

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

NETWORK SYSTEM TECHNOLOGIES,
LLC,

Plaintiff,

v.

TEXAS INSTRUMENTS
INCORPORATED; FORD MOTOR
COMPANY

Defendants.

Civil Action No. 2:22-cv-482-RSW

JURY TRIAL DEMANDED

**DEFENDANT TEXAS INSTRUMENTS INCORPORATED'S
RESPONSIVE CLAIM CONSTRUCTION BRIEF**

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Exhibit	Description
1.	Declaration of Dr. Mitchell Thornton Regarding Claim Construction
A-Thornton	Curriculum Vitae of Dr. Mitchell Thornton (.pdf page 70 of 131)
B-Thornton	Materials Considered in the Declaration of Mitchell Thornton (.pdf page 102 of 131)
C-Thornton	U.S. Patent No. 6,885,638 to Xu (.pdf page 104 of 131)
D-Thornton	U.S. Patent Application Publication No. 2004/0103230 to Emerson (.pdf page 119 of 131)
2.	Excerpts from the File Wrapper for U.S. Patent 7,373,449
3.	Email correspondence regarding claim constructions
4.	Dictionary of Computer Science Engineering and Technology (2001) - <i>Optimal</i>
5.	IEEE 100, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition - <i>Network</i>

I. INTRODUCTION

TI respectfully submits this brief pursuant to the Docket Control Order (Dkt. 49) and P.R. 4-5, and in response to NST's Opening Brief (Dkt. 98, hereinafter "Br.").¹ Through its proposed constructions, NST a) seeks to avoid means-plus-function treatment for terms that clearly invoke § 112 ¶ 6 (*see infra* Sections IV–V), b) proposes the same, nondescript structure of "circuit" for terms where different structure, or no circuit, are disclosed (Sections IV and V.A), c) sweeps under the rug the hopelessly indefinite meaning of terms reciting the word "optimal" with "plain and ordinary" constructions (Section VI), and d) imports limitations from the specification into otherwise well-known terms like "network" (Sections VII and VIII). NST's proposed constructions should be rejected in favor of TI's constructions, as demonstrated below.

II. TECHNICAL BACKGROUND

NST's brief includes a Technical Background with argumentative statements regarding the scope of the Asserted Patents. *See, e.g.*, Br. at 2 (arguing that the asserted patents cover "indirect," not "direct" interconnections between NoC modules), 1–5. Without conceding any arguments NST makes therein, TI addresses the scope and disclosures of the Asserted Patents, as applicable to the disputed claim terms, in the sections below and refers the Court to its submitted Technology Tutorial (Dkt. 97) for TI's overview of the relevant technology.

III. LEVEL OF ORDINARY SKILL IN THE ART

Dr. Mitchell Thornton, TI's expert, has provided technical opinions supporting TI's technical positions herein. Ex. 1, Thornton Declaration ("Thornton"). TI agrees with NST (*see* Br. at 7) that while Dr. Thornton and NST's expert (Dr. Chmelar) have expressed different opinions

¹ NST has agreed to drop the following terms that it addressed in its opening brief, which will thus not be briefed by TI: "multicast" ('9893 Patent), "narrowcast" ('9893 Patent), "data communication introducing a delay of M*N cycles" ('2893 Patent). *See* Ex. 3.

on the level of skill that a person of ordinary skill in the art (“POSA”) would have had at the time of the invention of the Asserted Patents, neither expert has argued that such a difference should impact the Court’s claim construction decisions.

IV. THE ’818 PATENT

A. “one dropping means (DM) for dropping data exchanged by said first and second module (M, S) / a first dropping means (DM) / said dropping means (DM)” (claims 1, 3, and 5)

Claim Term	NST’s Proposed Construction	TI’s Proposed Construction
“one dropping means (DM) for dropping data exchanged by said first and second module (M, S) / a first dropping means (DM) / said dropping means (DM)”	Not Subject to Section 112 ¶ 6 Circuit configured to drop messages Otherwise, if subject to Section 112 ¶ 6: Function: Drops data exchanged by said first and second modules M,S With respect to claim 3, the function according to claim 1 and “create an error message if data is dropped” With respect to claim 5, the function according to claim 1 and “send said error message to said first module” Structure: Circuit	Subject to Section 112 ¶ 6. Function: dropping data exchanged by first and second module (M, S) Structure: buffer that implements a ‘milk’ policy (drops oldest data) or a ‘wine’ policy (drops newest data) when the buffer overflows. 7:51–56; 8:38–39, 8:64–66; 9:2–10; Otherwise, indefinite Claim 3: Function: creating error messages Claim 5: Function: sending error messages Claims 3 and 5: Structure: structure for claim 1 with additional structure disclosed in the ’818 patent at 9:2–10. Otherwise, indefinite.

1. “one dropping means (DM) . . .” is a means-plus-function term.

The “dropping *means* (DM)” terms are written in classic means-plus-function format. The use of the term “dropping” before means does not add anything of substance, as it simply parrots the function performed by the means—dropping data. “Means” in claims 1, 3, and 5 therefore

creates a “rebuttable presumption that § 112, para. 6 applies.” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015). NST does not dispute the presumption applies. Br. at 16.

The presumption is only rebutted when the words of the claim are understood by a POSA to have a “sufficiently definite meaning as the name for structure.” *Williamson*, 729 F.3d at 1348. As TI’s expert (Dr. Thornton) explained, to a POSA, “dropping means” connotes “only function: the means by which data is dropped.” Thornton ¶ 39. Importantly, “[t]here is no particular meaning to the [dropping means (DM)] term in the industry pertaining to the design of SoCs or networks on chips.” *Id.* NST’s expert does not disagree, and points to no commonly held understanding for “dropping means.”² See *MTD Products Inc. v. Iancu*, 933 F.3d 1336, 1341 (Fed. Cir. 2019) (“a critical question [in the 112 ¶ 6 inquiry] is whether the claim term is used . . . by persons of skill in the pertinent art to designate structure.”) (citation omitted).

The remaining claim language related to the “dropping means” terms connotes pure function and does not recite structure. See Thornton ¶ 41. The claims only recite what the dropping means *does*, not what it is structurally comprised of: e.g., “for dropping data exchanged by said first and second module (M, S)” (claim 1), and creating / sending error messages (claims 3, 5).

2. The parties do not dispute the functions of the “dropping means” terms.

The parties’ proposed functions for “dropping means” are substantively identical. TI identified “dropping data exchanged by [the] first and second module (M, S)” as the function for claim 1. ’818 Patent, Claim 1. NST presents effectively the same function with minor syntactical differences. Br. at 17. TI believes either formulation is appropriate. Similarly, either party’s

² As explained in Section IV.A.5.a, NST and Dr. Chmelar erroneously conclude that the § 112 ¶ 6 presumption is rebutted because “dropping means” is part of a claimed “integrated circuit.”

substantively identical constructions for the functions of claims 3 and 5 is appropriate, adding the functions of “creating error messages” (claim 3) and “sending error messages” (claim 5).

3. The structure for claim 1’s “dropping means” is a buffer dropping data according to a wine or milk policy when the buffer overflows.

The next step in construing a means-plus-function claim is to identify the corresponding structure disclosed in the specification, which “must [be] *clearly associate[d]* . . . with performance of the function.” *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1113 (Fed. Cir. 2002) (emphasis added). The structure disclosed in the specification for “dropping means” is a buffer that implements a “milk” policy (drops oldest data) or a “wine” policy (drops newest data) when the buffer overflows.

The ’818 Patent states that “[t]he dropping manager DM may drop data *in case of buffer overflow*,” ’818 Patent, 8:38–39 (emphasis added); *see also id.*, 9:3–5. A POSA would have understood that this “buffer” that “overflow[s]” is a “memory used for storage,” and while “buffer” partially describes the disclosed structure, a buffer “in and of itself does not connote a structure that drops data,” because, e.g., “[t]here are buffers that do not drop data.” Thornton ¶ 47. The patent “limits the buffer” by disclosing a particular *type of buffer*: one that drops data in one of two ways: (1) a structure that drops the “oldest message” when the buffer overflows (“milk policy”), and (2) one that drops the “newest message” when the buffer overflows (“wine policy”). *Id.*; ’818 Patent, 7:54–56. Such buffers would be implemented to include structure that “allows the buffer to drop data based on the desired [milk or wine] scheme.” Thornton ¶ 47. As Dr. Thornton explains, a POSA would have understood this to be the “one structure” disclosed in the patent specification for implementing the claimed dropping means. *Id.*

4. If “dropping means” is not limited to TI’s proposed structure, the term is indefinite.

Beyond the limited structural description discussed above, the '818 Patent specification contains no other disclosure of a structure for “dropping means (DM).” *See* Thornton ¶ 48. Indeed, where “dropping means” is discussed aside from mentioning buffer overflow, it is solely to reiterate the same language describing *function*. *See, e.g.*, '818 Patent, 5:27–30 (“Said integrated circuit comprises at least one dropping means DM for dropping data exchanged by said first and second modules M, S.”), 5:50–52, 5:56–58.³ Therefore, to the extent the Court disagrees that the structure identified by TI for “dropping means” corresponds to the claimed function, the claim is indefinite. *Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007) (“If there is no structure in the specification corresponding to the means-plus-function limitation in the claims, the claim will be found invalid as indefinite.”).

5. NST’s arguments regarding “dropping means” should be rejected.

a) NST’s argument that the Williamson presumption is rebutted

NST’s argument that dropping means avoids § 112 ¶ 6 construction is not based on the disputed claim language, but rather on a different term: “integrated circuit,” introduced in the preamble and referred to in the claim, of which the dropping means is a “comprising” part. NST argues that because “dropping means” is part of a larger integrated circuit, it must necessarily be sufficiently structural to avoid § 112 ¶ 6 treatment. Br. at 16.

The Federal Circuit rejected a similar argument in *Egenera, Inc. v. Cisco Systems, Inc.*, 972 F.3d 1367 (Fed. Cir. 2020). *Egenera*, like NST here, argued that “logic to modify. . .” was structural because “logic” was part of another structural claim term. *Id.* at 1374. But the Court, in finding

³ The specification’s mentions of the similar term “dropping manager” do not connote any further structure beyond the mentions of “dropping means,” given the generic and non-structural nature of the term “manager.” *See Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1383 (Fed. Cir. 2009) (holding that “access control manager” is “essentially a black box that performs a recited function.”); *see also* Thornton ¶ 46 (“The '818 Patent treats ‘dropping manager’ simply as a black box that performs the function of dropping data exchanged by different modules . . .”).

that the term “logic to modify” was subject to § 112 ¶ 6 held: “Mere inclusion of a limitation within a structure does not automatically render the limitation itself sufficiently structural.” *Id.* Per *Egenera*, NST’s emphasis on a larger structure, “integrated circuit,” that contains the “means for dropping” focuses on the wrong question. NST ignored the real question: whether “dropping means” recites sufficient structure to perform the claimed functions. Its expert opines only that an *integrated circuit* is a structure. Further, per Dr. Thornton’s un rebutted testimony, “the ’818 Patent does not specify that the ‘dropping means’ must be implemented through circuitry.” Thornton ¶ 54. The file history of the ’818 Patent identifies an example of packet dropping that can be implemented “through circuits *or* ‘a suitably programmed processing device such as a DSP, a microprocessor, microcomputer, or any other suitable processing device.’” *Id.* (emphasis added) (quoting Thornton, Ex. C at 4:2–5). In other words, the dropping means is not *necessarily* or *merely* an unspecified circuit. Again, Dr. Chmelar does not opine otherwise beyond simply stating that the dropping means is a “comprising” element of an integrated circuit.

Nor does NST point to any caselaw supporting its argument that the § 112 ¶ 6 presumption is necessarily rebutted because “dropping means” is a “comprising” element of the “integrated circuit.” Courts routinely find otherwise. *See Samsung Elecs Co. v. Matsushita Elec. Indus. Co.*, 2007 WL 3389980, at *7–*9 (E.D. Tex. Nov. 14, 2007) (construing, per parties’ agreement, “access means” and “output means” under § 112 ¶ 6 where they were comprising elements of a “synchronous dynamic random access memory integrated circuit”).⁴

⁴ *See also Texas Instruments Inc. v. Linear Tech. Corp.*, 2002 WL 34455166, at *7 (E.D. Tex. Apr. 3, 2002) (construing “means for biasing said cascoded devices” under § 112 ¶ 6, by agreement, where recited as comprising element of “current source circuit”); *GSK Techs. Inc. v. Eaton Elec. Inc.*, 2008 WL 906713, at *2 (E.D. Tex. Apr. 1, 2008) (construing “current to voltage transforming means” under § 112 ¶ 6, by agreement, where recited as comprising element of “protector circuit”).

The only case raised by NST—*Skky*, Br. at 16—is inapposite; there, the court held that “wireless device means” did not invoke § 112 ¶ 6 because “‘wireless device’ is used in common parlance ... to designate structure.” *Skky, Inc. v. MindGeek, s.a.r.l.*, 859 F.3d 1014, 1020 (Fed. Cir. 2017) (citation omitted). But here, “dropping” is purely functional, as established by Dr. Thornton’s un rebutted testimony.^{5,6}

b) NST’s proposed structure of “circuit” should be rejected.

NST’s simplistic proposed structure—“circuit” and nothing more—should be rejected because it is not clearly linked to the claimed dropping function. “[T]he specification must *clearly associate* the structure with performance of the function.” *Cardiac Pacemakers*, 296 F.3d at 1113 (emphasis added). Dr. Thornton has reviewed the specification and found no such “clear association” or linking. Thornton ¶ 53. Neither NST in its brief nor its expert point to anything clearly associating a mere “circuit” with the functions of the dropping means.

As Dr. Thornton explains, in the ’818 Patent, “circuit” is “simply a generic term that a [POSA] would not have understood as corresponding to any particular function,” and “[t]here is no standard circuit that performs the function of dropping data.” Thornton ¶ 53. And, as noted above in Section IV.A.3, a POSA would not have understood dropping means as necessarily a circuit. NST does not explain *why* or *how* a bare “circuit” is the appropriate structure for “dropping means.” See *XR Commc’ns, LLC v. ARRIS Sols., Inc.*, 2023 WL 3529830, at *3 (Fed. Cir. May 18,

⁵ NST also does not explain why a finding that the “dropping means” is a circuit necessarily means that § 112 ¶ 6 is avoided. Cf. *Intelligent Automation Design, LLC v. Zimmer Biomet CMF*, 799 Fed. App’x 847, 850–51 (Fed. Cir. 2020) (holding that a claimed “control circuit for [function]” is a means-plus-function term because “the recitation of a ‘control circuit’” does not “provide enough description of the structure to render the limitation structural, rather than functional.”).

⁶ NST argues that TI’s position on “dropping means” is inconsistent with its treatment of “interconnect means,” which is not means-plus-function. Br. at 16. As TI explains below in Section VII.A, unlike “dropping means,” “interconnect means” itself connotes structure. TI’s fact-specific positions contrast with NST’s blanket positions that every “means” term presented is a “circuit.”

2023) (“[O]ur precedent compels rejecting” patentee’s position that “§ 112 ¶ 6 is avoided by reciting something a POSITA would understand as structure—even if a POSITA wouldn’t understand it as sufficient structure for performing the claimed function.”). NST (and its expert) instead fall back on the same argument for why the § 112 ¶ 6 presumption is rebutted merely because “dropping means” is within “integrated circuit.” Br. at 17. For the same reasons as shown in Section IV.A.5.a, this argument fails. Importantly, every case cited by NST for its “circuit” argument (Br. at 17) is distinguishable because those cases involved constructions of terms that actually contained the word “circuit.”⁷ NST provides no authority for its transitive argument that “dropping means” connotes adequate structure just because it is, in turn, part of a recited “circuit.”

6. The “dropping means” in claims 3 and 5 should be similarly limited or found similarly indefinite.

Claims 3 and 5 include the “dropping means” of antecedent claim 1. The additional functions of “creating error messages” (claim 3) and “sending error messages” (claim 5) require the disclosure of further structure because the structure TI identifies for claim 1 does not itself connote structure for creating or sending error messages. As Dr. Thornton explains, the ’818 Patent discloses that when the buffer corresponding to the dropping means overflows, causing the buffer to drop data based on either a milk or wine policy, “the dropping manager creates and sends messages in order to facilitate completion of the transaction,” Thornton ¶ 50 (as detailed at column 9, lines 2–10, which describes the use of return status messages to create and send error messages). Thus, the structure for these dependent claims is the structure for claim 1 with additional structure

⁷ See *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 711 F.3d 1348, 1364 (Fed. Cir. 2013) (analyzing “soft start circuit”); *Massachusetts Inst. of Tech. & Elecs. For Imaging, Inc. v. Abacus Software*, 462 F.3d 1344, 1355 (Fed. Cir. 2006) (construing “aesthetic correction circuitry”); *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1319 (Fed. Cir. 2004) (construing “first circuit,” “second circuit,” and “third circuit”); *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1369 (Fed. Cir. 2003) (construing several terms including “circuit”).

disclosed in the '818 Patent at 9:2–10. As with claim 1, if the Court does not agree that the “dropping means” of claims 3 and 5 are limited to this disclosed structure, the claims are indefinite for the same reasons described above in Section IV.A.4.

B. “interface means . . .” (claims 1, 6, and 7)

Claim Term	NST’s Proposed Construction	TI’s Proposed Construction
“interface means (ANIP, PNIP) for managing the interface between a module (M, S) and the network (N, RN) wherein said interface means (ANIP, PNIP) comprises a first dropping means (DM) for dropping data, and wherein the dropping of data and therefore the transaction completion can be controlled by the interface means”	Not Subject to Section 112 ¶ 6 Interface circuit that connects a module to a network Otherwise, if subject to Section 112 ¶ 6: Function: Manages the interface between a module M, S and the network N, RN and comprises a first dropping means DM for dropping data With respect to claim 6, the function according to claim 1 and “store received error messages” With respect to claim 7, the function according to claim 1 and “not drop error messages” Structure: Circuit	Subject to Section 112 ¶ 6. Function: managing the interface between a module (M, S) and the network (N, RN) and controlling dropping of data and transaction completion Claim 6: Function: storing received error messages Claim 7: Function: not dropping error messages Structure: structure for dropping means where enough buffer space is provided to accommodate a return status message for all outstanding transactions and structure at 8:40–45, 9:1–2, and 9:11–36; Otherwise indefinite

1. “interface means” is a means-plus-function term.

“Interface means,” which explicitly recites “means,” is presumed to be a means-plus-function term under *Williamson*, and NST does not argue otherwise. Br. at 13.

For similar reasons as “dropping means,” the presumption that 112 ¶ 6 applies to “interface means” is not rebutted, because a POSA would not understand the term to denote sufficiently definite structure. Claim 1 itself does not describe any particular structure that corresponds to the

“interface means,” describing it in functional terms, and by reference to the “dropping means” that itself does not connote a definite structure (as explained above). This functional language (“for managing the interface between a module (M, S) and the network (N, RN), wherein said interface means (ANIP, PNIP) comprises a first dropping means (DM) for dropping data, and wherein the dropping of data and therefore the transaction completion can be controlled by the interface means”) describes what the “interface means” is meant to *do*, not what it is *comprised of*.

Dr. Thornton explained that, similar to “dropping means,” a POSA would not have understood “interface means” as used in the ’818 Patent to refer to a particular known structure, or class of structures. *See* Thornton ¶ 59. Dr. Thornton was careful to point out that a POSA *would have* been familiar with the generic term “interface,” by itself, as performing the function of “managing an interface between modules or between a module and a network.” *Id.* But claim 1 requires that the interface means perform *other functions*, imposing the following requirement: “wherein the dropping of data and therefore the transaction completion can be controlled by the interface means.” A POSA would not have understood an “interface” to encompass structure necessary to perform *those specific functions*: dropping data and transaction completion. *Id.*; *see also Datapoint Corp. v. Standard Microsystems Corp.*, 31 Fed. App’x 685, 695 (Fed. Cir. 2002) (“statement that the term ‘interface’ connotes a well known structure” was not sufficient to rebut § 112 ¶ 6 presumption because “the *claim* hardly recites sufficient structure to perform the identified function”) (citation removed) (emphasis original). For this reason, the § 112 ¶ 6 presumption is not rebutted. Dr. Chmelar does not disagree, and points to no common technical understanding of the structure of the claimed “interface means.”

2. TI’s proposed functions for the “interface means” terms are correct.

The functions for “interface means” are “managing the interface between a module (M, S) and the network (N, RN) and controlling dropping of data and transaction completion.” These

functions stem from the claim language. Claim 1 recites “managing the interface between a module (M, S) and the network (N, RN)” directly following the “interface means” term. ’818 Patent, Claim 1. In addition, claim 1 recites “wherein the *dropping of data* and therefore the *transaction completion* can be *controlled by the interface means*,” which discloses the additional functions of controlling dropping of data and transaction completion. *Id.* (emphasis added).

NST’s proposed function for claim 1 is “manages the interface between a module M, S and the network N, RN and comprises a first dropping means DM for dropping data,” but this omits the explicitly claimed functions of controlling dropping of data and transaction completion. Although these two functions do not directly follow the term “interface means”, they are nonetheless functions performed by the interface means. *See Baran v. Med. Device Techs., Inc.*, 616 F.3d 1309, 1317 (Fed. Cir. 2010) (in identifying the claimed function, a court should include “vital function to be performed by the means-plus-function element”). NST does not argue that TI’s proposed functions for claim 1 are incorrect, or why it is proper to omit these functional terms.

Claim 6 provides that the interface means stores the error messages, and claim 7 adds that the interface means associated with the first module does not drop error messages. TI does not believe the parties’ proposals for claims 6 and 7 are materially different.

3. TI’s proposed structure for “interface means” is correct.

The structure that is “clearly linked” to the function for “interface means” is comprised of two parts, as explained by Dr. Thornton. First, the “interface means” of claim 1 comprises the “dropping means” and controls “dropping data,” and thus, is an interface that includes the same structure discussed above in Section IV.A.3 regarding the “dropping means,” namely a buffer that implements a “milk” or “wine” policy when the buffer overflows.

Second, the remaining function of “transaction completion [] controlled by the interface means” is linked in the specification to the structure for reserving enough buffer space to

accommodate a return status message for all outstanding transactions, and the structure at 8:40–45, 9:1–2, and 9:11–36. Thornton ¶ 62. To control transaction completion, response messages that deliver the status of the initial message should not be dropped. *See* ’818 Patent, 8:40–41. To assure this, the interface must allocate sufficient buffer space to accommodate response messages for all outstanding transactions. *See* ’818 Patent, 8:41–45; Thornton ¶ 62. This makes it so “[t]he master module M should always receive a response to a transaction.” ’818 Patent, 9:1–2. Finally, the patent also provides a specific scheme for interpreting response messages to control transaction completion. *Id.* at 9:11–36. A POSA would recognize these disclosures as describing the “accompanying structure for performing the transaction completion control function.” Thornton ¶ 62. Thus, the structure for “interface means” is “structure for the dropping means where enough buffer space is provided to accommodate a return status message for all outstanding transactions, and the structure at 8:40–45, 9:1–2, and 9:11–36.”

4. If the court finds “interface means” is not so limited, it is indefinite.

For similar reasons described above regarding “dropping means,” if the “interface means” is not found by the Court to be limited to the structure proposed by TI in Section IV.B.3 above, the term is indefinite. Dr. Thornton explains that, beyond the structure already described above in Section IV.B.3, “[t]he ’818 Patent includes no other information ascribing any sort of structure to the functions recited for an ‘interface means.’” Thornton ¶ 63. Where the “interface means” is otherwise discussed, it reiterates the same language describing *function* used in claims. *See, e.g.,* ’818 Patent, 5:37–44; 5:64–66. Therefore, to the extent the Court disagrees with TI’s proposed structure for “interface means,” there is no disclosed structure corresponding to the functional limitation in the claims, and the claim is invalid as indefinite. *Biomedino*, 490 F.3d at 950.

5. NST’s arguments regarding “interface means” should be rejected.

a) NST’s argument that the *Williamson* presumption is rebutted

NST makes a similar argument⁸ as it did for “dropping means,” that because the “interface means” is recited as a “comprising” element of the preamble’s “integrated circuit,” that § 112 ¶ 6 does not apply. Specifically, NST argues that “interface means” should be construed as “interface circuit that connects a module to a network.” As discussed above, “[m]ere inclusion of a limitation within a structure does not automatically render the limitation itself sufficiently structural.” *Egenera*, 972 F.3d at 1374; *see also Cardiac Pacemakers*, 296 F.3d at 1113 (“[T]he specification must *clearly associate* the structure with performance of the function.”). NST’s transitive argument should be rejected for the same reasons as above for “dropping means.”⁹

b) NST’s proposed structure of “circuit” should be rejected.

NST’s proposed structure of “circuit” should be rejected for similar reasons as for the “dropping means” term: “circuit” is not clearly linked in the specification of the ’818 Patent to, nor is it adequate for, the function of “managing the interface between a module (M, S) and the network (N, RN) and controlling dropping of data and transaction completion.” The ’818 Patent does not identify the structure of the “interface means” as a circuit element, i.e., a “circuit.” Nowhere in the specification does the patent describe the claimed function as performed *merely* through circuitry. Indeed, “[c]ircuit” is simply a generic term that a person of ordinary skill in the art would not have understood as corresponding to any particular function and the term refers to any combination of coupled electrical elements.” Thornton ¶ 70. The patent specification

⁸ NST also argues that because claim 6 recites an “interface means ANIP, PNIP is adapted to store received error messages,” this supports NST’s construction because “storage cannot be achieved without storage circuitry.” Br. at 13. But this is insufficient. The specification discloses what type of storage is associated with these error messages: a “buffer.” Thornton ¶ 66. And as explained above in Section IV.A, the “dropping means”—which is also associated with a buffer in the patent specification—is not necessarily comprised of unspecified circuitry.

⁹ As explained above in Section IV.A.5.a, courts routinely find that § 112 ¶ 6 applies where a claim term is a “comprising” element of an “integrated circuit.” *See supra* note 4.

associates the functions of the interface means with a particular type of storage: a “buffer.” *See* Section IV.A.

In addition, NST’s proposed structure ignores part of the claimed functionality of the “interface means,” namely, claim 1’s language requiring the “interface means” to be capable of controlling “dropping of data and therefore the transaction completion.” Thornton ¶ 69. “Where there are multiple claimed functions, as there are in this case, the patentee must disclose adequate corresponding structure to perform all of the claimed functions.” *Media Rts. Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1374 (Fed. Cir. 2015).

And NST again cites to the same caselaw as for “dropping means,” which is inapposite for the same reasons. Each of the cases recited by NST relates to terms that *explicitly incorporate and clearly link* the term “circuit” to the means-plus-function term in question. *See* Section IV.A.5.b.

6. “Interface means” in claims 6 and 7 are similarly limited, or otherwise similarly indefinite.

Claims 6 and 7 include the “interface means” of antecedent claim 1. The additional functions of “storing received error messages” (claim 6) and “not dropping error messages” (claim 7) correspond to the same structure of claim 1 discussed above. *See* Section IV.B.3; Thornton ¶ 66. Therefore, claims 6 and 7 should be similarly limited to the same structure, or found indefinite.

V. THE ’449 PATENT

A. “communication manager” (claims 10, 17, and 18)

Claim Term	NST’s Proposed Construction	TI’s Proposed Construction
“communication manager”	Not Subject to Section 112 ¶ 6 “circuit that manages communication between modules” Otherwise, if subject to Section 112 ¶ 6:	Subject to § 112 ¶ 6. Function: receiving a request for a connection from a first module, forwarding the request to a resource manager, and receiving the availability of the

	Function: “forward a request for a connection to a resource manager”	target connection from the resource manager
	Structure: “circuit”	Structure: Indefinite

1. “communication manager” is a means-plus-function term.

Although the *Williamson* presumption in favor of § 112 ¶ 6 treatment does not apply to “communication manager,” this term still invokes § 112 ¶ 6 because “manager” is a nonce word substituting for “means,” and “communication” is purely functional, imparting no structure. Indeed, the specification itself refers to the communication manager as “communication managing means.” 449 Patent, 7:35–36, 7:42–43, 7:50–51, 7:57–58, 8:2. The fact that the specification uses “communication manager” and “communication managing means” interchangeably supports the conclusion that “manager” is used as a nonce term.¹⁰ See *WSOU Invs. LLC v. Google LLC*, 2023 WL 6210607, at *4 (Fed. Cir. Sept. 25, 2023) (“nothing in the patent differentiates [‘alerting unit configured to issue an alert’ and ‘means for issuing an alert’]” and [] the interchangeable use of “unit” and “means” leads to the conclusion that neither term discloses sufficient structure.”); *Cypress Lake Software, Inc. v. ZTE (USA) Inc.*, 2018 WL 4035968, at *9 (E.D. Tex. Aug. 23, 2018) (construing “code for” under § 112 ¶ 6 where the specification “equate[d] ‘code for’ and ‘means for’ by using the same functional language as in the claims except that the specification recites ‘means for’ performing those functions, whereas the claims recite ‘code for’ doing so”).

Dr. Thornton’s opinion aligns with the result in *WSOU* and *Cypress Lake*. His unrebutted testimony explains that a POSA would not have understood “communication manager” as a “term of art identifying a particular structure or class of structures,” and that there is “no particular class

¹⁰ It is also noteworthy that the claims as originally filed included the limitation “at least one communication managing means (CM) for managing the communication” Ex. 2 at NST_0000525–26. The claim language was only changed to its present form in the last amendment before allowance. *Id.* at NST_0000441–44.

of structures that implements the generic function of managing communications that would be recognized by a [POSA].” Thornton ¶ 77–78. Rather, “[t]he ’449 Patent treats ‘communication manager’ simply as a black box that performs the function of managing communications between different modules, untied to any particular structure.” *Id.* at ¶ 77. Dr. Chmelar does not dispute this, or otherwise present any commonly held understanding of a “communication manager”—there is none. *See Kyocera Senco Indus. Tools Inc. v. Int’l. Trade Comm’n*, 22 F.4th 1369, 1380 (Fed. Cir. 2022) (§ 112 ¶ 6 applies where “no party claims [term] has a plain and ordinary meaning to [a POSA].”).

TI’s position is supported by case law considering similar situations interpreting “manager.” *See Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1383 (Fed. Cir. 2009) (“what the patent calls the ‘access control manager’ is simply an abstraction that describes the function of controlling access to course materials, which is performed by some undefined component of the system.”); *Alarm.com, Inc. v. SecureNet Techs., LLC*, 2019 WL 3996883, at *6 (D. Del. Aug. 23, 2019) (construing “connection management component” under § 112 ¶ 6 because it “has no commonly understood meaning, is not generally viewed by those skilled in the art to connote a particular structure, and the specification . . . only describes the term’s function . . .”).

2. TI’s proposed functions for “communication manager” are correct.

The functions for “communication manager” are “receiving a request for a connection from the first module, forwarding the request to a resource manager, and receiving the availability of the target connection from the resource manager.” These stem from the language of claim 10, which states that a “request for a connection” is sent from the first module to the communication manager, “the communication manager forward[s] the request to a resource manager,” and “the resource manager respond[s] with the availability of the target connection to the communication manager.” NST’s proposed function improperly removes the functions of (1) receiving a request

for a connection from the first module and (2) receiving the availability of the target connection from the resource manager. Both omitted functions are “vital function[s] to be performed by the means-plus-function element.” *Baran*, 616 F.3d at 1317.

3. The ’449 Patent does not specify a corresponding structure for “communication manager,” so claims 10, 17, and 18 are indefinite.

The ’449 Patent does not disclose corresponding structure for “communication manager,” rendering claims 10, 17, and 18 indefinite. Where the patent discusses this term, it is only as a black box performing functions. *See, e.g.*, ’449 Patent, 7:66–67 (“Accordingly, the communication manager CM has some control over the minimum requirements for a connection.”), 10:19–21 (“The communication manager CM request a [sic] connection with a set of properties between two modules from the resource manager RM”), 10:43–54 (describing “communication manager” performing function of receiving communications and rejecting connections), 10:59–61 (“... the communication manager CM issues a request to said resource manager RM to reset the connection or the connection properties.”). As Dr. Thornton explains, “[t]he specification simply describes the function of the ‘communication manager,’ not what it consists of.” Thornton ¶ 80. Thus, the Court should find these claims indefinite. *See Augme Techs., Inc. v. Yahoo! Inc.*, 755 F.3d 1326, 1338 (Fed. Cir. 2014) (“[s]imply disclosing a black box that performs the recited function is not [] sufficient . . . to render the means-plus-function term definite.”).

4. NST’s arguments regarding “communication manager” should be rejected.

a) NST’s argument about the *Williamson* presumption.

NST’s position that § 112 ¶ 6 does not apply is not credible. NST admits that the ’449 Patent “uses the terms ‘communication manager’ and ‘communication managing *means*’ interchangeably.” Br. at 18 n. 2 (emphasis added). As discussed above, a patent’s

“interchangeable” usage of a non-means term with a means term means that § 112 ¶ 6 *should apply*. See *WSOU*, 2023 WL 6210607, at *4.

Moreover, NST incorrectly relies on the specification alone, rather than the claims themselves, to argue that “communication manager” is comprised in “a system on chip,” and thus not subject to § 112 ¶ 6. Br. at 18. This attempt to import embodiments to supply missing structure is improper. *CXT Sys., Inc. v. Acad., Ltd.*, 2019 WL 4253841, at *13 (E.D. Tex. Sept. 6, 2019) (“[s]ufficient structure exists [to avoid § 112, ¶ 6] when the *claim language* specifies the exact structure that performs the functions in question *without need to resort to other portions of the specification* or extrinsic evidence for an adequate understanding of the structure.” (quoting *TriMed, Inc. v. Stryker Corp.*, 514 F.3d 1256, 1259 (Fed. Cir. 2008))) (emphasis added).^{11,12}

b) NST’s proposed structure of “circuit” should be rejected.

NST’s proposed structure of “circuit” should be rejected for similar reasons as with “dropping means” and “interface means”: a bare “circuit” is not clearly linked to, nor is it adequate for, the functions of “receiving a request for a connection from the first module, forwarding the request to a resource manager, and receiving the availability of the target connection from the resource manager.” The specification of the ’449 Patent does not “clearly associate the structure [of a ‘circuit’] with the performance of the [‘communication manager’] function.” *Cardiac Pacemakers*, 296 F.3d at 1113. Nowhere does the specification describe these functions as performed through circuitry, and thus “a [POSA] would [not have] underst[oo]d the corresponding

¹¹ In any event, as with “dropping means” and “interface means,” NST’s argument violates the holding of *Egenera*: “[m]ere inclusion of a limitation within a structure does not automatically render the limitation itself sufficiently structural.” 972 F.3d at 1374.

¹² NST’s argument is also based on a mistaken recitation of TI’s construction for “dropping means” as allegedly incorporating “dropping manager” as structure. Br. at 19–20. TI’s construction for “dropping means” does not include “dropping manager.” See Section IV.A.

structure of the ‘communication manager’ function to be a ‘circuit.’” Thornton ¶ 86; *see Traxcell Techs., LLC v. Sprint Commc’ns Co.*, 15 F.4th 1121, 1134 (Fed. Cir. 2021) (“A means-plus-function claim is indefinite if the specification fails to disclose adequate corresponding structure to perform the claimed function.”).

Neither NST nor its expert, Dr. Chmelar, rebut Dr. Thornton’s testimony that the ’449 Patent does not disclose a generic “circuit” (or any other structure) that performs the claimed functions of managing communications. NST only invokes the same transitive argument based on the communication manager being included as part of an “integrated circuit” (Br. at 20–21), which is incorrect as a matter of law. *See* Section IV.A; Section IV.B.

B. “resource manager determining whether a target connection with the desired connection properties is available” (claims 10, 14, and 15)

Claim Term	NST’s Proposed Construction	TI’s Proposed Construction
“resource manager determining whether a target connection with the desired connection properties is available”	“resource manager” means “circuit that manages network resources.” The remaining parts of this term should be afforded their plain and ordinary meanings.	“resource manager determining whether a target connection with the desired connection properties is available, where the resource manager is not an arbiter that selects the output based on input priorities”

TI’s construction of “resource manager,” which excludes a particular type of “arbiter,” is faithful to the prosecution disclaimer doctrine. During prosecution of the ’449 Patent, the examiner rejected a pending claim that became asserted claim 10 over U.S. Patent Pub. No. 2004/0103230 (“Emerson”), identifying an “arbiter” in Emerson as teaching a “resource managing means (RM).” *See* Thornton, Ex. D; Thornton ¶ 88. In response, the applicant distinguished the operation of Emerson’s arbiter 132 from the claimed invention. First, the *applicant* quoted and *emphasized* Emerson’s description of arbiter 132, which arbitrates which port has access to memory based on priority (emphasis original):

If the address received at a port matches that of the module for that bus, access to multiplexer 122 and the memory space of FIFO 126 and SRAM 130 is arbitrated by arbiter 132. **Arbiter 132 arbitrates which port has use of multiplexer 122 and of the memory space at a given time. The arbitration protocol may be any protocol suitable for the system, including rotation of the priority among the ports or assigning specific ports a priority over others, or a combination of both.** It is preferred that any given arbitration cycle prioritizes ports 120 so that if the port with the highest priority does not have any current requests, the port with the next highest priority will be serviced.

Ex. 2 at NST_0000445–46. To distinguish Emerson from this disclosure,¹³ the applicant introduced a new limitation (appearing in issued claim 10) that the resource manager must “determine[] whether a target connection with the desired connection properties is available,” and argued that Emerson’s arbiter “does not disclose or suggest” the claimed feature. *Id.* at NST_0000446; Thornton ¶ 95. As Dr. Thornton explains, and as is evident from the file history, the applicant was distinguishing the claimed “resource manager” from the “priority-based protocols” of Emerson’s arbiter. Thornton ¶ 96. “[A] reasonable competitor, reviewing the amendments and statements made by the applicant to distinguish the claimed invention from [Emerson], would conclude that the claimed invention did not cover a device like [Emerson’s].” *Springs Window Fashions LP v. Novo Indus., L.P.*, 323 F.3d 989, 995 (Fed. Cir. 2003). NST cannot “state during prosecution that the claims do not cover a particular device and then change position and later sue a party who makes that same device for infringement.” *Id.* For this reason, the Court should construe the claim to reflect the applicant’s unambiguous disclaimer of Emerson’s priority-based arbiter.

NST argues that this history should be ignored because the examiner’s reasons for allowance did not explicitly reflect disclaimer. Br. at 23. But “that an examiner placed no reliance

¹³ As Dr. Thornton explains, there is a typographical error in the applicant’s remarks identifying arbiter 112, as opposed to arbiter 132 that is discussed in the excerpted text from Emerson. *See* Thornton ¶¶ 97–98. Nevertheless, the same argument applies to arbiter 112. *Id.*

on an applicant's statement distinguishing prior art does not mean that the statement is inconsequential for purposes of claim construction.” *Laitram Corp. v. Morehouse Indus., Inc.*, 143 F.3d 1456, 1462 (Fed. Cir. 1998). Moreover, contrary to NST’s suggestion that this disavowal was “ambiguous,” Br. at 23, NST’s expert (Dr. Chmelar) conspicuously makes *no such assertion*—instead he opines in conclusory fashion that the applicant “did not disclaim scope.” Chmelar ¶ 153. The only expert who presented a substantive analysis of the file history from the perspective of a POSA is Dr. Thornton, who agrees with TI that a POSA would understand the file history to reflect the applicant’s disclaimer of arbiters implementing priority-based protocols. Thornton ¶¶ 88–98.

NST’s own proposed construction of “circuit that manages network resources” simply “repeats the claim term [without] provid[ing] any further clarity” to a POSA and ignores the prosecution history. Thornton ¶ 99. NST should not be allowed to backtrack on its disavowal of priority-based arbiters, which is what allowed it to obtain the ’449 Patent in the first place.

VI. THE ’800 PATENT

A. “optimal amount of data to be buffered” (claim 12)

Claim Term	NST’s Proposed Construction	TI’s Proposed Construction
“optimal amount of data to be buffered”	Plain and ordinary meaning	Indefinite

“Optimal amount of data to be buffered” is a prototypically subjective term of degree, leaving the public to guess whether and how NST might allege that a given device infringes. This is the problematic situation the Supreme Court envisioned when it held that a claim is indefinite when it “fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S.Ct. 2120, 2124 (2014).

Dr. Thornton explained, citing a technical dictionary, that “optimal” indicates “a calculated solution (e.g., a minimum or a maximum) to a provided or a known objective function.” Thornton

¶ 105 (citing Ex. 4 (*Optimal*, DICTIONARY OF COMPUTER SCIENCE ENGINEERING AND TECHNOLOGY (2001))). Importantly, what constitutes “optimal” in a particular system “depends upon the objective function and the parameters to be considered,” and “if the objective function is not clearly specified for a given set of parameters,” arriving at an “optimal result” becomes “subjective.” *Id.* That is the problem here—there is no “industry-wide understanding” for what constitutes an “optimal amount of data to be buffered” and no standard techniques or parameters for determining an “optimal” amount of data to be buffered when designing a device envisioned in the ’800 Patent. *Id.* at ¶ 107.

The ’800 Patent specification does not help in providing reasonable certainty, as it provides only subjective guidance on how to determine the “optimal amount of data to be buffered.” Thornton ¶¶ 107–116. Where the patent refers to “amount[s]” of data, it substitutes one subjective term for another, e.g., repeatedly referring to a “**sufficient**” amount of data, which means something different than, and provides no further clarity beyond, “optimal amount.” *See, e.g.*, ’800 Patent, 3:47–49; (“data is buffered on the slave side until a **sufficient large amount of data** to be transferred . . . is reached.”) (emphasis added), 4:50–52, 4:55–58, 7:16–19.

Nor does the specification’s statement that “determination of an optimal burst length” may be performed based on “communication or connection properties” provide reasonable certainty. ’800 Patent at 6:63–7:2. As Dr. Thornton noted, the ’800 patent provides a “confus[ing]” and lengthy list of potential connection properties, “some of which may have contradictory or conflicting impact on optimal result.” Thornton ¶ 113; ’800 Patent, 5:27–35. The patent rattles off this list, but “gives no indication as to what aspect or combination of these ‘connection properties’ may facilitate the determination of an ‘optimal amount of data.’” Thornton ¶ 115.

NST likens these properties to “Quality of Service (QoS)” indicators, Br. at 3, but this only undermines its position further. In *Intell. Ventures I LLC v. T-Mobile USA, Inc.*, the Federal Circuit considered a claim reciting a function of “optimize end user application IP QoS requirements.” 902 F.3d 1372, 1381 (Fed. Cir. 2018). The Court found “QoS requirements” to be “entirely subjective and user-defined,” and therefore, concluded that this term rendered the claim indefinite. *Id.* The “QoS” (communication properties) here present the same problem. “[E]ach one of [the listed] individual terms covers a plethora of concepts and may refer to any number of different networking considerations, methodologies, and potential networking rules.” Thornton ¶ 115.

NST argues that “a POSITA would understand that a ‘first optimal amount of data to be buffered’ equates to the amount of data that is optimal under certain conditions,” Br. at 29, but this circular definition exposes the problem. It cannot be that the definition of “optimal amount of data” is “the amount of data that is optimal” NST’s argument only further shows the difficulty in defining “optimal amount of data.” Similarly, NST relies on Dr. Chmelar’s discussion of excerpts from the specification (*see id.* (citing Chmelar ¶¶ 227, 228)), but these excerpts substitute other wishy-washy terms of degree: e.g., “buffered data is *sufficiently large*,” “utilized *more efficiently*,” “*sufficient* data for an optimal packet size.” Chmelar ¶ 227.

NST also argues¹⁴ that “optimal amount of data to be buffered” is not indefinite because it is “not a fixed quantifier but based on certain conditions such as communication properties and/or interconnect characteristics,” Br. at 29, but again, as noted directly above, these “connection

¹⁴ NST cites to one case (*Bitmicro LLC v. Kioxia America, Inc., et al.*, Case 6:22-cv-00331 (W.D. Texas Feb. 16, 2023)) to argue that “optimal” should be afforded its “plain and ordinary meaning,” Br. at 28–29, but that case is readily distinguishable. There, the court addressed whether a patent provided sufficient guidance as to an “optimal” device where the patent provided explicit guidance for two mutually exclusive optimization scenarios. Slip op. at 44. Here, the ’800 Patent presents a subjective list of ten different criteria with competing interests. *See* Thornton ¶ 116.

properties” are the same sort of QoS indicators that the Federal Circuit found indefinite in *Intell. Ventures*. Dr. Thornton further notes that a POSA would be “unable to identify how to weight these properties and utilize them together,” Thornton ¶ 116, which presents one more problem. Even if each individual connection property provided an objective metric to measure optimality (they do not), without some guidance as to how these properties should be understood to work together, “[d]ifferent approaches to weighing or otherwise specifying the[ir] interactions . . . would also often lead to materially different results, i.e., different optimal values that are dependent upon the subjective decisions.” *Id*; see also *In re TR Labs Pat. Litig.*, 2014 WL 3500596, at *5 (D.N.J. July 14, 2014) (finding optimization term indefinite where specification did not “take into account how such costs are to be weighed and balanced in a way that optimizes demand served”).¹⁵

B. “an optimal moment for sending the data” (claim 12)

Claim Term	NST’s Proposed Construction	TI’s Proposed Construction
“an optimal moment for sending the data”	Plain and ordinary meaning	Indefinite

“Optimal moment for sending the data” is indefinite for similar reasons as discussed above for “optimal amount.” “Optimal moment for sending the data” is not a known term of art to a POSA, so a POSA would need to look to the specification for further guidance to understand the scope of the term. Thornton ¶¶ 117–120. But the specification provides even less information here than for “optimal amount.” In fact, there is *no mention* of an “optimal moment” in the

¹⁵ Moreover, a POSA would not understand how to determine the “optimal amount of data” and the “optimal moment” (discussed below in Section VI.B) with respect to each other. As Dr. Thornton explains, “[t]he terms must, at least to some extent, consider one another, otherwise they may contradict. For instance, an ‘optimal moment’ must at least be far enough in the future to allow time for an ‘optimal amount of data’ to buffer, otherwise an amount less than the ‘optimal amount of data’ will be sent at the ‘optimal moment.’” Thornton ¶ 121. The ’800 Patent says nothing about how to reconcile “optimal amount” and “optimal moment.” *Id*.

specification; the term appears only in the claims. The closest the specification gets is a single sentence stating that “[b]esides the optimal burst length determination, also the *transmission moment* may be determined in a similar way by the first and second determination means BLDU1, BLDU2.” ’800 Patent, 7:4–6 (emphasis added). The specification does not even say that this “transmission moment” is “optimal.” Given this threadbare disclosure, Dr. Thornton opined that a POSA would lack sufficient guidance to understand the scope of this term. Thornton ¶ 118.

Although Claim 12 invokes the same long list of “connection properties” (with slightly different syntax) for the “optimal moment for sending the data” as discussed above for “optimal amount,” for similar reasons as discussed above, those “QoS”-like communication properties do not provide reasonable certainty to the scope of the claim. The “connection properties” encompass vague and subjective criteria, and the patent does not describe how a POSA should understand how each “connection property” relates to a given “optimal moment for sending the data.” *See id.* ¶ 120. And again, the patent does not explain how to reconcile competing properties that, weighted differently, could yield materially different resulting “optimal” moments. *See id.*

NST tepidly argues that the specification’s discussion of a “transmission moment” “sufficiently disclose[s]” the “optimal moment,” pointing to a statement that, in determining the transmission moment “[f]or a guaranteed throughput GT connection, data should wait for one of the slots reserved for its connection” and that “for a best effort BE connection, a round robin arbitration across connections in the NI can be used.” Br. at 28 (quoting ’800 Patent at 7:4–14). This disclosure—discussing only *one* of Claim 12’s listed connection properties (throughput) and a connection property *not* listed in Claim 12 (best effort)—fails to resolve the core issue—how to reconcile ten different connection properties with often competing interests—and does not provide “objective boundaries for those of skill in the art.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d

1364, 1371 (Fed. Cir. 2014). At bottom, “optimal moment,” which is determined in reference to vague “connection properties,” is just like the “optimiz[ing]... QoS” term in *Intell. Ventures I*—it is a “term of degree” that is “purely subjective,” thereby rendering the claim indefinite. 902 F.3d at 1381.

VII. THE '052 PATENT

A. “interconnect means”

Claim Term	NST’s Proposed Construction	TI’s Proposed Construction
“interconnect means”	“multi-hop interconnection between modules separated by one or more network nodes.”	Plain and ordinary meaning

“Interconnect means” should be afforded its plain and ordinary meaning of structure that couples various processing modules. ’052 Patent at 1:6–10, 3:15–22, 3:51–54, 4:1–7, claim 6 (“coupling said plurality of processing modules (M, S) by an interconnect means”). Both parties agree that this is not a § 112 ¶ 6 term. And as Dr. Thornton explained,¹⁶ a POSA would be familiar with the term “interconnect” as it is used in the field of integrated circuits as a “class of structures that couple the processing modules of an integrated circuit.” Thornton ¶ 135.

NST’s narrow construction (“multi-hop interconnection between modules separated by one or more network nodes”) contradicts that common understanding, and seeks to a) import the concept of a “network,” b) limit the term to a “multi-hop” arrangement, and c) exclude what NST’s brief calls a “direct interconnection” or “shared bus” scheme. *See* Br. at 9, 10. NST’s transparent motivation for importing these limitations is its concern about “invalidity disputes.” *Id.* at 10. But

¹⁶ Dr. Thornton’s declaration analyzes a broader version of NST’s proposed construction for “interconnect means” due to a misunderstanding between the parties leading up to the Joint Claim Chart submission. Dr. Thornton’s conclusion that this broader construction is itself unduly limiting supports TI’s position here that the even narrower construction NST proposes (including a “multi-hop” limitation) is also unduly limiting.

these limitations contradict the specification, which states that a “network on chip NOC” is merely *one kind* of interconnect. ’052 Patent at 4:46–50; *see also* ’052 Patent at 1:48–58 (also listing “buses, switches, or point-to-point wires” as examples of “interconnects”); Thornton ¶ 137 (“the ’052 Patent explicitly contemplates that an interconnect would encompass wires, bus, switches and a network”).

At bottom, NST has come nowhere near the high standard required to import limitations into a claim or otherwise narrow the plain and ordinary meaning of claim language. *See Housey Pharms., Inc. v. Astrazeneca UK Ltd.*, 366 F.3d 1348, 1352 (Fed. Cir. 2004) (“[T]here is a heavy presumption that the language in the claim carries its ordinary and customary meaning.”) (internal citations omitted). Presumably, if the ’052 Patent’s inventors had intended to claim a “multi-hop” and “network”-based interconnect using “indirect interconnection” between modules, as NST now argues, they could have done so. Instead, they broadly claimed an “interconnect means.” *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364-65 (Fed. Cir. 1999) (“Courts do not rewrite claims; instead, we give effect to the terms chosen by the patentee.”).¹⁷

VIII. COMMON TERMS

A. “network”

Claim Term	NST’s Proposed Construction	TI’s Proposed Construction
“network”	“multi-hop interconnection between modules separated by one or more network nodes”	Plain and ordinary meaning

¹⁷ NST’s off-handed suggestion that a “plain and ordinary meaning” construction violates *O2 Micro* (Br. at 10) should be rejected. If the Court adopts TI’s construction, rejecting NST’s proposal, this will resolve any dispute as to whether “interconnect means” “should encompass additional concepts like bus architectures and off-chip communications.” Br. at 10. If NST later tries to improperly resurrect this dispute before the jury, “[r]estating a previously settled argument does not create an ‘actual dispute regarding the proper scope of the claims’ within the meaning of *O2 Micro*.” *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1207 (Fed. Cir. 2010).

NST’s proposed construction, which is identical to its proposal for “interconnect means,” should be rejected for similar reasons as for “interconnect means.” The intrinsic evidence does not constrain the claimed “network” with the limitations NST attempts to import into the claims, namely “multi-hop,” and “separated by one or more network nodes,” nor does it limit a network to a system of “indirect[ly]” connected modules, as NST argues in its brief (Br. at 2).

“Network” is a common term with a well-understood meaning in the art: “[a] series of points interconnected by communication channels.” Thornton ¶ 139 (quoting Ex. 5 (*Network*, AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS (7th ed., 2000))).¹⁸ NST does not even attempt to argue that the plain and ordinary meaning of “network” includes the limitations it attempts to import. *See* Br. at 8. Nor does NST argue that the patents contain language of “manifest exclusion or restriction,” as would be necessary to otherwise limit “network” in the way NST proposes.¹⁹ *See Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1306 (Fed. Cir. 2011) (“To disavow claim scope, the specification must contain expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.”) (internal quotations omitted). Contrary to NST’s position, the ’2893 Patent defines network broadly to include “network stations . . . interconnected via . . . wires,” ’2893 Patent at 1:22–25, and does not specify

¹⁸ As with “interconnect means,” Dr. Thornton analyzed a broader construction of “network” due to a misunderstanding leading up to the parties’ joint claim construction submission. As noted above in footnote 16, his conclusion that a broader construction was unduly limiting supports TI’s position here that an even narrower construction is also unduly limiting.

¹⁹ The closest NST comes is a citation to the Asserted Patents that “[i]ntroducing networks as on-chip interconnects radically changes the communication when compared to direct interconnects, such as buses or switches . . . because of the multi-hop nature of a network” Br. at 8. But NST’s argument is predicated on *its own proposed construction* of another claim term (“integrated circuit”) that attempts to unduly limit the scope of the invention to “on a chip” embodiments. *See* Section VIII.B. NST again ignores the repeated use of “network” in the Asserted Patents according to its plain and ordinary meaning beyond “on a chip” embodiments. *See, e.g.*, ’449 Patent at 1:61–66 (discussing parallel machine interconnect networks); *see also* Thornton ¶ 141.

that the stations must connect via “intervening nodes” or multiple hops as NST suggests. *See* Thornton ¶ 141. The patent’s definition of network requires only that a plurality of network stations be interconnected. It encompasses indirect connections via “data routers,” ’2893 Patent at 1:25–28, but does not exclude direct connections between specific functional blocks, ’2893 Patent at 1:22–25.

NST argues that a plain and ordinary construction is “unworkable” because the term allegedly lacks a consistent meaning. Br. at 8. But the factual support NST cites for its “unworkable” proposition *undermines* its position. NST cites its expert, Dr. Chmelar, who in turn cites two dictionary definitions for network, one of which defines the term as “any set of devices or subsystems connected by links joining (*directly or indirectly*) a set of terminal nodes” and “[a]n arrangement of components, or nodes, and interconnecting branches.” Br. at 8–9. The first definition expressly contradicts NST’s argument that a network must only involve “indirect” connection, and the second definition implicitly contradicts NST’s position by positing a broad definition of the term that encompasses indirect *and* direct connections. Dr. Chmelar’s opinion on this issue is thus not credible. Dr. Thornton, who considered the same dictionary source as Dr. Chmelar, correctly concluded that a POSA would be familiar with the term “network” and have no reason to depart from its plain meaning. *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014) (“There is a *heavy presumption* that claim terms carry their accustomed meaning in the relevant community at the relevant time.”) (emphasis added) .

B. “integrated circuit”

Claim Term	NST’s Proposed Construction	TI’s Proposed Construction
“integrated circuit”	“interconnected circuitry on a chip”	Plain and ordinary meaning

NST presents no reason why “integrated circuit” should stray from its well-accepted meaning and be narrowed to an “on a chip” embodiment. “Absent disclaimer or lexicography, the plain meaning of the claim controls.” *Toshiba Corp. v. Imation Corp.*, 681 F.3d 1358, 1369 (Fed. Cir. 2012). But NST makes no argument based on the prosecution history, nor does it argue that the patent “clearly express[es] [the intent to redefine the meaning of a claim term away from its ordinary meaning] in the written description.” *Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1370 (Fed. Cir. 2005). NST’s argument that the Asserted Patents “disclose embodiments concerning circuitry ‘on a chip’” comes nowhere close to the high bar for disclaimer. Br. at 11.

NST’s proposed definition goes against a POSA’s understanding of “integrated circuit.” “The term ‘integrated circuit’ came to be used in common parlance in the semiconductor industry over the intervening four decades [since their invention in 1958] and would have been well-understood to a person of ordinary skill in the art by the time the invention of the Asserted Patents.” Thornton ¶ 138. Nothing in any of the Asserted Patents suggests construing “integrated circuit” as “interconnected circuitry on a chip,” and in fact such a definition would exclude “blocks that are not specifically interconnected with each other (i.e., the blocks cannot communicate with one another),” despite such structures being commonly understood to constitute integrated circuitry. *Id.* Much like its proposal for “interconnect means,” NST’s construction for “integrated circuit” improperly attempts to limit the scope of the claims and should be rejected. *See also Optimum Imaging Techs. LLC v. Canon Inc.*, 2020 WL 3104290, at *19 (E.D. Tex. June 11, 2020) (construing several terms that include “integrated circuit” to have plain and ordinary meanings).

IX. CONCLUSION

TI respectfully requests the Court to adopt its proposed claim construction positions.

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Respectfully Submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that all counsel of record who are deemed to have consented to electronic service are being served with a copy of the foregoing document via the Court's CM/ECF system per Local Rule CV-5(a)(3) this 11th day of October, 2023.

/s/ Ranganath Sudarshan