

Filed on behalf of: K.Mizra LLC

By: David DeZern
Registration No. 60,117
NELSON BUMGARDNER CONROY P.C.
2727 N. Harwood St., Suite 250
Dallas, Texas 75201
Telephone: (214) 446-4950
Email: david@nelbum.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Silicon Motion Inc.

Petitioner

v.

K.Mizra LLC,

Patent Owner

Case IPR2024-01240

U.S. Patent 9,160,466

PATENT OWNER'S PRELIMINARY RESPONSE

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I. INTRODUCTION

Pursuant to 35 U.S.C. § 313 and 37 C.F.R. § 42.107, Patent Owner K.Mizra (“Patent Owner”) submits this Preliminary Response to the Petition for *Inter Partes* Review (“Petition,” Paper 1) filed by Silicon Motion Inc. (“Petitioner”) and challenging Claims 1-19 of U.S. Patent No. 9,160,466 (the “’466 Patent”) (EX-1001). The Board should not institute *inter partes* review because Petitioner has not met its burden of showing a reasonable likelihood of prevailing on its proposed grounds of unpatentability, each based on obviousness under 35 U.S.C. § 103(a).

The Petition relies on *Meaney* as its primary reference. But *Meaney* does not disclose many of the ’466 Patent’s claim limitations. To address those shortcomings, Petitioner repeatedly relies on the purported knowledge of a POSITA and a series of secondary references. But even after attempting to plug the holes of *Meaney*, the grounds remain deficient to institute this IPR.

II. THE ’466 PATENT AND THE CHALLENGED CLAIMS

A. Background of the ’466 Patent and Problems with the Prior Art

The ’466 Patent explains that the field of the claimed inventions is “the calibration of communication channel parameters in systems, including mesochronous systems, in which two (or more) components communicate via an interconnection link; and to the calibration needed to account for drift of conditions related to such parameters during operation of the communication channels.” EX-

1001, 1:26-31. For prior art communication systems “[t]o provide reliable results, the calibration sequences pass a calibration pattern or calibration patterns that include lots of data and take quite a long time.” *Id.*, 2:1-4.

The ’466 Patent further explains that “calibration sequences use patterns with long or numerous codes designed to find the worst-case leading edge and the worst-case trailing edge of a passing region for a parameter subject of the calibration, such as drive timing points and sample timing points.” *Id.*, 2:5-9. Finding those edge values implicates the system parameters. As the patent explains, “[t]he edge values are a function of many system parameters including for example silicon processing variations, and packaging parameters such as crosstalk, terminal resistance accuracy, system board impedance, module impedance, trace lengths, connector locations, and so on.” *Id.*, 2:10-14. “In addition to the uncertainty of these variables, the patterns necessary to create worst-case inter-symbol interference or resonance can be very long, and are difficult to predict.” *Id.*, 2:14-17.

The ’466 Patent explains that “to deal with the uncertainty of which patterns will generate the leading or trailing edge of the worst-case passing region, many systems use a brute force approach to calibration sequences, using sequences with very long calibration patterns.” *Id.*, 2:17-21. The kind of patterns that the prior art systems use include pseudorandom bit sequence (PRBS) and “patterns that are

hundreds of bits long to present the worst-case pattern for a given configuration, and attempt to cover all possible conditions.” *Id.*, 2:21-27.

The patent then explains that long, complex patterns could sometimes be acceptable. Specifically, it states that the “use of long, complex patterns is generally adequate if the calibration sequence is run infrequently. For example, if the algorithm is run only during an initial system bring up, the length of the calibration pattern is not generally critical.” *Id.*, 2:28-31.

Then the ’466 Patent introduces the issue of changing system conditions. The patent states that “[h]owever, during normal operation, system conditions will change.” *Id.*, 2:31-32. For example, “[a]mbient temperature, component temperature, supply voltages, and reference voltages will drift from their initial value.” *Id.*, 2:31-35. The patent adds that “[a]lso, spread spectrum clock systems intentionally shift the clock frequency to meet emission standards.” *Id.*, 2:35-36. The ’466 Patent then describes how these conditions affect timing. It states that “[a]s the conditions drift, the optimal timing points of the transmitter and receiver and other parameters will change.” *Id.*, 2:36-38.

The ’466 Patent then explains inadequacies of simply re-running the calibration sequences to account for those changing conditions. The patent states “[a]lthough the calibration sequences can be run periodically to adjust for drift, the length and complexity of the patterns and the algorithms used in the sequences

interfere with mission-critical operations of the system.” *Id.*, 2:39-42. Said another way, re-running the calibration sequences wastes the resources of the system. For example, “the long calibration sequences with patterns having long or numerous codes require storage, access to the input/output circuits and interconnect, and processing resources in order to complete a calibration sequence. During this recalibration time, the system is unavailable to the application.” *Id.*, 2:42-47.

The patent provides conclusions regarding the problems associated with re-running the calibration sequences. Specifically, the ’466 Patent states that this “creates at least two significant problems. First, performance is reduced, in general. Second, many applications can tolerate only minimum latency addition without under or over running their streaming data.” *Id.*, 2:47-51.

B. Solution Offered by the ’466 Patent

The ’466 Patent seeks “to provide techniques to compensate for the condition drift, and provide improvements in system and component design to permit these techniques to be utilized.” *Id.*, 2:52-54. To achieve that goal, the inventors of the ’466 Patent sought to take “advantage of a discovery that long-term drift in timing, voltage or other parameters of a communication channel caused for example by temperature change, can be largely independent of the calibration pattern utilized to compute the operation value of the parameter.” *Id.*, 2:58-62. “In other words, drift in a particular parameter can be tracked without using patterns based on long and/or

numerous codes required for determining an optimal operation value for the parameter.” *Id.*, 2:62-66. The patent proposes that “a simpler calibration sequence can be applied to track drift of the particular parameter during operation of the device.” *Id.*, 2:66-3:1. This simpler calibration sequence uses less system resources than the prior art. As the patent explains, the “simpler calibration sequence used to track drift of the parameter utilizes less of the resources of the communication channel (that is, it occupies the link, transmitter and receiver for less time) than the more exhaustive initial calibration sequence.” *Id.*, 3:1-5. The patent explains that “[c]hanges in the parameter based on computations that arise from the use of a simpler calibration sequence are used to adjust the operation value that was created using the more exhaustive initial sequence.” *Id.*, 3:5-8.

According to its inventors, “the present invention provides a system and method for calibrating an operation value for a parameter of a communication channel, which allows for optimizing the operation value of the parameter, while efficiently accounting for drift of properties of the channel.” *Id.*, 3:12-16.

C. Challenged Claims

The Petition challenges every claim in the ’466 Patent, i.e., claims 1-19. That includes the three independent claims (claims 1, 10, and 17) and the remaining dependent claims (2-9, 11-16, and 18-19).

Claim 1 recites:

1[pre] A method of operation in a system that includes a receive component having circuitry to receive a digital signal, the method comprising:

1[a] subjecting the receive component to a first calibration during initialization to identify an initial value **1[b]** for a parameter affecting proper reception by the circuitry of the receive component of data communicated across a channel as part of the digital signal;

1[c] periodically subjecting the receive component to a second calibration to update an existing value of the parameter for drift attributable to change in at least one of operating voltage or temperature; and

1[d] wherein the existing value is dependent on the initial value **1[e]** and wherein the second calibration is constrained to occur during a time period that is shorter than a time period of the first calibration.¹

The central claim limitation addressed in this Preliminary Response has been emphasized above.

III. LEVEL OF ORDINARY SKILL

¹ For purposes of ease of reference between the Petition and this Preliminary Response, Patent Owner has adopted the Petitioner's limitation identifications, e.g., 1[pre]-1[e].

For the limited purpose of this Preliminary Response, Patent Owner does not contest Petitioner’s definition of a person of ordinary skill in the art, but it reserves the right to do so if trial is instituted.

IV. CLAIM CONSTRUCTION

Petitioner does not seek to construe any terms in this preliminary response. Should the Board institute trial, Patent Owner reserves the right to present claim construction positions.

V. APPLICABLE LEGAL STANDARDS

The Board may only grant a petition for *inter partes* review where “the information presented in the petition ... shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a); 37 C.F.R. § 42.108(c). Petitioner bears the burden of showing that this statutory threshold has been met. *See* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756 (Aug. 14, 2012) (“The Board ... may institute a trial where the petitioner establishes that the standards for instituting the requested trial are met”).

At a minimum, the reasonable-likelihood-of-prevailing standard “effectively requires the petitioner to present a prima facie case justifying a rejection of the claims in a patent.” 112 Cong. Rec. S1375 (daily ed. Mar. 8, 2011) (quoting Sen. Kyl). As explained by the Federal Circuit, “the expedited nature of IPRs bring[s]

with it an obligation for petitioners to make their case in their petition to institute.” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016). Moreover, the Board may not overlook flaws in the petition or reformulate its challenges to enhance their suitability. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (“[I]t’s the petitioner, not the Director, who gets to define the contours of the proceeding.”); *see also id.* (“[T]he petitioner is master of its complaint . . .”); *see also id.* at 1353 (forbidding the Board from “curat[ing]” the petition).

A. Obviousness

Section 103 of the Patent Act provides that “[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a). The obviousness analysis requires several threshold inquiries: the level of ordinary skill in the art must be established; the scope and content of the prior art must be determined; and any differences between the prior art and the claims at issue must be ascertained. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Obviousness is resolved on several factual determinations “including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of ordinary skill in the art.” *See Graham*,

383 U.S. at 17-18. Petitions for *inter partes* reviews “must address the Graham factors.” *Eizo Corp. v. Barco N.V.*, IPR2014-00358, Paper 11 at 29-30 (PTAB July 23, 2014).

VI. GROUND 1 FAILS

Ground 1 in the Petition relies on *Meaney* (EX-1004) as its primary reference. Because Petitioner acknowledges that *Meaney* alone does not render the challenged claims invalid, the Petition further relies on the purported knowledge of a POSITA to supplement *Meaney*. While there appear to be many deficiencies across the grounds, in this response, Patent Owner presents a single deficiency from Ground 1 that is fatal to the Petition across all grounds.

A. *Meaney* does not disclose that the “second calibration is constrained to occur during a time period that is shorter than a time period of the first calibration” from limitation 1[e].

If a single element of the claim is absent from the prior art, the claim cannot be considered obvious. *See CFMT, Inc. v. YieldUp Int’l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (“Obviousness requires a suggestion of all limitations in a claim.”) (citing *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974)); *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (reversing obviousness rejection where prior art did not teach or suggest all claim limitations); *Garmin Int’l, Inc. v. Patent of Cuozzo Speed Techs. LLC*, IPR2012-00001, Paper 15 at 15 (PTAB Jan. 9, 2013) (refusing to institute an *inter partes* review under 35 U.S.C. § 103 where prior art did not disclose

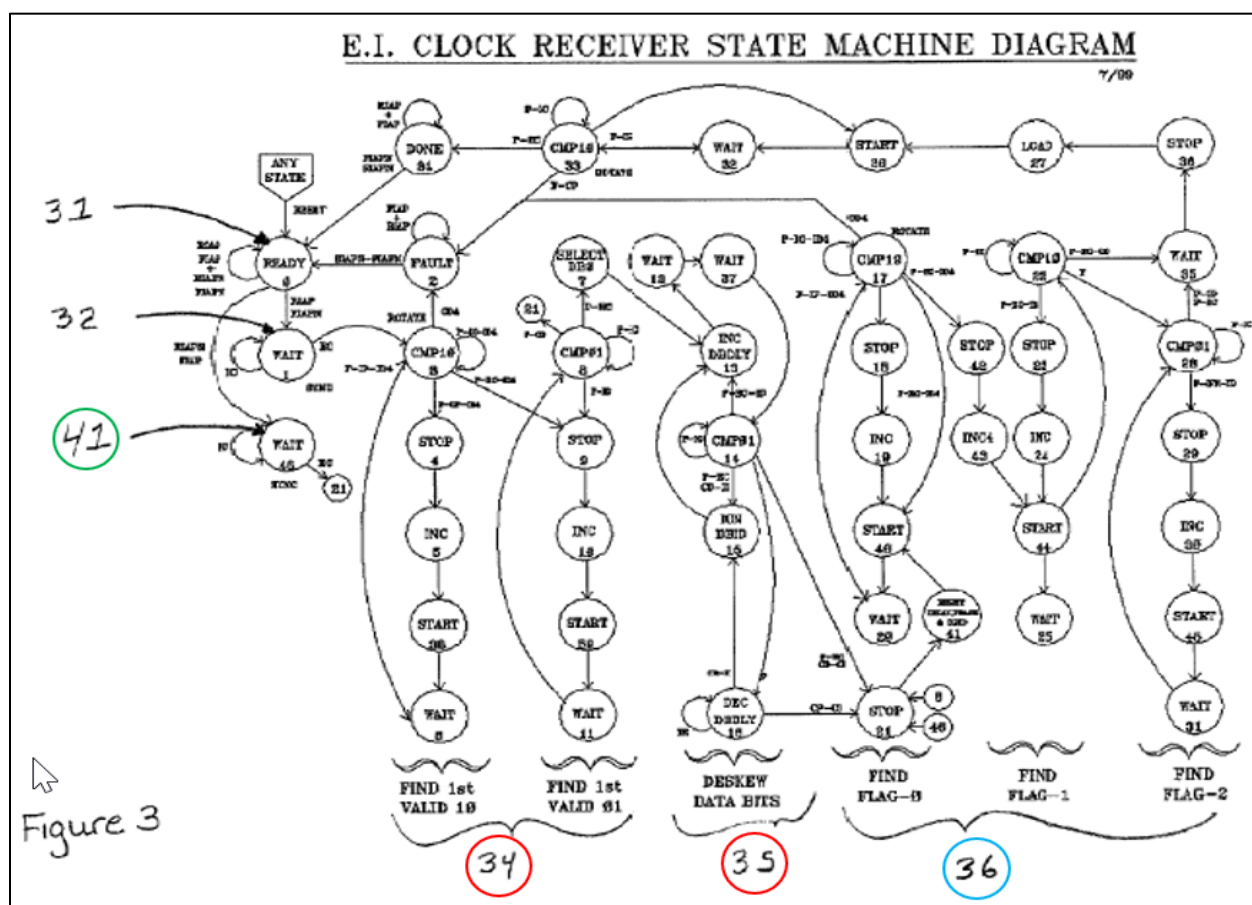
all claim limitations). Here, *Meaney* does not disclose or render obvious the limitation recites that “second calibration is constrained to occur during a time period that is shorter than a time period of the first calibration.”

For this limitation, Petitioner relies on conclusory statements from its expert. Specifically, Petitioner states that “a POSITA would have understood that the recalibration of *Meaney* would occur during a time period that is shorter than the time period of *Meaney*’s initial calibration.” Petition at 21. That conclusory statement is insufficient to meet this limitation. *Apple Inc. v. Voip-Pal.com, Inc.*, 976 F.3d 1316, 1325 (Fed. Cir. 2020) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

This limitation requires that the “second calibration is constrained to occur during a time period that is shorter than a time period of the first calibration.” Nothing in *Meaney* suggests that the recalibration period is constrained to be shorter than the initial calibration. Petitioner’s argument hinges on *Meaney* “skipping certain steps” (Petition at 20) during recalibration. For recalibration in *Meaney*, “a new wait state, 41, is used, which allows the calibration logic to proceed directly to the final clock calibration sequence, 36.” Ex. 1004 at [0039]. This purportedly allows

Meaney to skip steps 34 (initial clock calibration sequence) and 35 (data deskew sequence) from the initial calibration sequence.

But Petitioner incorrectly assumes that steps 34, 35, and 36 in the initial calibration necessarily take longer than performing a new step 36 and new wait state 41 during recalibration. Instead, the final clock calibration sequence (36) in the recalibration may in some instances take much longer to run than the final clock calibration sequence (36) that occurred during the initial calibration. This is apparent from the state machine in Figure 3.



Ex. 1004 at Figure 3 (annotated). As seen in Figure 3, the final clock calibration sequence (36) includes indeterminate numbers of cycling through comparisons, stops, incs, and wait steps, each taking an indeterminate amount time. Accordingly, one instance of a final clock calibration sequence (36) can require much more time to occur than another. Thus, running the calibration sequence (36) during recalibration may take longer than running the calibration sequence (36) during initial calibration. Therefore, the recalibration period cannot be said to be constrained to occur during a time period that is shorter than a time period of the initial calibration period. There are no such constraints discussed in *Meaney*.

Moreover, Petitioner ignores the “new wait state” (41) that is added to the recalibration procedure. This wait state involves “idl[ing] all the processors while having one processor oversee the recalibration sequence.” Ex. 1004 at [0014]. *Meaney* does not discuss the amount of time it takes for the wait sequence to run, which requires waiting for all the processors reach an idle state. And *Meaney* does not disclose that the new wait state is constrained in time such that its running would not, at least in some instances, cause the run time of the recalibration sequence to exceed the run time of the initial calibration sequence. Thus, the new wait state (41) adds additional time to the recalibration procedure, further keeping it from being constrained to a shorter time period than the initial calibration period.

Petitioner's other vague arguments do not save the fatal flaw identified above. Petitioner mentions that recalibration is described as a "fast initialization process." Petition at 20. But only being described as "fast" does not mean that the "second calibration is constrained to occur during a time period that is shorter than a time period of the first calibration." Moreover, Petitioner argues that "the initial calibration of *Meaney* is performed from a stopped position, whereas the recalibration merely requires putting the system in a 'wait' state for the duration of the recalibration." Petition at 20. But as discussed above, the wait state adds time to the recalibration procedure, requiring time for the processors reach an idle state. It is not, as Petitioner argues, a time-saving feature over the initial calibration procedure in the purported invention of *Meaney* to the extent that "the second calibration is constrained to occur during a time period that is shorter than a time period of the first calibration."

B. *Meaney* also fails for the remaining claims under Ground 1.

Petitioner also uses Ground 1 against claims 2, 6-12, 15-16. Claims 2 and 6-9 all depend from claim 1. Ground 1 therefore fails for those claims for the same reason as claim 1 fails.

Independent claim 10 contains a similar limitation to 1[e], namely 10[d]: "wherein a time duration of the second calibration is constrained to be shorter than a time duration of the first calibration." For limitation 10[d], Petitioner relies solely

on its arguments for limitation 1[e]. Petition at 30. Thus, Ground 1 also fails for claim 10 for the reasons addressed above for limitation 1[e]. Claims 11, 12, 15, and 16 all depend from claim 10. Ground 1 therefore fails for those claims for the same reason as claim 10 fails.

VII. GROUND 2 FAILS

Ground 2 in the Petition relies on *Meaney* in combination with *Nguyen* (EX-1005) for claims 1, 2, 6-12, 15, and 16. But Ground 2 fails for same reason as Ground 1 because Petitioner does not use *Nguyen* to supplement *Meaney*'s failure to disclose limitation 1[e] and 10[d].

Petitioner relies exclusively on its *Meaney*-based arguments from Ground 1 for limitation 1[e]. *See* Petition at 37 (“All other elements of claims 1, 2, 6-12, 15, and 16 are disclosed or rendered obvious by *Meaney* as explained in Ground 1.”); *see also id.* at 40-43 (only including sections on limitations 1[pre] and 1[d]). And Petitioner also relies solely on its arguments for limitation 10[d] from Ground 1. Petition at 47. Because each of the claims in Ground 2 includes either limitation 1[e] or 10[d] (either via dependency or direct inclusion in the claim), Ground 2 also fails.

VIII. GROUND 3 FAILS

Ground 3 in the Petition relies on *Meaney* in combination with *Greeff* (EX-1006). But Ground 3 fails for same reason as Ground 1 because Petitioner does not use *Greeff* to supplement *Meaney*'s failure to disclose limitation 1[e] and 10[d].

Ground 3 only addresses claims 4, 5, 13, 14, and 17-19. Petition at 52-53. Claims 4, 5, 13, and 14 are dependent on either claim 1 or 10. Petitioner relies on Ground 1 to disclose the limitations of claims 1 and 10. *See* Petition at 53 (“All other elements of claims 4, 5, 13, 14, and 17-19 are disclosed or at least rendered obvious by Meaney as described above in Ground 1.”). Thus, Ground 3 fails because Ground 1 does not show limitations 1[e] and 10[d], which appear in the independent claims associated with dependent claims 4, 5, 13, and 14.

Claim 17 is an independent claim that Petitioner did not address in Grounds 1 or 2. Similar to limitations 1[e] and 10[d], claim 17 includes limitation 17[f] that requires that “the second calibration is constrained to be performed during a time period that is shorter than a time period of the first calibration.” For this limitation, Petitioner relies on its same arguments from *Meaney* for limitation 1[e]. *See* Petition at 61. Thus, Ground 3 fails for claim 17 for the same reason as discussed above for Ground 1. Claims 18 and 19 depend from claim 17. Thus, Ground 3 also fails for those dependent claims.

IX. GROUND 4 FAILS

Ground 4 in the Petition relies on *Meaney* in combination with *Nguyen* and *Greeff* and the knowledge of a POSITA to address claims 4, 5, 13, 14, and 17-19. Petition at 64. But Ground 4 fails for same reason as Ground 1 because Petitioner

does not use *Nguyen* or *Greeff* or the knowledge of a POSITA to supplement *Meaney*'s failure to disclose limitation 1[e], 10[d], and 17[f].

Petitioner relies on Ground 1 to disclose the limitations of claims 1, 10, and 17. *See* Petition at 65 (“All other elements of claims 4, 5, 13, 14, and 17-19 are disclosed or rendered obvious by *Meaney* as explained in Ground 1.”). Thus, Ground 4 fails because Ground 1 does not show limitations 1[e], 10[d], or 17[f], which appear in claims 4, 5, 13, 14, and 17-19, either directly or via dependency.

X. GROUNDS 5A and 5B FAIL

Ground 5A relies on *Meaney* in combination with *Allee* (Ex. 1007) and the knowledge of a POSITA. Ground 5B relies on *Meaney* in combination with *Nguyen*, *Allee* and the knowledge of a POSITA. Grounds 5A and 5B both only address dependent claim 3. Petition at 67-69. There is no discussion of independent claim 1 associated with dependent claim 3. *Id.* Accordingly, neither Ground 5A nor Ground 5B overcome the deficiency of *Meaney* to show limitations 1[e]. Thus, Ground 5A and Ground 5B fail.

XI. CONCLUSION

The Board should deny institution. Petitioner has not met its burden of showing that any of the grounds are reasonably likely to render the challenged claims obvious.

Dated: December 10, 2024

By: /s/ David DeZern
David DeZern
Registration No. 60,117
NELSON BUMGARDNER
CONROY P.C.
2727 N. Harwood St., Suite 250
Dallas, Texas 75201
Telephone: (214) 446-4950
Email: david@nelbum.com

Attorney for Patent Owner

CERTIFICATE OF COMPLIANCE WITH WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), I certify that this Response complies with the type-volume limits of 37 C.F.R. § 42.24(b)(1) because it contains 4,080 words, according to the word processing system used to prepare this Patent Owner's Preliminary Response.

Dated: December 10, 2024

By: /s/ David DeZern
David DeZern
Registration No. 60,117
NELSON BUMGARDNER
CONROY P.C.
2727 N. Harwood St., Suite 250
Dallas, Texas 75201
Telephone: (214) 446-4950
Email: david@nelbum.com

Attorney for Patent Owner

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Patent Owner's Preliminary Response was served on December 10, 2024 to Lead and Back-up Counsel for Petitioner at the service address provided in Petitioner's Mandatory Notices:

Email: DLSiliconIPR466@bakerbotts.com

Dated: December 10, 2024

By: /s/ David DeZern
David DeZern
Registration No. 60,117
NELSON BUMGARDNER
CONROY P.C.
2727 N. Harwood St., Suite 250
Dallas, Texas 75201
Telephone: (214) 446-4950
Email: david@nelbum.com

Attorney for Patent Owner