

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

REVOLAZE LLC,

Plaintiff,

v.

J.C. PENNEY COMPANY, INC. ET AL,

Defendants.

Case No. 2:19-cv-00043-JRG

CLAIM CONSTRUCTION MEMORANDUM OPINION AND ORDER

Before the Court is the opening claim construction brief of RevoLaze LLC (“Plaintiff”) (Dkt. No. 91, filed on January 7, 2020),¹ the response of J.C. Penney Corporation, Inc. and J.C. Penney Purchasing Corporation (collectively, “Defendants”) (Dkt. No. 94, filed on January 21, 2020), and Plaintiff’s reply (Dkt. No. 99, filed on January 28, 2020). The Court held a hearing on the issues of claim construction and claim definiteness on February 5, 2020. Having considered the arguments and evidence presented by the parties at the hearing and in their briefing, the Court issues this Order. Further, Plaintiff’s Motion to Strike Expert Testimony of Dr. Christine Cole (Dkt. No. 97) is denied as set forth herein.

¹ Citations to the parties’ filings are to the filing’s number in the docket (Dkt. No.) and pin cites are to the page numbers assigned through ECF.

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I. BACKGROUND

Plaintiff alleges infringement of five U.S. Patents: No. 5,990,444 (the “’444 Patent”), No. 6,140,602 (the “’602 Patent”), No. 6,252,196 (the “’196 Patent”), No. 6,664,505 (the “’505 Patent”), and No. 6,819,972 (the “’972 Patent”) (collectively, the “Asserted Patents”). The patents are subject-matter related in that all are directed to laser technology for creating visual markings on textiles and other materials.

A. The ’444 and ’196 Patents

The ’444 Patent is entitled Laser Method and System of Scribing Graphics and the ’196 is entitled Laser Method of Scribing Graphics. The ’444 Patent and the ’196 Patent are related in that the ’196 Patent issued from a divisional of the ’444 Patent’s application. The application for the ’444 Patent was filed on October 11, 1996 and states an earliest priority date of October 30, 1995 through a continuation-in-part application. The ’196 Patent states an earliest priority date of October 11, 1996. In general, the ’444 and ’196 Patents are directed to technology to control the laser energy transferred to the material in order to generate the desired marking on the material. The patents define a laser-energy-deposition parameter EDPUT: the Energy Density Per Unit Time.

The ’444 Patent’s abstract provides:

A laser method scribes graphics on materials. The method relates to the identification and understanding of a new energy measurement called energy density per unit time, and the identification and simultaneous control of the laser operating parameters which influence this energy measurement. Once a range of energy density per unit time is determined for scribing a desired graphic on a given material, the energy density per unit time can be controlled to stay within that range to achieve desired results in a repeatable fashion. In a preferred embodiment, the material is one of a group of fabric, leather and vinyl materials. In this embodiment, the energy density per unit time can be controlled to substantially avoid complete carbonization, melting and/or burnthrough of the material.

The '196 Patent's abstract provides:

A laser method scribes graphics on materials. The method relates to the identification and understanding of a new energy measurement called energy density per unit time, and the identification and simultaneous control of the laser operating parameters which influence this energy measurement. Once a range of energy density per unit time is determined for scribing a desired graphic on a given material, the energy density per unit time can be controlled to stay within that range to achieve desired results in a repeatable fashion. In a preferred embodiment, the invention relates to a method of scribing graphics on fabric, leather and vinyl materials. In this embodiment, the energy density per unit time can be controlled to substantially avoid complete carbonization, melting and/or burnthrough of the material.

Claim 46 of the '444 Patent and Claim 11 of the '196 Patent are illustrative of the asserted claims from these patents. With the claim language in dispute emphasized, these claims provide as follows:

'444 Patent Cl. 46. A method of scribing a desired pattern on a material, comprising:

obtaining an indication of the desired pattern;

using a controllable movable laser, having command elements which command movement of an output of said laser to different locations on said working surface;

controlling said laser to produce outputs indicative of the desired pattern to be formed based on said indication, said outputs controlling said controllable laser to control a position of marking thereof, said controller controlling an energy density per unit time that is output from said laser to stay within a controlled range of energy per unit time and per unit area for said material, ***which does not cause undesired carbonization, melting or vaporization for said material***, and said material is one of a fabric material, a leather material or a vinyl material, and wherein said energy density per unit time can be different for different materials.

'196 Patent Cl. 11. A method of scribing a desired pattern on a material without damaging the material, comprising:

obtaining an indication of a desired pattern to be placed on the material;

determining a position representing a beginning portion of a portion of the desired pattern, where the laser will begin to form the desired pattern on said material,

controlling a controllable movable laser to begin moving relative to the material, and, while moving, to begin outputting its laser beam, said laser beam not being output until after said laser is moving relative to said material, ***to avoid overetching of the material*** at startup.

B. The '602 Patent

The '602 Patent is entitled Marking of Fabrics and Other Materials Using a Laser. The application for this patent was filed on April 29, 1997. In general, the '602 Patent is directed to technology for controlling the laser energy transferred to the material in order to generate the desired marking on the material by matching the speed of the laser beam across the material to the material based on properties of the material.

The '602 Patent's abstract provides:

A unique method imparts laser induced patterns and other designs on thin fabrics and leathers. The method uses a laser beam to slightly penetrate the surface of the product at a controlled specific speed. The laser beam is directed at the product either directly or through mirrors, shutters or lenses. The speed of the laser beam relative to the surface of the product is controlled within a predetermined range. Specific identification and control of this relative speed for a particular product are the keys to overcoming technical barriers which have prevented such use of lasers in the past. Preferably a computer is used to provide a signal to a drive mechanism to control the relative speed. The drive mechanism can control movement of the laser, the product, a mirror or a lens.

Claim 120 of the '602 Patent is illustrative of the asserted claims from this patent. With the claim language in dispute emphasized, this claim provides as follows:

120. A method of selectively altering portions of a material to *form a desired pattern* on the material, comprising:
determining a pattern to be formed on the material;
determining specific characteristics of the material on which the pattern is to be formed;
determining *special operational parameters* for the material with its specific characteristics, said special operational parameters which allow a focused beam of radiation to form a pattern in the material which changes the material *without undesirably damaging the material*; and
forming a pattern on said material using the special operational parameters.

C. The '505 Patent

The '505 Patent is entitled Laser Processing of Materials Using Mathematical Tools. The application for this patent was filed on December 5, 2000 and the patent states an earliest priority date of December 6, 1999 through a provisional application. In general, the '505 Patent is directed

to technology for controlling the pattern the laser marks on the material using a mathematical operation, such as polynomial, trigonometric, fractal, and cellular-automata functions.

The '505 Patent's abstract provides:

A system of forming an image using mathematical tools. The images formed using any of the set of mathematical tools, which can be modular level sets, fractals, or cellular automata, or any other modular level set tool. Whenever tool is used, but parameters associated with the values in that tool can be set. This allows producing a number of different functions. The output of the tool is an image, which each pixel of the image having a color and each color representing some change that is to be carried out to the material being processed. The material being processed can be a textile material or denim for example. The processing device can be a laser which produces an output whose value is dependent on the different colors, with each color representing a power output or energy density per unit time specific to that color.

Claim 1 of the '505 Patent is illustrative of the asserted claims from this patent. With the claim language in dispute emphasized, this claim provides as follows:²

1. A method, comprising:
 - allowing a user to enter and/or change each of a plurality of different parameters;
 - carrying out a *mathematical operation* based on said parameters to form values which are individualized for each of a plurality of areas; and
 - using said values to control a laser to change a look of a textile material according to said values.

D. The '972 Patent

The '972 Patent is entitled Material Surface Processing With a Laser That Has a Scan Modulated Effective Power to Achieve Multiple Worn Looks. The application for this patent was filed on September 1, 2000 and the patent states an earliest priority date of October 5, 1999 through a provisional application. In general, the '972 Patent is directed to technology for controlling the

² The parties originally disputed whether “mathematical operation” rendered Claims 1 and 49 of the '505 Patent indefinite. Defendants withdrew their indefiniteness challenge to these claims at the hearing.

laser energy transferred to the material in order to selectively change the color the material and thereby generate a marking pattern.

The '972 Patent's abstract provides:

Techniques which enable changing certain amount of energy being applied from a laser to a material during scan lines of the laser. Energy can be applied to a material to change its look. Different energies can be applied within a single scan line to the material. A display can represent the pattern, by showing different areas of change to the material as different colors/looks on the display. For example, the color of the display can represent the amount of energy being applied to a specific position represented by that color. Since the amount of energy that is applied can change within a single scan line, and in fact may change multiple times within that scan line, this enables freely setting the characteristics.

Claim 92 of the '972 Patent is illustrative of the asserted claims from this patent. With the claim language in dispute emphasized, this claim provides as follows:

92. A method comprising:
authoring a *special image* intended for use in changing the color of textile fabric, which has differently colored areas representing different levels of change of color to said textile fabric; and
using said image to form a file that controls a laser to carry out said changing of color of said textile fabric.

II. LEGAL PRINCIPLES

A. Claim Construction

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *Id.* at 1313; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc’ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *Phillips*, 415 F.3d at 1314; *C.R. Bard, Inc.*, 388 F.3d at

861. The general rule—subject to certain specific exceptions discussed *infra*—is that each claim term is construed according to its ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003); *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.”) (vacated on other grounds).

“The claim construction inquiry ... begins and ends in all cases with the actual words of the claim.” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). “[I]n all aspects of claim construction, ‘the name of the game is the claim.’” *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) (quoting *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998)). First, a term’s context in the asserted claim can be instructive. *Phillips*, 415 F.3d at 1314. Other asserted or unasserted claims can also aid in determining the claim’s meaning, because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term’s meaning. *Id.* For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id.* at 1314–15.

“[C]laims ‘must be read in view of the specification, of which they are a part.’” *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). “[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). But, “[a]lthough the specification may aid the court in

interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.” *Comark Commc’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1323. “[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

The prosecution history is another tool to supply the proper context for claim construction because, like the specification, the prosecution history provides evidence of how the U.S. Patent and Trademark Office (“PTO”) and the inventor understood the patent. *Phillips*, 415 F.3d at 1317. However, “because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Id.* at 1318; *see also Athletic Alternatives, Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (ambiguous prosecution history may be “unhelpful as an interpretive resource”).

Although extrinsic evidence can also be useful, it is “less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular

meaning of a term in the pertinent field, but an expert’s conclusory, unsupported assertions as to a term’s definition are not helpful to a court. *Id.* Extrinsic evidence is “less reliable than the patent and its prosecution history in determining how to read claim terms.” *Id.* The Supreme Court has explained the role of extrinsic evidence in claim construction:

In some cases, however, the district court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period. *See, e.g., Seymour v. Osborne*, 11 Wall. 516, 546 (1871) (a patent may be “so interspersed with technical terms and terms of art that the testimony of scientific witnesses is indispensable to a correct understanding of its meaning”). In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the “evidentiary underpinnings” of claim construction that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal.

Teva Pharm. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 841 (2015).

B. Departing from the Ordinary Meaning of a Claim Term

There are “only two exceptions to [the] general rule” that claim terms are construed according to their plain and ordinary meaning: “1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution.”³ *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) (“[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal.”). The standards for finding lexicography or disavowal are “exacting.” *GE Lighting Solutions*, 750 F.3d at 1309.

³ Some cases have characterized other principles of claim construction as “exceptions” to the general rule, such as the statutory requirement that a means-plus-function term is construed to cover the corresponding structure disclosed in the specification. *See, e.g., CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002).

To act as his own lexicographer, the patentee must “clearly set forth a definition of the disputed claim term,” and “clearly express an intent to define the term.” *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee’s lexicography must appear “with reasonable clarity, deliberateness, and precision.” *Renishaw*, 158 F.3d at 1249.

To disavow or disclaim the full scope of a claim term, the patentee’s statements in the specification or prosecution history must amount to a “clear and unmistakable” surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 (“The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.”). “Where an applicant’s statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.” *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

C. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. A claim, when viewed in light of the intrinsic evidence, must “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). If it does not, the claim fails § 112, ¶ 2 and is therefore invalid as indefinite. *Id.* at 901. Whether a claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. *Id.* at 911. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1365 (Fed. Cir. 2017). “[I]ndefiniteness is a question of law and in effect part of claim construction.” *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

When a term of degree is used in a claim, “the court must determine whether the patent provides some standard for measuring that degree.” *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015) (quotation marks omitted). Likewise, when a subjective term is used in a claim, “the court must determine whether the patent’s specification supplies some standard for measuring the scope of the [term].” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005). The standard “must provide objective boundaries for those of skill in the art.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014).

III. PERSON HAVING ORDINARY SKILL IN THE ART AND PLAINTIFF’S MOTION TO STRIKE EXPERT TESTIMONY OF DR. CHRISTINE COLE

A. The Person of Ordinary Skill in the Art

The parties dispute the appropriate definition of the person having ordinary skill in the art (“POSA”) from whose perspective the Asserted Patents are to be interpreted. Plaintiff proposes the following:

One of ordinary skill in the art of the five patents-in-suit is a person with several years of work experience operating lasers for surface treatment of materials and/or developing software for controlling lasers for that purpose, where that work was a major focus amounting to hundreds of hours.

(Dkt. No. 91 at 8.) Defendants respond by contending the POSA has:

- a. several years of experience in the field of laser marking, ablation, or abrasion of surfaces; []
- b. experience with the research, development, or application of surface treatment technologies ... [and]
- c. an undergraduate degree in physics, chemistry, materials science, or mechanical or electrical engineering, or equivalent.

(Dkt. No. 94 at 11.) Plaintiff contends that Defendants’ proposal is incorrect because it improperly provides that: (1) experience with laser “ablation” is relevant to the qualifications of the POSA,

(2) experience with surface treatment of materials other than with lasers is relevant to the qualifications of the POSA, and (3) specific education is required to qualify as a POSA.

For purposes of construction of the disputed terms before the Court, there is not a meaningful difference between the parties' proposals and the Court therefore declines to address this dispute at this stage in the litigation.

B. Plaintiff's Motion to Strike Expert Testimony of Dr. Christine Cole

Plaintiff seeks to strike the testimony of Defendants' expert witness for two reasons. Plaintiff first submits that Dr. Cole's analysis to identify the qualifications of the person having ordinary skill in the art is flawed. Plaintiff next submits that Dr. Cole does not qualify as a person having ordinary skill in the art under the proper understanding of that person.

As stated above, the Court determines that the differences between Plaintiff's proposed definition of the POSA and Defendants' proposed definition for that person are not relevant to resolving the claim-construction disputes presented to the Court and thus Dr. Cole's analysis regarding the qualifications of that person is irrelevant at this stage in the litigation. Further, the Court is not persuaded that Dr. Cole's testimony on the issues before the Court is so unreliable as to justify striking the testimony. Accordingly, the Court denies Plaintiff's motion to strike Dr. Cole's testimony.

IV. CONSTRUCTION OF DISPUTED TERMS

A. The “Desired” and “Undesired” Claim Terms

Disputed Term⁴	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“in a way to prevent undesired carbonization, melting or burn-through”</p> <ul style="list-style-type: none"> • ’444 Patent Claim 1 	<p>no construction necessary</p> <p>alternatively,</p> <ul style="list-style-type: none"> • “undesired carbonization, melting or burn through” means “carbonization, melting or burn through that the user or operator wished or hoped to avoid” 	<p>indefinite</p>
<p>“in a way that prevents undesired carbonization, melting or burn through of the material”</p> <ul style="list-style-type: none"> • ’444 Patent Claim 21 		
<p>“which avoids undesired carbonization, melting or burn-through”</p> <ul style="list-style-type: none"> • ’444 Patent Claim 33 		
<p>“which does not cause undesired carbonization, melting or vaporization for said material”</p> <ul style="list-style-type: none"> • ’444 Patent Claim 46 	<p>no construction necessary</p> <p>alternatively,</p> <ul style="list-style-type: none"> • “undesired carbonization, melting or vaporization for said material” means “carbonization, melting or vaporization for said material that the user or operator wished or hoped to avoid” 	<p>indefinite</p>

⁴ For all term charts in this order, the claims in which the term is found are listed with the term but: (1) only the highest-level claim in each dependency chain is listed, and (2) only asserted claims identified in the parties’ Joint Claim Construction Chart Pursuant to Patent Rule 4-5(d) (Dkt. No. 103) are listed.

Disputed Term⁴	Plaintiff's Proposed Construction	Defendants' Proposed Construction
“without undesirable burning, melting-through or carbonizing the material” <ul style="list-style-type: none"> • '444 Patent Claim 69 	no construction necessary alternatively, <ul style="list-style-type: none"> • “undesirable burning, melting-through or carbonizing the material” means “burning, melting-through or carbonizing the material that the user or operator wished or hoped to avoid”⁵ 	indefinite
“without undesirable burning, melting-through or carbonizing the material” <ul style="list-style-type: none"> • '444 Patent Claim 72 		
“obtaining an indication of the desired pattern” <ul style="list-style-type: none"> • '444 Patent Claim 46 	no construction necessary alternatively, <ul style="list-style-type: none"> • “desired pattern” means “the pattern the user or operator wished for or hoped for” 	indefinite
“obtaining an indication of a desired pattern” <ul style="list-style-type: none"> • '196 Patent Claims 11, 13, 16 		
“defining a desired pattern” <ul style="list-style-type: none"> • '972 Patent Claim 56 		
“indicating a desired pattern” <ul style="list-style-type: none"> • '602 Patent Claim 99 		
“indicating the desired pattern” <ul style="list-style-type: none"> • '602 Patent Claim 99 		
“form a desired pattern” <ul style="list-style-type: none"> • '602 Patent Claims 120, 141 		

⁵ Plaintiff does not specifically list a construction for the “undesirable burning, melting-through or carbonizing the material” in the parties P.R. 4-5(d) chart, but the Court infers this construction based on the arguments and proposed construction for similar terms.

Disputed Term ⁴	Plaintiff's Proposed Construction	Defendants' Proposed Construction
“without undesired damage to the material” <ul style="list-style-type: none"> • '602 Patent Claim 99 	not construction necessary alternatively, <ul style="list-style-type: none"> • “undesired damage” means “damage that the user or operator wished or hoped to avoid” 	indefinite
“without undesirably damaging the material” <ul style="list-style-type: none"> • '602 Patent Claims 120, 141 	not construction necessary alternatively, <ul style="list-style-type: none"> • “undesirably damaging the material” means “causing damage to the material that the user or operator wished or hoped to avoid” 	indefinite

Because the parties’ arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties’ Positions

Plaintiff submits: In context, the “desired” and “undesired” claim terms “merely refer to the result the operator is seeking to achieve or avoid.” Various courts have found “desired,” when used in claims as it is used here, is readily understandable and sufficiently definite. Specifically, “desired” and “undesired” are not indefinite when they denote the user’s foreknowledge or specification of a requested or sought-after result. In fact, during prosecution of the '444 Patent, the patent examiner allowed claims only once the claims were modified to specify that the laser marking excluded “undesired” results. Further, and as evinced by prior-art patents, the term “desired” is commonly used in the art to denote a specific result. (Dkt. No. 91 at 15–20.)

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** '444 Patent col.1 ll.48–54, co.2 ll.6–8, col.2

ll.40–43, col.6 ll.11–13, col.11 ll.9–12, col.13 ll.52–53, col.33 ll.60–62, col.34 ll.7–10, col.34 ll.31–34, col.34 ll.50–53, col.35 ll.7–10, col.36 ll.8–11; '602 Patent col.1 ll.37–39; '196 Patent col.1 ll.48–54, col.2 ll.7–9, col.2 ll.40–43, col.6 ll.11–13, col.11 ll.8–12, col.14 ll.17–18, col.35 ll.13–16, col.35 ll.27–30, col.35 ll.51–54, col.36 ll.3–6, col.36 ll.27–30, col.37 ll.27–30; '972 Patent col.9 ll.13–15; '444 Patent File Wrapper January 27, 1999 Examiner Interview (Summary) (Plaintiff's Ex. 18, Dkt. No. 91-18); U.S. Patent No. 4,629,858 (Plaintiff's Ex. 10, Dkt. No. 91-10); U.S. Patent No. 5,567,207 (Plaintiff's Ex. 19, Dkt. No. 91-19). **Extrinsic evidence:** *Merriam-Webster's Collegiate Dictionary* 313 (10th ed. 1999) "desire" (Plaintiff's Ex. 12, Dkt. No. 91-12 at 4); U.S. Patent No. 3,626,143 (Plaintiff's Ex. 8, Dkt. No. 91-18); U.S. Patent No. 4,024,545 (Plaintiff's Ex. 9, Dkt. No. 91-9); U.S. Patent No. 4,861,620 (Plaintiff's Ex. 20, Dkt. No. 91-20).

Defendants respond: The "desired" and "undesired" claim terms "are subjective terms of degree, not objective boundaries." As such, the terms render the claims indefinite. For example, certain claims exclude "undesired carbonization" but whether a certain level of carbonization is undesired is purely subjective. Similarly, certain claims require a "desired pattern" but whether a particular pattern is desired is subjective. The Asserted Patents fail to provide any objective boundaries on these terms and in fact exacerbate the lack of objective guidance as to claim scope. For instance, the '444 and '196 Patents describe the same level of carbonization as both desired and undesired (citing, inter alia, '444 Patent col.1 ll.51–62, col.27 ll.52–55). As described in the patents, whether a feature of the marking created with the laser is desired or undesired is based on aesthetics and is therefore purely subjective. That "desired" or "undesired" may be used in other patents to provide sufficiently objective boundaries is irrelevant as to whether these terms are used in the Asserted Patents to provide such boundaries. Similarly, cases applying a pre-*Nautilus* indefiniteness analysis to other patents is also irrelevant to whether the "desired" and "undesired"

terms of the Asserted Patents provide sufficient clarity as to claim scope under the *Nautilus* standard. (Dkt. No. 94 at 11–21.)

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence:** '444 figs.32–33, Patent col.1 ll.16–30, col.1 ll.48–62, col.2 ll.11–14, col.2 ll.20–23, col.11 ll.2–6, col.13 ll.62–67, col.15 ll.14–17, col.15 ll.23–25, col.18 ll.14–17, col.19 ll.46–51, col.19 ll.53–57, col.21 ll.2–6, col.21 ll.24–25, col.26 l.60 – col.27 l.7, col.27 ll.40–43, col.27 ll.52–55, col.31 ll.28–31, col.31 ll.45–54, col.31 l.66 – col.32 l.3; '196 Patent col.1 ll.17–31, col.1 ll.48–54, col.15 ll.51–53, col.19 ll.1–4, col.22 ll.17–18, col.28 ll.59–62; '602 Patent col.1 ll.13–15, col.1 ll.21–22, col.1 l.66 – col.2 l.2, col.3 ll.37–41, col.4 ll.1–27, col.6 ll.7–19; '444 Patent File Wrapper January 27, 1999 Examiner Interview (Summary) (Plaintiff's Ex. 18, Dkt. No. 91-18). **Extrinsic evidence:** Cole Decl.⁶ ¶¶ 83, 85, 87, 89–90, 92, 94, 96–101, 103, 105–10, 121–26, 135–39, 145–46, 148, 164–69 (Defendants' Ex. 1, Dkt. No. 94-1); Cole Dep.⁷ 71:17–22, 75:5–19, 83:1 – 84:12, 84:16 – 85:8 (Defendants' Ex. 3, Dkt. No. 94-3); U.S. Patent No. 3,626,143 (Plaintiff's Ex. 8, Dkt. No. 91-18); U.S. Patent No. 4,861,620 (Plaintiff's Ex. 20, Dkt. No. 91-20).

Plaintiff replies: The “desired” and “undesired” terms are used to describe “the result the user is seeking to achieve or avoid” rather than as the subjective terms of degree Defendants' present. Whether the result of the laser operation is that which is intended by the laser operator (desired) or not (undesired) is objectively determinable. Thus, the claims are not indefinite. (Dkt. No. 99 at 6–9.)

⁶ Expert Declaration of Dr. Christine Cole Regarding Claim Construction and Indefiniteness

⁷ Video Deposition of Christine Cole, Ph.D.

Analysis

The issue in dispute is whether the scopes of the “desired” and “undesired” terms are reasonably certain. They are. They refer to the visual composition intended to be created by operation of the claims. A “desired” composition is that specified to or in the claim. An “undesired” feature is a feature that is contrary to that specification.

The Asserted Patents, and the claims, are directed to using a laser to create predetermined surface markings according user-defined parameters. In other words, the “desired” marking is the intended, specified, design effect; marking features that are outside of this design effect are “undesired.” For example, the ’444 Patent lists numerous design effects that might be specified to be marked on a surface: (1) graphic images on denim, ’444 Patent col.15 ll.1–44, (2) sandblasted denim, *id.* at col.15 l.45 – col.17 l.16, (3) stonewashed denim, *id.* at col.17 ll.17–51, (4) frayed denim, *id.* at col.17 l.52 – col.18 l.17, (5) logos and identification on denim, *id.* at col.18 ll.18–42, (6) stitched look on denim, *id.* at col.18 ll.43–48, (7) plaid look on denim, *id.* at col.18 l.59 – col.19 l.2, (7) polka dot on denim, *id.* at col.19 ll.3–14, (8) moire look on denim, *id.* at col.19 ll.15–29, and (9) crazy line look on denim, *id.* at col.19 ll.30–41. Numerous other examples of design effects and materials are also described.

The ’444 Patent describes the particular design that is to be laser marked on the material as the “desired” design effect. For example, the patent describes that “[t]his invention then teaches the importance of identifying and simultaneously controlling several laser operating parameters together so as to achieve an EDPUT which produces the desired results each and every time.” *Id.* at col.2 ll.40–43. In describing an embodiment in which the laser beam is positioned with mirrors to mark the surface, the patent explains: [t]he movements and timing of the mirrors 13, 17 are

controlled by the numerical control computer 15 to scribe the specific desired graphic 23.” *Id.* at col.6 ll.11–13. For this same embodiment, the patent further explains:

A second computer such as a work station computer (not shown) can be used in the method to facilitate the formation of the desired graphic. For example, a graphic can be scanned into the work station computer, converted into the proper format, and then introduced into the numerical control computer via floppy disk. The numerical control computer then controls the galvanometers and mirrors to form the graphic on the surface of the material at the appropriate EDPUT.

Id. at col.6 ll.14–22. In describing the marking of denim with specific graphics, the patent provides:

Selection of the laser operating parameters and settings which produced the desired graphic images after washing was then used to specify the preferred EDPUT. The combination and ranges of operating parameters, and the resulting EDPUT range that produced a variety of preferred graphic images on denim, are given in Table 7.

Id. at col.15 ll.38–44. Table 7 lists numerous different “Design Effect[s],” each corresponding to a “desired” pattern. *Id.* at col.14 ll.1–67. In other words, the desired graphic is defined by an input, such as an image “scanned into the work station computer [and] converted into the proper format” for controlling the laser system to mark the material, and not by whether the completed design is somehow aesthetically pleasing in the abstract.

While an unexpressed desire, such as a desire for a laser system to create a specific marking design, may be subjective, once it is expressed, such as in providing instructions to the laser system to create the marking, it is no longer subjective. The patents are directed to the latter scenario, not the former. They are addressed to marking desired designs, i.e., requested or input designs, not to marking designs that may or may not be desired, depending on the subjective preferences of the observer of the created design. Defendants’ cited cases deal with subjective preferences and are thus inapposite.

This use of “desired” is plainly stated in the claims. For example, Claim 46 of the ’444 Patent expressly claims obtaining an indication of the desired pattern as an affirmative step and then marking the material with the pattern according to this indication:

46. A method of scribing a desired pattern on a material, comprising:
obtaining an indication of the desired pattern;
using a controllable movable laser, having command elements which command movement of an output of said laser to different locations on said working surface;
controlling said laser to produce outputs indicative of the desired pattern to be formed based on said indication, said outputs controlling said controllable laser to control a position of marking thereof, said controller controlling an energy density per unit time that is output from said laser to stay within a controlled range of energy per unit time and per unit area for said material, ***which does not cause undesired carbonization, melting or vaporization for said material,*** and said material is one of a fabric material, a leather material or a vinyl material, and wherein said energy density per unit time can be different for different materials.

'444 Patent col.40 ll.18–36 (emphasis added). Plainly, the “desired pattern” is the one the laser is instructed to mark on the material.

In the Asserted Patents, the “undesired” features are set forth in contrast to the “desired” pattern and are thus plainly features that are not part of the desired pattern. This is expressed, for example, in Claim 46 of the '444 Patent as set forth above: the level of carbonization, melting, or vaporization that is caused by the laser marking must be according to the desired pattern, else it is undesired. Indeed, the '444 Patent expressly teaches that different patterns have different features:

It was also learned that some level of carbonization, burnthrough and/or melting can be acceptable and sometimes desired ***such as with the frayed or thread barren look described above.*** The level of carbonization, burnthrough and/or melting can be controlled by proper selection of the EDPUT.

Id. at col.27 ll.52–57 (emphasis added); *see also, id.* at col.17 ll.37–38 (“The EDPUT of the laser is carefully controlled to prevent burnthrough [for the stonewashed look].”), col.18 ll.14–17 (“A frayed look can also be produced by the use of closely spaced lines, intersecting lines or duplicate lines such that partial or complete carbonization and partial or complete burnthrough is intended.”).

Ultimately, whether a particular design or feature is “desired” or “undesired” is a function of the specified design, not the vagaries of any person’s opinion. This is the only understanding that reasonably comports with the claim language and the description of the invention. *See Phillips v.*

AWH Corp., 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc) (“The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” (quotation marks omitted)).

Accordingly, the Court holds that Defendants have not proven any claim is indefinite for including any of the “desired” or “undesired” terms and that those terms have their plain and ordinary meanings without the need for further construction.

B. “to avoid overetching the material”

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“to avoid overetching the material” <ul style="list-style-type: none"> • ’196 Patent Claims 11, 13, 16 	no construction necessary alternatively, <ul style="list-style-type: none"> • “overetching” means “creating a hole in the material” 	indefinite

The Parties’ Positions

Plaintiff submits: The term “to avoid overetching the material” does not render any claim indefinite for two reasons. First, it is not limiting but rather states the intended result of the claimed method steps. Second, even if limiting, the meaning of this term is reasonably certain—it refers to avoidance of creating a hole in the material on startup of the laser. (Dkt. No. 91 at 21–23.)

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: ’196 Patent figs.36–40, col.7 ll.15–18, col.28 ll.32–43, col.34 ll.34–56.

Defendants respond: The term “overetching” is a subjective term of degree without an objective boundary. As with the “desired” and “undesired” terms, the ’196 Patent teaches that a certain level of etching (complete burn-through) represents both the intended etching and overetching (citing ’196 Patent col.19 ll.1–4, col.28 ll.32–44). Thus, the technical disclosure does

not provide the requisite objective boundaries for “overetching.” Finally, “to avoid overetching the material” is limiting in the claims. Specifically, it is not preceded by a “thereby” or “whereby” or equivalent transitional phrase that indicates a non-limiting statement of intended result of a method step. (Dkt. No. 94 at 22–25.)

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence:** ’196 Patent col.19 ll.1–4, col.28:32–44. **Extrinsic evidence:** Cole Decl. ¶¶ 113, 115–17 (Defendants’ Ex. 1, Dkt. No. 94-1); Cole Dep. 130:25 – 135:23 (Defendants’ Ex. 3, Dkt. No. 94-3).

Plaintiff replies: Whether “to avoid overetching the material” is limiting in the claims does not hinge on the presence of a particular transitional phrase in the claim. Rather, it depends on whether the term states an intended result of the method step. In the claims at issue, the overetching term is not limiting because it states the intended purpose/result of the claimed method steps. (Dkt. No. 99 at 10–11.)

Analysis

There are two issues in dispute. The first issue is whether “to avoid overetching the material” is a limitation as used in the claims. It is. Given the ’196 Patent’s teachings that the amount of etching performed by a laser depends on the speed of the laser beam across the material, the overetching term informs the meaning of the laser’s “moving relative to the material” recited in the claims. The second issue in dispute is whether the meaning of “overetching” is reasonably certain as used in the claims. It is. It refers to etching beyond the parameters of the pattern to be placed on the material (the “desired pattern”).

The “overetching” term is used in Claims 11, 13, and 16 of the ’196 Patent in the context of claiming specific behavior of the laser-marking system at the startup of the laser beam. For example, Claim 11 provides as follows:

11. A method of scribing a desired pattern on a material without damaging the material, comprising:
obtaining an indication of a desired pattern to be placed on the material;
determining a position representing a beginning portion of a portion of the desired pattern, where the laser will begin to form the desired pattern on said material,
controlling a controllable movable laser to begin moving relative to the material, and, while moving, to begin outputting its laser beam, said laser beam not being output until after said laser is moving relative to said material,
to avoid overetching of the material at startup.

’196 Patent col.38 ll.53–65 (emphasis added). As explained in the ’196 Patent, a laser may experience a power surge at startup. *Id.* at col.28 ll.32–35 (“Adjustments to the galvanometer setting times can also help to prevent the initial creation of a hole when *the laser beam is first turned on and the initial surge of energy contacts the material.*” (emphasis added)). In this same passage, the patent teaches that by initiating movement of the laser relative to the material before starting the laser beam it is possible to prevent an unwanted hole in the material that could otherwise be formed due to the power surge. *Id.* at col.28 ll.32–43. While this teaching is found in the description of an embodiment in which the laser beam is moved relative to the material by changing the position of mirrors, the fundamental teaching is agnostic as to how the laser beam is moved relative to the material.

It is inconceivable to the Court that one of ordinary skill in the art would ignore the above-cited passage when interpreting Claims 11, 13, and 16, as Defendants’ contend and as Defendants’ expert did. (*See* Dkt. No. 94 at 24); (Cole Decl. ¶ 116, Dkt. No. 94-1 at 35–36). Indeed, Dr. Cole had to ignore other clear teachings in the patent to find this passage “not analogous” to the claim recitation of “controlling a controllable movable laser to begin moving relative to the material” to

prevent overetching. (Cole Decl. ¶ 116, Dkt. No. 94-1.) For example, the '196 Patent teaches that the purpose of moving the mirrors is to move the laser beam across the material to mark the material with the desired pattern:

The laser 11 generates a laser beam 12 in the direction of a computer numerically controlled mirror system. The mirror system includes an x-axis mirror 13. The x-axis mirror 13 is mounted on an x-axis galvanometer 14. The x-axis galvanometer 14 is adapted to rotate to cause rotation of the x-axis mirror 13. ***Rotation of the x-axis mirror 13 causes movement of the laser beam 12 along the x-axis.*** A numerical control computer 15 controls the output of a power source 16 to control rotation of the x-axis galvanometer. The laser beam 12 is deflected by the x-axis mirror 13 and directed toward a y-axis mirror 17. The y-axis mirror 17 is mounted on an y-axis galvanometer 18. The y-axis galvanometer 18 is adapted to rotate to cause rotation of the y-axis mirror 17. ***Rotation of the y-axis mirror 17 causes movement of the laser beam 12 along the y-axis.*** The numerical control computer 15 controls the output of the power source 16 to control rotation of the y-axis galvanometer 18. ...

The lens 19, mirrors 13, 17 and galvanometers 14, 18 can be housed in a galvanometer block (not shown). ...

The laser beam 12 is directed by the mirrors 13, 17 against the surface 22 of the material 21. ... The movements and timing of the mirrors 13, 17 are controlled by the numerical control computer 15 to scribe the specific desired graphic 23.

'444 Patent col.5 l.40 – col.6 l.4 (emphasis added). The patent also teaches that movement of the laser beam across the material may be controlled by moving the laser. For example, the patent teaches:

The “speed” is the ***speed of the laser beam relative to the surface of the material.*** The speed can be varied by controlling the movements of the x-axis mirror 13 and y-axis mirror 17 illustrated in FIG. 1. In other embodiments of the invention, the ***speed can be varied by controlling the movements of the laser,*** the movements of the material, the movements of a lens, by combinations of these methods, or by other means.

'196 Patent col.7 ll.32–39. Indeed, the patent describes several “embodiments of the laser method of forming graphics on materials according to the invention” as alternatives to the mirrored system described above. *Id.* at col.34 ll.14–15. The first and tenth of these enumerated alternatives include moving the laser to move the laser beam across the material. *Id.* at figs.34 & 43, col.34 ll.16–44,

col.37 ll.14–32. The very core of the invention centers on moving a laser beam relative to the material to mark the material, and the patent provides various ways in which to move the beam.

The '196 Patent also teaches that a “key” to the invention is controlling the energy density per unit time (EDPUT) applied by the laser to the material as it moves across the material to mark the desired pattern. *See, e.g.*, '196 Patent col.1.1.66 – col.2 1.16. By controlling operating parameters of the laser, such as the speed of the laser beam across the material, one is able to manage the EDPUT to avoid unwanted etching of the material. *See, e.g., id.* at col.2 ll.17–28, col.14 1.31 – col.15 1.28 (Table 7). Dr. Cole’s opinion that one of ordinary skill in the art would ignore an express teaching of a marking benefit of moving the laser beam across the material at startup of the laser simply because that teaching was in the context of an embodiment that moves mirrors rather than lasers is simply not credible.

While the '196 Patent clearly teaches that moving the laser relative to the material before turning the laser beam on prevents the creation of a hole, “overetching” in the claims is not simply the creation of hole, as Plaintiff suggests. Rather, “overetching” must be understood relative to the “desired pattern” of the claims. In other words, “overetching” is informed not solely by the patent’s teaching of the no-hole benefit of relative movement of laser and material prior to starting the laser beam, but is also informed by the patent’s teaching regarding desired and undesired features (described above) and the claims’ recitation of the “desired pattern.” Thus, the overetching that is avoided according to the claims is etching that goes beyond what is specified for the desired pattern.

Finally, the Court is not persuaded that “to avoid overetching of the material” is a nonlimiting statement of the intended result of the relative movement of the laser and material. This is not because the lack of a particular transitional phrase, as Defendants contend. Rather, a main teaching

of the '136 Patent is that the EDPUT is a function of speed of the laser beam across the material and that the EDPUT is what is controlled to control the “level of carbonization, burnthrough and or melting.” '136 Patent col.2 ll.17–28, col.14 l.31 – col.15 l.28 (Table 7), col.28 ll.59–64. Stated another way, core to the patent is that the level of etching depends on the speed of the laser beam across the material. Thus, “to avoid overetching of the material” informs the meaning of the “controlling a controllable movable laser to begin moving relative to the material, and, while moving, to begin outputting its laser beam” in Claims 11 and 16 and “controlling the marking device to output the focused beam of radiation toward said material, by commanding said relative movement, and then, while there is said relative movement between said marking device and said material, to begin outputting said focused beam of radiation” in Claim 13.

Accordingly, the Court holds that Defendants have not proven any claim is indefinite for including “to avoid overetching the material” and construes the term as follows:

- “to avoid overetching the material” means “to avoid etching the material beyond that specified for the desired pattern.”

C. The “Special” Claim Terms

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“special operational parameters” <ul style="list-style-type: none"> • '602 Patent Claims 120, 141 	no construction necessary alternatively, <ul style="list-style-type: none"> • “special” means “having a specific or particular function” 	indefinite
“special image” <ul style="list-style-type: none"> • '972 Patent Claim 92 	no construction necessary alternatively, <ul style="list-style-type: none"> • “special image” means “image for use in scribing” 	indefinite

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: The meanings of these terms are clear in the context of the intrinsic evidence. For example, the "special operational parameters" are defined in the claims as those associated with a "material with ... specific characteristics." In this context, the "special operational parameters" are "those for use with that specific material." This comports with the customary, lay, meaning of "special"; namely, "having a specific or particular function." Exemplary operational parameters are provided in the '602 Patent, such as the speed, power, and wavelength of the laser beam and the distance of the laser from the material. With respect to the "special image," the claims state and the '972 Patent describes that it is an image "for use in changing the color of the textile fabric." (Dkt. No. 91 at 26–32.)

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** '602 Patent col.3 ll.53–58, col.4 ll.1–39, col.4 l.52 – col.5 l.18; '972 Patent, at [57] Abstract, col.2 ll.46–49, col.3 ll.47–65, col.4 ll.8–49, col.9 ll.27–40, col.9 ll.65–68, col.10 l.1 – col.11 l.18, col.11 ll.30–31, col.11 ll.46–49, col.11 l.51 – col.12 l.13; '602 Patent File Wrapper October 30, 1998 Applicant Amendment and Remarks⁸ (Plaintiff's Ex. 22, Dkt. No. 91-22). **Extrinsic evidence:** *Random House Webster's College Dictionary* 754 (2d ed. 1997), "level" (Plaintiff's Ex. 11, Dkt. No. 91-11 at 4).

Defendants respond: The term "special" is inherently a subjective term of degree and the '602 and '972 Patents do not provide the requisite objective boundaries for "special operational

⁸ This characterization of the document is Plaintiff's. The submitted portion of the document does not itself convey this character.

parameters” or “special image.” With respect to “special operational parameters,” it is not clear if this refers to “beam diameter, wavelength, frequency, energy, duration” or any of a multitude of other parameters. The outcome of using these special operational parameters does not provide any further clarity. In fact, the ’602 Patent suggests that these parameters must be determined by experimentation (citing col.3 ll.59–60, col.4 ll.33–35). The meaning of a term, however, is not reasonably certain if one of ordinary skill in the art must perform tests to ascertain the meaning. The exemplary operational parameters listed in the patent do not cure this as it is still uncertain what parameters outside the exemplary listing would qualify as “special.” With respect to “special image,” the claim and the teaching of the ’972 Patent do not clarify how the image is “special” or how it is “intended” for use in changing the color of a fabric, improperly leaving this “to the preferences of an individual.” While Claim 92 of the ’972 Patent provides that the image has “differently colored areas” and states that it is used to “form a file that controls a laser to carry out said changing of color,” this does not cure the subjective nature of what makes the image “special” or how it is “intended” to be used. (Dkt. No. 94 at 25–30.)

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence:** ’602 Patent col.2 ll.12–14, col.3 ll.59–60, col.4 ll.33–35; ’972 Patent col.11 ll.46–50. **Extrinsic evidence:** Cole Decl. ¶¶ 129, 131–32, 186, 189–91 (Defendants’ Ex. 1, Dkt. No. 94-1); Cole Dep. 165:12 – 166:13, 173:19 – 174:1, 217:23 – 218:10, 219:21 – 220:20 (Defendants’ Ex. 3, Dkt. No. 94-3).

Plaintiff replies: The ’602 Patent provides guidance regarding the operating parameters and how they effect the claim-recited function and thus the meaning of “special operational parameters” is reasonably certain in the context of the claims and the description of the invention. With respect to “special image” in the ’972 Patent, Defendants’ entire argument is improperly

premised on unsupported expert opinion manufactured for litigation. This extrinsic evidence cannot be used to generate ambiguity that does not exist in the intrinsic record. (Dkt. No. 99 at 11–13.)

Analysis

There are two issues in dispute. First, whether the meaning of “special operational parameters” is reasonably certain in the context of the claims and the teaching of the ’602 Patent. It is. Second, whether the meaning of “special image” is reasonably certain in the context of the claims and the teaching of the ’972 Patent. It is.

C-1. “special operational parameters”

The meaning of “special operational parameters” is reasonably certain in the context of the claims, as informed by the ’602 Patent’s technical disclosure: these are the operational parameters that are particular to the material based on the specific characteristics of the material and are for altering the material to form a desired pattern with a laser. Claim 120 provides:

120. A method of selectively altering portions of a material to form a desired pattern on the material, comprising:
determining a pattern to be formed on the material;
determining specific characteristics of the material on which the pattern is to be formed;
determining special operational parameters for the material with its specific characteristics, said special operational parameters which allow a focused beam of radiation to form a pattern in the material which changes the material without undesirably damaging the material; and
forming a pattern on said material using the special operational parameters.

’602 Patent col.26 ll.32–45 (emphasis added). Claim 141 provides:

141. A method of selectively altering portions of a material to form a desired pattern on the material, comprising:
determining a pattern to be formed on the material;
determining specific characteristics of the material on which the pattern is to be formed;
determining special operational parameters for the material with its specific characteristics, said special operational parameters which allow a focused beam of radiation to cause a chemical change in a surface of the material that

causes a pattern which can be seen to be formed in the material without undesirably damaging the material; and ***forming a pattern on said material using the special operational parameters.***

Id. at col.29 ll.12–26 (emphasis added). The claims themselves define the parameters, and how they are “special” in that they are specific to the material.

The ’602 Patent explains that the key to invention is determining the appropriate relative speed of the laser beam across the material for the specific material and controlling the speed accordingly to mark the material with the beam. For example, in the Summary of the Invention, the patent provides:

This invention relates to a unique method to impart laser induced patterns and other designs on thin fabrics and leathers. The method uses a laser beam to slightly penetrate the surface of the product at a controlled specific speed. The laser beam is directed at the product either directly or through mirrors, shutters or lenses. The speed of the laser beam relative to the surface of the product is controlled within a predetermined range. ***Specific identification and control of this relative speed for a particular product are the keys to overcoming technical barriers which have prevented such use of lasers in the past.*** Preferably a computer is used to provide a signal to a drive mechanism to control the relative speed. The drive mechanism can control movement of the laser, the product, a mirror or a lens.

Id. at col.1 ll.52–65 (emphasis added). The patent further explains: “It has now been discovered that specific identification and control of this speed are the keys to preventing carbonization, complete melting and/or burn-through of the fabric.” *Id.* at col.3 ll.37–40. The beam speed must be above a certain level (the “Threshold Level”) to prevent the laser beam from fully penetrating the fabric and resulting in carbonization, complete melting and/or burn-through. The beam speed must also be below a certain level (the “Maximum Speed”), else the laser will not form the desired pattern on the material. *Id.* at col.3 ll.45–50. The range between the Threshold Level and the Maximum Speed is the “Process Operating Speed.”

The range of speeds between the Threshold Speed and the Maximum Speed will be referred to herein as the Process Operating Speed. The Process Operating Speed is a function of the type of fabric or leather material, the thickness of the material, the construction of the material, the power and wavelength of the laser beam, the

distance between the laser and the material, and the type of design formed on the surface of the material.

Id. at col.3 ll.51–58. The patent also describes a “Critical Operating Speed” “above which the propensity to not form a design on the fabric increases, and below which the propensity to cause burn-through, complete melting and/or carbonization increases.” *Id.* at col.4 ll.29–35. This parameter “is a function of numerous material and process variables.” *Id.* at col.4 ll.35–37. These various parameters are determined using “[s]tatistically designed experiments,” “statistical models,” and “statistical quantitative models.” *Id.* at col.3 ll.59–63, col.4 ll.35–39.

The '602 Patent describes a number of different systems that may be operated to mark a pattern on a material, each with potentially different operating parameters related to the appropriate speed of the beam relative to the material. For example, in one embodiment the laser moves (rotationally and/or translationally) while the material is stationary. *Id.* at col.2 l.66 – col.3 l.31. In another example, the laser is stationary and the material moves. *Id.* at col.7 l.28 – col.8 l.3. In another example, both the laser and the material move. *Id.* at col.8 ll.4–46. In another example, both the laser and the material are stationary, and the beam is moved across the material by positioning mirrors. *Id.* at col.8 l.47 – col.9 l.15. In another example, the laser is stationary, the material moves, and mirrors and material move in concert to move the beam across the material. *Id.* at col.9 ll.16–63. Various iterations of moving lasers, moving material, and beam-positioning optical devices are described. *Id.* at col.9 l.64 – col.13 l.31.

When read in the context of the technical disclosure and the surrounding claim language, it is reasonably certain that the claim-recited “special operational parameters” for forming the pattern “without undesirably damaging the material” are those material-specific parameters related to the appropriate relative speed between the laser beam and the material. Accordingly, the Court holds that Defendants have not proven any claim is indefinite for including “special operational

parameters” and hold that the term has its plain and ordinary meaning without the need for further construction.

C-2. “special image”

The meaning of “special image” is reasonably certain in the context of the claims, as informed by the ’972 Patent’s technical disclosure: this is the image that provides information related to the color-specific energy density per unit time (EDPUT) as a function of area. Claim 92 provides:

92. A method comprising:
authoring a *special image* intended for use in changing the color of textile fabric, which has differently colored areas representing different levels of change of color to said textile fabric; and
using said image to form a file that controls a laser to carry out said changing of color of said textile fabric.

’972 Patent col.21 ll.7–13 (emphasis added). The claim itself defines the image, and how it is “special” in that it has “differently colored areas representing different levels of change of color to said textile fabric.”

The ’972 Patent provides that “the energy density per unit time of the laser causes the garment to change color to varying degrees from indigo blue or black to white or grey.” *Id.* at col.3 ll.1–4. Geometric regions in a pattern (areas) having different colors are thus associated with different EDPUTs. For example, the patent teaches scanning a pattern, then associating an EDPUT with each area on the pattern based on the color of the area. *See, e.g., id.* at col.5 ll.59–67. As an alternative to scanning, the user can “manually enter the [color] changes in EDPUT ... along the pattern geometry.” *See, e.g., id.* at col.6 ll.8–13. This information is then used to formulate instructions to drive the system to create the desired pattern. *See, e.g., id.* at col.6 ll.1–7. For example, the power of the laser, the duty cycle of the laser, the speed of the laser beam across the material, the spot size of the laser, and the number of beam passes over a given region may all be

varied to effect a change in color of the material according to the pattern represented in the EDPUT image. *See, e.g., id.* at col.4 l.24 – col.5 l.13.

The EDPUT image of the pattern may be generated in various ways. For example, a user may draw on a computer screen and associate different regions in the drawings with EDPUT color values:

The user draws on the computer screen, with the mouse, the desired shape of the pattern. Then the user can select different colors for different areas. This can use a point-and-shoot technique or selection from a menu or by right clicking on an area and selecting from a context menu. This click associates different sections of the pattern with different EDPUT/power/duty cycle levels. The actual power level or duty cycle associated with a given color may be set by a user, and may be modified for different materials.

'972 Patent col.9 l.32–40. The drawing may be input or modified through a variety of tools, such as: (1) a blending tool, which colors regions based on surrounding regions, *id.* at col.10 ll.24–34, (2) a whisker tool, which generates whiskers in the drawing, *id.* at col.10 ll.35–38, (3) a grain tool, which generates a grainy look, *id.* at col.10 ll.39–48, (4) a blaster tool, which provides incremental color intensity, *id.* at col.10 ll.49–65, and others. The patent describes a new file format “which communicates precisely those parameters required for converting the desired image into laser control commands.” *Id.* at col.11 ll.19–22. When in bitmap (pixel) form:

[e]ach value [in the file] represents power level/duty cycle/ EDPUT for each pixel in the image as well as other control values. ***This file format therefore includes an edput value, or at least a value indicative of the amount of effective energy to be applied to a pixel associated with each pixel or group of pixels*** that is handled as a unit.

Id. at col.11 ll.23–29 (emphasis added). Ultimately, any pattern “can be obtained in any of the ways described herein, *i.e., by authoring a special image intended for use in changing the color of textile fabric*, or by scanning a real garment and using the results of the scan to form information to use in changing the color.” *Id.* at col.11 ll.43–50 (emphasis added).

When read in the context of the '972 Patent's technical disclosure and surrounding claim language, it is reasonably certain that the claim-recited "special image" with "differently colored areas representing different levels of change of color to said textile fabric" denotes an image having values related to the EDPUT levels to change the color of the material. Accordingly, the Court holds that Defendants have not proven any claim is indefinite for including "special image" and that the term has its plain and ordinary meaning without the need for further construction.

D. The Terms Withdrawn By Defendants

Defendants seek to withdraw from the claim-construction process several terms that were originally presented for construction. Specifically, the meanings of "color alterations," "different levels of change," a number of variants of "control," and "mathematical operation" were originally disputed. (*See, e.g.*, P.R. 4-3 Exhibit A: Joint Claim Construction Chart at 1–4, 10–11, 13–15, Dkt. No. 80.) In their responsive brief, Defendants purported to withdraw "color alterations," "different levels of change," and the "control" terms from the claim-construction process. (Dkt. No. 94 at 34.) At oral argument, Defendants further expressed a desire to withdraw "mathematical operation" from the claim-construction process. Plaintiff briefed "color alterations," "different levels of change," and the "control" terms in its opening brief and the parties fully briefed "mathematical operation." Based on the original submission of these disputes to the Court, Plaintiff requests that the Court now address the disputes to prevent them from returning in the litigation. (Dkt. No. 99 at 5.)

The Court understands that there is no claim-scope dispute over the claim terms numbered 1, 2, 3, and 7 parties' Joint Claim Construction Chart Pursuant to Patent Rule 4-5(d) (Dkt. No. 103) and that there is therefore no need to construe the terms. The Court notes that Plaintiff's position on these terms has consistently been that no construction is necessary and that "color alterations," "different levels of change" and "mathematical operation" are not indefinite. The Court also notes

that Defendants had originally submitted that “color alterations,” “different levels of change” and “mathematical operation” all are indefinite and that the “control” terms should be accorded a specific construction.⁹ Finally, the Court notes that under the Rules of Practice for Patent Cases before the Eastern District of Texas, claim-scope disputes, including indefiniteness, are to be raised and addressed at a particular point in the litigation. *See, e.g.*, P.R. 4-1 (“Not later than 10 days after service of the ‘Invalidity Contentions’ pursuant to P. R. 3-3, each party shall simultaneously exchange a list of claim terms, phrases, or clauses which that party contends should be construed or found indefinite by the Court.”); P.R. 4-3 (“Not later than 60 days after service of the ‘Invalidity Contentions,’ the parties shall complete and file a Joint Claim Construction and Prehearing Statement, which shall contain ... [e]ach party’s proposed claim construction or indefiniteness position for each disputed claim term, phrase, or clause.”); P.R. 4-5 (setting forth the briefing schedule for claim-scope issues, including indefiniteness). Thus, the Court interprets Defendants’ withdrawal of terms as abandoning their claim-scope positions on these terms, including indefiniteness.

Accordingly, the Court holds that these withdrawn terms have their plain and ordinary meanings without the need for construction.

⁹ Defendants fully briefed and submitted expert testimony on the indefiniteness of “mathematical operation.” Defendants’ indefiniteness position, and that of its expert, was that “mathematical operation” is indefinite for unlimited scope because “any mathematical function—whether described in the specification or not—[would fall] within the scope of this term.” (*See* Dkt. No. 94 at 32); (Dkt. No. 94-1 at ¶¶ 152, 154). The Court has considered the argument and evidence and, absent Defendants’ withdrawal of the dispute over this term, would reject Defendants’ position and hold that the term is not indefinite, relying on *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1367 (Fed. Cir. 2017), which provides that “the inference of indefiniteness simply from [a broad] scope finding is legally incorrect: ‘breadth is not indefiniteness.’”

V. CONCLUSION

The Court determines that Defendants have failed to prove any claim is indefinite and adopts the constructions set forth above, as summarized in the following table. The parties are **ORDERED** that they may not refer, directly or indirectly, to each other’s claim-construction positions in the presence of the jury. Likewise, the parties are **ORDERED** to refrain from mentioning any portion of this opinion in the presence of the jury. Any reference to claim-construction proceedings is limited to informing the jury of the definitions adopted by the Court.


Within thirty (30) days of the issuance of this Memorandum Opinion and Order, the parties are hereby **ORDERED**, in good faith, to mediate this case with the designated mediator in this case. As a part of such mediation, each party shall appear by counsel (with lead and local counsel present and participating) and by at least one corporate officer possessing sufficient authority and control to unilaterally make binding decisions for the corporation adequate to address any good faith offer or counteroffer of settlement that might arise during such mediation. Failure to do so shall be deemed by the Court as a failure to mediate in good faith and may subject that party to such sanctions as the Court deems appropriate.

Section	Term	Construction
A	“in a way to prevent undesired carbonization, melting or burn-through” • ’444 Patent Claim 1	plain and ordinary meaning
	“in a way that prevents undesired carbonization, melting or burn through of the material” • ’444 Patent Claim 21	plain and ordinary meaning
	“which avoids undesired carbonization, melting or burn-through” • ’444 Patent Claim 33	plain and ordinary meaning

Section	Term	Construction
	<p>“which does not cause undesired carbonization, melting or vaporization for said material”</p> <ul style="list-style-type: none"> • ’444 Patent Claim 46 	plain and ordinary meaning
	<p>“without undesirable burning, melting-through or carbonizing the material”</p> <ul style="list-style-type: none"> • ’444 Patent Claim 69 	plain and ordinary meaning
	<p>“without undesirable burning, melting-through or carbonizing the material”</p> <ul style="list-style-type: none"> • ’444 Patent Claim 72 	plain and ordinary meaning
	<p>“obtaining an indication of the desired pattern”</p> <ul style="list-style-type: none"> • ’444 Patent Claim 46 	plain and ordinary meaning
	<p>“obtaining an indication of a desired pattern”</p> <ul style="list-style-type: none"> • ’196 Patent Claims 11, 13, 16 	plain and ordinary meaning
	<p>“defining a desired pattern”</p> <ul style="list-style-type: none"> • ’972 Patent Claim 56 	plain and ordinary meaning
	<p>“indicating a desired pattern”</p> <ul style="list-style-type: none"> • ’602 Patent Claim 99 	plain and ordinary meaning
	<p>“indicating the desired pattern”</p> <ul style="list-style-type: none"> • ’602 Patent Claim 99 	plain and ordinary meaning
	<p>“form a desired pattern”</p> <ul style="list-style-type: none"> • ’602 Patent Claims 120, 141 	plain and ordinary meaning
	<p>“without undesired damage to the material”</p> <ul style="list-style-type: none"> • ’602 Patent Claim 99 	plain and ordinary meaning

Section	Term	Construction
	“without undesirably damaging the material” <ul style="list-style-type: none"> • ’602 Patent Claims 120, 141 	plain and ordinary meaning
B	“to avoid overetching the material” <ul style="list-style-type: none"> • ’196 Patent Claims 11, 13, 16 	to avoid etching the material beyond that specified for the desired pattern
C1	“special operational parameters” <ul style="list-style-type: none"> • ’602 Patent Claims 120, 141 	plain and ordinary meaning
C2	“special image” <ul style="list-style-type: none"> • ’972 Patent Claim 92 	plain and ordinary meaning
D	“color alterations” <ul style="list-style-type: none"> • ’972 Patent Claim 56 	plain and ordinary meaning
	“different levels of change” <ul style="list-style-type: none"> • ’972 Patent Claim 92 	plain and ordinary meaning
	“controlled” / “controllable” / “controlling” / “controller” / “control” / “controls” <ul style="list-style-type: none"> • ’444 Patent Claims 1, 21, 46, 72, • ’602 Patent Claim 99 • ’196 Patent Claims 11, 13, 14, 16 • ’505 Patent Claims 1, 49 • ’972 Patent Claim 92 	plain and ordinary meaning
	“mathematical operation” <ul style="list-style-type: none"> • ’505 Patent Claims 1, 49 	plain and ordinary meaning

So ORDERED and SIGNED this 11th day of February, 2020.



 RODNEY GILSTRAP
 UNITED STATES DISTRICT JUDGE