

No. 24-1822

**United States Court of Appeals
for the Federal Circuit**

CONSTELLATION DESIGNS, LLC

Plaintiff-Appellee,

v.

**LG ELECTRONICS INC., LG ELECTRONICS U.S.A., INC.,
LG ELECTRONICS ALABAMA, INC.**

Defendants-Appellants

APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE EASTERN
DISTRICT OF TEXAS IN CASE NO. 2:21-CV-00448-JRG

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CERTIFICATE OF INTEREST

Counsel for Defendants-Appellants LG Electronics Inc., LG Electronics U.S.A., Inc., and LG Electronics Alabama, Inc. (collectively, “LG”) certifies the following:

1. **Provide the full names of all entities represented by undersigned counsel in this case.**

LG Electronics Inc., LG Electronics U.S.A., Inc., LG Electronics Alabama, Inc.

2. **Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities.**

None/Not Applicable

3. **Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities.**

LG Corporation, LG Electronics Inc., LG Electronics U.S.A., Inc.

4. **List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).**

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5. **Other than the originating case(s) for this case, are there related or prior cases that meet the criteria under Fed. Cir. R. 47.5(a)?**

No.

6. **Provide any information required under Fed. R. App. P. 26.1(b) (organizational victims in criminal cases) and 26.1(c) (bankruptcy case debtors and trustees). Fed. Cir. R. 47.4(a)(6).**

None/Not Applicable

Dated: December 4, 2024

/s/ Michael J. McKeon

Michael J. McKeon

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INTRODUCTION

Constellation does not, and cannot, justify the District Court’s reversible errors.

First, the asserted claims directed to the mathematical concept of optimizing constellations for parallel decoding capacity are patent-ineligible. Constellation’s recharacterization of its claims, without identifying any specific improvement, merely rehashes the abstract concept. The claims without the optimization limitation are also abstract and untethered to the alleged invention. And Constellation cannot save claims lacking an inventive concept. Judgment of ineligibility is appropriate.

Second, Constellation took the shortcut of solely using the A/322 standard’s constellations for at least one limitation of each claim. But contrary to precedent, Constellation failed to show first that its *claims* are standard essential. So, Constellation now misinterprets precedent to save its infringement case. Constellation does not defend the District Court’s extension of precedent, probably because this extension has no legal support. And regardless, LG’s own chips do not implement A/322’s constellations.

Third, LG televisions with Realtek chips do not infringe for another reason: Constellation has no substantial evidence for the limitations reciting “demapper,” “decoder,” “likelihoods,” and constellations. Without discovery, Constellation could only speculate about these limitations in Realtek’s chips.

Finally, the damages issue reduces to whether Constellation's vague comparison points legally sufficed to support built-in apportionment. But pointing to generic elements, common standards body names, and customary license provisions does not meet the required comparability to find built-in apportionment in a third party's licenses involving different patents, technologies, and economic circumstances. Constellation's expert simply failed to apportion. And his sole adjustment (upward) for inflation contradicts the undisputable evidence.

Reversal is thus necessary.

ARGUMENT

I. THE DISTRICT COURT ERRONEOUSLY GRANTED SUMMARY JUDGMENT OF PATENT ELIGIBILITY

A. The Asserted Claims Fail *Alice*'s Step One

1. Constellation's Characterization of Its Claims Cannot Demonstrate Eligibility

The asserted claims are directed to the generic notion of optimizing constellations for parallel decoding capacity. BB20-24. In response, Constellation argues its claims “recite (i) a specific *type* of constellation (non-uniform constellations), (ii) constructed using a specific *measure* of efficiency (parallel decode capacity), (iii) that achieves a specific *benefit* (more efficient data

transmission).”¹ RB29 (Constellation’s emphases omitted). This three-pronged characterization cannot save its claims.

To start, being specific to one “type” of constellation does not make the claims less abstract. *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1287 (Fed. Cir. 2018) (ruling that “a claim is not patent eligible merely because it applies an abstract idea in a narrow way”). In *BSG*, this Court determined that limiting claims to “summary comparison usage information” did not avoid abstractness, because “we have never suggested that such minimal narrowing, by itself, satisfies *Alice*’s test.” *Id.* This rule is even truer here, where barely any narrowing occurred. Because a constellation can only be uniform or non-uniform, Appx135 (1:25-28); Appx138 (7:40-42), optimizing non-uniform constellations does not make the claimed optimization any less abstract. As the inventor and his patents acknowledge, optimizing non-uniform constellations was in the prior art and thus not inventive. Appx20186 (286:17-288:25); Appx135 (1:59-62).

The supposed coverage of an alleged “specific measure” and “specific benefit,” RB29, do not avoid patent-ineligibility because they are one and the same. Indeed, the “specific benefit” of “more efficient data transmission” is evaluated by “parallel decode capacity” (“PD capacity”), which is also Constellation’s alleged “specific measure.” *Id.* Hence, the specific measure and benefit collapse into the

¹ All emphases are added unless otherwise noted.

abstract idea itself: optimizing a constellation for parallel decoding capacity. This abstractness is worsened by Constellation’s refusal to quantify the degree of optimization required to reap this “specific benefit.” RB33. Ultimately, however great this benefit might be, RB29, the claims are patent-ineligible for not reciting the means to achieve it. *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1351 (Fed. Cir. 2016).

And Constellation cannot avoid abstractness because its claims recite a “discrete article” (e.g., “receiver”) or specific components (e.g., “demapper,” “decoder”). RB26-27. Not only were these generic hardware components known in the prior art, Appx20186 (286:17-287:3), but “[a] claim does not cease to be abstract for section 101 purposes simply because the claim confines the abstract idea to a particular technological environment[.]” *In re Mohapatra*, 842 F. App’x 635, 638 (Fed. Cir. 2021).

2. Constellation’s Cited Cases Cannot Save Its Patent-Ineligible Claims’ Lack of Specific Improvement

Constellation cannot avoid abstractness by citing inapposite cases. RB28-32 (citing *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016); *Uniloc USA, Inc. v. LG Elecs. USA, Inc.*, 957 F.3d 1303 (Fed. Cir. 2020); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016); *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014)). As this Court explained, these cited cases’ claims were directed to actual technological improvements. *E.g.*,

Simio, LLC v. FlexSim Software Prod., Inc., 983 F.3d 1353, 1361 (Fed. Cir. 2020) (distinguishing *McRO*).²

In contrast, Constellation’s asserted claims lack the required “specific improvement” common to these cases. *Ancora Techs., Inc. v. HTC Am., Inc.*, 908 F.3d 1343, 1347-48 (Fed. Cir. 2018). This may be why Constellation did not compare its asserted claims to those in its cited cases. RB28-32.

Constellation cannot find this specific improvement in either “constellations constructed using [PD] capacity” or recitation of “specific constellations.” RB27-28; RB30-31. The prior art already disclosed improving constellations constructed using PD capacity, as shown by the Sommer reference’s “shaping gain” improvement in its non-uniform constellation’s PD capacity. BB12, BB17. Constellation has no response to Sommer. Likewise, using non-uniform constellations is not a specific improvement because, as the inventor admitted, he did not invent non-uniform constellations. Appx20193 (315:2-15).

Even if Constellation reframes the specific improvement as “a very specific type of ... optimized non-uniform constellation for PD capacity” (as the inventor characterized his invention), *id.*, this alleged improvement would still not appear in the claims. As LG explained, the claims lack any parameters or constraint values to

² *Sycamore IP Holdings LLC v. AT & T Corp.*, 294 F. Supp. 3d 620, 652-53 (E.D. Tex. 2018), while not binding, also implicated claims reciting “a concrete technical contribution and not simply the embodiment of an abstract idea.”

achieve this “very specific type of” optimized non-uniform constellation. BB20-24, BB26. Having no response on this point, Constellation merely accuses LG of overgeneralizing the claims. RB30-31. Constellation’s lack of a response confirms its claims are “written at a distinctly high level of generality” and thus lack a “specific improvement to the way computers operate” or “rules with specific characteristics.” *Solutran, Inc. v. Elavon, Inc.*, 931 F.3d 1161, 1167 & 1169 (Fed. Cir. 2019) (distinguishing *Enfish & DDR*, respectively).

Without any “specific improvement,” the asserted claims merely cover mathematical operations whose parameters are unclaimed. Such operations are not patent-eligible because appending “abstract calculations” to “well-understood, routine, and conventional steps” merely “results in the mathematical analysis itself,” which is a “basic tool of scientific and technological work.” *In re Bd. of Trustees of Leland Stanford Jr. Univ.*, 991 F.3d 1245, 1252 (Fed. Cir. 2021). Although *Stanford*’s claims’ “specific or different combination of mathematical steps yield[ed] more accurate [results] than previously achievable under the prior art[,]” that was “not enough to transform the abstract idea in claim 1 into a patent eligible application.” *Id.* Constellation has no response to LG’s citation of *Stanford*, BB21,

probably because its asserted claims do not recite any specific mathematical steps and merely cover the notion of optimization.³

Nor did Constellation provide a cogent response to LG's cases on point. BB22-24 (citing *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329 (Fed. Cir. 2017); *Hawk Tech. Sys, LLC v. Castle Retail, LLC*, 60 F.4th 1349 (Fed. Cir. 2023)). As Constellation conceded, both cases' claims were directed to a result, with no means of achieving that result. RB31-32. As in those cases, Constellation's claims do not "explain what the claimed parameters are or how they should be manipulated." *Hawk*, 60 F.4th at 1357-58 (brackets omitted). The asserted claims therefore lack a "sufficient recitation of *how* the purported invention improves the functionality" of the system. *Id.* (original italics).

And Constellation cannot import into its claims any supposed technical improvement from its specifications. RB28-29. As this Court instructed, "the § 101 inquiry must focus on the language of the Asserted Claims themselves, and the specification cannot be used to import details from the specification if those details are not claimed." *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 769 (Fed. Cir. 2019). Because Constellation's specification cites do not match any limitations,

³ In *California Institute of Technology v. Broadcom Ltd.*, 25 F.4th 976, 988 (Fed. Cir. 2022), the claims recited "more than a mathematical formula" by covering "an efficient, improved method of encoding data that relies in part on irregular repetition."

these cites cannot help the claims' patent-eligibility. *See id.* That Constellation must reach to the specifications confirms its claims' abstract nature.

3. Constellation Cannot Avoid Its Expert's Testimony

Constellation cannot avoid its technical expert's testimony, RB32-33, especially since it submitted Dr. Mark Jones ("Jones")'s report to support its eligibility summary judgment. Appx1432; Appx1100. Constellation's attempt to avoid Jones's testimony is hardly surprising, since he admitted that "any method or [] optimization process" would satisfy the claim language. Appx1198-1199 (152:25-153:9).

While Constellation quibbles with whether Jones made this admission, RB32-33, his testimony speaks for itself:

- Q. ... [I]f a constellation is optimized for capacity using parallel decode capacity by any method or by any optimization process, would it meet the claim language in claims 1 and 17 of the '761 patent, in your opinion?
- A. It would have to meet all of the claim language, ***but that seems like a tautology***. I mean, if it meets the claim language, it meets the claim language.

Appx1198-1199 (152:25-153:9). Because a tautology merely says the same thing twice, Jones's "tautology" response conceded the claim language merely calls for a constellation optimized by any method or optimization process. *Id.* He would not have done so if the asserted claims required some specific method or optimization process. Jones's admission confirms the abstractness of Constellation's claims.

4. The '700, '509, and '922 Patents Do Not Pass Step One

Although the District Court incorrectly relied on amorphous optimization to declare the asserted claims patent-eligible, the legal error is compounded for the '700, '509, and '922 patents' asserted claims (the "Non-Optimization Claims"), which have no optimization limitation. Appx197 (Cl.1); Appx260 (Cls.21, 23); Appx447 (Cl.24). Without an optimization limitation, the District Court's optimization-based eligibility reasoning cannot, logically, apply to these claims. Reversal is necessary on this basis alone.

Constellation recognizes the problem, because it now asserts that optimization was not the basis of the District Court's decision. RB25, RB35-36. The record shows otherwise: in explaining its ruling, the District Court described the asserted patents' patent-eligible improvement as "*optimized channel capacity* and more efficient over-the-air data transmission." Appx20025 (94:13-18); Appx2.

Constellation cannot blame LG for the District Court's reliance on optimization. RB36. During the summary judgment hearing, the District Court asked Constellation to identify, in the four asserted patents, "a concept that's not abstract." Appx20019 (72:6-11). Unsatisfied with Constellation's non-response, *id.* (72:12-73:3), the District Court took the '761 patent's claim appearing on the screen as an example and asked: "Tell me how that limitation ... is something that's directed at a solution to a technical problem." Appx20019 (73:12-14). Constellation

responded that the limitation includes a “QAM symbol constellation that’s geometrically spaced,” which addressed the need “to optimize.” Appx20020 (74:5-18). Although LG tried to dispel Constellation’s incorrect conflation of the asserted claims, *e.g.*, *id.* (75:22-76:9), it was too late because the District Court embraced Constellation’s optimization concept and focused its questions on it. *E.g.*, Appx20020-20021 (77:17-19, 78:12-18, 81:16-20). Constellation, not LG, therefore bears the blame for conflating the ’761 patent and the Non-Optimization Claims.

When fairly considered, the Non-Optimization Claims are as patent-ineligible as the optimization claims. The ’700 and ’509 patents’ asserted claims cannot avoid preempting all means of selecting a pair of code rate and constellation just by reciting a “specific type of constellation ... with a specific type of code rate[.]” RB33-34. Nothing about a particular constellation-code rate pair indicates *how* such pair is selected, and Constellation identifies none. *Id.* Nor can Constellation’s specification cite help, since the Non-Optimization Claims do not recite these cited specification details. *Compare* RB34, *with ChargePoint*, 920 F.3d at 769. Hence, these claims are no different from the patent-ineligible claims that, as Constellation admits, “did not ‘specify any particular metric or method’ for making a selection[.]” RB35 (quoting *Cisco Sys, Inc. v. Uniloc 2017 LLC*, 813 F. App’x 495, 498 (Fed. Cir. 2020)).

For the '922 patent's asserted claims, Constellation characterizes this patent as covering non-uniform constellations using particular amplitudes. RB35. But representing a constellation type in a certain way does not make the representation any less abstract, especially where the claims do not recite how to implement the representation. Constellation did not even respond to LG's case law on that point. BB26 (citing *Hawk*, 60 F.4th at 1357).

B. No Inventive Concept Exists to Save the Claims at *Alice*'s Step Two

Constellation's arguments at *Alice*'s Step Two focus heavily on the asserted claims' purported novelty. RB24-25, RB36-38. But a "claim for a new abstract idea is still an abstract idea." *Stanford*, 991 F.3d at 1251-52 ("Nor is novelty the touchstone of patent eligibility."). Regardless, Constellation misplaces its reliance on novelty, given its inventor's admissions that the prior art already disclosed the claimed hardware (receivers, demodulators, demappers, decoders), Appx20186 (286:17-287:3); error correction using low-density parity check, *id.* (287:4-6); and optimized non-uniform constellations, *id.* (287:7-288:25). While Constellation tries to shift the focus to PD capacity, its patents concede that PD capacity is merely a measurement associated with the claimed prior-art aspects. *E.g.*, Appx137 (6:45-49).

Constellation also relies on a "non-conventional and non-generic arrangement" of these components. RB38 (quoting *BASCOM Glob. Internet Servs.*,

Inc. v. AT&T Mobility LLC, 827 F.3d 1341, 1350 (Fed. Cir. 2016)). *BASCOM*, however, requires “a specific, discrete implementation of the abstract idea,” 827 F.3d at 1350, and Constellation makes no such showing except to reassert its claims are novel. RB38. Even were that true, the arrangement in the claims is highly routine and thus insufficient. *See In re Rudy*, 956 F.3d 1379, 1385 (Fed. Cir. 2020).

C. Judgment of Ineligibility in LG’s Favor Is Warranted

Constellation argues that this Court cannot adjudge the patents ineligible because Constellation, not LG, moved for §101 adjudication. RB38-39. But Constellation identifies no factual issue requiring a full trial here. *Id.* In such situations, this Court has recognized that LG’s requested relief is appropriate. *Litton Indus. Prod., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 164 (Fed. Cir. 1985).

Constellation’s sole response is that *Litton* did not grant this relief. RB39. There is no reason, however, why *Litton*’s principle should not apply here, and Constellation identifies none. RB38-39. A remand for an unnecessary trial would be anathema to judicial economy. The Court should direct judgment of ineligibility in LG’s favor.⁴

⁴ Should the Court disagree, it should reverse the summary judgment and remand for further proceedings.

II. NO REASONABLE JURY COULD HAVE FOUND INFRINGEMENT

A. Constellation's Mix-and-Match Infringement Case Violates This Court's Standard Essentiality Precedent

1. Constellation Misinterprets *Fujitsu* and Its Progeny

The District Court “h[eld] that the reasoning of *Fujitsu* ... applies on a limitation-by-limitation basis[,]” Appx57, because this Court’s precedent did not preclude “extending the reasoning the Federal Circuit laid out in *Fujitsu* from a claim-by-claim basis to a limitation-by-limitation basis.” Appx59. Curiously, Constellation does *not* defend the District Court’s holding, and barely acknowledges it. RB45-53.

Constellation instead accuses LG of not “identif[ying] any contrary authority.” RB49. But as LG explained, BB38-44, *Fujitsu Ltd. v. Netgear Inc.*, allows comparisons of a *claim* to an industry standard rather than to accused products, but first requires proof that the asserted *claim* is standard-essential by showing the “patent covers every possible implementation of a standard.” 620 F.3d 1321, 1327-28 (Fed. Cir. 2010).

Faced with *Fujitsu*, Constellation tries to limit its application to cases where the patentee *solely* relies on an industry standard for infringement. RB44-46. Under this read, *Fujitsu* cannot apply if the patentee uses *any* evidence in addition to the standard. *Id.* Constellation’s sole support, however, is an out-of-context quote from *Fujitsu*. RB45 (quoting “standards compliance *alone*” (emphasis by Constellation)).

In context, *Fujitsu* merely explained that, where “the relevant section of the standard is optional, [then] standards compliance alone would not establish that the accused infringer chooses to implement the optional section.” *Fujitsu*, 620 F.3d at 1327-28. Not only does *Fujitsu* not support Constellation’s misinterpretation, but it would vitiate this precedent because any patentee could sidestep *Fujitsu*’s requirement by merely adding any piece of non-standard evidence to its trial presentation.

Constellation cannot buttress its misinterpretation by quoting out-of-context phrases from *INVT SPE LLC v. International Trade Commission*, 46 F.4th 1361, (Fed. Cir. 2022), and *Godo Kaisha IP Bridge 1 v. TCL Commc’n Tech. Holdings Ltd.*, 967 F.3d 1380 (Fed. Cir. 2020). RB45-46. In context, *Godo Kaisha* permits a standards-based read **only if** the patent covers a mandatory part of the standard. *Id.* at 1384 (“*Fujitsu* teaches that where, but only where, a patent covers mandatory aspects of a standard, is it enough to prove infringement by showing standard compliance.”). Likewise, in context, *INVT* merely explained that, where the standard is not detailed enough or the relevant standard section is optional, “[i]n such instances, the patent owner cannot establish infringement simply by arguing that the product practices the standard[.]” 46 F.4th at 1377. The facts of *INVT* also contradict Constellation’s misinterpretation because, despite the presence of non-LTE evidence, this Court spent nine paragraphs analyzing whether the claims were

standard essential. *Id.* at 1377-80. Such analysis would be unnecessary under Constellation's misreading.

And *Toshiba Corp. v. Imation Corp.*, 681 F.3d 1358, 1365-66 (Fed. Cir. 2012), is inapposite, RB46, because *Toshiba* does not involve comparing a claim to a standard to meet a claim element. Instead, the DVD standard in *Toshiba* was only used as evidence of a user's infringing act (*i.e.*, operating the DVDs in an infringing mode). 681 F.3d at 1365-66.

In sum, Constellation cannot avoid *Fujitsu* by misinterpreting precedent.

2. The A/322 Standard Is Constellation's Sole Evidence for at Least One Limitation of Each Asserted Claim

To avoid *Fujitsu*, Constellation argues that its expert presented additional evidence, such as testing results and source code, for the constellation-related limitations. RB47-48. But its brief admits that Jones compared the constellation limitations to the standard (not to LG's televisions): "Jones established that the *constellations claimed* by the patented inventions matched the constellations in the *ATSC 3.0 Standard*." RB48.

Constellation also cites twenty transcript pages to insinuate that Jones compared the claims to source code and testing results. RB48 (citing Appx20220-20224). To the contrary, Jones *separately* addressed: portions of A/322 describing the standard's constellations, Appx20220-20221 (101:2-105:13); testing of certain LG televisions, Appx20221-20222 (105:14-111:20); LG's design documents,

Appx20222 (111:21-112:5); and LG's source code, Appx20222-20224 (112:6-120:25). Nowhere in this testimony did Jones compare the asserted claims to this evidence. Appx20220-20224 (101:2-120:25).

When his testimony later addressed the claims, Jones relied solely on the A/322 standard (or on documents about A/322) for at least one limitation in each independent claim. Appx20229-20235 (139:13-142:12, 148:5-150:7, 153:3-12, 154:3-17, 157:9-161:14). Thus, without the standard, Constellation cannot show infringement.

3. The District Court Incorrectly Extended *Fujitsu*

To use a standard for infringement, Constellation had to comply with *Fujitsu* and show that the *claim* is essential to that standard. *INVT*, 46 F.4th at 1377; *Fujitsu*, 620 F.3d at 1327. But Jones never compared A/322 to each limitation of a claim to establish standard essentiality of that claim, and Constellation does not suggest otherwise. RB48-50.

The District Court, however, stretched *Fujitsu* to permit a single limitation to read on a standard *without* proof the entire claim is standard-essential. Appx56-59. In doing so, the District Court acknowledged that *Fujitsu* held otherwise: "*Fujitsu* was addressing a situation where a standard was relied upon to show infringement of *an entire claim, not a particular limitation.*" Appx56; *see also Fujitsu*, 620 F.3d at 1327 ("[I]f an accused product operates in accordance with a standard, then

comparing the *claims* to that standard is the same as comparing the claims to the accused product.”). The District Court even recognized that *INVT* “concerns infringement reads where the patent owner asserts infringement of *a claim* based on a standard, *not practice of a limitation*.” Appx58; *see also INVT*, 46 F.4th at 1377 (“Infringement can be proven based on an accused product’s use of an industry standard if the asserted *claim* is standard essential.”). The District Court thus understood its holding stretched *Fujitsu* and *INVT*. Appx56-58; BB38-41. But Constellation offers no precedent supporting this holding. RB48-50.

Lacking precedent, Constellation simply parrots the District Court’s policy argument of judicial efficiency.⁵ RB48-49. Under this policy argument, the exception would swallow the rule. The default rule is that direct infringement requires comparing claims to accused products, and *Fujitsu* carved out a narrow exception with strict requirements. *Fujitsu*, 620 F.3d at 1327-28. Constellation’s policy argument would abrogate these requirements and permit comparison of any limitation to a standard rather than an accused product.

⁵ Despite its appeal to policy, Constellation has no response to most of LG’s policy arguments. *Compare* RB49-50, *with* BB40-41.

4. The Undisputed Evidence Shows that LG Does Not Implement the Claimed Constellations

Even if *Fujitsu* applied on a limitation-by-limitation basis, Constellation's only evidence for the constellation limitations was A/322's constellation values. Appx20229-20235.

Yet, the constellation values in LG's O22 and B17+ chips differ from those in A/322. BB44-47. In developing these chips, LG "intentionally used constellations in LG's televisions that are different from the constellations in the A/322 standard[,] by "sacrific[ing] some BICM capacity" (compared to A/322) to "achieve a small size and better power consumption" for its chips. Appx20350 (25:21-27:24). LG's expert demonstrated these differences by converting LG's binary constellation values to decimals—computations that Jones did not dispute—and by comparing these values to those in A/322. *Compare* Appx20362-20363 (75:6-77:9), *with* Appx20251 (225:16-19). The values did not match. *Id.*

Constellation first responds that "correcting" the constellation values in LG's chips would match those in A/322. RB50-51. But Jones's corrections involved rounding and using numerical "representation" to blur the differences in values. Appx20251 (227:2-15). The need to manipulate values means there is no match in the constellation values.

Constellation's second response cites Mr. Lewis's testimony that "A/322 is, in fact, incorporated into chipsets." RB51 (citing Appx20317). This response

assumes, erroneously, that A/322 only contains constellation values. But A/322 covers many other technologies. Appx20361 (69:1-70:12). So, merely implementing some A/322 aspects does not mean LG's chips implement A/322's constellation values.

Constellation's third response argues LG's televisions must "align with transmitters to receive broadcast signals." RB51-52. Aligning does not, however, require the same constellation values. Although LG's chips use values different from A/322's values, these chips remain compatible with the A/322-based transmitted signals thanks to high-performing decoders that compensate for these differences. Appx20350 (26:25-27:8).

Hence, there was no evidence for a reasonable jury to find that LG's constellation values match those in A/322.

B. Constellation Failed to Show Infringement for Televisions with a Realtek Chip

Many accused televisions use Realtek's K8Hp chip, instead of LG's chips. BB47. But there was *no* discovery from Realtek, thus leaving Constellation's infringement case for Realtek-based televisions with gaping holes. While Constellation tries to minimize the issue as source code-related, RB40-41, RB52, the lack of source code is just one (glaring) example of these evidentiary holes.

1. Constellation’s Mischaracterizations Cannot Show that Realtek’s Chip Uses Likelihoods

All asserted claims require “likelihoods.” BB50. As LG showed (without dispute), systems can use either likelihoods by performing “soft” decoding or no likelihoods by performing “hard” decoding. *Compare* BB51, *with* RB55-57. The A/327 Guidelines recommend either decoding operation. Appx15961-15962; Appx15972-15973. Because Constellation has no evidence about which operation Realtek’s chip implements, BB51, it mischaracterized the record. RB55-56.

First, *no* witness in Constellation’s citations ever testified that “likelihoods are an essential component of modern digital-communications systems,” that “older technologies” use hard decoding while “newer technologies” use soft decoding, or that “modern systems use soft decoding (and therefore rely on likelihoods) as a matter of course.” *Compare* RB55, *with* Appx20170-20171; Appx20219; Appx20358. Instead, the inventor testified that “sometimes systems” use “hard decoding,” which is “simpler” than the “alternative ... soft decoding.” Appx20171 (225:25-226:5, 226:11-17). Other systems can opt for the more complex likelihood-based “soft decoding” because it is “statistically better ... [b]y up to 50 percent” than hard decoding. Appx20171 (226:11-21). Given this trade-off, the A/327 Guidelines recommend the use of either “soft” or “hard” decoding. Appx15961-15962; Appx15972-15973.

Second, Jones did *not* “explain[] that both Realtek’s documents and the ATSC recommendations showed that the Realtek chip supported demapping using likelihoods.” *Compare* RB55-56, with Appx20228-20229; Appx20221. Regarding “Realtek’s documents,” Jones only discussed a single slide from a single high-level Realtek document produced by LG. *Compare* BB48, with RB52-58. But he *never* mentioned likelihoods or soft decoding in discussing this slide. Appx20229 (137:10-18, 139:4-12). Regarding “the ATSC recommendations,” Jones *never* tied Realtek’s chip to the A/327 Guidelines. *Compare id.*, with Appx20228 (136:5-19). And because the A/327 Guidelines recommend either hard or soft decoding, merely saying “all of LG’s televisions can receive ATSC signals,” RB56 (citing Appx20221), says nothing about likelihoods.

Third, Jones did *not* testify the Realtek chip’s performance “would be impossible using hard decoding.” *Compare* RB56, with Appx20222; Appx20171. Instead, Jones testified that LG’s test results for its B17+ chip and Realtek’s chip “show that the performance is commensurate with what was in the A/327 document.” Appx20222 (111:16-20). Since A/327’s test values can be based on hard or soft decoding, results commensurate with A/327’s values are inconclusive about likelihoods. Appx15961-15962; Appx15972-15973; Appx15978-15981.

Constellation’s additional cites do not help it. Jones’s testimony on generic ATSC 3.0 receivers is not specific to Realtek’s chip. RB56 (citing Appx20219).

Nor can Constellation rely on the accused televisions' compatibility with ATSC 3.0, RB56 (citing Appx20359; Appx20222), or the Realtek chip's supposed use of a decoder, RB56-57 (citing Appx20229; Appx18048), because ATSC 3.0-compatible receivers can implement hard decoding without using likelihoods.

Constellation's failure to identify relevant evidence confirms the lack of substantial evidence. *See Forest Labs., Inc. v. Abbott Labs.*, 239 F.3d 1305, 1312 (Fed. Cir. 2001).

2. Constellation Failed to Identify Evidence that Realtek's Chip Has Demappers or Decoders

Constellation's responses cannot save Jones's insufficient evidence of a demapper or decoder in Realtek's chip. RB52-55; BB47-50.

First, Constellation's cited testimony cannot establish that demappers and decoders are "present in any television that receives broadcast signals," because it only shows they are "typical" components of receivers. *Compare* RB53, with Appx20356 (50:13-15); *see also* Appx20170-20171; Appx20358. Just as a gasoline engine is a typical car component absent from some cars (e.g., electric cars), testimony about typical components says nothing about what components are actually in Realtek's chip. And Constellation's reliance on A/322, RB53, is equally deficient for failing to show standard essentiality. *See* Part II.A, *supra*; BB42-44.

Second, the cited compatibility tests merely show that Realtek's chip can decipher ATSC 3.0 signals, RB53-55 (citing Appx20221-20222; Appx20227-

20234), without indicating the chip's internal structures. For instance, cellular and landline phones can both process an incoming call, but their internal structures are quite different. Regardless, Jones's testimony on these structures did not mention or rely on these tests. Appx20228-20229 (134:15-23, 135:22-136:4, 138:5-13). And even Constellation's overbroad cite about Jones's walking through the asserted claims confirms that he mentioned his testing for other limitations, not for the demapper and decoder limitations. RB54-55 (citing Appx20227-20234).

Finally, although Constellation insists the jury credited Jones' testimony about Realtek's slide, RB53-54, it fails to address LG's identified factual inconsistencies, including the absence of the words "demapper" or "decoder" on the slide, the lack of depicted BICM blocks, and the nonsensical placement of the alleged decoder and demapper inside a demodulator contrary to the claim language. *Compare id., with* BB49. A reasonable jury would not ignore these inconsistencies. *Brigham & Women's Hosp., Inc. v. Perrigo Co.*, 761 F. App'x 995, 1004 (Fed. Cir. 2019).

3. Constellation Failed to Identify Evidence that Realtek's Chip Uses the Accused Constellations

Constellation's brief confirms the lack of actual evidence that Realtek's chip has the accused constellation values, RB57-58, by only relying on compatibility testing, RB57 (citing Appx20220; Appx20222). But those compatibility tests only indicate the constellation *size* (e.g., 16QAM), not the constellation *values*.

Appx20220-20222 (102:3-25, 104:8-14, 105:3-10, 107:3-5, 110:3-111:20); Appx16387-16577 (JTX-025). Since Realtek’s chip could use different constellation values than the transmitter, BB53, the tests are inconclusive.

Although Constellation asserts “that the receiver needs to use the same constellations as the transmitter to process signals,” RB58 (citing Appx20171; Appx20216), its first citation merely states that a demapper “*need[s] to know* the constellation that the transmitter used[.]” Appx20171 (225:6-15). Knowing and using are, however, different things. *Compare* BB53, *with* RB58. The second citation is equally puzzling, because Jones’s cited testimony does not mention constellations. Appx20216. The jury could not “credit Constellation’s evidence,” RB58, where none exists.

III. NO REASONABLE JURY COULD HAVE FOUND THE DAMAGES AWARDED AT TRIAL

A. Constellation Does Not Challenge Much of LG’s Opening Brief

Much of the facts and law in LG’s opening brief stand unrebutted. Indeed, Constellation does not dispute that proper apportionment requires excluding the value of: unaccused television features; other technologies standardized in ATSC 3.0; and unasserted patents. *Compare* BB57-59, *with generally* RB58-74. Yet, Dr. Ryan Sullivan (“Sullivan”) never performed any apportionment, and Constellation cites no apportionment testimony. *Compare* BB59, *with* RB72-73.

Despite Constellation’s reliance on a built-in apportionment theory on appeal, RB60, it does not dispute the comparability requirements for built-in apportionment, or the substantial differences between Zenith’s licenses and the hypothetical negotiation, including the different patents, technologies, licenses’ age, licensor, licensed products, and geographical scope. *Compare* BB60-65, *with generally* RB58-74.

Nor did Constellation dispute LG’s description of what Jones and Sullivan presented at trial regarding comparability. Jones’s technical comparison relied on generic communication system elements (e.g., “demapper” and “demodulator”) and the acronym of the standard-setting organization (“ATSC”). *Compare* BB65, *with* RB61-62, RB69-70. And Sullivan’s economic comparison relied on customary license provisions (e.g., license duration through patent expiration), superficial similarities (e.g., whether licensors manufacture), and common licensee (i.e., LG). *Compare* BB66, *with* RB63-64, RB70.

There is also no disagreement that Sullivan’s sole adjustment increased the Zenith rate for inflation using the general, not TV-specific, Consumer Price Index (“CPI”). *Compare* BB67-69, *with* RB64-67, RB73-74. And there is no dispute that Sullivan’s \$6.75 per-unit rate exceeds the sum (\$5.75) of the per-unit rates of both existing patent pools for the entire ATSC 3.0 suite of standards. *Compare* BB56-57, *with generally* RB58-74.

Given these undisputed points, the damages-related question boils down to whether Constellation's superficial comparisons to Zenith's 2004-2005 licenses legally sufficed for built-in apportionment. The answer is clearly no, and concluding otherwise would eviscerate the guardrails around built-in apportionment, so this Court should vacate the damages award. *See Omega Pats., LLC v. CalAmp Corp.*, 13 F.4th 1361, 1379 (Fed. Cir. 2021).

B. LG's Damages Challenge Is Proper

Constellation argues that LG's damages challenge can only proceed under the *Daubert*, rather than JMOL, standard. RB67-69 (citing *Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d 1255, 1264 (Fed. Cir. 2013)). Constellation is wrong.

This Court has overturned damages awards under the JMOL standard. *E.g.*, *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1340 (Fed. Cir. 2009); *Enplas Display Device Corp. v. Seoul Semiconductor Co., Ltd.*, 909 F.3d 398, 411-13 n.2 (Fed. Cir. 2018). This Court has even vacated an award where the defendant challenged the sufficiency of damages, without a prior *Daubert* challenge. *Omega*, 13 F.4th at 1380 n.10.

Versata does not require exclusively applying the *Daubert* standard in reviewing damages awards. In *Versata*, defendant SAP's appeal challenged the admissibility of lost profits evidence, despite never filing a *Daubert* challenge to that theory. 717 F.3d at 1260. Given the lack of prior *Daubert* challenges, this Court

ruled that SAP's *Daubert*-based appeal was "improperly raised" because "[t]his is the improper context for deciding questions that, by SAP's own admissions, boil down to the admissibility of evidence." *Id.* at 1264.

In contrast to *Versata* and as Constellation recognizes, LG challenged Constellation's damages theory at **both** the *Daubert* and JMOL stages. RB67-69; *compare* Appx6000-6020 (LG's *Daubert* brief),⁶ *with* Appx1326-1347 (LG's JMOL brief). By presenting its legal challenges at both stages in the District Court and then presenting them in the alternative in its appellate brief, LG properly preserved its challenges. BB54 ("The Court should reverse the District Court's denial of JMOL of no damages, or alternatively the denial of LG's damages-related *Daubert* motion[.]").

But even if LG's damages challenge were reviewed under the *Daubert* standard, the analysis would not change, because the review standards for *Daubert* and JMOL both encompass review for legal error. *E.g.*, *Omega*, 13 F.4th 1375 (abuse of discretion includes legal error); *Shockley v. Arcan, Inc.*, 248 F.3d 1349, 1357-58 (Fed. Cir. 2001) (review of JMOL includes review for legal error). Here, the District Court legally erred by admitting non-comparable agreements, *LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 78 (Fed. Cir. 2012),

⁶ LG could not provide a lengthy list of "specific legal error[s] in the [District] Court's *Daubert* order," RB68, because that order was perfunctory. Appx3 ("The remainder of the motion was denied.").

and by sustaining an award relying on a non-apportioned damages theory, *Commonwealth Sci. and Indus. Research Organisation v. Cisco Sys.*, 809 F.3d 1295, 1304 (Fed. Cir. 2015).

C. Sullivan’s Built-In Apportionment Theory Is Legally Insufficient

1. Jones’s Technical Comparability Was Insufficient for Built-In Apportionment

Although Constellation relies on Jones’s technical comparability analysis for built-in apportionment, RB61-62; RB69-70, his analysis was flawed.

At the threshold, Constellation’s cited cases are inapposite. RB69-70. In *Vectura Ltd. v. Glaxosmithkline LLC*, the “built-in” prior licenses involved the asserted patent and “roughly very similar technologies,” and the accused mixtures were also “the very same mixtures covered by the [past] 2010 license.” 981 F.3d 1030, 1040-41 (Fed. Cir. 2020). In *Bio-Rad Laboratories, Inc. v. 10X Genomics Inc.*, 967 F.3d 1353, 1373-74 (Fed. Cir. 2020), two past licenses dealt with the same microfluid technology, while a third license dealt with technology the defendant did not seek to exclude. Here, in contrast, the Zenith licenses do *not* implicate Constellation’s patents, the same (or even similar) technologies, or the same accused televisions or standards. BB55-56.

The lack of comparability is evident from Jones’s reliance on vague and loose similarities. *See LaserDynamics*, 694 F.3d at 79-80. Although Constellation says (without cites) that Jones did more than keyword searches for generic elements,

RB69, that is exactly what Jones explained he did. Appx20237 (170:24-171:11). Worse yet, these generic elements are commonplace in prior art communication systems predating the patents, Appx20186-20187 (286:17-289:6); Appx20193 (315:5-9), and are so generic that they appear in prior technical standards governing cable broadcast and 2G cellular communications, Appx20367 (94:13-96:20).

Likewise, Zenith's and Constellation's patents are not technologically comparable merely because the former covers ATSC *1.0*'s physical layer and the latter supposedly covers ATSC *3.0*'s physical layer. RB61-62. Indeed, the common use of "ATSC" in these two standards' names cannot create technical comparability, just as landline "telephones" are not technologically comparable to 5G cellular "telephones" despite sharing the word "telephone" in their names. This same example undermines Constellation's reliance on vague "technological benefits of the licensed technology." RB62. If such benefits sufficed, landline telephones and 5G cellular telephones—both enabling voice communication as a benefit—would incongruously be technologically comparable.

By considering only superficial similarities and vague benefits, Jones ignored fundamental technological differences such as: ATSC 3.0 is not backward-compatible to ATSC 1.0, because ATSC "1.0 used VSB while 3.0 uses OFDM," Appx20292 (91:2-13); ATSC 3.0's suite of standards covers significant technologies different and absent from ATSC 1.0, Appx20241 (186:21-187:1), Appx20360-

20362 (68:21-73:8); and ATSC 3.0 uses *non-uniform* constellations that are irreconcilable with ATSC 1.0's *uniform* constellations, Appx20238 (174:20-25), Appx 20257 (251:5-9).

Constellation cannot whitewash these technical differences just because its lead negotiator considered Zenith's licensing program. RB62 (citing Appx20199; Appx20326). If such consideration sufficed for built-in apportionment, any patentee could arrogate the value of prior technologies by having its witnesses "consider" the prior technology. Built-in apportionment would become the norm, not the exception.

2. Sullivan's Economic Comparability Was Insufficient for Built-In Apportionment

As with technical comparability, Constellation and Sullivan rely on superficial similarities for economic comparability. RB63-64, 70.

For example, Constellation emphasizes that neither Zenith nor Constellation made products. *Id.* That is a false equivalence, because Zenith created ATSC 1.0's VSB technology and had made televisions, Appx20276 (25:9-23), whereas Constellation did not contribute to ATSC 3.0 and never made products, Appx20183 (275:14-22); Appx20181-20182 (267:12-22, 268:25-269:4); Appx20202 (29:21-30:21); Appx20205 (41:15-43:18).

Nor can economic comparability rest on trivialities like LG being a licensee in the hypothetical negotiation and to Zenith's VSB technology. RB63. Otherwise,

a defendant’s prior licenses would automatically become economically comparable in every patent lawsuit.

Generic provisions of license agreements—such as royalty structure, life-of-patents duration, non-exclusivity, and U.S. sales—can hardly support economic comparability, RB63-64, RB70, because these provisions are so common that too many patent licenses would become economically comparable. And Mr. Marino’s consideration of these generic provisions, RB64, RB70, cannot create economic comparability, lest a patentee can manufacture artificial comparability at will.

Such surface-deep similarities are too loose or vague to be legally sufficient.⁷

LaserDynamics, 694 F.3d at 79-80.

3. The Experts’ Mere Identification of Differences Is Not Legally Sufficient

Constellation incorrectly argues its experts accounted for the differences between the hypothetical negotiation and Zenith’s licenses, RB64-67, RB71.

First, Constellation’s discussions of technical differences are puzzling. RB64-66, 71. Constellation asserts its patents were so “transformative” that they “unlocked efficiency gains” superior to those “over the prior forty years of research combined,” while “Zenith’s technology ... did not mark a fundamental shift in digital

⁷ Constellation argues the Zenith licenses “covered only the technology necessary to receive ATSC 1.0 broadcast signals, rather than other technology or features of the licensed televisions.” RB64 (citing Appx20280). The cited testimony says no such thing. Appx20280.

communications.” RB65. Yet, its experts merely identified these technological differences without accounting for them, just like the expert in *Omega*, 13 F.4th at 1381. Worse yet, if these substantial differences were true, then Zenith’s patents and technologies *cannot* be technologically comparable to Constellation’s, and no built-in apportionment can apply.

Regardless, Constellation assumes its patents are responsible for the 1dB capacity improvement from optimized non-uniform constellations. RB65-66. But the Sommer prior art already secured improved PD capacity “in the order of 1dB” years before the alleged invention. Appx135 (1:59-62); Appx1201-1204. And Constellation cannot arrogate for itself ATSC 3.0’s improvements, since its patent prosecutor drafted most of its claims after studying ATSC 3.0. Appx1288-1292 (149:14-153:7); Appx1229-1279; Appx1226 (331:12-18); Appx447 (24:42-51); Appx20185 (281:7-15). Accordingly, there is no support for Sullivan’s opinion that the royalty ought to be “higher for the Constellation Designs patents[.]” RB66 (Appx20277 (31:23-32:12)).

Constellation’s treatment of economic differences fares no better because Sullivan also identified differences without accounting for them, as shown by Constellation’s two cites. Its first cite does not address how Sullivan “accounted for the fact that Zenith’s licenses covered more patents than those asserted in this case[.]” RB66 (citing Appx20280). Instead, Sullivan improperly opined his \$6.75

rate applied regardless of how many patents and claims are infringed. *Compare id.*, with Appx20280; *see also Omega*, 13 F.4th 1376-77, 1379 (rejecting such one-size-fits-all opinion). Similarly, the second cite does not account for differences in the value of the ATSC 3.0 and ATSC 1.0 pools' respective patents. RB66 (citing Appx20278-20279). Instead, Sullivan only identified differences in patent pools' rates, and then conclusorily opined that Constellation's patents are worth more than the ATSC 3.0 patent pools' combined rates. Appx20278-20279. Thus, Constellation's cites confirm the legal error in Sullivan's failure to account for critical differences.⁸

D. Dr. Sullivan's Inflation Uplift Is Legally Flawed

Sullivan made only one adjustment to the Zenith rate: he increased the rate by 35% for inflation. RB66 (Appx20278), RB73-74. But he based this uplift on the general increase in CPI, rather than any television-specific CPI. Appx20278 (34:4-17). Because, as Sullivan admitted, television prices and the television-specific CPI have declined since the Zenith licenses, Appx20287 (69:23-70:14), an inflation-based adjustment for televisions should have *decreased* the rate.

This uplift stands on even shakier grounds, because Zenith never "incorporat[ed] inflation adjustments" into its television-related licenses. *Compare*

⁸ Constellation mischaracterizes the District Court, RB66 (citing Appx49), which never praised Constellation's evidence as "thorough." Appx48-50.

BB68, *with* RB73-74. As Sullivan admitted, he relied on: a 1997 Zenith report's recommendation which was never implemented; Zenith's broadcast equipment agreements which Sullivan never claimed to be comparable; and Zenith's participation in the ATSC 1.0 patent pool which never adjusted its rate for inflation. Appx20278 (33:25-35:19).

Constellation cannot shift the burden onto LG to find cases rejecting Constellation's unprecedented inflation-based uplift. RB73; *see Omega*, 13 F.4th at 1377 (plaintiff bears burden on damages). At base, Sullivan's adjustment was untethered to the price of televisions and this case's facts, and is therefore legally flawed. *See Apple Inc. v. Wi-LAN Inc.*, 25 F.4th 960, 973-74 (Fed. Cir. 2022) (rejecting damages opinion "untethered to the facts of this case").

E. The Panel Should Consider the En Banc Court's *EcoFactor* Decision in Deciding This Appeal

The Court's en banc rehearing in *EcoFactor* may provide legal guidance on built-in apportionment. *See EcoFactor, Inc. v. Google LLC*, 104 F.4th 243, 254 (Fed. Cir. 2024) (mentioning built-in apportionment), *vacated by* 115 F.4th 1380 (Fed. Cir. 2024). If the en banc Court addresses this issue, the resulting guidance may aid the disposition of this appeal.

Constellation's various arguments cannot avoid the en banc decision's impact. RB74. Indeed, LG preserved its challenge to the *Daubert* ruling. *See supra* §III.B. Constellation is also incorrect that Jones performed a proper technical comparability

analysis, so it is no basis for distinguishing *EcoFactor*. RB74; *see supra* §III.C.1. Nor does *EcoFactor*'s discussion of lump-sum licenses distinguish it, RB74, especially since lump sum licenses can be used to calculate running royalties. *Whitserve, LLC v. Computer Packages, Inc.*, 694 F.3d 10, 30 (Fed. Cir. 2012). Hence, there is no sound reason why the en banc *EcoFactor* decision may not impact this appeal.

CONCLUSION

The Court should reverse the judgment of patent eligibility, liability, and damages.

Dated: December 4, 2024

Respectfully submitted,

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CERTIFICATE OF SERVICE AND FILING

I certify that on December 4, 2024, I electronically filed the foregoing **REPLY BRIEF** of Defendants-Appellants LG Electronics Inc., LG Electronics U.S.A., Inc., and LG Electronics Alabama, Inc. using the Court's CM/ECF filing system. Counsel for Plaintiff-Appellee Constellation Designs, LLC were electronically served by and through the Court's CM/ECF filing system per Fed. R. App. P. 25 and Fed. Cir. R. 25(e).

/s/ Michael J. McKeon _____

Michael J. McKeon

CERTIFICATE OF COMPLIANCE

The **REPLY BRIEF** of Defendants-Appellants LG Electronics Inc., LG Electronics U.S.A., Inc., and LG Electronics Alabama, Inc. is submitted in accordance with the type-volume limitation of Fed. Cir. R. 32(b). The brief contains 6,995 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(f) and Fed. Cir. R. 32(b)(2). This brief has been prepared in a proportionally spaced typeface using Microsoft Word for Microsoft 365 in Times New Roman, 14 Point.

Dated: December 4, 2024

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