

United States District Court  
Northern District of California

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UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA

IN RE: CHROMACODE LITIGATION

Case No. [23-cv-04823-EKL](#)

**CLAIM CONSTRUCTION ORDER**

The patents asserted in this case relate to biochemical tests for detecting the presence of specific polynucleotide sequences within samples using fluorescent signals. The parties propose competing constructions of ten terms across five patents. The Court held a tutorial and a *Markman* hearing regarding the construction of the disputed terms, and ordered supplemental briefing. After considering the parties’ papers and evidence, the Court construes the terms as follows.

**I. PROCEDURAL BACKGROUND**

On September 20, 2023, ChromaCode, Inc. (“ChromaCode”) filed the present action against Bio-Rad Laboratories, Inc. (“BioRad”), seeking a declaratory judgment of non-infringement as to U.S. Patent Nos. 9,222,128 (’128 Patent) and 9,921,154 (’154 Patent). ECF No. 1. BioRad asserted counterclaims for infringement of its ’128 Patent and ’154 Patent. ECF No. 27. The parties completed claim construction briefing for the ’128 and ’154 Patents on June 28, 2024.

On October 5, 2023, ChromaCode filed suit against BioRad in the U.S. District Court for the Central District of California asserting claims for infringement of U.S. Patent Nos. 10,068,051

1 ('051 Patent) and 10,770,170 ('170 Patent). ECF No. 1.<sup>1</sup> ChromaCode amended its complaint on  
 2 October 13, 2023, to add the California Institute of Technology ("Caltech") as a plaintiff. ECF  
 3 No. 12. On December 11, 2023, the case was transferred to the Northern District. ECF No. 35.  
 4 On March 27, 2024, ChromaCode and Caltech (together, "ChromaCode") filed a second amended  
 5 complaint adding a claim for infringement of U.S. Patent No. 11,827,921 ('921 Patent). ECF No.  
 6 54. The parties completed initial claim construction briefing for the '051, '170, and '921 Patents  
 7 on August 9, 2024.

8 On August 16, 2024, the two cases were consolidated for all purposes, with this case  
 9 designated as the lead. ECF No. 71. On August 20, 2024, the consolidated action was reassigned  
 10 to the undersigned. The Court held a tutorial on December 3, 2024, and a *Markman* hearing on  
 11 December 12, 2024. ECF Nos. 92, 96. On January 10, 2025, the parties completed supplemental  
 12 briefing ordered by the Court regarding its proposed construction of term 6. ECF Nos. 100, 102.

## 13 **II. FACTUAL BACKGROUND**

14 BioRad and ChromaCode develop technology used in genetic analysis and diagnostic  
 15 tools.<sup>2</sup> One such tool is polymerase chain reaction ("PCR"), in which analytes (*i.e.*, molecules of  
 16 interest such as DNA sequences) are amplified (*i.e.*, replicated) and combined with probes  
 17 designed to hybridize (*i.e.*, bind) to the analytes. The probes are equipped with fluorophores that  
 18 emit light signals when excited, permitting detection and identification of the analytes present.  
 19 Both parties' patents address problems that arise with multiplexing PCR assays (*i.e.*, attempting to  
 20 detect multiple targets within samples) by using multiple colors of light, alone or in combination,  
 21 to encode targets of interest. The parties' respective patents are summarized below.

### 22 **A. The '128 and '154 Patents**

23 BioRad's patents are directed to solving problems that arise with multiplexing by using  
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25 <sup>1</sup> ECF citations for pleadings and claim construction briefing concerning the '128 and '154 Patents  
 26 refer to the docket for the above captioned case. ECF citations regarding pleadings and claim  
 27 construction briefing concerning the '051, '170, and '921 Patents refer to the docket for  
 28 *ChromaCode Inc. v. Bio Rad Labs. Inc.*, No. 23-cv-06360-EKL (N.D. Cal.).

<sup>2</sup> ChromaCode is Caltech's exclusive licensee for the '051, '170, and '921 Patents. Sec. Am.  
 Compl. ¶¶ 49, 60, 71, ECF No. 54.

1 multiple colors in combination to encode targets of interest.

2 The '128 Patent, titled "Multiplexed Digital Assays with Combinatorial Use of Signals,"  
3 was filed on March 19, 2012, and claims priority from provisional application no. 61/454,373  
4 ("373 Application"), filed on March 18, 2011. '128 Patent, ECF No. 51-1. Prior art methods for  
5 PCR multiplexing were inadequate for various reasons, including that the hardware required to  
6 detect multiple targets was complicated and expensive. *See id.* at 2:14-18. The '128 Patent  
7 addresses this problem by allowing targets to be detected by more than one color signal. *Id.* at  
8 Fig. 8.

9 The '154 Patent was filed on December 6, 2013, as a continuation-in-part of the '128  
10 Patent, and also claims priority from the 373 Application. '154 Patent, ECF No. 51-2. The '154  
11 Patent, titled "Multiplexed Digital Assays," teaches multiplexing examples wherein two targets  
12 are detected in a sample using a single color signal. *Id.* at 4:51-56.

13 BioRad asserts that Caltech's high-definition PCR technology infringes the '128 and '154  
14 Patents. BioRad Countercls. at 10-15, ECF No. 27.

#### 15 **B. The '051, '170, and '921 Patents**

16 The ChromaCode patents are continuations of one another and share the same title and  
17 specification. The '051 Patent, titled "Signal Encoding and Decoding in Multiplexed Biochemical  
18 Assays," was filed on August 5, 2014, as a continuation of application no. 13/756,760, filed on  
19 February 1, 2013. '051 Patent, ECF No. 65-1. The '170 Patent was filed on March 7, 2018. '170  
20 Patent, ECF No. 65-2. The '921 Patent was filed on May 1, 2020. '921 Patent, ECF No. 65-3.  
21 The '051 and '170 Patents recite the invention as a method, and the '921 Patent is directed to an  
22 assay.

23 ChromaCode's patents attempt to solve the multiplexing problem by applying a  
24 nondegenerate encoding scheme, in which every unique potential combination of analytes  
25 corresponds unambiguously to a unique light signature. *See, e.g.*, '051 Patent at 18:34-20:21 &  
26 Table 5. In a degenerate encoding scheme, the same cumulative light signal could potentially  
27 correspond to more than one possible combination of analytes present. *Id.* In a nondegenerate  
28 encoding scheme, the cumulative light signal emitted from the sample volume uniquely

1 corresponds to only one possible combination of analytes present. *Id.* The '051 Patent teaches  
 2 that the coding scheme can be used to detect the presence, or absence, of any analyte. *Id.* at  
 3 Abstract.

4 ChromaCode asserts that BioRad's products, including the QX600 Droplet Digital PCR  
 5 System, the QX ONE Droplet Digital PCR System, and the ddPCR Multiplex Supermix, infringe  
 6 the '051, '170, and '921 Patents by practicing one or more claims of each of the patents. Sec. Am.  
 7 Compl. ¶¶ 39-45.

### 8 **III. LEGAL STANDARD**

#### 9 **A. Claim Construction**

10 Claim construction is a matter of law to be determined by the court. *Markman v. Westview*  
 11 *Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc). The “correct construction” is  
 12 “[t]he construction that stays true to the claim language and most naturally aligns with the patent’s  
 13 description of the invention[.]” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005)  
 14 (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).  
 15 Claim terms “are generally given their ordinary and customary meaning.” *Id.* at 1312 (quoting  
 16 *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). “[T]he ordinary and  
 17 customary meaning of a claim term is the meaning that the term would have to a person of  
 18 ordinary skill in the art in question at the time of the invention, *i.e.*, as of the effective filing date  
 19 of the patent application.” *Id.* at 1313.

20 The claims “must be read in view of the specification, of which they are a part.”  
 21 *Markman*, 52 F.3d at 979. “[T]he specification ‘is always highly relevant to the claim  
 22 construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a  
 23 disputed term.’” *Phillips*, 415 F.3d at 1315 (quoting *Vitronics*, 90 F.3d at 1582); *see also Merck*  
 24 *& Co. v. Teva Pharms. USA, Inc.*, 347 F.3d 1367, 1371 (Fed. Cir. 2003) (“A fundamental rule of  
 25 claim construction is that terms in a patent document are construed with the meaning with which  
 26 they are presented in the patent document.”). Although “claims are interpreted in light of the  
 27 specification,” this “does not mean that everything expressed in the specification must be read into  
 28 all the claims.” *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 957 (Fed. Cir. 1983). “The claim,

1 not the specification, measures the invention[.]” *Env’t Designs, Ltd. v. Union Oil Co. of Cal.*, 713  
2 F.2d 693, 699 (Fed. Cir. 1983) (citing *Cont’l Paper Bag Co. v. E. Paper Bag Co.*, 210 U.S. 405,  
3 420 (1908)).

4 In addition to considering the specification, “the court should also consider the patent’s  
5 prosecution history, if it is in evidence.” *Markman*, 52 F.3d at 980 (quoting *Graham v. John*  
6 *Deere Co.*, 383 U.S. 1, 33 (1966)). The prosecution history, which is part of the intrinsic  
7 evidence, “consists of the complete record of the proceedings before the [U.S. Patent and  
8 Trademark Office (“PTO”)] and includes the prior art cited during the examination of the patent.”  
9 *Phillips*, 415 F.3d at 1317 (citing *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 399 (1967)).  
10 “Like the specification, the prosecution history provides evidence of how the PTO and the  
11 inventor understood the patent.” *Id.*

12 Finally, courts may consider extrinsic evidence, such as dictionary definitions, expert and  
13 inventor testimony, and treatises. *Markman*, 52 F.3d at 980. “This evidence may be helpful to  
14 explain scientific principles, the meaning of technical terms, and terms of art that appear in the  
15 patent and prosecution history.” *Id.*

#### 16 **B. Indefiniteness**

17 Indefiniteness is an invalidity defense arising from 35 U.S.C. § 112(b), which requires that  
18 a patent specification “conclude with one or more claims particularly pointing out and distinctly  
19 claiming the subject matter which the inventor . . . regards as the invention.” 35 U.S.C. § 112(b).  
20 “[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating  
21 the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in  
22 the art about the scope of the invention.” *Nautilus, Inc. v. BioSig Instruments, Inc.*, 572 U.S. 898,  
23 901 (2014). Determining whether a claim is indefinite requires “a delicate balance” between the  
24 uncertainty inherent in the “limitations of language,” and enough precision “to afford clear notice  
25 of what is claimed” and “appris[e] the public of what is still open to them.” *Id.* at 909. The  
26 indefiniteness analysis focuses on entire claims rather than individual terms. *Cox Commc’ns, Inc.*  
27 *v. Sprint Commc’n Co. LP*, 838 F.3d 1224, 1231 (Fed. Cir. 2016). “Indefiniteness must be proven  
28 by clear and convincing evidence.” *Sonix Tech. Co. v. Publ’ns Int’l, Ltd.*, 844 F.3d 1370, 1377

1 (Fed. Cir. 2017).

2 **IV. DISCUSSION**

3 The parties request construction of ten terms across the five patents at issue. The Court  
4 addresses each below.

5 **A. Term 1: “digital amplification assay” (’128 Patent, Claims 1, 12)**

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BioRad’s Proposed Construction	ChromaCode’s Proposed Construction	Adopted Construction
Not limiting; to the extent a construction is deemed necessary, “an assay in which targets from a sample are partitioned and amplified, and digital information on the presence or absence of said targets is collected”	Limiting; “an assay in which a sample is separated into partitions containing zero or small numbers of individual molecules; the molecules are then amplified; and digital information on the presence or absence of individual molecules within each partition is collected and consolidated across the partitions”	Limiting. “An assay in which targets from a sample are partitioned and amplified, and digital information on the presence or absence of said targets is collected.”

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15 BioRad argues that the term “digital amplification assay” in the preamble is not limiting  
16 because the body of these claims defines a structurally complete invention, and the preamble  
17 merely states the intended use for the claimed invention. ChromaCode argues that the preamble is  
18 limiting because it represents an important characteristic of the invention.

19 “[W]hether to treat a preamble as a claim limitation is determined on the facts of each case  
20 in light of the claim as a whole and the invention described in the patent.” *TomTom v. Adolph*,  
21 790 F.3d 1315, 1323 (Fed. Cir. 2015) (quoting *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 952  
22 (Fed. Cir. 2006) (internal quotation marks omitted)). “[A] preamble is a claim limitation if it  
23 recites essential structure or steps, or if it is ‘necessary to give life, meaning, and vitality’ to the  
24 claim.” *Poly-America, L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1309 (Fed. Cir. 2004)  
25 (quoting *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999)). “[A]  
26 preamble is not limiting ‘where a patentee defines a structurally complete invention in the claim  
27 body and uses the preamble only to state a purpose or intended use for the invention.’” *Id.* at 1310  
28 (quoting *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997)).

1 The Court finds that the disputed term recites essential structure or steps and is therefore  
2 “necessary to give life, meaning, and vitality” to claims 1 and 12. *Poly-America*, 383 F.3d at  
3 1309. This case is analogous to *Poly-America*, where the patent at issue taught a method for  
4 making a three-layered textured landfill liner with a “blown-film” process. The Federal Circuit  
5 held that the term “blown-film” in the preamble was limiting because “the specification [was]  
6 replete with references to the invention as a ‘blown-film’ liner, including the title of the patent  
7 itself and the ‘Summary of the Invention.’ The phrase [was] used repeatedly to describe the  
8 preferred embodiments, and the entire preamble ‘blown-film textured liner’ [was] restated in each  
9 of the patent’s seven claims.” *Id.* Thus, the entirety of the patent revealed that the preamble  
10 language relating to “blown-film” did not state “a purpose or an intended use of the invention,”  
11 but rather, “disclose[d] a fundamental characteristic of the claimed invention that [was] properly  
12 construed as a limitation of the claim itself.” *Id.*

13 Here too, the specification is “replete with references” to the method taught as a  
14 multiplexed digital amplification assay. The title of the ’128 patent, “Multiplexed Digital Assays  
15 with Combinatorial Use of Signals,” refers to digital assays. *See* ’128 Patent at 1. The ’128  
16 Patent’s summary and detailed description state: “The present disclosure provides a system,  
17 including methods, apparatus, and compositions, for performing a multiplexed digital assay on a  
18 greater number of targets through combinatorial use of signals.” ’128 Patent at 2:27-30, 4:27-30.  
19 The term “digital amplification assay” is restated in the preamble of independent claims 1 and 12.  
20 ’128 Patent at 31:19-20 and 32:24-25. The specification presents numerous embodiments related  
21 to methods and compositions for performing multiplexed digital assays. ’128 Patent at 9:42-43,  
22 9:51-52 (Example 1), 12:45-47 (Example 2), 13: 19-25 (Example 3), 13: 61-64 (Example 4),  
23 14:55-57 (Example 6), 18:16-18 (Example 7), 24: 18-20 (Example 8), 26:40-43 (Example 9).  
24 Thus, the preamble of claims 1 and 12 is limiting “in light of the claim as a whole and the  
25 invention described in the patent.” *TomTom*, 790 F.3d at 1323.

26 In the event that the Court finds the preamble to be limiting, the parties offer competing  
27 constructions of the term. BioRad asserts that ChromaCode’s proposed construction improperly  
28 introduces additional limitations, such as “partitions containing zero or small numbers of

1 individual molecules,” and “digital information . . . consolidated across the partitions,” which are  
 2 not disclosed in the specification. The Court agrees that ChromaCode’s proposed construction is  
 3 improperly limiting in light of the specification. For instance, the ’128 Patent states: “A fraction  
 4 of the partitions may have a coincidence of different targets, where each of these partitions  
 5 contains a copy of each of *two or more* targets in the same individual partitions.” ’128 Patent at  
 6 8:10-13 (italics added), 8:18-19 (“[T]he fraction of partitions containing two or more distinct  
 7 targets may (or may not) be kept relatively low[.]”). Based on the specification, a person of  
 8 ordinary skill in the art would understand that the number of targets in a partition does not have to  
 9 be “zero or small,” as proposed by ChromaCode.

10 ChromaCode’s proposed construction also effectively limits the claims to a digital PCR  
 11 method, necessarily excluding other amplification methods such as quantitative PCR (“qPCR”).  
 12 ChromaCode asserts that the specification discloses key features of digital amplification assays,  
 13 including separating the sample into a set of partitions and amplifying them. ChromaCode  
 14 Responsive Cl. Constr. Br. at 7-8, ECF No. 59 (“CC Resp. Br.”) (citing ’128 Patent at 1:30-62).  
 15 ChromaCode notes that patent application no. 2010/0173394 (“394 Application”) is incorporated  
 16 into the ’128 Patent “specifically for its description of ‘assays.’”<sup>3</sup> *Id.* at 8 (citing ’128 Patent at  
 17 9:27-38).

18 The specification does not reference qPCR, and ChromaCode argues that its proposed  
 19 construction is appropriate because digital PCR – not qPCR – is the subject of BioRad’s invention.  
 20 *See* CC Resp. Br. at 9 (“In qPCR, each partition is analyzed independently; there is no  
 21 consolidation of the digital information across the many dilute partitions in order to make a  
 22 statistically meaningful analysis of the original sample as a whole.”).

23 BioRad argues persuasively that the claims are not limited to digital PCR because  
 24 ChromaCode does not identify any clear disavowal in the specification, and the passages cited by  
 25 ChromaCode are “nothing more than exemplary embodiments of the invention[.]” BioRad Reply  
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27 <sup>3</sup> The Court reviewed the 394 Application for its description of digital PCR. *See* Tuttle Decl. Ex.  
 28 C ¶ 169, ECF No. 59-4. “Patents that are incorporated by reference are ‘effectively part of the  
 host [patents] as if [they] were explicitly contained therein.” *Finjan LLC v. ESET, LLC*, 51 F.4th  
 1377, 1382 (Fed. Cir. 2022).

1 at 5. Absent a clear disavowal in the specification, “[a] patentee may claim an invention broadly  
2 and expect enforcement of the full scope of that language[.]” *Home Diagnostics, Inc. v. LifeScan,*  
3 *Inc.*, 381 F.3d 1352, 1357 (Fed. Cir. 2004). Even if the ’128 Patent treats digital PCR as the  
4 preferred embodiment, “we do not read limitations from the embodiments in the specification into  
5 the claims.” *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014).

6 The Court accordingly adopts BioRad’s proposed construction, which does not limit the  
7 claim to a digital PCR method.

8 **B. Term 2: “average level[s]” / “levels” (’128 Patent, Claims 1, 8, 9, and 12)**

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Bio-Rad’s Proposed Construction	ChromaCode’s Proposed Construction	Adopted Construction
Plain and ordinary meaning	“statistical measure of frequency”  Alternatively, if “average level” and “level[s]” are construed to have different meanings, then “level[s]” should be construed as “measure of frequency”	Plain and ordinary meaning.

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BioRad urges the Court to adopt the plain and ordinary meaning of these terms, asserting that identically construing both terms disregards the rule that different terms used in a patent have different meanings. ChromaCode argues that its proposed construction is supported by the specification because the ’128 Patent uses these terms interchangeably to refer to the use of probability and statistics. *See e.g.*, CC Resp. Br. at 12 (stating that “the very use of ‘average’ in ‘average level’ implies a statistical measure, because an average is a statistical concept.”). The Court agrees with BioRad, and applies the plain and ordinary meaning of these terms.

“There is an inference . . . that two different terms used in a patent have different meanings.” *Comaper Corp. v. Antec, Inc.*, 596 F.3d 1343, 1348 (Fed. Cir. 2010) (holding that district court correctly construed the terms “drive bay slot” and “drive bay” differently based on the prosecution history). While the inference is “not conclusive,” intrinsic evidence may support the court’s construction of different terms having different meanings. *Id.*

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1 To support its position, ChromaCode cites a series of examples in the specification where  
 2 the terms “average level” and “level” appear. These examples do not support an identical  
 3 construction. For example, the patent description explains that under one method of multiplexing,  
 4 “[a]n average level of each target in the partitions may be calculated based on the R signals, with  
 5 the level calculated accounting for a coincidence, if any, of different targets in the same individual  
 6 partitions.” ’128 Patent at 4:38-41. The specification teaches that “[a] level of each target may be  
 7 calculated, indicated at [figure] 52. The level *may be an average level*, such as an average  
 8 concentration of molecules of the target per partition.” ’128 Patent at 8:51-53 (italics added). The  
 9 “may be” language indicates that the terms “level” and “average level” are not interchangeable.  
 10 Even if the specification implied that the terms are interchangeable (it does not), “[s]imply  
 11 referring to two terms as alternatives or disclosing embodiments that all use the term the same way  
 12 is not sufficient to redefine a claim term.” *Thorner v. Sony Comput. Ent. Am. LLC*, 669 F.3d  
 13 1362, 1368 (Fed. Cir. 2012) (construing the term “attached” with its plain and ordinary meaning  
 14 because the specification’s use of the term “attachment” in a specific context did not rise to level  
 15 of lexicography or disavowal).

16 BioRad’s position finds support in two additional points. First, “the specification may  
 17 reveal a special definition given to a claim term by the patentee that differs from the meaning it  
 18 would otherwise possess. In such cases, the inventor’s lexicography governs.” *Phillips*, 415 F.3d  
 19 at 1316. Second, “the specification may reveal an intentional disclaimer, or disavowal, of claim  
 20 scope by the inventor.” *Id.* ChromaCode has not identified any lexicography or disclaimer in the  
 21 specification indicating that these terms should be construed other than by their plain meaning.  
 22 The Court therefore adopts BioRad’s proposed construction of plain and ordinary meaning.

23 **C. Term 3: “calculating” / “calculated” (’128 Patent, Claims 1, 4, 9, and 12)**

Bio-Rad’s Proposed Construction	ChromaCode’s Proposed Construction	Adopted Construction
The term “calculating” is interchangeable with “estimating” and vice versa	“estimating” / “estimated”	The term “calculating” is interchangeable with “estimating” and vice versa.

28 The specification states that the terms “estimation” and “calculation” are interchangeable.

1 '128 Patent at 6:54-55 (“The terms ‘estimation’ and ‘calculation’ are used interchangeably.”)  
 2 Where the specification reveals “a special definition given to a claim term by the patentee that  
 3 differs from the meaning it would otherwise possess,” the “inventor’s lexicography governs.”  
 4 *Phillips*, 415 F.3d at 1316. Because the specification states that these terms are interchangeable,  
 5 the Court adopts BioRad’s proposed construction.

6 **D. Term 4: “each [of]” (’128 Patent, Claim 1 (from the phrase “calculating an**  
 7 **average level of each target in the partitions”); ’154 Patent, Claims 1, 11, 19**  
 8 **(from the phrase “determining a respective level of each of the R targets from**  
 9 **the data”))**

Bio-Rad’s Proposed Construction	ChromaCode’s Proposed Construction	Adopted Construction
Plain and ordinary meaning	“each and every [one of]”	Plain and ordinary meaning.

11 ChromaCode asserts that its construction of the term “each” is correct because the purpose  
 12 of the invention is to perform a multiplexed digital assay on a greater number of targets than  
 13 colors. ChromaCode explains that if *every* target is not analyzed or quantified, there will be no  
 14 way to know whether the number of targets actually exceeds the number of colors. BioRad argues  
 15 that ChromaCode’s proposed construction of “each” as “each and every” is contrary to the  
 16 specification of both patents.

17 The Court finds BioRad’s position more persuasive because the specification teaches that  
 18 the meaning of “each” depends on the context and method used when practicing the invention.  
 19 Construing “each” as “every” is contrary to the specification because it would exclude certain  
 20 preferred embodiments. For example, the ’128 Patent recites that in some circumstances, only a  
 21 subset of partitions positive for particular signals may be counted, not “each and every” signal.  
 22 *See* ’128 Patent at 8:31-36 (describing Fig. 1). The ’154 Patent similarly discloses analyses based  
 23 on counts of subpopulations of partitions, but not every single partition. *See* ’154 Patent at 10:4-7  
 24 (describing Fig. 1). The specification therefore teaches that in the performance of some assays,  
 25 the targets of only certain subpopulations, and not *every* population, may be counted or analyzed.  
 26 “[A] claim interpretation that excludes a preferred embodiment from the scope of the claim is  
 27 rarely, if ever, correct.” *Accent Packaging, Inc. v. Leggett & Platt, Inc.*, 707 F.3d 1318, 1326  
 28 (Fed. Cir. 2013).

1 ChromaCode does not address whether its proposed construction is consistent with or  
 2 contrary to the specification. At hearing, ChromaCode emphasized that the term should be  
 3 “tightened up” because “the jury could understand ‘each’ to mean ‘many’ or the jury could  
 4 understand ‘each’ to mean ‘some.’” Hr’g Tr. at 105, ECF No. 99. ChromaCode’s reasoning is  
 5 unpersuasive because it is not supported by the specification for the reasons discussed above. The  
 6 Court therefore gives this term its plain and ordinary meaning.

7 **E. Term 5: Order of performance of “plotting” and “determining” steps (’154**  
 8 **Patent, Claim 19)**

Bio-Rad’s Proposed Construction	ChromaCode’s Proposed Construction	Adopted Construction
Order not required	The steps must be performed in order as written.	An order is not required.

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 12 The “plotting” and “determining” steps that are in dispute appear in claim 19 of the ’154  
 13 Patent. Claim 19 is recited as:

14 19. A method of performing a multiplexed digital assay, the method comprising:

15 19(a) forming partitions that collectively contain R targets;

16 19(b) amplifying the R targets in the partitions;

17 19(c) collecting data representing amplification of each of the R targets in the  
 18 partitions, all of the data being collected in fewer than R optical channels;

19 19(d) **plotting** the data such that partition populations containing different  
 20 combinations of the R targets form a rectangular array, wherein the step of plotting  
 21 is performed with respect to a pair of orthogonal axes, and wherein each partition  
 22 population that is positive for only one of the R targets is arranged along a line that  
 23 is at least generally parallel to one of the axes; and

24 19(e) **determining** a respective level of each of the R targets from the data,  
 25 wherein each level is specific for a single target of the R targets, and wherein the  
 26 level determined for at least one of the R targets is based in part on a partition count  
 27 for a partition population positive for two of the R targets.

28 ’154 Patent, Cl. 19 (emphasis added). BioRad argues that an order of performance of the  
 “plotting” and “determining” steps is not required, while ChromaCode argues that the steps must  
 be performed in the order written in the claim.

“[A]lthough a method claim necessarily recites the steps of the method in a particular  
 order, as a general rule the claim is not limited to performance of the steps in the order recited,

1 unless the claim explicitly or implicitly requires a specific order.” *Baldwin Graphic Sys., Inc. v.*  
2 *Siebert, Inc.*, 512 F.3d 1338, 1345 (Fed. Cir. 2008). Claim 19 does not impose a specific order for  
3 the “plotting” and “determining” steps. To determine whether the steps of a method claim that  
4 does not otherwise recite an order must be performed in the order in which they are written, the  
5 court performs a two-part test. First the court looks “to the claim language to determine if, as a  
6 matter of logic or grammar, they must be performed in the order written.” *Altiris, Inc. v. Symantec*  
7 *Corp.*, 318 F.3d 1363, 1369 (Fed. Cir. 2003). Next the court looks “to the rest of the specification  
8 to determine whether it ‘directly or implicitly requires such a narrow construction.’” *Id.* at 1370  
9 (citing *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1343 (Fed. Cir. 2001)).  
10 The language of claim 19 does not imply a specific order. Thus, the Court turns to the  
11 specification.

12 The parties focus their dispute on Figure 1 of the specification. Figure 1 is a flowchart that  
13 illustrates method 40, an exemplary method of performing a multiplexed digital assay. Method 40  
14 is comprised of steps 42 (prepare sample), 44 (form partitions), 46 (amplify R targets), 48 (collect  
15 amplification data in < R optical channels), 50 (identify partition populations), 52 (obtain  
16 population counts), and 54 (determine target levels based on combinations of counts). ’154 Patent  
17 at Fig. 1. BioRad argues that a person of ordinary skill in the art would understand the “plotting”  
18 and “determining” steps in claim 19 to relate to steps 50 and 54, respectively. The specification  
19 teaches that method 40, represented in Figure 1, “may be performed in any suitable order and in  
20 any suitable combination.” ’154 Patent at 6:21-24. As discussed above, the language of claim 19  
21 “does not tie these . . . steps together.” *Sunoco Partners Mktg. & Terminals L.P. v. U.S. Venture,*  
22 *Inc.*, 32 F.4th 1161, 1177 (Fed. Cir. 2022). Moreover, the specification states that the steps in  
23 method 40 may be performed in “any suitable order.” ’154 Patent at 6:21-24. Accordingly, the  
24 Court finds that an order of performance is not required.

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F. **Term 6: “providing a sample solution volume . . . comprising at least seven hybridization probes” and “contacting . . .” (’051 Patent, Claim 1)**

Bio-Rad’s Proposed Construction	ChromaCode’s Proposed Construction	Adopted Construction
Indefinite	Plain and ordinary meaning; not indefinite	Indefinite.

The disputed terms appear in claim 1 of the ’051 Patent. Claim 1 of the ’051 Patent is recited as:

1. A method of detecting the presence or absence of at least seven polynucleotide analytes, in any combination of presence or absence, in a single sample solution volume, the method comprising:

1(a) **providing a sample solution volume comprising or potentially comprising, at least one of at least seven polynucleotide analytes, and comprising at least seven hybridization probes**, each hybridization probe corresponding to one of the at least seven polynucleotide analytes, wherein each hybridization probe comprises at least one fluorophore selected from four fluorophores, and wherein each hybridization probe, when excited and when contacted with its corresponding polynucleotide analyte, generates a cumulative intensity signal, further wherein each generated cumulative intensity signal comprises at least one signal generated by excitement of at least one of the four fluorophores;

1(b) **contacting** said sample solution volume with the plurality of hybridization probes and exciting the hybridization probes to generate the cumulative intensity signal(s) if one or more of the at least seven polynucleotide analytes is present in the sample volume; and

1(c) measuring the cumulative intensity signal(s), thereby generating a cumulative signal measurement, wherein the cumulative signal measurement non-degenerately indicates the presence or absence of the at least seven polynucleotide analytes, in any combination of presence or absence,

wherein said method non-degenerately detects the presence or absence of the at least seven polynucleotide analytes in said single sample solution volume, in any combination of presence or absence, without requiring any step of immobilization of said polynucleotide analytes, physical separation of said polynucleotide analytes, or mass spectrometry.

’051 Patent, Cl. 1 (emphasis added). The parties dispute what “contacting said sample solution volume with the plurality of hybridization probes” means within step (b), in light of the claim language in step (a) that the “sample solution volume” comprises “at least one of at least seven polynucleotide analytes, and . . . at least seven hybridization probes.” *Id.*

ChromaCode argues the claim is not indefinite if “contacting” in step (b) is construed as performing the step required to bring the probes in the sample solution into contact with the analytes in the solution, *i.e.*, hybridization. *See* ChromaCode Opening Cl. Constr. Br. at 21, ECF

1 No. 73 (“CC Opening Br.”). ChromaCode emphasizes that the “contacting step is important”  
2 because the analytes (typically a single strand of DNA that has been split apart from its double-  
3 helix structure) and the probes, while both present in the sample volume at step (a), “may not  
4 come into contact on their own.” ChromaCode Reply at 3-4, ECF No. 75 (“CC Reply”). “In other  
5 words, even if probes and analytes are both present in the provided sample volume, a contacting  
6 step (such as amplification through polymerase chain reaction) must be taken so that the probes  
7 hybridize to the analytes. Step (b) includes that ‘contacting’ step.”<sup>4</sup> *Id.* at 4.

8 BioRad argues that the claim is indefinite because step (a) teaches that the sample solution  
9 already comprises the analytes and the hybridization probes, and step (b) plainly requires the  
10 “impossible and contradictory act” of “contacting” the solution volume containing the  
11 hybridization probes “with the exact same thing that the solution already is in contact with,” *i.e.*,  
12 the hybridization probes. BioRad Resp. Br. at 4-5, ECF No. 74.

13 In an effort to resolve this dispute, the Court proposed a construction prior to hearing,  
14 giving the terms their plain and ordinary meaning, but construing “with” in step (b) to mean  
15 “containing.” Tentative Ruling at 1, ECF No. 95. Under the Court’s proposed construction, step  
16 (b) would read:

17 (b) contacting said sample solution volume ~~with~~ *containing* the plurality of hybridization  
18 probes and exciting the hybridization probes to generate the cumulative intensity signal(s)  
19 if one or more of the at least seven polynucleotide analytes is present in the sample  
20 volume[.]

21 At hearing, BioRad objected to the Court’s proposed construction on the grounds that it is  
22 inconsistent with the file history, and at odds with the plain language meaning of the  
23 specification’s use of “contacting.” Hr’g Tr. at 14-17. BioRad argued that the Court’s proposed  
24 construction “just creates more uncertainty” because even if it were read into the claim, it would

25 <sup>4</sup> To support its argument that this is a plain reading of step (b), ChromaCode cites the example of  
26 the TAQMAN probe, an oligonucleotide hybridization probe that hybridizes to the targeted DNA  
27 sequence during PCR amplification if the sequence is present in the sample volume. *See* CC  
28 Opening Br. at 22 (citing ’051 Patent at 33:32-42, 34:13-35, 47:30-45). This example does not  
compel the Court to adopt ChromaCode’s construction, since “it is well established that claims are  
not limited to preferred embodiments, unless the specification clearly indicates otherwise.”  
*WesternGeco LLC v. Ion Geophysical Corp.*, 889 F.3d 1308, 1323-24 (Fed. Cir. 2018).

1 not identify what the sample solution is put into contact *with*. *Id.* at 20.

2 ChromaCode agreed with the Court’s proposed construction but indicated it was not  
3 necessary to understand the claim. Hr’g Tr. at 9 (“So we think that the Court’s construction or  
4 proposal to construe the term “with,” as “containing,” is a way of reading that term under its plain  
5 and ordinary meaning. We don’t necessarily think that it’s necessary but we don’t disagree that  
6 that’s what the term means[.]”). To further support its proposed construction, ChromaCode  
7 offered a “salad dressing” analogy to illustrate that the plain and ordinary meaning of “contacting”  
8 includes the concept of “mixing” or “agitating” the sample solution to promote hybridization of  
9 the probes and the analytes present in the sample solution. Hr’g Tr. at 6 (“When we are talking  
10 about contacting, that’s step 1(b), it refers to mixing the sample solution to allow the probes to  
11 hybridize to their targets, and that’s clear from the language of the claim itself.”).

12 At the Court’s request, the parties filed supplemental briefs addressing the proposed  
13 construction. ECF Nos. 100, 102. After considering the briefs, the argument of counsel, the  
14 specification, the file history, and the extrinsic evidence submitted, the Court finds that the term is  
15 indefinite.

### 16 **1. Specification**

17 The Court construes claim terms “with the meaning with which they are presented in the  
18 patent document.” *Merck & Co.*, 347 F.3d at 1371. The specification is “highly relevant” to  
19 claim construction analysis. *Phillips*, 347 F.3d at 1315 (quoting *Vitronics*, 90 F.3d at 1582). It is  
20 “usually . . . dispositive” and “the single best guide to the meaning of a disputed term.” *Id.* The  
21 Court’s proposed construction of claim 1 is at odds with the specification because the specification  
22 “uniformly uses the term ‘contacting’ to refer to two things physically touching.” BioRad Supp.  
23 Br. at 4, ECF No. 100 (citing ’051 Patent at 2:39-41, 3:59-63, 4:28-32, 5:26-30, 5:46-51, 6:2-6,  
24 6:26-31, 9:14-20, 33:62-34:12, 35:30-45). Moreover, the specification regularly pairs the terms  
25 “contacting” and “with” to mean bringing two things together, thus indicating that the Court’s  
26 construction would lead to redundancy. *See, e.g.*, ’051 Patent at 2:39-41 (“In some examples, a  
27 sample is *contacted with* at least 18 of said hybridization probes.”), 3:59-63, 4:28-32, 5:26-30,  
28 5:46-51 (“(b) providing a sample comprising, or potentially comprising, at least one of said

1 analytes; (c) *contacting* said sample *with* analyte-specific reagents that generate said first value . . .  
 2 .”) (italics added), 6:2-6 (“(b) providing said party with analyte-specific reagents that generate said  
 3 first value, as represented in said coding scheme, when each of said analytes is present, said party:  
 4 (i) *contacting* a sample comprising, or potentially comprising, at least one of said analytes *with*  
 5 said reagents . . .”) (italics added); 9:14-20 (“After encoding of the analytes, a sample is provided  
 6 wherein the sample comprises or may comprise at least one of the encoded analytes. The sample  
 7 is *contacted with* an analyte-specific reagent or reagents that generate a particular signal . . .”)  
 8 (italics added); 33:66 (“In some cases, a sample is *contacted with* 4, . . . 50, or more probes to  
 9 detect the presence or absence of all analytes.”) (italics added); 35:34 (“In some cases a sample to  
 10 be analyzed is *contacted with* at least 1, . . . 50 or more pairs of primers.”) (italics added). The  
 11 Court’s proposed construction would not address or resolve this inconsistency.

12 ChromaCode asserts that the Court’s proposed construction is consistent with the  
 13 specification. To support this position, ChromaCode cites the following definitional language:  
 14 “[T]o the extent that the terms ‘including,’ ‘includes,’ ‘having,’ ‘has,’ ‘with,’ ‘such as,’ or variants  
 15 thereof, are used in either the specification or and/or the claims, such terms are not limiting and  
 16 are intended to be inclusive in a manner similar to the term ‘comprising.’” ’051 Patent at 9:65-  
 17 10:3. While this definitional language suggests that the Court’s proposed construction is generally  
 18 consistent with how the specification uses “with” in some instances, none of the examples cited by  
 19 ChromaCode use “with” in conjunction with “contacting” as it appears in claim 1. *See, e.g.*, ’051  
 20 Patent at 8:5-8 (“For example, the dengue virus analyte is detected using three additional probes  
 21 *with* green, yellow, and red fluorophores[.]”), 28:28-29 (“The presence of an analyte may indicate  
 22 an infection *with* a particular pathogen, or any other disease[.]”). These examples are contextually  
 23 different from claim 1, which recites a method wherein A (*i.e.*, a sample solution comprising  
 24 analytes and probes) is “contacted . . . with” B (*i.e.*, probes). The specification does not support  
 25 ChromaCode’s position vis-à-vis the use of “with” in claim 1.

## 26 2. File History

27 “The court has broad power to look as a matter of law to the prosecution history of the  
 28 patent in order to ascertain the true meaning of language used in the patent claims[.]” *Markman*,

1 52 F.3d at 980. BioRad submits excerpts from the '051 Patent file history containing amended  
2 claim 49, the original version of claim 1, to support its assertion that the parties have consistently  
3 intended the term “contacting” to mean putting two things into contact with each other, rather than  
4 “mixing.” Walter Decl. Ex. 1, ECF No. 100-2. Prior to the amendments that resulted in the  
5 current version, step (a) of the claim read, “providing a sample comprising, or potentially  
6 comprising, at least one of said analytes.” *Id.* at 17-18.<sup>5</sup> Notably, in the pre-amendment version  
7 of step (a), the sample solution comprised analytes alone. *Id.* Step (b) read, “*contacting* said  
8 sample *with* analyte-specific reagents that generate said first value, as represented in said coding  
9 scheme, when each of said analytes is present.” *Id.* at 18 (italics added). Thus, the original  
10 version recited a method for contacting a sample containing analytes with something else:  
11 analyte-specific reagents.

12 ChromaCode urges the Court to disregard the pre-amendment language because the  
13 amendments “surely affected the scope of the claim and context of ‘with.’” ChromaCode Supp.  
14 Br. at 1, ECF No. 102. Notably, ChromaCode does not explain *how* the amendments would have  
15 affected the claim’s scope and the context of “with.” The original language of claim 1 indicates  
16 that the intended meaning of “contacting” was to put two things in contact with each other, rather  
17 than the “mixing” of the sample solution to hybridize the contents – akin to the oil and vinegar in a  
18 vinaigrette as proposed by ChromaCode.

19 Ultimately, when read in light of the specification and the file history, claim 1 is indefinite  
20 because it fails to inform “those skilled in the art about the scope of the invention.” *Nautilus*, 572  
21 U.S. at 901. ChromaCode’s proposed construction of “contacting” to mean “mixing” is  
22 inconsistent with both the specification and the file history, and does not save the claim from  
23 indefiniteness. The Court’s proposed construction of “with” to mean “containing” does not  
24 resolve the logical impossibility of contacting a sample solution comprised of analytes and probes  
25 with the probes that are already part of the solution, or with nothing at all. In any event, it is not  
26 the Court’s function “to rewrite claims to preserve their validity.” *Allen Eng’g Corp. v. Bartell*

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<sup>5</sup> The Court refers to the ECF pages numbers for Exhibit 1.

1 *Indus., Inc.*, 299 F.3d 1336, 1349 (Fed. Cir. 2002). For these reasons, claim 1 is indefinite.

2 **3. Extrinsic Evidence**

3 To support its position, ChromaCode submitted extrinsic evidence in the form of  
4 dictionary definitions of the term “with” to illustrate the potentially broad meaning of “with.”  
5 Salen Decl. Exs. 1-3, ECF Nos. 102-2, 102-3, 102-4. The Court considered this extrinsic  
6 evidence but did not find it persuasive in light of the specification and file history discussed above.

7 **4. Dr. Batt’s IPR Expert Declaration**

8 ChromaCode repeatedly cites to the declaration of Carl A. Batt, Ph.D (“Batt Declaration”)  
9 to argue that claim 1 is not indefinite. *See, e.g.*, CC Opening Br. at 2, 22-23; CC Reply at 4-5;  
10 Hr’g Tr. at 8-9. BioRad submitted the Batt Declaration in support of its *inter partes* review  
11 (“IPR”) petition for the ’051 Patent. *See* Decl. of Eric P. Tuttle Ex. A ¶¶ 19, 130, 132, 186-89,  
12 ECF Nos. 73-1, 73-2 (“Tuttle Decl.”).<sup>6</sup> In the still-pending IPR proceeding, Dr. Batt opined that  
13 “each claim term [of the ’051 Patent] can be easily understood by the skilled artisan without  
14 further construction, that is, my analysis is based on the plain and ordinary meaning of the claim  
15 terms, unless otherwise indicated.” Batt Decl. ¶ 19. Dr. Batt further opined that the ’051 Patent is  
16 invalid because prior art discloses the invention recited in claim 1. *See id.* ¶¶ 186-189.  
17 ChromaCode argues that if claim 1 were “impossible,” as BioRad contends, Dr. Batt could not  
18 have opined that the claim was disclosed in prior art. CC Reply at 5 (“A logically impossible  
19 claim term cannot be present in the prior art because it can’t exist.”).

20 The Court may properly consider the Batt Declaration as part of the file history.  
21 *Evolutionary Intel., LLC v. Sprint Nextel Corp.*, No. C-13-03587, 2014 WL 4802426, at \*4 (N.D.  
22 Cal. Sept. 26, 2014) (noting that IPR proceedings are part of patent prosecution history, and  
23 “[p]rosecution history is an important part of the intrinsic record relevant to claim construction.”).  
24 However, the Batt Declaration is of limited persuasiveness for two reasons. First, BioRad  
25 explicitly did not waive any argument as to indefiniteness in its IPR petition. *See* Walter Decl. Ex.

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28 <sup>6</sup> Plaintiffs submitted the Tuttle Declaration and exhibits in support of their opening claim construction brief in Case No. 23-cv-06360. ECF Nos. 73-1 and 73-2.

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1 1 at 28 n.1, ECF No. 74-1 (“Because indefiniteness cannot be raised in an IPR proceeding,  
 2 Petitioner addresses claim 1 based on Patent Owner’s apparent interpretation in view of its  
 3 infringement contentions, and without conceding that these terms are not indefinite.”). Second, as  
 4 noted by BioRad in its petition, indefiniteness cannot be determined in an IPR proceeding. *UUSI,*  
 5 *LLC v. United States*, 131 Fed. Cl. 244, 253 n.7 (2017) (“In *inter partes* review proceedings, the  
 6 PTAB cannot consider whether a claim is indefinite under 35 U.S.C. § 112,” but is limited to  
 7 reviewing claims for anticipation and obviousness); *see also Samsung Elecs. Am., Inc. v. Prisia*  
 8 *Eng’g Corp.*, 948 F.3d 1342, 1355 (Fed. Cir. 2020) (holding that indefiniteness “does not  
 9 necessarily preclude the Board from addressing the patentability of the claims” under 35 U.S.C.  
 10 §§ 102 (patentability) and 103 (obviousness)). Dr. Batt did not offer his opinion for the purpose of  
 11 determining indefiniteness, and the Batt Declaration is of limited value in the context of claim  
 12 construction.

13 ChromaCode does not plausibly address or resolve the apparent incongruity between steps  
 14 (a) and (b) of claim 1 of the ’051 Patent. Accordingly, the Court finds this claim to be indefinite.

15 **G. Term 7: “corresponds to the presence of a unique combination of presence or**  
 16 **absence of said at least five polynucleotide analytes in said sample” (’170**  
 17 **Patent, Claim 1 (step (e)))**

Bio-Rad’s Proposed Construction	ChromaCode’s Proposed Construction	Adopted Construction
Indefinite	Plain and ordinary meaning; not indefinite	Not indefinite. Plain and ordinary meaning.

18 BioRad argues that this claim is indefinite because a person of ordinary skill in the art  
 19 would not be able to determine whether the “presence or absence” of analytes described in step (e)  
 20 would be detected in a “plurality of droplets,” as stated in the preamble and in step (d) of claim 1,  
 21 or in “said sample” as stated in step (e) of claim 1. Stated differently, BioRad asserts that the  
 22 alternating use of the term “plurality of droplets” in the preamble and in steps (c) and (d) with the  
 23 terms “sample” and “said sample” in the preamble and step (e) renders this claim indefinite.  
 24 ChromaCode argues that claim 1 is not indefinite because the preamble clearly limits the detection  
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1 of analytes to the “plurality of droplets” that is formed in step (c) rather than the original sample.<sup>7</sup>

2 The Court does not find claim 1 to be indefinite. First, “a claim could be indefinite if a  
3 term does *not* have proper antecedent basis where such basis is not otherwise present by  
4 implication or the meaning is not reasonably ascertainable.” *Halliburton Energy Servs., Inc. v. M-*  
5 *ILLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008) (italics added). Here, the term “plurality of droplets”  
6 in steps (c) and (d) finds an antecedent basis in the preamble. Second, the requirement in the  
7 preamble that the detection take place “in a plurality of droplets” is limiting. *Bio-Rad Labs., Inc.*  
8 *v. 10X Genomics Inc.*, 967 F.3d 1353, 1369 (Fed. Cir. 2020) (“Reliance on a preamble phrase for  
9 antecedent basis, however, may limit claim scope.”). Although step (e) provides for measuring  
10 signals to generate a cumulative intensity measurement that corresponds to the presence or  
11 absence of analytes in “said sample,” the claim provides that the sample is made into a mixture  
12 (step (b)) and then partitioned into a “plurality of droplets” (step (c)). BioRad’s indefiniteness  
13 argument disregards the antecedent and limiting language in the preamble, and the partitioning in  
14 step (c). By applying the term’s plain and ordinary meaning, the Court “stays true to the claim  
15 language” and adopts the meaning that “most naturally aligns with the patent’s description of the  
16 invention[.]” *Phillips*, 415 F.3d at 1316. This term is not indefinite, and shall have its plain and  
17 ordinary meaning.

18 **H. Term 8: “cumulative intensity signal(s)” (’051 Patent, Claims 1, 4)**

Bio-Rad’s Proposed Construction	ChromaCode’s Proposed Construction	Adopted Construction
“the signal or collection of signals from the probes that contact a given analyte”	Plain and ordinary meaning. To the extent a construction is necessary, “signal representing the total intensity of the light emitted by a given probe”	“Signal representing the total intensity of the light emitted by a given probe type.”

24 Claim 1 of the ’051 Patent describes a method wherein each hybridization probe, when

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27 <sup>7</sup> ChromaCode relies on a similar declaration submitted by Dr. Batt in support of BioRad’s IPR  
28 petition on the ’170 Patent. CC Opening Br. at 20 (citing Tuttle Decl. Ex. D, ECF Nos. 73-1, 73-5); CC Reply at 7. For the reasons explained in Section IV.F.3, the Court does not find the Batt Declaration dispositive of indefiniteness as to claim 1 of the ’170 Patent.

1 contacted with its corresponding polynucleotide analyte and excited, generates a “cumulative  
2 intensity signal.” ’051 Patent, Cl. 1.

3 BioRad asserts that this term requires construction because it is a “technical term,” but it  
4 contends that ChromaCode’s proposed construction is incorrect because it mistakenly refers to  
5 signals generated by probes that correspond to specific analytes, rather than the cumulative  
6 intensity of signals emitted by a single type of probe. BioRad Resp. Br. at 9-10 (citing ’051 Patent  
7 Table 3). To put it another way, BioRad argues that ChromaCode effectively misunderstands its  
8 own term to mean “cumulative intensity measurement,” which is a different disputed term  
9 discussed below. BioRad proposes that the Court construe this term instead as “the signal or  
10 collection of signals from the probes that contact a given analyte.”

11 BioRad’s proposed construction improperly rewrites this term to delete the key concepts of  
12 “cumulative” and “intensity,”<sup>8</sup> which are both contemplated in the specification. For example, the  
13 encoding scheme in Table 3 shows how analytes are encoded by both color (blue, green, yellow,  
14 red) and intensity (indicated by the numbers in the table). ’051 Patent at Table 3. Based on this  
15 encoding scheme, Table 4 utilizes a decoding scheme to reveal a cumulative assay result that  
16 indicates the combination of analytes present in the sample through the colors present, and the  
17 total intensity of each color, *i.e.*, each given probe. ’051 Patent at Table 4. At hearing,  
18 ChromaCode clarified that “a given probe” refers to a “probe type,” *e.g.*, a blue color signal. Hr’g  
19 Tr. at 40.

20 With the addition of this clarification, the Court finds ChromaCode’s proposed  
21 construction to be consistent with Tables 3 and 4 in the specification. To ensure that “the jury  
22 fully understands the court’s claim construction rulings and what the patentee covered by the  
23 claims,” *Sulzer Textil A.G. v. Picanol N.V.*, 358 F.3d 1356, 1366 (Fed. Cir. 2004), however, the  
24 Court adopts ChromaCode’s proposed construction, as modified, to construe “cumulative intensity  
25 signal(s)” as “signal representing the total intensity of the light emitted by a given probe *type*.”

26 \_\_\_\_\_  
27 <sup>8</sup> Although BioRad’s proposed construction omits the “cumulative” and “intensity” concepts,  
28 BioRad seemingly acknowledges the role of both concepts because it notes that its proposed  
construction “refers to ‘signal(s)’ – which encompasses ‘intensity’ – from a collection of probes –  
which reflects the ‘cumulative’ concept.” *See* BioRad Resp. Br. at 11 n.4.

**I. Term 9: “cumulative [signal/intensity] measurement” (’051 Patent, Claim 1; ’170 Patent, Claim 1)**

Bio-Rad’s Proposed Construction	ChromaCode’s Proposed Construction	Adopted Construction
“the signal or collection of signals from the probes that contact the present analytes”	’051 Patent, Claim 1: “measurement of the cumulative intensity signal(s) in the volume”  ’170 Patent, Claim 1: “measurement of the cumulative intensity of the signal(s) in the plurality of droplets”	’051 Patent, Claim 1: “Measurement of the cumulative intensity signal(s) in the volume.”  ’170 Patent, Claim 1: “Measurement of the cumulative intensity of the signal(s) in the plurality of droplets.”

The dispute regarding this term builds upon the parties’ dispute regarding the related term “cumulative intensity signal(s),” discussed above. In claim 1 of the ’051 Patent, a “cumulative intensity signal” is generated in step (b). ’051 Patent, Cl. 1. In step (c), the “cumulative intensity signal” is measured, “thereby generating a cumulative signal measurement, wherein the cumulative signal measurement non-degenerately indicates the presence or absence of” analytes. *Id.* BioRad’s proposed construction of this term extends the same reasoning it applied to “cumulative intensity signal(s),” which is inconsistent with the specification for the reasons discussed above. In effect, BioRad proposes the same construction for both “cumulative intensity signal(s)” and “cumulative [signal/intensity] measurement.” For the ’051 Patent, the Court therefore adopts ChromaCode’s proposed construction of “cumulative [signal/intensity] measurement” as the “measurement of the cumulative intensity signal(s) in the volume.”

Claim 1 of the ’170 Patent describes a method of measuring signals to generate a “cumulative intensity measurement” in a “plurality of droplets” rather than the “single sample solution volume” described in the ’051 Patent. ChromaCode’s proposed construction is consistent with its construction of claim 1 in the ’051 Patent, and acknowledges this distinction. The Court therefore adopts ChromaCode’s proposed construction for the ’170 Patent.

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**J. Term 10: “non-degenerately,” “degenerate” or “degeneracy” (’051 Patent, Claim 1; ’921 Patent, Claims 4, 13, 14)**

Bio-Rad’s Proposed Construction	ChromaCode’s Proposed Construction	Adopted Construction
“degenerate” or “degeneracy” means a situation where a result is not definitive, because it can indicate more than one possibility in terms of the presence or absence of an analyte	For “degenerate” and “degeneracy”: “degenerate” and “degeneracy” generally describe a situation where a legitimate result is not definitive, because it can indicate more than one possibility in terms of the presence or absence of an analyte  “nondegenerately” means a result cannot indicate more than one possibility	For “degenerate” and “degeneracy”: “Degenerate” and “degeneracy” generally describe a situation where a legitimate result is not definitive, because it can indicate more than one possibility in terms of the presence or absence of an analyte.  “Nondegenerately” means a result cannot indicate more than one possibility.

The specification teaches that “[t]he terms ‘degenerate’ and ‘degeneracy,’ as used herein, generally describe a situation where a legitimate result is not definitive, because it can indicate more than one possibility in terms of the presence or absence of an analyte.” ’051 Patent at 17:62-65. The parties do not dispute the nature of the description; rather, they dispute whether the terms should be defined, or only generally described. BioRad asserts that defining the terms would assist the jury, whereas ChromaCode argues that the terms should remain generally described, as they are in the specification.

ChromaCode’s position is consistent with the specification. The use of the phrase “generally describe” in the specification does not indicate that the patentee intended to define these terms. As a general matter, the ’051 Patent defines terms by stating that a term “as used herein, generally refer(s) to. . . .” See ’051 Patent at 9:58-11:44 (“Definitions”). The phrase “generally describe” is not a definition “because it does not accord with the linguistic formula used by the patentee to signal the designation of other defined terms[.]” *Medicines Co. v. Mylan, Inc.*, 853 F.3d 1296, 1306 (Fed. Cir. 2017); see also *Am. Med. Sys., Inc. v. Biolitec, Inc.*, 618 F.3d 1354, 1361 (2010) (observing that specification’s statement that disputed term was “based upon” a particular method, rather than that the term “means” or “is” the method, undermined the suggestion that the disputed term was defined or limited in the claim). Accordingly, the Court

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1 adopts ChromaCode’s proposed constructions for “degenerate,” “degeneracy,” and “non-  
2 degenerately.”<sup>9</sup>

3 **V. ORDER**

4 For the foregoing reasons, the Court construes the following terms:

	<b>Claim Term</b>	<b>Court’s Construction</b>
5		
6	1 “digital amplification assay” 2 (’128 Patent, Claims 1, 12)	Limiting. “An assay in which targets from a sample are partitioned and amplified, and digital information on the presence or absence of said targets is collected.”
7		
8	2 “average level[s]” / “levels” 3 (’128 Patent, Claims 1, 8, 9, and 12)	Plain and ordinary meaning.
9		
10	3 “calculating” / “calculated” 4 (’128 Patent, Claims 1, 4, 9, and 12)	The term “calculating” is interchangeable with “estimating” and vice versa.
11		
12	4 “each [of]” 5 (’128 Patent, Claim 1 (from the phrase 6 “calculating an average level of each 7 target in the partitions”)) 8 (’154 Patent, Claims 1, 11, 19 (from the 9 phrase “determining a respective level 10 of each of the R targets from the data”))	Plain and ordinary meaning.
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16		
17	5 Order of performance of “plotting” and 6 “determining” steps 7 (’154 Patent, Claim 19)	An order is not required.
18		
19	6 “providing a sample solution volume . . . 7 comprising at least seven hybridization 8 probes” and “contacting . . .” 9 (’051 Patent, Claim 1)	Indefinite.
20		
21		
22	7 “corresponds to the presence of a unique 8 combination of presence or absence of 9 said at least five polynucleotide analytes 10 in said sample” 11 (’170 Patent, Claim 1 (step (e)))	Not indefinite. Plain and ordinary meaning.
23		
24		
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26	8 “cumulative intensity signal(s)”	“Signal representing the total intensity of the light emitted by a given probe type.”
27		

28 <sup>9</sup> BioRad did not propose a construction for “non-degenerately.”

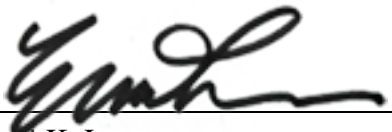
United States District Court  
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	<b>Claim Term</b>	<b>Court’s Construction</b>
	(’051 Patent, Claims 1, 4)	
9	“cumulative [signal/intensity] measurement”  (’051 Patent, Claim 1)  (’170 Patent, Claim 1)	’051 Patent, Claim 1: “Measurement of the cumulative intensity signal(s) in the volume.”  ’170 Patent, Claim 1: “Measurement of the cumulative intensity of the signal(s) in the plurality of droplets.”
10	“non-degenerately,” “degenerate” or “degeneracy”  (’051 Patent, Claim 1)  (’921 Patent, Claims 4, 13, 14)	For “degenerate” and “degeneracy”: “Degenerate” and “degeneracy” generally describe a situation where a legitimate result is not definitive, because it can indicate more than one possibility in terms of the presence or absence of an analyte.  For “nondegenerately”: “Nondegenerately” means a result cannot indicate more than one possibility.

**IT IS SO ORDERED.**

Dated: July 22, 2025




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Eumi K. Lee  
United States District Judge