

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

SAMSUNG ELECTRONICS CO., LTD.,

Plaintiff,

v.

TECHNICAL CONSUMER PRODUCTS,
INC., *et al.*,

Defendants.

)
)
) 1:23-CV-186
)
)
)
)
)
)
)

OPINION

J. Nicholas Ranjan, United States District Judge (sitting by designation)

This patent case involves aspects of designing and manufacturing LED semiconductors. Before the Court is the issue of claim construction of multiple terms in the following patents: U.S. Patent Nos. 9,035,341 ('341 Patent), 9,373,746 ('746 Patent), 9,105,762 ('762 Patent), and 7,759,140 ('140 Patent).

The parties at first disputed the meaning of ten terms, but, during briefing, agreed on construction of six of those terms, leaving four disputed terms for the Court to construe. ECF 121, pp. 4-5.

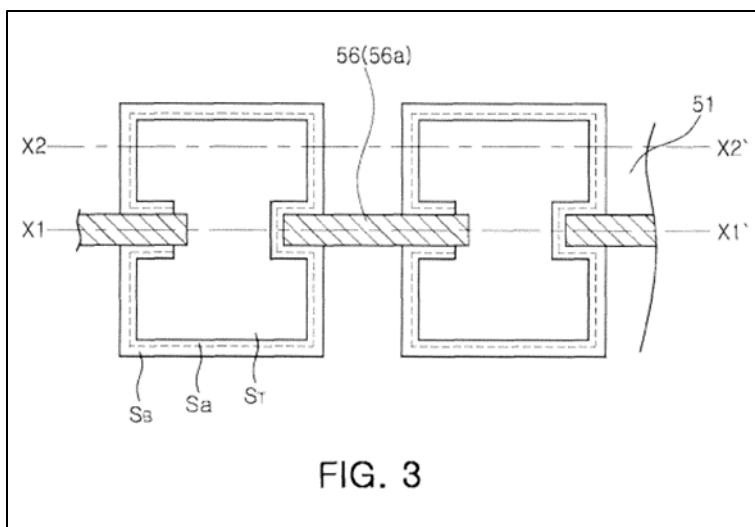
Specifically, the parties continue to dispute the meanings of these four terms: one term ("wiring region") in the '746 Patent, one term ("reflection unit") in the '762 Patent, and two terms ("growth rate" and "majority of the growth") in the '140 Patent. The Court held a *Markman* hearing on claim construction on May 14, 2024. The Court has considered the parties' joint claim construction brief and accompanying authority, as well as the parties' arguments at the *Markman* hearing. For the reasons explained below, the Court will adopt the following constructions.

BACKGROUND

The three patents here address different aspects of designing and manufacturing LED semiconductors.

The '746 Patent (“Wiring Connection Patent”)¹

The '746 Patent² discloses a method for manufacturing a semiconductor LED with a sloped wiring unit. Ex. B. The patent explains that light-emitting cells are placed onto a substrate, with groups of three such cells connected by a “wiring unit.” *Id.* 4:34-44. Figure 3 below shows a close-up of two cells connected by a wiring unit—the wiring occurs at the “wiring formation region” or “wiring region.” *Id.* 5:24-6:9.



The specification provides that the side-surfaces of each cell have steeper or gentler angles in relation to the wiring region. Specifically, in a wiring region, the “respective lateral (side) surface regions have relatively gentle slope angles θ_1 and θ_2 such that a smooth wiring deposition process is guaranteed and a defect such as a

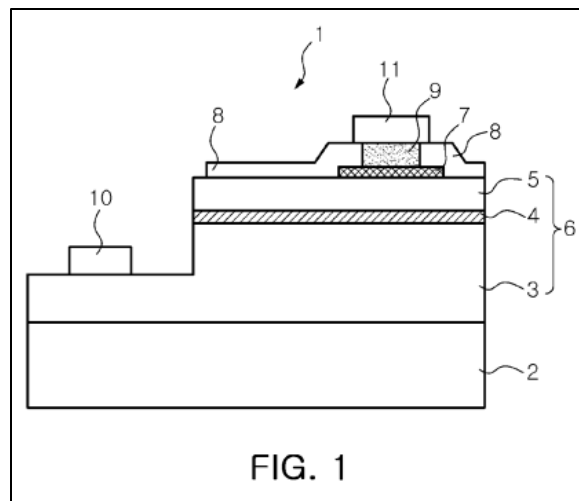
¹ The parties have, at times, referred to the patents here colloquially as the “wiring connection patents” (’341 and ’746 Patents), “light extraction patent” (’762 patent), and “crystal growth patent” (’140 patent). ECF 150, 5:11-17. The Court uses those terms in this Opinion.

² The ’746 Patent is derivative of the ’341 Patent, and both patents share the same specification. ECF 121, pp. 6 n.3, 14-15. The parties don’t dispute construction of any terms in the ’341 Patent.

disconnection, or the like, is reduced.” *Id.* 5:46-50. By contrast, outside of a wiring region, the side surface “has a slope angle θ_3 greater than the slope angles θ_1 and θ_2 of the wiring formation region.” *Id.* 5:55-57. This is done so that, in a LED of this design, the “wiring formation region is selectively implemented to have a gentle slope while the other regions have a steep slope angle as possible, thereby sufficiently securing an effective light emission area[,]” while “minimize[ing] defective wiring” in the wiring region. *Id.* 6:5-8, 6:43-47.

The '762 Patent (“Light Extraction Patent”)

The '762 Patent describes a method for manufacturing a semiconductor LED with improved light-extraction efficiency, comprised of a substrate 2, a light emission structure 6, an insulation layer 7, a transparent electrode 8, a reflection unit 9, and a first 10 and second electrode 11, annotated to Figure 1, below. Ex. C, 1:57-61, 3:54-63. The reflection unit is formed on top of the insulation layer and below the second electrode after removing a portion of the transparent electrode. *Id.* 4:44-47.

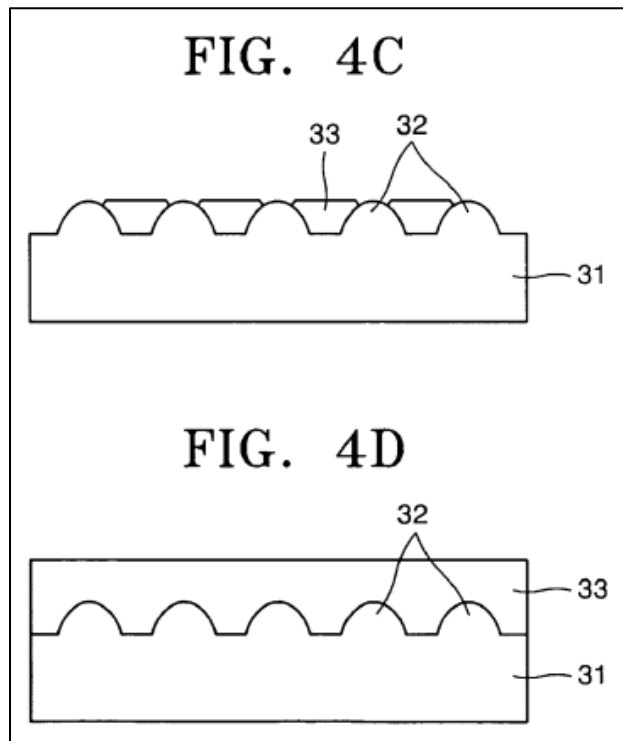


The specification provides that the reflection unit prevents light from being absorbed by the second electrode layer because it has a “low light absorption rate” and reflects light before the second electrode 11 can absorb it. *Id.* 4:39-51, 7:47-52.

In this way, the presence of a reflection unit provides “improve[d] luminous efficiency” in a LED compared to a LED without a reflection unit. *Id.* 4:38-51.

The '140 Patent (“Crystal Growth Patent”).

The '140 Patent concerns a method for growing the semiconductor crystal layer of the LED. Ex. D. With reference to the figures below, this patent describes how crystal 33 is grown on a substrate 31 with “protruded portions” 32, rather than a planar surface or an uneven surface without rounded protrusions. Ex. D, 3:25-26, 6:1-55. The crystal grows on the gaps between the “protruded portions,” but grows very little, if at all, on the “protruded portions” themselves. *Id.* 4:36-38, 5:64-67. As the crystal grows upwards and blooms out, it covers the surface of the substrate. *Id.* 6:5-10. The crystal is grown to a predetermined thickness and is then planarized. *Id.* 5:47-49. The result is a light-emitting surface better suited to planarization and with improved light extraction. *Id.* 6:1-55.



LEGAL STANDARD

“Claim construction” refers to the stage of patent infringement litigation where “the court ‘construes’ the patent claims by establishing the scope and boundaries of the subject matter that is patented, as a matter of law[.]” *Netword, LLC v. Centraal Corp.*, 242 F.3d 1347, 1350 (Fed. Cir. 2001); *see Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004) (“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.”). In other words, “[c]laim construction’ is the judicial statement of what is and is not covered by the technical terms and other words of the claim.” *Safety Rail Source, LLC v. Bilco Co.*, 656 F. Supp. 2d 468, 474-75 (D.N.J. 2009) (cleaned up).

“During claim construction, a court is to construe the words of a claim in accordance with their ordinary and customary meaning, namely the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *XMTT, Inc. v. Intel Corp.*, 657 F. Supp. 3d 591, 598 (D. Del. 2023) (cleaned up). This inquiry is an objective one, where the court “looks to those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean.” *Innova*, 381 F.3d at 1116.

First, courts look to the “intrinsic evidence,” meaning the claim language itself, the specification, and the prosecution history. *Safety Rail Source, LLC*, 656 F. Supp. 2d at 475. Though the words of the claim itself determine its scope, they “must be read in view of the specification, of which they are a part.” *XMTT, Inc.*, 657 F. Supp. 3d at 598 (cleaned up).

“The specification contains a written description of the invention which must be clear and complete enough to enable those of ordinary skill in the art to make and use it. Thus, the 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.” *Vitronics Corp. v. Conceptor, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.1996). Still, courts must be cautious not to “confine the claims to the specific embodiments of the invention described in the specification.” *XMTT, Inc.*, 657 F. Supp. 3d at 598; *Innova*, 381 F.3d at 1117 (“particular embodiments appearing in the written description will not be used to limit claim language that has broader effect”).

Courts should also consider the prosecution history where that history is submitted in evidence. The prosecution history “consists of all express representations made by or on behalf of the applicant to the examiner to induce a patent grant.” *Howmedica Osteonics Corp. v. Wright Med. Tech., Inc.*, 540 F.3d 1337, 1346 (Fed. Cir. 2008) (cleaned up).

The prosecution history is most relevant in the context of prosecution disclaimer. Under this doctrine, “claims that have been narrowed in order to obtain the issuance of a patent by distinguishing the prior art cannot be sustained to cover that which was previously by limitation eliminated from the patent.” *Safety Rail Source, LLC*, 656 F. Supp. 2d at 475-76 (cleaned up); *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003) (prosecution disclaimer “preclude[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution”). Though prosecution disclaimer readily attaches “where the patentee has unequivocally disavowed a certain meaning to obtain his patent,” courts should refrain from applying prosecution disclaimer where “the alleged disavowal of claim scope is ambiguous.” *Id.* at 1324.

In some cases, a court may also consider extrinsic evidence, “which consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *XMTT, Inc.*, 657 F. Supp. 3d at 598 (cleaned up). But extrinsic evidence is generally “less significant than the

intrinsic record in determining the legally operative meaning of claim language.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (cleaned up). Generally, courts should only consider extrinsic evidence if the intrinsic evidence is ambiguous. *XMTT, Inc.*, 657 F. Supp. 3d at 598.

DISCUSSION & ANALYSIS

I. Agreed-upon terms.

The parties agreed upon the construction of the following claim terms during briefing on claim construction. ECF 121, pp. 4-5.

Patent	Term	Construction
'762 Patent, claim 1	“sequentially stacking...; forming an insulating layer...; forming a transparent electrode...; removing a portion of the transparent electrode...; forming a reflection unit...; and forming a second electrode... .”	these specific steps, as they relate to each other, are performed in the order in which they are recited.
'762 Patent, claim 1	“second conductive semiconductor layer”	“second conductive semiconductor layer”
'762 Patent, claims 5, 6	“larger area”	“which is larger two-dimensional surface”
'341 Patent, claims 1, 2 '746 Patent, claims 1, 2	“isolation region”	“a region where the semiconductor laminate is absent/removed to electrically isolate light emitting cells”
'140 Patent, claims 7, 8	“facet growth”	“growth of a semiconductor crystal layer with a smooth flat surface”
'140 Patent, claim 8	“the step of forming the first semiconductor crystal layer comprises the step of growing the first semiconductor crystal layer on the substrate surface between the protruded portions covered without a facet growth on the curved surface of the protruded portions”	“the step of forming the first semiconductor crystal layer comprises the step of growing the first semiconductor crystal layer on the substrate surface between the protruded portions without a facet growth on the curved surface of the protruded portions”

The Court will adopt the parties' agreed-upon constructions.

II. Disputed terms.

A. The '746 Patent (Wiring Connection Patent)

Disputed term	Samsung's Proposal	Defendants' Proposal	Court's Construction
"wiring region" '746 Patent: claims 1-3, 6, 7, 9, and 10	Plain and ordinary meaning; To the extent construction is required, "a region of the side surface of the light emitting cell in which a wiring unit is formed"	"a region where the wiring unit is placed"	Plain and ordinary meaning

Samsung argues that the term "wiring region" need not be construed for the jury to understand and apply it because the claim specifies the attributes of the wiring region. ECF 121, p. 12. Samsung points to claim 1, which provides, "forming a wiring region on a portion of both side surfaces of each of the light emitting cells such that slopes of the side surface of the first conductivity-type semiconductor in the wiring region are gentler than slopes of the side surfaces of the first conductivity-type semiconductor in other region of each of the light emitting cells[.]" Ex. B, 10:37-42. That's all the jury needs, it argues, since the wiring region's size and location are defined by the relative slopes of the side-surfaces of the LED. ECF 121, p. 12 ("the wiring region is a region of the side surface of a light emitting cell where the slope of the side surface of the first conductivity-type semiconductor is gentler than the slope of the side surface of the first conductivity-type semiconductor in other regions.").

Defendants argue that Samsung's construction cannot be correct because it does not limit the size and location of the "wiring region." They say that the "wiring region" can only be as large as the "wiring unit" that is ultimately placed there. ECF 121, p. 14. Otherwise, the length of the wiring region will be "entirely unbounded" and could extend "the entirety of the side surfaces on which the wiring unit is located." *Id.* at 16-17 (cleaned up). Defendants say that such a device would

contravene the prosecution history, where the examiner approved the '746 Patent only after determining that “[t]he slope of the lateral surface is gentler where the surface *underlies the wiring unit* . . . than where it does not.” *Id.* at 15 (emphasis added). Given this prosecution history, Defendants argue that the “wiring region” is that region of the side-surface that “underlies a wiring unit.” *Id.*

After reviewing the relevant materials (with a specific focus on the specification), the Court finds that Defendants’ concerns are unfounded, and finds that no construction is needed.

“There is a heavy presumption that the terms used in claims mean what they say and have the ordinary meaning that would be attributed to those words by persons skilled in the relevant art.” *SuperGuide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 874 (Fed. Cir. 2004) (cleaned up). And the claims and specification of the '746 Patent by their plain terms define the length and size of the “wiring region” by the relative angles of the side-surfaces as provided in the claim, not by the length and size of the wiring unit that is placed there.

The specification explains that it can be “difficult to perform a wiring deposition process or a defect such as a disconnection, or the like, may be easily generated” when making wiring connections on side surfaces with “an extreme gradient” (*i.e.*, a steep side-surface angle). Ex. B, 5:15-23. At the same time, a side surface with uniformly gentle angles limits the surface area of the active layer, leading to lower light emission. *Id.* 6:4-49. The '746 Patent avoids both pitfalls by providing for a “wiring region” with “a gentle slope to thus minimize defective wiring, while the other regions [of the cell] are implemented to have a relatively great slope angle to thus provide an active layer area greater than the area in a configuration . .

. in which the entire lateral surfaces of the light emitting cell are processed to have a gentle slope required for a wiring process.” *Id.* 6:43-49.

Thus, claim 1 explains that the “wiring region” is that “*portion of both side surfaces* of each of the light emitting cells such that *slopes of the side surface* of the first conductivity-type semiconductor *in the wiring region are gentler than slopes of the side surfaces* of the first conductivity-type semiconductor *in other region* of each of the light emitting cells[.]” *Id.* 10:37-42 (emphasis added). Claim 1 adds that “at least a portion” of the wiring unit “is positioned in the wiring region.” *Id.* 10:43-44. The plain and ordinary meaning of these terms therefore defines the size and location of the wiring region. No further construction is necessary.

Defendants assert that their construction is required based on an argument that sounds in prosecution disclaimer.³ They first look to the prosecution history of the ’341 Patent, which is the parent to the ’746 Patent, pointing out that the applicant overcame a rejection based on U.S. Patent Application 2010/0047943 (“Lee”). ECF 121, pp. 14-15. The applicant differentiated the ’341 Patent from Lee by arguing that the side-surface angles of the first semiconductor layer were gentler where “the side surface underlies a wiring unit[.]” while the side surface angles of the semiconductor layer in Lee were “the same whether underlying a wiring unit or not.” Ex. E, SAMTCP000051. Defendants add that the applicant overcame a similar rejection in prosecuting the ’746 Patent by arguing that the slope angles of the side surfaces in

³ That is, Defendants don’t argue specifically for prosecution disclaimer (which carries a heavy burden); rather, they argue that statements made during the examination inform the claim construction. ECF 121, pp. 14-17 (arguing Defendants’ construction “is fully consistent with the prosecution history” while Plaintiffs’ proposed construction “is in direct conflict with the applicants’ successful arguments during prosecution”).

Lee were “the same” throughout the side surface of the relevant semiconductor layer. Ex. F, SAMTCP000357-58; ECF 121, p. 15.

With this history in mind, Defendants argue that the plain and ordinary meaning of the claim creates a wiring region that is “entirely unbounded”—that is, a wiring region where the length of the side surface has a uniform slope “whether underlying a wiring unit or not.” ECF 121, p. 16. They say that because each cell has four side surfaces, the entire length of the two sides with sub-connection wiring can be claimed to be “wiring region,” while the two sides without sub-connection wiring are the “other region” in the cell. *Id.* at 16-17. To avoid this result and fit with the prosecution history, Defendants assert that their construction, defining the “wiring region” in terms of the wiring unit that is “placed” there, must be correct.

Defendants’ theory fails, however, for two reasons.

First, the intrinsic record does not support Defendants’ reading. The claims and specification don’t contemplate that the wiring region will be formed across the entire length of a side surface with a wiring region.

Claim 1 designates that a cell must contain two wiring regions, one at “both side surfaces of each of the light emitting cells[.]” Ex. B, 10:37-38. That’s because each cell has two sub-connection wirings. *Id.* Fig. 1. Each side containing sub-connection wiring is split into two regions—the “wiring region” with a gentler slope angle, and the “other region” that has a steeper angle. *Id.* 7:61-64, 10:37-42 (“forming a wiring region on a portion of both side surfaces of each [cell] . . . such that slopes of the side surface . . . in the wiring region are gentler than slopes . . . in other region[.]”). Importantly, the claim limits the length of the wiring region by designating the

“wiring region” as a “portion” of the side surface, not the entire side surface. *Id.* 10:37. The use of the word “portion” creates an upper bound on the size of the wiring region.

Nor does the claim anticipate that the wiring region must be sized based on the wiring unit, as Defendants would have it. Claim 1 states that only a “portion” of the wiring unit “is positioned in the wiring region.” *Id.* 10:43-44. So by its terms, the claim distinguishes between the relative sizes of the wiring region and wiring unit, and doesn’t require that the wiring region and the wiring unit be coextensive. The Court cannot read a limitation into the construction of “wiring region” that contradicts this language. *In re Mobile Telecomms. Techs., LLC*, 265 F. Supp. 3d 454, 460 (D. Del. 2017) (“[T]he claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction.” (cleaned up)).⁴

Second, there is no prosecution disclaimer, because the discussion during the examination about Lee concerned a different issue. “As long as the *same claim limitation* is at issue, prosecution disclaimer made on the same limitation in an ancestor application will attach.” *Omega Eng’g*, 334 F.3d at 1333 (emphasis added). The prosecution history for the ’341 Patent and its reference to the side surface “underlying a wiring unit” concerned the uniformity of the angles of the side surfaces. Ex. E, SAMTCP000051. Here, by contrast, Defendants dispute the size and location

⁴ At the *Markman* hearing, Defendants analogized the wiring region to the foundation of a house to support their reading. ECF 150, 17:16-20. But the Court finds that analogy misses the mark. The foundation of a building is more ordinarily understood as “an underlying base or support[,] especially[] the whole masonry substructure” of the building, not, as Defendants would construe it, the place on which the building is placed. *Foundation*, MERRIAM-WEBSTER DICTIONARY, <https://www.merriam-webster.com/dictionary/foundation> (last visited June 10, 2024). In other words, the reference to a foundation (or region) is to its general location, and not in reference to what might go on or in it.

of the wiring region itself. ECF 121, p. 14. Though the issues are related, they are not the same.

Moreover, the prosecution history is, at a minimum, consistent with the plain and ordinary meaning of “wiring region” and doesn’t purport to limit its size and location. The semiconductor layer in Lee had uniform side-surface angles. Ex. E, SAMTCP000051. By contrast, the semiconductor layer in the patents here has different side-surface angles—specifically, at a portion of the slope of the side surface of the first semiconductor layer—*i.e.*, the wiring region. That distinction of itself doesn’t really inform how “wiring region” is to be defined, but certainly cannot be a basis on which to limit construction.⁵

The Court therefore finds that Defendants’ proposed construction doesn’t align with the intrinsic or extrinsic record here. The plain and ordinary meaning of the word “wiring region,” when viewed in context, is more than understandable.

B. The ’762 Patent (Light Extraction Patent)

Disputed term	Samsung’s Proposal	Defendants’ Proposal	Court’s Construction
“reflection unit” '762 Patent: claims 1, 4-5	“a component distinct from the second electrode and the insulating layer to reflect light generated from the active layer”	“a discrete component that reflects more light generated from the active layer than it absorbs or transmits”	“a component to reflect light generated from the active layer”

⁵ Again, the Court understands that Defendants raise Lee to inform claim construction, not as a prosecution disclaimer *per se*. To the extent that Defendants are raising a specific prosecution-disclaimer argument, it fails for another, related reason: there was no clear and unmistakable disavowal. “In order for prosecution disclaimer to attach, the disavowal must be both clear and unmistakable.” *Mass. Inst. of Tech. v. Shire Pharms., Inc.*, 839 F.3d at 1119 (Fed. Cir. 2016) (cleaned up). Disclaimer will not apply “[w]here the alleged disavowal is ambiguous, or even amenable to multiple reasonable interpretations[.]” *Id.* (cleaned up). Defendants bear the burden of proving “the existence of a clear and unmistakable disclaimer that would have been evident to one skilled in the art.” *Id.* (cleaned up). And the Court concludes that Defendants haven’t met their burden, given that the issue in Lee was different.

The '762 Patent describes a method for manufacturing a semiconductor light emitting device, where part of the process involves “removing a portion of the transparent electrode formed on the insulating layer to expose a portion of the insulating layer; forming a reflection unit in the area in which the insulating layer is exposed; and forming a second electrode on the transparent electrode and the reflection unit.” Ex. C, 2:50-54.

The parties agree that the “reflection unit” is a “component” of the device. But Defendants argue that “reflection unit” must be defined with two limitations: (1) that the reflection unit is “discrete,” meaning its size is determined relative to the other components of the device, and (2) that the unit is one that “reflects more light generated from the active layer than it absorbs or transmits.” ECF 121, pp. 31, 36-38. Samsung contends that this definition creates “extraneous limitations” on the claim, and that the word “distinct” in its proposed definition is sufficient to describe the reflection unit. ECF 121, pp. 26, 32. The Court agrees with Samsung that the plain language and relevant record do not support the narrowing of the claim that Defendants suggest; however, the Court will adopt a slightly different construction than those advanced by either party.

There are two aspects to the term “reflection unit,” and the Court addresses each in turn.

To begin with, “unit.” Defendants correctly point out that “unit” has a different meaning than the other terms in the patent, such as “layer,” “electrode,” or “substrate.” *See CAE Screenplates Inc. v. Heinrich Fiedler GmbH & Co. KG*, 224 F.3d 1308, 1317 (Fed. Cir. 2000) (“In the absence of any evidence to the contrary, we must presume that the use of these different terms in the claims connotes different

meanings.”). The Court agrees, but the parties’ proposed use of the term “component” is sufficient to make that clear.

The intrinsic record is helpful on this point. The specification provides that the device is structured by “sequentially stack[ing]” the first conductive semiconductor layer, the active layer, the second conductive semiconductor layer, the insulating layer, and the transparent electrode. Ex. C, 6:20-44. Then, “a portion of the transparent electrode” is “remov[ed].” *Id.* 2:50-54, 8:9-11. The reflection unit is then “disposed” in the removed portion of the transparent electrode. *Id.* 8:9-11. Lastly, the second electrode is placed on top of the reflection unit, but remains in contact with the transparent electrode. *Id.* 2:5-8.

This description of the device’s structure does two things: it conveys that the reflection unit is different from the other labeled parts, and designates that the reflection unit is freely separable such that its presence or absence does not alter the device’s structural integrity.⁶ *Cf. Impax Lab’s, Inc. v. Actavis Lab’s FL, Inc.*, No. 15-6934, 2017 WL 1900726, at *3-4 (D.N.J. May 9, 2017) (construing “distinct component” to mean “freely separable,” as in, “may be moved independently, separated in space without affecting the integrity or structure”). Put differently, the reflection unit is simply an added “part” (Ex. C, 1:21) or, as the parties agree, a “component.”

Both Samsung and Defendants’ constructions are flawed in this regard. Samsung’s use of the word “distinct” is superfluous, since the specification already describes that the reflection unit is different from the other parts, as explained above.

Defendants’ use of the word “discrete” to modify the word “component” too is extraneous, plus it’s confusing. Defendants appear to take the position that “discrete”

⁶ Though the reflection unit is situated beneath the second electrode, the transparent electrode provides the support for the second electrode. Ex. C, 2:5-8, 6:52-64. Thus, removing the reflection unit does not alter the device’s structural integrity.

means something that does not “span the width of the device[,]” suggesting that something is “discrete” if it has a small area. ECF 121, pp. 29-30. But “discrete” means “distinct” or “separate,” and doesn’t concern matters of size.⁷ So “discrete” doesn’t do the work that Defendants want it to do, which is to limit the relative size of the reflection unit. ECF 121, pp. 30-31; ECF 150, 34:16-35:6. Regardless, the specification doesn’t purport to limit the reflection unit’s size in that way.

In short, given the parties’ agreement on the word “component,” Samsung’s use of the word “distinct” and Defendants’ use of the word “discrete” are unnecessary. “Component” will suggest to the jury a part that is different than the other parts of the invention described in the claim.

As to the second aspect of the term at issue (“reflection”), the Court agrees with Samsung’s proposed language: a reflection unit “reflects light generated from the active layer.” As made clear by the plain language of the specification, the reflection unit’s only necessary property is a low light absorption rate, so that a device with a reflection unit reflects more light than a device without that unit. Ex. C, 7:47-52 (“having *a low light absorption rate* is provided under the second electrode” such that “light is reflected with a smaller amount thereof being lost, *compared with the device without the reflection unit.*” (emphasis added)).

Defendants’ proposal goes too far and is unsupported by the intrinsic record. The specification is silent as to the relative rates of reflection, absorption, and transmission, and the Court will not read a limitation into the claim where the

⁷ *Discrete*, MERRIAM-WEBSTER DICTIONARY, <https://www.merriam-webster.com/dictionary/discrete> (last visited June 10, 2024).

patentee did not clearly intend for one to exist. *In re Mobile Telecomms.*, 265 F. Supp. 3d at 460.⁸

For these reasons, the Court concludes that the appropriate construction of the term “reflection unit” is: “a component to reflect light generated from the active layer.” Based on the claim language, a person of ordinary skill in the art would understand that the claim refers to the reflection unit as a separate part of the overall device that simply reflects light away from the active layer.

C. The '140 Patent (Crystal Growth Patent)

Disputed term	Samsung Proposal	Defendants' Proposal	Court's Construction
“growth rate” '140 Patent: claims 1, 4, 9-12	plain and ordinary meaning; to the extent construction is required, “the amount of growth over time”	indefinite	Plain and ordinary meaning
“majority of the growth” '140 Patent: claims 1, 4	plain and ordinary meaning; to the extent construction is required, “more than 50% of the growth”	indefinite, or in the alternative: “greater than 50% of the volume of the semiconductor crystal layer at the end of step of forming”	Plain and ordinary meaning

The '140 Patent describes a method of manufacturing a LED, wherein “the step of forming the first semiconductor crystal layer is performed so that a first growth rate of the first semiconductor crystal layer on the substrate surface between the protruded portions is higher than a second growth rate of the first semiconductor crystal layer on the surface of the protruded portions such that the majority of the

⁸ The claim contemplates that the reflection unit provides improved efficiency by limiting light loss absorption as compared to a device that lacks a reflection unit. Ex. C, 4:47-50, 7:47-52. Nothing in the specification suggests that this can only be achieved with a reflection unit that reflects more light than it absorbs or transmits. Ex. R, ¶¶ 29-30. Defendants appear to concede the point. *Id.*; ECF 121, p. 28.

growth of the first semiconductor crystal layer occurs on the substrate surface between the protruded portions.” Ex. D, 7:27-34.

Defendants argue that the terms “growth rate” and “majority of the growth” are indefinite for related reasons. The Court addresses both terms together, and finds that they are not indefinite.

“[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). Though “absolute” or “mathematical” precision is not required for a term to be definite, “it is not enough . . . to identify some standard for measuring the scope of the phrase.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370-71 (Fed. Cir. 2014) (cleaned up). Rather, the claims, when read in the context of the specification and prosecution history, “must provide objective boundaries” for those skilled in the art. *Id.* at 1371. The party claiming indefiniteness has the burden to prove it by clear and convincing evidence. *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1365 (Fed. Cir. 2017).

Defendants contend that there is no clear way to measure the “growth” of the crystal layer because the claims fail to designate the appropriate time or method to measure that growth. ECF 121, pp. 43, 56. Without this designation, they say it is impossible for a person of ordinary skill in the art to compare the respective “growth rates” of crystal between the protruded portions of substrate vis-à-vis the crystal on the protruded portions, or determine that the “majority of the growth” occurs between the protruded portions of the substrate. ECF 150, 54:22-56:17.

But Defendants don’t provide any evidence to show why these terms are indefinite. Instead, they present hypotheticals to raise the specter of uncertainty. *E.g.*, ECF 121, p. 46 (“Is the ‘growth rate’ instantaneous at some point during forming

or average? Further, growth rates in the vertical direction will be different than in the lateral direction.” (cleaned up)). But clear and convincing evidence—not hypotheticals—is needed to sustain an indefiniteness argument. So Defendants’ position stumbles at the starting line.

Even so, the intrinsic record resolves Defendants’ doubts about measuring the growth of the crystal layer. The specification provides that a crystal layer is formed on a substrate with at least one “protruded portion with a curved surface[.]” Ex. D, 3:25-26. The crystal layer grows on the substrate “between the protruded portions[.]” rather than on the curved protrusions themselves, “until the surface of the protruded portions is covered.” *Id.* 3:27-29. The benefit of the curved surface of the protruded portion is that crystal growth “does not frequently occur on the surface of the protruded portions[.]” such that growth occurs instead “between the protruded portions” and “cover[s]” the sides and tops of the protrusions. *Id.* 4:36-38, 6:5-10. The crystal layer is then grown to a predetermined thickness and planarized. *Id.* 5:47-49. Growth in this manner—rather than growth on a planar surface or an uneven surface (but without curved protrusions)—leads to improved planarization of the crystal layer and improved light extraction. *Id.* 6:1-55.

The “growth rate” and “majority of the growth” are measured during the “step of forming” the crystal layer. *Id.* 7:27; Ex. R, ¶ 33. The time it takes to complete that step will be determined by the specific properties of the crystal used as well as the predetermined thickness of the layer. *See* Ex. D, 5:2-6 (describing kinds of group III nitride compounds to form the crystal layer), 5:47-48. Defendants essentially acknowledge that a person of ordinary skill in the art can discern this information.

See ECF 121, p. 46 (“It is well-known that growth rates for GaN are highly dependent on the crystalline planes presented.”); Ex. P, ¶ 63.

Functionally, the “growth rate” of crystal between the protrusions should always be higher than the “growth rate” of crystal on the protrusions, because crystal growth “does not frequently occur on the surface of the protruded portions.” Ex. D, 4:36-38, 5:65-67 (crystal growth on protrusions “does not easily occur”); Ex. R, ¶ 35. Thus, the “majority of the [crystal] growth” should always come from crystal grown between the protrusions. Ex. R, ¶¶ 36-40; ECF 150, 68:11-69:14.⁹ A person of ordinary skill in the art would be able to observe this growth and make this determination. Ex. R, ¶¶ 36-40.

The prosecution history provides further support that “growth rate” and “majority of the growth” are not indefinite. During prosecution, the examiner noted concerns that the claimed invention was too similar to Patent No. 20030057444 (“Niki”). Ex. H, SAMTCP000680. To distinguish the present invention from Niki, the applicant argued that “the crystal growth rate is faster in between the protrusions while the growth rate in Niki et al. is the same in between the protrusions and on top of the protrusions.” *Id.* at SAMTCP000691. The examiner and applicant introduced three iterations of language to capture this difference, which in turn are reflected at claims 1 and 4, 9-10, and 11-12, respectively. *Id.* at SAMTCP000680-81; ECF 150, 69:1-14.

“[W]e presume that an examiner would not introduce an indefinite term into a claim when he/she chooses to amend the claim for the very purpose of putting the application in a condition for allowance.” *Tinnus Enters., LLC v. Telebrands Corp.*,

⁹ To the extent Defendants argue that a method of growing the crystal layer may involve growing crystal on the protrusions, that goes to non-infringement, not indefiniteness.

733 F. App'x 1011, 1020 (Fed. Cir. 2018). That's exactly what happened here. Accordingly, "[t]he examiner's own remarks confirm that the claim language informs a person of ordinary skill of the objective boundaries of" the terms "growth rate" and, in turn, "majority of the growth." *Id.*

Defendants make one last attempt to suggest indefiniteness by arguing that the intrinsic record fails to provide a person of ordinary skill in the art with guidance on how to measure the growth—as a measure of weight, volume, direction, or some other metric. ECF 121, pp. 46, 51. But this is a straw man because Defendants haven't offered evidence that the choice of measurement "would yield different results." *See Prolitec Inc. v. ScentAir Techs., LLC*, No. 20-984, 2023 WL 8697973, at *18 (D. Del. Dec. 13, 2023).¹⁰ Defendants acknowledge that the properties of the compound for forming the crystal layer can be determined by a person of ordinary skill in the art. ECF 121, p. 46; Ex. P, ¶¶ 63; Ex. R, ¶¶ 41-42. Thus, so long as the chosen method for measuring is consistent, a person of ordinary skill in the art will be able to determine growth over time. Ex. R, ¶ 42; *cf. Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 789 F.3d 1335, 1341, 1345 (Fed. Cir. 2015) (finding claim indefinite where three measures of molecular weight could be used and would yield different results).

As Defendants have not met their burden to establish indefiniteness, the Court must determine what construction, if any, the terms "growth rate" and "majority of the growth" require. The Court concludes that these words may be afforded their plain and ordinary meanings. Both terms have meanings that are readily apparent

¹⁰ Indeed, it appears that the manner of measurement is immaterial, because any way one measures it, there isn't frequent growth on the surface of the protruded portion. Ex. D, 4:36-38; ECF 150, 75:25-76:9.

to a person of ordinary skill in the art, the jury, and the Court in the context of the '140 Patent. No further construction is therefore necessary.

CONCLUSION

For these reasons, the Court will adopt the parties' agreed-to constructions, and will construe the disputed claim terms consistent with this Opinion. An appropriate order follows.

DATED this 12th day of June, 2024.

BY THE COURT:

/s/ J. Nicholas Ranjan
United States District Judge

	the protruded portions covered without a facet growth on the curved surface of the protruded portions”	surface between the protruded portions without a facet growth on the curved surface of the protruded portions”
--	--	--

IT IS FURTHER ORDERED that the following disputed terms shall be construed as follows:

Patent	Term	Construction
'746 Patent: claims 1-3, 6, 7, 9, and 10	“wiring region”	Plain and ordinary meaning
'762 Patent: claims 1, 4-5	“reflection unit”	“a component to reflect light generated from the active layer”
'140 Patent: claims 1, 4, 9-12	“growth rate”	Plain and ordinary meaning
'140 Patent: claims 1, 4	“majority of the growth”	Plain and ordinary meaning

BY THE COURT:

/s/ J. Nicholas Ranjan

United States District Judge