degree, but without reference to any defined area that does NOT have increased stress.” (*Id.*) Defendants urge that “if a POSITA cannot determine the extent of this ‘area of increased stress,’ it cannot determine where to place its routing traces in the bottom routing layer to avoid that area.” (*Id.* at 41.)

Plaintiff replies that “[a]s was known by POSITAs at the time of the ’245 patent, the via pitch reduction requires the use of thin core substrates which are susceptible to warpage during thermal excursions,” and “the areas under the die corner are regions of stress concentration.” (Dkt. 82 at 10.) Plaintiff also argues that “the specification, and the attached Figure 4 (’245 patent at 2:33–39, 3:20–30, 3:38–39, 3:43–45, 3:52–54, 4:40) conclusively establishes that a POSITA would have understood the meaning of ‘areas of increased stress’ as its plain and ordinary meaning with reasonable certainty, as well as what the metes and bounds for said areas were.” (Dkt. 82 at 10.)

At the October 10, 2023 hearing, Defendants argued that the claim lacks any objective boundaries because reciting an area that is “defined by the corner of the die” explains nothing about the boundaries of the area. Defendants also argued that the patent provides no objective boundaries for what level of stress qualifies as “increased.” Plaintiff responded that a person of ordinary skill in the art would understand this claim in light of the disclosures in the written description and in Figure 4 of the patent. See ’245 Patent at 3:10–30. Defendants replied that “increased stress” is a term of degree with no objective boundaries and is therefore indefinite.

(b) Analysis

The definiteness requirement of 35 U.S.C. § 112 requires that “a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty,” otherwise the claim is indefinite. *Nautilus*, 572 U.S. at 910.

Claim 7 of the ’245 Patent recites (emphasis added):

7. A semi-conductor package comprising:

 a top layer having a die mounted thereon, said die having a corner defining a surrounding *area of increased stress*; and

 a plurality of layers under the top layer, said plurality of layers comprising a bottom routing layer having signal traces thereon, and a ball pad layer under the bottom routing layer, said ball pad layer having a plurality of ball pads dispersed thereon, wherein none of the signal traces of the bottom routing layer are located within the *area of increased stress* defined by the corner of the die.

The word “increased,” as used here, is a word of degree, and “[w]hen a word of degree is used[,] the district court must determine whether the patent’s specification provides some standard for measuring that degree.” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005) (citation and internal quotation marks omitted).

The Abstract of the ’245 Patent states (emphasis added):

A semiconductor package for a die with improved thermal cycling reliability. A first layer of the package provides ball pads dispersed throughout. A second layer of the package provides signal traces. A *high stress area* associated with the corner of the dies is defined. Preferably the *high stress area* is defined as two ball pitches away from the corner of the die. Signal traces are routed away from the *high stress area* and in particular signal traces are routed away from the ball pads associated with the high stress to eliminate the cracks in the routed traces.

The Objects and Summary of the Invention likewise states:

Briefly, and in accordance with the foregoing, an embodiment of the present invention provides an improved package in which a *high stress area* associated with the die corner is defined and in which the signal traces are routed away from the *high stress areas* at the die corner. The invention describes a methodology for signal trace routing in the *high stress area* under the die corner that incorporates a range of die sizes.

Id. at 2:32–39 (emphasis added). The specification further discloses:

A quadrant of the L9 layer 50 of a 9-layer stackup is shown in FIG. 4. The remaining quadrants of the layer L9 are similar to the quadrant shown. Ball pads 52 are dispersed through the L9 layer 50. It is to be understood that although the invention is described in connection with a 9-layer stackup, the invention applies to any multi-layer stack up that uses a thin core. Lines 54, 56 represent placement of die quadrants. Varying sized dies can be used. Line 54 represents placement of a die and the associated corner 54a of one size and line 56 represents placement of a die of a larger size and the

associated corner 56a. A high stress zone 58 is associated with the die corner 54a and a high stress zone 60 is associated with the die corner 56a. Each high stress zone 58, 60 is similarly shaped. A portion of high stress zone 58 overlaps a portion of high stress zone 60. The high stress zone 58 extends approximately two ball pitches away from the die corner 54a in each direction. The high stress zone 60 extends approximately two ball pitches away from the die corner 56a in each direction. Several ball pads 52 are provided within the high stress zone 58 and several ball pads are provided within the high stress zone 60.

'245 Patent at 3:10–30; *see id.* at 3:43–45 (“the *high stress area 58* on layer LS includes a very small number of signal traces 64 and other metal structures”) (emphasis added); *see also id.* at Fig. 4.

These disclosures regarding “high” stress areas are not purely abstract but rather are set forth in relation to other portions of the “substrate package.” *See id.*; *see also id.* at 3:6–9 (“An embodiment of the present invention provides a substrate package in which signal traces are routed away from the high stress area associated with the ball pads and the corner of the die.”).

Nonetheless, Defendants persuasively argue that “[t]he specification . . . fails to provide any detail or measurements for what constitutes an ‘increased’ amount of stress.” (Dkt. 80 at 40.) Although the patent uses the word “increased” in relation to other areas of the semiconductor package rather than with reference to any numerical values, the patent provides no “objective boundaries” by which a person of skill in the art could determine the presence of “increased” stress. *Liberty Ammunition*, 835 F.3d at 1396 (quoting *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370–71 (Fed. Cir.

2014)). This fails to provide sufficient clarity because “[t]he scope of claim language cannot depend solely on the unrestrained, subjective opinion of a particular individual purportedly practicing the invention.” *Datamize*, 417 F.3d at 1350.

Having considered the oral arguments and having further reviewed the evidence, the Special Master departs from the above-noted tentative construction and finds that the recital of “areas of increased stress” fails to “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus*, 572 U.S. at 910.

The Special Master accordingly hereby finds that “**areas of increased stress**” renders Claim 7 of the ’245 Patent **indefinite**.

IV. CONCLUSION

For the foregoing reasons, the Special Master construes the disputed terms as set forth above.

IT IS SO ORDERED.

Date:

October 16, 2023

David M. Keyzer
David M. Keyzer
Special Master