

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHENZHEN QIANFENYI INTELLIGENT TECHNOLOGY CO., LTD.,
(A.K.A. MAXEYE)
Petitioner,

v.

WACOM CO. LTD.,
Patent Owner.

Case IPR2025-01533
U.S. Patent No. 9,977,519

PATENT OWNER'S PRELIMINARY RESPONSE

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PATENT OWNER'S EXHIBIT LIST

Exhibit No.	Description
2001	Assignment from Synaptics Inc. to Wacom Co., Ltd., Reel 050229, Frame 0145 (Aug. 27, 2019)
2002	Second Amended Complaint, <i>Wacom, Co., Ltd. v. Shenzhen Qianfenyi Intelligent Technology Co., Ltd.</i> , Civ. No. 2:24-cv-702 (E.D. Tex. Oct. 27, 2025)
2003	Defendant's Preliminary Invalidity Contentions, <i>Wacom, Co., Ltd. v. Shenzhen Qianfenyi Intelligent Technology Co., Ltd.</i> , Civ. No. 2:24-cv-702 (E.D. Tex. Mar. 4, 2025)
2004	Agreed Docket Control Order, <i>Wacom, Co., Ltd. v. Shenzhen Qianfenyi Intelligent Technology Co., Ltd.</i> , Civ. No. 2:24-cv-702 (E.D. Tex. Feb. 6, 2025)
2005	U.S. District Courts - Federal Court Management Statistics– Comparison Within Circuit (June 30, 2025) (available at https://www.uscourts.gov/sites/default/files/document/fcms_na_distcomparison0630.2025.pdf) (annotated)
2006	Memorandum Order, <i>Headwater Research LLC v. Samsung Electronics Co., Ltd.</i> , Civ. No. 2:23-CV-00103 (Dec. 11, 2024)

Pursuant to 37 C.F.R. § 42.107, Patent Owner Wacom Co. Ltd. (“Patent Owner” or “Wacom”) files this preliminary response to the Petition, setting forth reasons why the Petition for *inter partes* review (“IPR”) of claims 1-4, 6, 7, 9, 10, 12-14, 16, 17, and 19-24 of U.S. Patent No. 9,977,519 (the “’519 patent”), as requested by Shenzhen Qianfenyi Intelligent Technology Co., Ltd. (a.k.a Maxeye) (“Petitioner” or “Maxeye”), should be denied on the merits.¹

I. INTRODUCTION

Petitioner presents four distinct, redundant challenges against each of the three challenged independent claims. None of these challenges has merit. In fact, the Petition is best characterized as a collection of citations that lacks any real understanding of the references or how they apply to the challenged claim language.

Importantly, Petitioner systematically fails to address or satisfy the core limitations of the independent claims—specifically the recited “current beacon period,” “timeslots,” and the coordination of how these elements interact with upstream and downstream communication from active styluses. Recognizing a number of gaps in its primary reference, Petitioner also leans heavily on the disclosure of “other information” in one reference to encompass a number of

¹ By submitting this Preliminary Response, no waiver of any argument is intended by Patent Owner. Patent Owner will have a right to file a complete response to the Petition, should the Board institute *inter partes* review. 37 C.F.R. § 42.120(a).

missing elements without ever showing how or why a POSITA would have interpreted the “other information” to disclose or suggest those missing elements. In essence, Petitioner relies upon attorney argument and unsupported assertions to fill in disclosure gaps in the prior art. As a result, rather than providing a complete analysis demonstrating how each prior art reference discloses, or each proposed combination suggests, every element of the challenged claims, Petitioner relies on conclusory statements, unsupported expert assertions, and improper incorporation of arguments without adequate explanation.

As another defect, Petitioner fails to recognize that its theories are contradicted by its own references. As an example, the '519 patent allows communication with multiple active styluses and, in attempting to show this aspect, the Petition points to “stylus scan count” in one of the references (Kremin'361) to suggest that this reference “counts” the number of active styluses present. But only one paragraph before Petitioner's cited paragraph, the reference in question—Kremin'361—explains exactly what the “stylus scan count” means, and it has nothing to do with counting the number of styluses. Petitioner either elected not to address this disclosure in its Petition or it was ignorant of it. Either way, this failure is just one example of the clumsy and deficient arrangement of challenges presented against the '519 patent.

For the reasons explained below, all four grounds of the Petition should be rejected on the merits, and no *inter partes* review should be granted.

II. THE '519 PATENT

The '519 patent is entitled, “Active Pen with Bidirectional Communication,” and concerns itself with communications protocols that may improve the coordination of transmissions between an active pen and an input device, and allow a plurality of active pens to communicate with a single device at the same time.

FIG. 1 of the '519 patent, reproduced below, provides a block diagram of an exemplary input device (100):

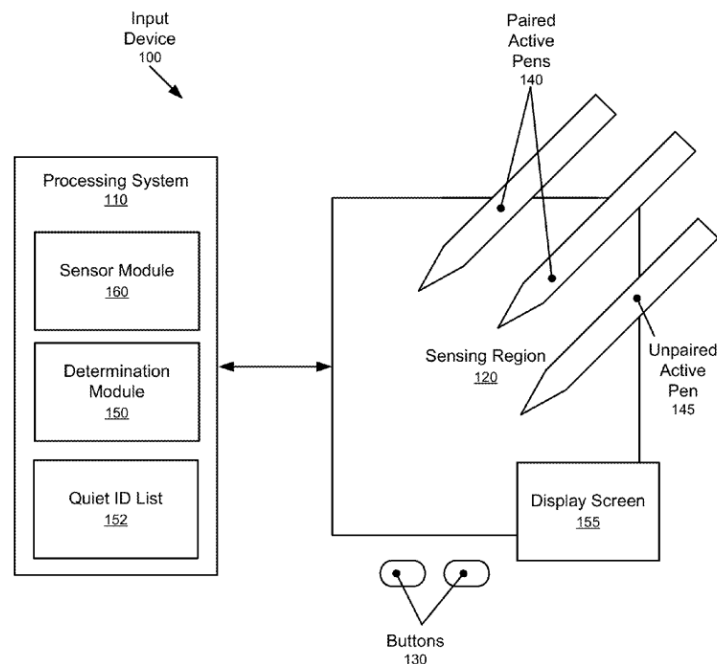


FIG. 1

In FIG. 1, the input device (100) is shown as a proximity sensor device (also referred to as a “touchpad” or a “touch sensor device”) configured to sense input provided by one or more input objects in a sensing region (120). '519 patent, 2:37-39. Input objects may include multiple active pens, which are illustrated as paired active pens (140) and an unpaired active pen (145) in FIG. 1. '519 patent, 3:9-13. Active pens (140, 145) typically include a transmitter, which may provide a mechanism for identifying the position of the active pen, receiving of data (e.g., configuration data, time slot information, frequency information, etc.), and sending data (e.g., pressure, color, or button status information). '519 patent, 3:13-21. A processing system (110) is configured to operate the hardware of the input device (100) to detect input in the sensing region (120). '519 patent, 4:56-59.

Data may be wirelessly transmitted by an active pen (140, 145) to the processing system (110), such as a measured pressure or force at the tip of the active pen, button status (e.g., pressed, not pressed, etc.), the tilt of the pen, and/or a mode (e.g., erasure mode) in which the active pen (140, 145) is operating. '519 patent, 7:12-23. Other data may also be transmitted including a unique ID (e.g., serial number), a vendor part number, a version ID, or any value that may be set by the manufacturer of the active pen (140, 145). '519 patent, 7:24-47.

The data may be transmitted from the active pen (140, 145) to the processing system (110) in one or more downstream packets and the processing system (110)

may determine the attributes of the active pens (140, 145) based on the received downstream packets. '519 patent, 7:48-8:11.

Active pens can be classified as paired active pens (140) or unpaired active pens (145). '519 patent, 8:12-14. Each paired active pen (140) is assigned a unique pen identification (ID). '519 patent, 8:14-15. Each unpaired active pen (145) has not been assigned a pen ID and/or is set to a default pen ID (e.g., pen ID=0). '519 patent, 8:15-17.

FIG. 3, reproduced below, shows a timing diagram described in the '519 patent ('519 patent, 9:7-10:3):

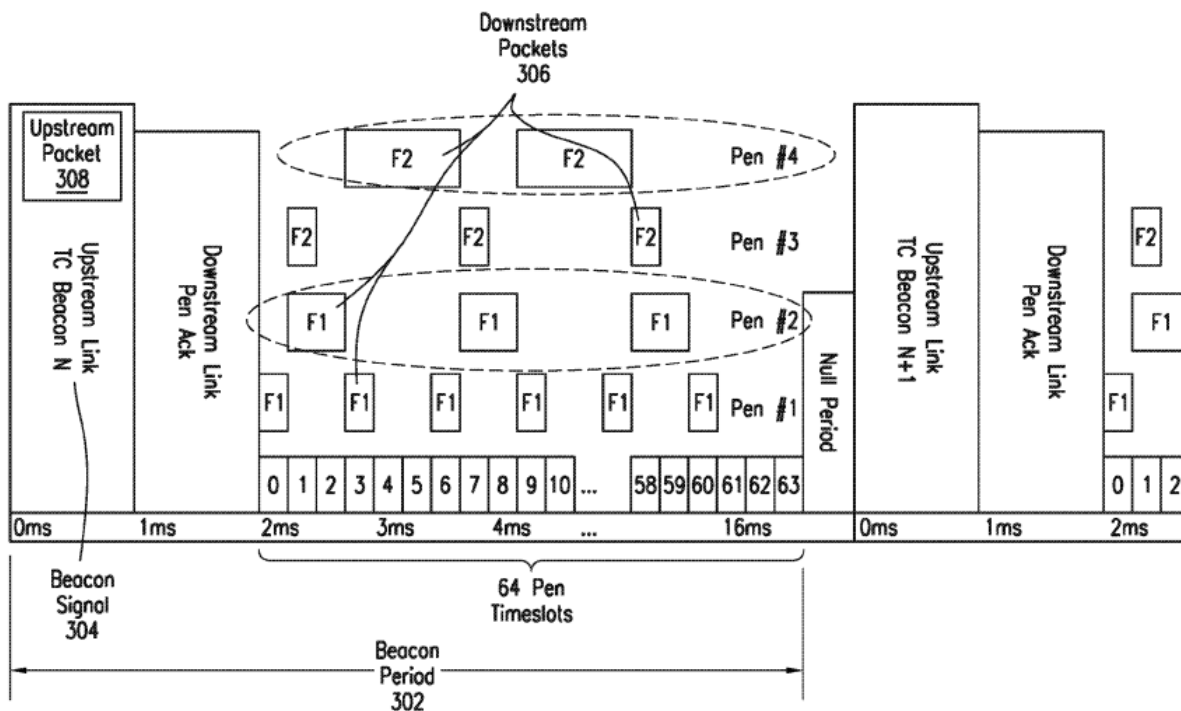


FIG. 3

Data is exchanged between the processing system (110) and the active pens (140, 145) within the context of a repeated beacon period 302. '519 patent, 8:25-28. The sensor module (160) is configured to initiate a beacon period by broadcasting a beacon signal. '519 patent, 8:28-30. The beacon signal can provide a timing reference to the active pens (140, 145). '519 patent, 8:40-41. A predetermined number of timeslots (e.g., 16, 32, 64, etc.) follow the beacon signal and are referenced from the end of the beacon signal. '519 patent, 8:41-45. The paired active pens (140) transmit their downstream packets during these timeslots. '519 patent, 8:46-48.

Specifically, FIG. 3 shows a beacon period (302). The beacon period (302) starts with a beacon signal (304). '519 patent, 9:8-10. Multiple timeslots follow the beacon signal (304). '519 patent, 9:10-11. It is during these timeslots that the paired active pens (e.g., Pen # 1, Pen # 2, Pen #3, Pen #4) may transmit their downstream packets (306). '519 patent, 9:11-13. As shown in FIG. 3, there can be multiple timeslots wherein both Pen # 1 and Pen # 4 are transmitting their downstream packets (306) at different frequencies (F1 and F2). '519 patent, 9:13-17. Pen # 1 and Pen # 2 can each use a carrier signal having the same frequency (i.e., F1) but transmit their downstream packets (306) during different timeslots. '519 patent, 9:18-21.

The beacon signal (304) can include an upstream packet (308). '519 patent, 9:23-24. The upstream packet (308) may target one of the active pens by specifying a pen ID. '519 patent, 9:24-26. The active pen with the matching pen ID can utilize the upstream packet (308) and other active pens that do not have the matching ID can discard/ignore the upstream packet (308). '519 patent, 9:26-29.

The upstream packet (308) may specify one or more timeslots and one or more frequencies. '519 patent, 9:29-31. The upstream packet (308) may also specify downstream packet size, number of downstream packets, downstream packet rates, etc. '519 patent, 9:31-33. Upon receiving the upstream packet (308), the active pen may reconfigure itself to transmit its downstream packets during the timeslot(s) and at the frequency/frequencies specified in the upstream packet (308). '519 patent, 9:33-37. Thus, the processing system (110) may use the upstream packet (308) to dynamically configure and reconfigure one or more of the active pens. '519 patent, 9:39-41. For example, a need to reconfigure could arise when noise is detected at one of the carrier signal frequencies. A new carrier signal frequency may be selected in order to mitigate noise. '519 patent, 9:41-45.

The upstream packet (308) can be used to pair an unpaired active pen (e.g., unpaired active pen (145)). '519 patent, 9:59-61. For example, the upstream packet (308) may include the default pen ID (i.e., pen ID=0), a new pen ID to be assigned to the unpaired active pen, and one or more timeslots and carrier signal

frequencies to be used by the unpaired active pen to transmit its downstream packets. '519 patent, 9:62-66. Once the unpaired active pen is assigned a (non-zero) pen ID, timeslots, and carrier signal frequencies, the unpaired active pen may be classified as a paired active pen, as illustrated in FIG. 4. '519 patent, 9:67-10:3.

FIG. 4, reproduced below, shows a timing diagram relating to the communication protocol of the '519 patent ('519 patent, 10:3-18):

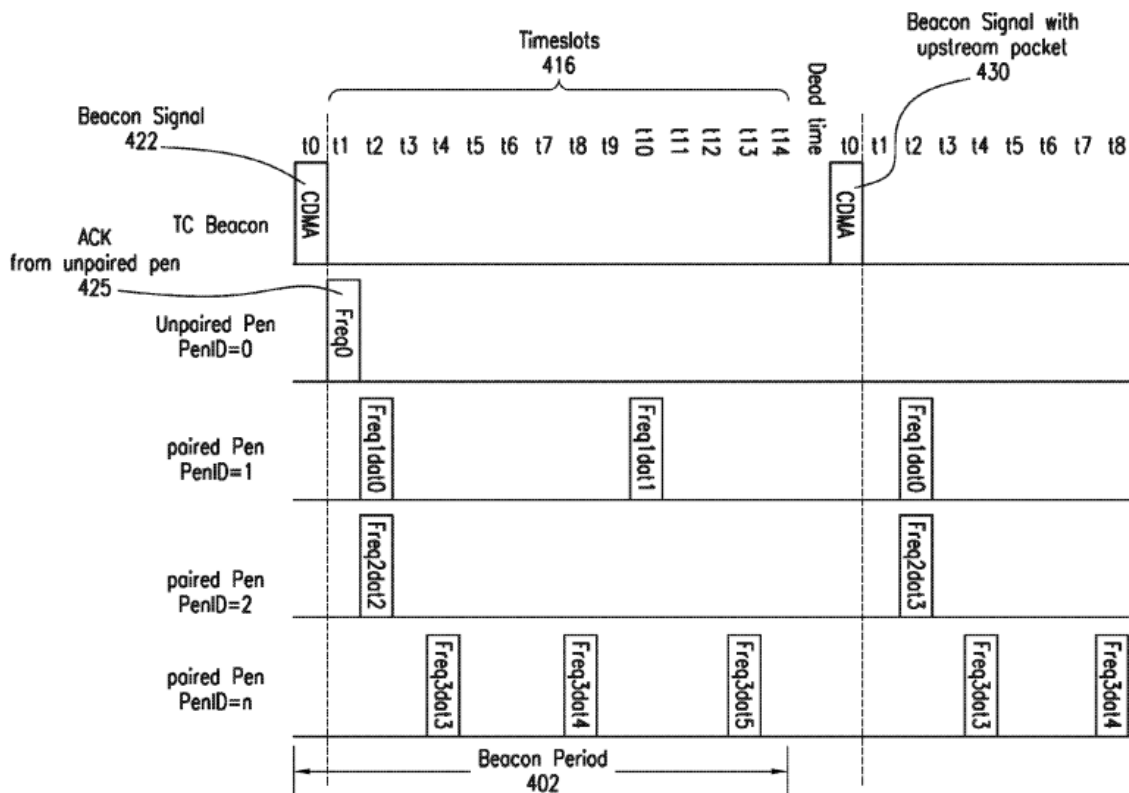


FIG. 4

As shown in FIG. 4, there is a beacon period (402) that starts with an initial beacon signal (422) followed by multiple timeslots (i.e., t1, t2, . . . , t14) (416). '519 patent, 10:5-7. In the timeslot immediately following the beacon signal (i.e., t1),

the processing system (110) may receive an ACK (425) from an unpaired active pen in response to the initial beacon signal (422). '519 patent, 10:8-11. Then, in the subsequent beacon period, the beacon signal (430) includes an upstream packet with the new pen ID to be assigned to the unpaired active pen, timeslots, and carrier frequencies for the now paired active pen to transmit its downstream packets. '519 patent, 10:11-15. The beacon may also request the pen to transmit in the current beacon period. '519 patent, 10:15-17. That is, "the pen need not wait until the next beacon period." '519 patent, 10:17-18. Additionally, the beacon may target a paired active pen by specifying the same pen ID (i.e., pen ID=5) as the pen ID assigned to the active pen. '519 patent, 14:51-54. Such an upstream packet can specify a new timeslot and/or a new frequency. '519 patent, 14:54-58.

The '519 patent includes three independent claims (claims 1, 12, and 20), and each of these claims is challenged in the Petition:

Independent claim 1 recites in full:

1. **1[pre]**² A processing system for an input device, the processing system comprising:

1[a] a sensor module coupled to sensor circuitry and configured to:

1[b] initiate *a current beacon period comprising a plurality of timeslots* by broadcasting, to a plurality of

² The bolded designations added before the preamble and each claim element correspond to Petitioner's designations as set forth in the Petition.

active pens comprising a first active pen, *a current beacon signal comprising an upstream packet for the first active pen and specifying a pen identification (ID) associated with the first active pen;*

1[c] receive, *during a first timeslot*, a first downstream packet from a first active pen transceiver of the first active pen; and

1[d] receive, *during a second timeslot*, a second downstream packet from a second active pen transceiver; and

1[e] a determination module configured to:

1[f] generate the upstream packet for the first active pen specifying the pen ID; and

1[g] determine an attribute of the first active pen comprising the first active pen transceiver from at least the first downstream packet.

'519 patent, claim 1 (emphasis added to elements 1[b], 1[c], and 1[d]).

Independent claim 12 recites in full:

12. **12[pre]**³ A method for operating a processing system of an input device, comprising:

12[a] generating *an upstream packet for a first active pen specifying a pen identification (ID) associated with the first active pen;*

³ Once again, the bolded designations added before the preamble and each claim element correspond to Petitioner's designations as set forth in the Petition.

- 12[b] initiating *a current beacon period comprising a plurality of timeslots* by broadcasting, to a plurality of active pens comprising the first active pen, *a current beacon signal comprising the upstream packet*;
- 12[c] receiving, *during a first timeslot*, a first downstream packet from a first active pen transceiver over a first frequency;
- 12[d] receiving, *during a second timeslot*, a second downstream packet from a second active pen transceiver over a second frequency; and
- 12[e] determining an attribute of the first active pen comprising the first active pen transceiver from at least the first downstream packet.

'519 patent, claim 12 (emphasis added to elements 12[a], 12[b], 12[c], and 12[d]).

Independent claim 20 recites in full:

20. 20[pre]⁴ An active pen, comprising:

- 20[a] an identification (ID) register *storing a pen identification (ID)*;
- 20[b] a button; and
- 20[c] a transceiver configured to:
- 20[d] receive, from a first input device, *a current beacon signal comprising an upstream packet specifying the pen ID, a timeslot, and a frequency*,

⁴ Again, the bolded designations added before the preamble and each claim element correspond to Petitioner's designations as set forth in the Petition.

20[e] wherein the current beacon signal initiates *a current beacon period comprising a plurality of timeslots*; and
20[f] transmit, to the first input device and *during the timeslot specified in the upstream packet*, a downstream packet comprising a status of the button *using the frequency specified in the upstream packet*.

'519 patent, claim 20 (emphasis added to elements 20[a], 20[d], 20[e], and 20[f]).

III. CLAIM CONSTRUCTION

Petitioner provides no “formal” claim construction for any claim terms and violates 37 C.F.R. § 42.104(b)(3) with an allegation that it elects not to reveal “arguments concerning claim scope or grounds that can only be raised in district court.” Pet., 6.

Further, as will be addressed below, Petitioner provides an inadequate and conclusory analysis and fails to address a variety of claim terms, particularly the “current beacon period” and “timeslot” recitations. Without waiving its right to submit responsive express constructions in a Patent Owner Response, Patent Owner shows in Section IV that Petitioner's failure to provide its interpretation of the language in these recitations magnifies fundamental flaws in Petitioner's analysis, resulting in Petitioner's failure to establish the disclosure of every claimed element in each independent claim.

IV. PETITIONER'S CHALLENGES FAIL ON THE MERITS

Petitioner's four Grounds each present a separate challenge to independent claims 1, 12, and 20. Ground 1 asserts that the independent claims, and a variety of dependent claims, are anticipated or rendered obvious in view of Sundara-Rajan.⁵ Ground 2 asserts that the independent claims, and a smaller subset⁶ of the dependent claims addressed in Ground 1, are rendered obvious by Sundara-Rajan in view of Kremin'926.⁷ Ground 3 asserts that the independent claims, and yet another set of dependent claims, are rendered obvious in view of Kremin'361⁸ in view of Sundara-Rajan. Finally, Ground 4 asserts that the independent claims, and yet another set of dependent claims, are rendered obvious in view of Lefevre⁹ in view of Chandran.¹⁰ As addressed below, each Ground fails to establish each independent claim is unpatentable. Therefore, Petitioner's challenges against those independent claims, and their dependent claims, fail.

⁵ Ex. 1005, U.S. Patent No. 9,606,680 ("Sundara-Rajan").

⁶ Foreshadowing the confusing nature of Petitioner's challenges, the Petition leaves as a mystery how the allegedly anticipatory reference of Ground 1 allegedly invalidates fewer claims once that reference is combined with another reference in Ground 2.

⁷ Ex. 1006, U.S. Patent Application Publication 2013/0207926 ("Kremin'926").

⁸ Ex. 1007, U.S. Patent Application Publication 2012/0105361 ("Kremin'361").

⁹ Ex. 1008, U.S. Patent Application Publication 2013/0157690 ("Lefevre").

¹⁰ Ex. 1009, U.S. Patent No. 9,703,433 ("Chandran").

A. Ground 1 Fails to Establish the Unpatentability of Claims 1, 12, and 20

1. Claim 1

Petitioner presents its Ground 1 challenge to claim 1 on pages 17-23 of the Petition. Element 1[b] of claim 1 recites initiating “a *current beacon period* comprising a *plurality of timeslots* by broadcasting, to a *plurality of active pens* comprising a first active pen, a current beacon signal comprising an upstream packet for the first active pen and specifying *a pen identification (ID) associated with the first active pen.*” ’519 patent, claim 1 (emphasis added). Petitioner’s Ground 1 fails to satisfy each aspect of element 1[b].

While element 1[b] includes a number of recited elements, Petitioner addresses element 1[b] in a cursory manner, dedicating only two paragraphs in the Petition to address this element. *See* Pet., 19-20. Those paragraphs are formed almost entirely of quotations from Sundara-Rajan, *without analysis*. The *only* sentences in those paragraphs that do not quote Sundara-Rajan are purely conclusory assertions, addressing only two isolated aspects of element 1[b]: the “plurality of timeslots” and the “pen ID.” Pet., 19 (alleging without explanation that “Sundara-Rajan discloses a frequency ID, which a POSITA would understand to be a plurality of timeslots.”), *id.*, 20 (alleging without explanation that “A POSITA would reasonably expect that ‘other information’ could include a pen ID.”). The remainder of element 1[b] is unaddressed by the Petition. Thus, not

only is the Petition's analysis of element 1[b] *woefully incomplete*, but it relies on conclusory assertions that lack support.

The remaining aspects of element 1[b] are unaddressed by the Petition. For example, even though element 1[b] of claim 1 recites a "a current beacon period," the Petition does not mention the presence of a "current beacon period," or even a "beacon period" anywhere in its analysis. Moreover, the quoted portions of Sundara-Rajan include no disclosure or suggestion of a "current beacon period," so it is, frankly, impossible to tell how Petitioner believes Sundara-Rajan allegedly discloses this claimed feature. Petitioner plainly fails to establish that Sundara-Rajan satisfies the "current beacon period" aspects of claim 1, once again destroying any likelihood of success of Petitioner's anticipation theory.

Element 1[b] also recites that the "current beacon period" includes a "plurality of timeslots" ("a current beacon period comprising a plurality of timeslots") and a "current beacon signal" ("a current beacon signal comprising an upstream packet for the first active pen and specifying a pen identification (ID) associated with the first active pen"). As noted above, Petitioner has advanced no credible theory of how Sundara-Rajan allegedly discloses the plurality of timeslots, and at best advances a crackpot theory that a frequency ID somehow discloses a plurality of timeslots. This argument has no support and makes absolutely no

sense. How does the transmission of a frequency ID disclose a plurality of timeslots? The Petition doesn't bother to explain.

Moving to elements 1[c] and 1[d], these elements require receiving, “during a first timeslot,” a first downstream packet from a first active pen and receiving, “during a second timeslot,” a second downstream packet from a second active pen. The Petition addresses these elements on pp. 20-21, but the Petition fails to address these aspects of the “timeslot” limitations and never even tries to reconcile the earlier assertion that frequency ID is the claimed “plurality of timeslots.”¹¹ Indeed, the Petition's analysis of claim 1 mentions “timeslots” only once, for element 1[b] (discussed above), where it alleges that “Sundara-Rajan discloses a frequency ID, which a POSITA would understand to be a plurality of timeslots” and pointing to its expert's claim chart. Pet., 19 (citing Ex. 1018, 1[b]). But neither the Petition nor its expert explains why a “frequency ID” corresponds to a “plurality of timeslots,” as recited in element 1[b], or how this correspondence holds up in elements 1[c] and 1[d]. Their allegation is a mere conclusion, unsupported by any facts. And in any event, they are wrong. A “frequency ID” in Sundara-Rajan specifies an operating frequency and does not disclose or suggest a plurality of timeslots, as the Petition recognized elsewhere. *See, e.g.*, Pet. 19 (the “stylus

¹¹ Given the woefully deficient analysis of the Petition's handling of elements 1[b], 1[c], and 1[d] in Ground 1, it is questionable whether Petitioner ever formulated an invalidity theory better than what a poor AI tool might spit out.

device 102 configures its operation according to the frequency corresponding to the frequency ID”) (citing Sundara-Rajan, 4:37-50, Fig. 2).

Additional defects abound. When addressing elements 1[c] and 1[d] (Pet., 20-21), the Petition does not mention a “timeslot” at all, and the Petition does not even attempt to show that two active pens communicate in two timeslots of a current beacon period. Instead, the Petition alleges that because “a” could include “one or more” for an active pen, “Sundara-Rajan’s disclosures described in 1[c] could apply to a second active pen.” Pet., 20-21. But these claim elements do not only require the ability to communicate with multiple active pens. Instead, they specify *how* that communication involving multiple active pens is accomplished using timeslots. The Petition fails to set forth a correct understanding of the challenged claim, and fails to identify these claimed elements in the prior art.¹²

Notably, claim 1 also requires that the “current beacon signal” specify a pen identification for the first active pen (element 1[b]), receive a downstream packet from the first active pen in a timeslot of the current beacon period (element 1[c]), and then determine an attribute of the first active pen from the downstream packet (element 1[g]). Again, the Petition completely overlooks these aspects of claim 1

¹² The Petition later admits that “Sundara-Rajan ... provides minimal detail on how to use more than one active stylus simultaneously.” Pet., 43. Given the fact that claim 1 recites the claimed details of receiving downstream packets from two active styluses, Petitioner’s admission regarding Sundara-Rajan’s shortcomings is fatal to Ground 1 against claim 1.

as is evident from the Petition’s failure to deal with the “current beacon period” and “timeslot” recitations. Highlighting these deficiencies, when trying to satisfy the additional requirement of including a pen identification in the current beacon signal, the Petition’s analysis of element 1[b] points to Sundara-Rajan’s vague disclosure of “other information” and offers the conclusion that a “POSITA would reasonably expect that ‘other information’ *could* include a pen ID.” Pet., 20 (emphasis added). This manufactured attempt to fill in a gap in Sundara-Rajan’s disclosure goes beyond what is permitted in IPRs, namely the statutory requirement to base IPR challenges only on patents and printed publications. *See* 35 U.S.C. § 311(b). This attempt to fill in the disclosure gap is plainly deficient, as the test for anticipation or obviousness is not what a reference “could” show but rather what the reference discloses or suggests.

For all these reasons, the Petition’s handling of Ground 1 against claim 1 is deficient, and has no chance of success. Additionally, the Petition cites back to and relies on this deficient analysis over and over again in its challenges, thus emphasizing that the Petition should be denied on the merits.

2. Claim 12

Ground 1 also fails for claim 12. The Petition addresses claim 12 with an incorporation of its deficient analysis of claim 1, without further comment. Pet., 28 (citing back to the analysis of claim 1, including elements 1[b] and 1[c]). *See*

below:

8. Claim 12

a. 12[pre]

See 1[pre].

b. 12[a]

See 1[b].

c. 12[b]

See 1[b].

d. 12[c]

See 1[c].

e. 12[d]

See 1[c], 9[b].

f. 12[e]

See 1[g].

Thus, Ground 1 against claim 12 and its dependent claims also fails for the same reasons as stated above with respect to claim 1.

3. Claim 20

Ground 1 also fails for claim 20. Like claim 1, elements 20[d], 20[e], and 20[f] include “current beacon signal,” “current beacon period” and “timeslot” recitations. The Petition presents a chain of incorporations in attempting to satisfy these elements of claim 20, primarily relying on its deficient analysis of element of claim 1 and incorporations of other elements of certain dependent claims. Pet., 30-33. None of these incorporations are availing.

With regard to element 20[d], which recites “receiv[ing], from a first input device, *a current beacon signal comprising an upstream packet specifying the pen ID, a timeslot, and a frequency,*” the Petition points to its analysis of elements 1[b], 1[f], and 12[a],¹³ and alleges that those analyses discuss “the transmission of a penID in the upstream packet sent during the current beacon signal.” Pet., 32, reproduced below.

e. 20[d]

See 1[b], 1[f], 12[a] (discussing the transmission of a penID in the upstream packet sent during the current beacon signal); 10[f], 19[e] (discussing the transmission of a timeslot and a frequency in the upstream packet during the current beacon signal).

See Pet., 32. But as addressed above, elements 1[b] and 1[f] do not speak to a “current beacon signal.” Moreover, as noted above with regard to claim 1, the reference to “other information” in Sundara-Rajan does not disclose or suggest a penID in Sundara-Rajan. Similarly, for element 20[a], the Petition relies on “capability” to store a pen identification rather than any actual teaching in Sundara-Rajan of storing such information. Pet., 31. This is insufficient.

As noted above, the Petition’s challenge for element 20[d] also calls back to the analysis in elements 10[f] and 19[e] to assert those analysis show “discussing

¹³ The analysis of element 12[a] only calls back to the prior deficient analysis of element 1[b]. *See* Pet., 28.

the transmission of a timeslot and a frequency in the upstream packet during the current beacon signal.” Pet., 32. But, again, the analysis of elements 10[f] and 19[e] (which merely incorporates the analysis in element 10[e] appearing on Pet., 27), do not contain a teaching of a “current beacon signal” as recited in claim 20. Element 10[f] presents another incorporation of recitations (1[b], 10[b]-[c], 10[e], Pet., 28), and again, relies on the faulty analysis in element 1[b]. Pet., 28. In 10[f], the Petition again relies on the disclosed “other information” in Sundara-Rajan and expands that generic reference about what “other information” “could” include (here, timeslot and a frequency) without ever showing that Sundara-Rajan discloses or suggests such inclusion. Pet., 28. This assertion does not salvage the challenges against claim 10 or claim 20.

Moreover, Petitioner’s conclusions regarding element 20[d] are even more suspect considering the Petition’s deficiencies in addressing the claimed “timeslot” recitations as noted above with regard to claim 1. Accordingly, the Petition fails to establish that Sundara-Rajan discloses or suggests element 20[d].

Concerning element 20[e], which recites “wherein the current beacon signal initiates *a current beacon period comprising a plurality of timeslots*,” the Petition incorporates the deficient analysis of element 1[b] without further comment. Pet., 32. As noted above with regard to claim 1, the Petition fails to show the presence of such a current beacon period comprising a plurality of timeslots in Sundara-

Rajan. Accordingly, the Petition fails to establish that Sundara-Rajan discloses or suggests element 20[e].

Finally, concerning element 20[f], which recites “transmit[ting], *to the first input device and during the timeslot specified in the upstream packet*, a downstream packet comprising a status of the button using the frequency specified in the upstream packet,” the Petition calls back to the analysis in elements 7[a] and 7[b] without further comment. The analysis contained in elements 7[a] and 7[b], like the analysis contained in the Petition for claim 1, fails to address the “timeslot” aspects of element 20[f]. *See* Pet., 25 (failing to address, or mention, a “timeslot”). Accordingly, the Petition fails to establish that Sundara-Rajan discloses or suggests element 20[f].

For all these reasons, the Petition’s handling of Ground 1 against claim 20 is similarly deficient, and has no chance of success. None of the challenges in Ground 1 justify institution of the Petition, and instead show that the Board’s handling of the Petition would be a waste of the Board’s attention and resources. The Petition should be denied on the merits, and none of the challenges presented in Grounds 2-4 alter that outcome.

B. Ground 2 Fails to Establish the Unpatentability of Claims 1, 12, and 20

The Petition presents Ground 2 “[t]o the extent one or more limitations are not disclosed in Sundara-Rajan.” Pet., 38. But the Petition fails to specify which

features it believes are missing from Sundara-Rajan, or how Kremin'926 remedies those deficiencies. In essence, Petitioner is improperly asking Patent Owner and the Board to guess at what invalidity theory Petitioner is asserting based on this combination. This is improper and should be rejected.

1. Claim 1

Once again, the Petition never addresses the deficiencies noted above concerning elements 1[b], 1[c], and 1[d] of claim 1. In addressing claim 1 and Ground 2, the Petition does not even mention the aspects of claim 1 concerning the “current beacon period comprising a plurality of timeslots,” a “current beacon signal comprising an upstream packet for the first active pen and specifying a pen identification (ID) associated with the first active pen,” or the receiving of packets from two active pens during first and second timeslots of the current beacon period. *See* Pet., 41-43. As was the case with Ground 1 and claim 1, the Petition fails to explain how the disclosures of Kremin'926 relate to the actual claim recitations. Moreover, Ground 2 carries over a number of the deficiencies of Ground 1 without correction. For example, the Petition continues to assert that Sundra-Rajan's “other information” includes a “pen ID,” *see* Pet., 41 (“including, reasonably, a pen ID”), when there is nothing in Sundra-Rajan that even suggests the use of pen identification. Similarly, when discussing the timeslot requirements of elements 1[c] and 1[d], the Petition does not show the claimed reception in time

slots as specified in claim 1. Pet., 41-42.

As an additional defect, the Petition adopts an unreasonable interpretation of Kremin'926. Petitioner looks to Kremin'926's disclosure that different types of pens exist to allege that "Kremin'926 teaches the possibility of handling multiple pens." Pet., 42. But just because both passive and active styluses exist does not mean the Kremin'926 discloses receiving packets from two active pens during identified timeslots of a current beacon period, as claimed. Further, Petitioner's reason for concluding otherwise is confusing and undeveloped. Petitioner asserts that Kremin'926's use of buses somehow supports the use of communicating with multiple pens. Pet., 42 (reproduced below).

A POSITA would also understand Kremin'926 teaches the possibility of handling multiple pens by disclosing "the interconnection between circuit components or blocks may be shown as buses [for bi-directional communication] or as single signal lines. Each of the buses may alternatively be one or more single signal lines" and vice-versa. Ex. 1006, ¶0075; Ex. 1018, 1[d].

Pet., 42. ***This argument makes no sense.*** Why does the use of buses, formed of one or more signal lines, mean that Kremin'926 can "handl[e] multiple pens"? The Petition never bothers to explain this confounding argument.

For these reasons, Ground 2 is similarly deficient and fails to warrant institution.

2. Claim 12

Ground 2 also fails for claim 12. The Petition addresses claim 12 with an incorporation of its deficient analysis of claim 1, without further comment. Pet., 46. Thus, Ground 2 fails for claim 12 and its dependent claims for the same reasons as stated above.

3. Claim 20

Ground 2 also fails for claim 20. As noted above for Ground 1, elements 20[d], 20[e], and 20[f] include “current beacon signal,” “current beacon period” and “timeslot” recitations. The Petition again presents a chain of incorporations in attempting to satisfy these elements of claim 20, primarily relying on its deficient analysis of element of claim 1 and incorporations of other elements of certain dependent claims. These incorporations are unavailing for the same reasons are stated above with regard to claim 1 in Ground 2, and with regard to Ground 1 as applied to claim 20. Specifically, as best as the Petition’s various leapfrogging incorporations-by-reference can be understood, Petitioner’s theory against claim 20 in Ground 2 does not materially differ from Petitioner’s theory against claim 20 in Ground 1.

For all these reasons, the Petition’s handling of Ground 2 is once again deficient, and has no chance of success. None of the challenges in Ground 2 justify institution of the Petition.

C. Ground 3 Fails to Establish the Unpatentability of Claims 1, 12, and 20

The Petition's flaws for Ground 3 are similar to its flaws for Ground 2. The Petition presents Ground 3 as based on Kremin'361 and Sundara-Rajan, but then merely offers vague suggestions of a combination without showing what the combination would result in. Once again, Petitioner is improperly asking Patent Owner or the Board to guess at Petitioner's invalidity theory based on this combination. This is improper and should be rejected. Further adding to the confusing nature of Ground 3, the Petition repeatedly contends that each reference discloses a particular element. *See, e.g.,* Pet., 57 (for element 1[b], "Kremin'361 and Sundara-Rajan ***each disclose*** 1[b]") (emphasis added). Thus, responding to this vague suggestion of a combination is nearly impossible.

Nevertheless, because the combination relies on the faulty analysis of Sundara-Rajan, and because Kremin'361 similarly fails to show the "current beacon period" aspects of the claims, Ground 3 fails.

1. Claim 1

Petitioner presents its Ground 3 challenge to claim 1 on pages 54-60 of the Petition. Again, even though element 1[b] of claim 1 recites a "a current beacon period," the Petition does not mention the presence of a "current beacon period," or even a "beacon period" anywhere in its analysis. As such, Petitioner fails to

establish that either Kremin’361 or Sundara-Rajan satisfies the “current beacon period” aspects of claim 1.

Similarly, element 1[b] continues to recite that the “current beacon period” includes a “plurality of timeslots” (“a current beacon period comprising a plurality of timeslots”) and a “current beacon signal” (“a current beacon signal comprising an upstream packet for the first active pen and specifying a pen identification (ID) associated with the first active pen”). Elements 1[c] and 1[d] then recite receiving, “during a first timeslot,” a first downstream packet from a first active pen and receiving, “during a second timeslot,” a second downstream packet from a second active pen. The Petition fails to address these aspects of the “timeslot” limitations. Indeed, the Petition’s analysis of claim 1 for Ground 3 does not even mention “timeslots.” The Petition seems to suggest that Kremin’361’s use of time division multiplexing would result in the use of time slots, but the Petition fails to tie that use of timeslots to the specific requirements of the claim, and fails to identify what it purports is the claimed “current beacon period.”

Moreover, the Petition’s reliance on a “scan stylus count” to establish a pen identification is wrong. Pet., 57. First, there is nothing in Kremin’361 suggesting that Kremin’361 uses multiple active styluses. The Petition’s faulty reasoning is similar to its flawed reasoning in Ground 1 by being based on, in this case, the presence of “one or more signal lines.” Pet., 58. Petitioner’s leap from “multiple

touch objects” in Kremin’361 to multiple active pens reads disclosure into Kremin’361 that is not present.

But even more egregious, Kremin’361 “stylus scan count” plainly has nothing to do with the counting the number of styluses or a Pen ID, contrary to Petitioner’s theory. The Petition relies on the ¶[0129] of Kremin’361 for support of a “stylus scan count,” and argues that this suggests a processor counting styluses. Pet., 57 (“If the number of styluses is counted by the processor, then each stylus must be assigned a numerical identification.”). But just one paragraph earlier, in Kremin’361’s ¶[0128], Kremin’361 expressly defines what is meant by “scan count” and a “stylus scan count.” Kremin’361 explains that the “scan count determines the amount of time the processing logic remains in a particular scan setting.” Kremin’361, ¶[0128]. Thus, the “scan count” in Kremin’361 has nothing to do with counting a number of active styluses, as Petitioner and Petitioner’s expert have imagined, but instead is a measure of elapsed time.

Other disclosures in Kremin’361 make the time-based nature of the scan count even more clear, stating “[t]he stylus scan may continue in iterative scan periods until either a stylus is detected (in which case the stylus scan count is reset to zero and stylus position tracking period restarts) or until the stylus scan period ends (when the stylus scan count reaches a threshold value).” Kremin’361, ¶[0131]; *see also id.*, ¶[0128] (“For example, the processing logic scans for the

stylus while the scan count is less than a predetermined value.”). Petitioner either elected not to address this disclosure or simply wasn't aware of it. Either way, Petitioner's theory of the “stylus scan count” as disclosed in the reference is plainly incorrect. Kremin'361's “stylus scan count” does not support Petitioner's theory.

Thus, Ground 3 against claim 1 is once again a failure and does not warrant institution.

1. Claim 12

Ground 3 also fails for claim 12. The Petition addresses claim 12 with an incorporation of its deficient analysis of claim 1, without further analysis. Pet., 62. Thus, Ground 3 fails for claim 12 and its dependent claims for the same reasons as stated above.

2. Claim 20

Ground 3 fails for the same reasons as stated above with regard to claim 1. For example, element 20[a] of claim 20 recites an active pen with “an identification (ID) register storing a pen identification (ID).” The Petition again relies on arguments about what Kremin'361 “could” disclose, along with its misunderstanding of the “stylus scan count” in Kremin'361. Pet., 64-65. Accordingly, Petitioner fails to establish the presence of element 20[a] in Kremin'361 or Sundara-Rajan (for the reasons discussed above in Ground 1).

Further, the Petition relies on incorporation of prior failed claim 1 arguments

for elements 20[d], 20[e], and 20[f]. Pet., 66. Accordingly, Ground 3 fails to show elements 20[d], 20[e], and 20[f] for the reasons already stated above with regard to claim 1 and with regard to Sundara-Rajan in Ground 1.

Ground 3 once again establishes no chance of success, and should be rejected.

D. Ground 4 Fails to Establish the Unpatentability of Claims 1, 12, and 20

Ground 4 is also deficient because the Petition fails to provide a clear explanation of its proposed combination and how that combination would satisfy the claim elements. Instead, the Petition presents a collection of citations from the two references relied upon (Lefevre and Chandran) without ever demonstrating how those citations would result in the claim elements being satisfied.

For example, when describing its proposed combination, the Petition contends that Chandran is necessary because Chandran discloses use of a capacitive touchscreen, but Petitioner presents this argument after already noting the Lefevre also discloses use of a capacitive touchscreen. Pet., 69. So why is Chandran necessary? The Petition fails to explain.

The Petition then contends that a “POSITA looking at Lefevre’s objective would have looked to Chandran’s more specific disclosure of a protocol for simultaneous multi-stylus and non-stylus operations in a capacitive system, *and vice versa.*” Pet., 69 (emphasis added); *see also* Pet., 70 (describing Chandran’s

protocol as “critical”). From this broad statement, it is unclear what aspects of Chandran's protocol Petitioner seeks to include in Lefevre's system (not to mention what Petitioner means by “vice versa”), and Petitioner advances no motivations supporting its unstated combination.

Moreover, as will be explained in detail below, the collections of citations include aspects of different, incompatible embodiments in these references. Once again, it is not the Board's or Patent Owner's or responsibility to sift through Petitioner's array of citations to build a phantom theory of invalidity and then evaluate it. The burden of establishing a clear challenge that can be addressed is Petitioner's burden, and one Petitioner clearly failed to carry in the Petition.

1. Claim 1

Petitioner presents its Ground 1 challenge to claim 1 on pages 70-80 of the Petition. Concerning element 1[b], presumably to show “a current beacon period comprising a plurality of timeslots” where the “current beacon signal comprising an upstream packet for the first active pen and specifying a pen identification (ID) associated with the first active pen,” the Petition begins by citing to paragraph [0192] of Lefevre and its “common activation signal.” Then, the Petition contends that the “common activation signal, denoted sync” includes “an upstream packet” and that “the upstream packet contains the index i (identification code), specifying a corresponding index i (identification code) associated with a mobile element.”

Pet., 71-72 (citing Lefevre, ¶[0165]-[0166]). A major problem with the Petition’s theory, however, is the citations of Lefevre at ¶[0192] and Lefevre at ¶[0166]-[0167] point to different, inconsistent embodiments of Lefevre. In particular, ¶[0166]-[0167] of Lefevre are directed to embodiments where tailored, sequential activation signals are iteratively provided to localization members as shown and described relative to Figures 10 and 11 in Lefevre. The embodiments corresponding to ¶[0192] of Lefevre correspond to a “common activation signal” that is not tailored to a particular localization member in Lefevre as shown and described relative to Figures 12 and 13 of Lefevre. Thus, the Petition is wrong to suggest that the “common activation signal” of Lefevre would include “an upstream packet for the first active pen and specifying a pen identification (ID) associated with the first active pen,” as claimed in element 1[b].

Further, the Petition then points to ¶¶[0210]-[0214], [0221]-[0225] of Lefevre to refer to a “prior beacon period.” Pet., 72-73. But the Petition fails to explain how these disclosures of a “prior beacon period” relate to the claimed recitation of a “current beacon period” in element 1[b]. And these passages correspond to the common activation signal embodiment of Figure 13. The Petition implicitly acknowledges its own shortcomings by citing to nearly 20 paragraphs of Lefevre, *see* Pet., 72 (citing ¶[0213]-[0231]), but still fails to show the claimed “upstream packet” in this embodiment of Figure 13.

In addition, as noted above with regard to Ground 1, element 1[b] recites that the “current beacon period” includes a “plurality of timeslots” (“a current beacon period comprising a plurality of timeslots”). Elements 1[c] and 1[d] then recite receiving, “during a first timeslot,” a first downstream packet from a first active pen and receiving, “during a second timeslot,” a second downstream packet from a second active pen. As in Ground 1, the Petition fails to address these aspects of the claim with regard to the combination of Ground 4. With regard to Chandran, the Petition contends that Chandran “shows a plurality of timeslots” (Pet., 75) but then does nothing to show that Chandran discloses the reception of signals from two active pens in a “current beacon period.” In fact, as shown in Fig. 10 of Chandran, Chandran iteratively receives stylus signals for *sequential* wake-up signals in Chandran (*see, e.g.*, Pet., 78 (highlighting in red portions corresponding to “Wake-Up 1” and “Wake-Up 2”)).

The Petition does nothing to remedy the deficiencies of these references, and fails to propose a reasoned combination, supported with a motivation to combine, that would include each aspect of the claims in a combination, or any showing of a reasonable expectation of success in doing so. Accordingly, Ground 4 fails for independent claim 1 and its challenged dependent claims.

2. Claim 12

Ground 4 also fails for claim 12. The Petition addresses claim 12 with an

incorporation of its deficient analysis of claim 1, without further analysis. Pet., 94-95. Thus, Ground 4 fails for claim 12 and its dependent claims for the same reasons as stated above.

3. Claim 20

Ground 1 also fails for claim 20. Like claim 1, elements 20[d], 20[e], and 20[f] include “current beacon signal,” “current beacon period” and “timeslot” recitations. The Petition presents a chain of incorporations in attempting to satisfy these elements of claim 20, primarily relying on its deficient analysis of element of claim 1 and incorporations of other elements of certain dependent claims. None of these incorporations are availing.

In addition, element 20[d] of claim 20 also requires that the “upstream packet” specify “a timeslot” and “a frequency” and element 20[f] requires that the active pen “transmit, to the first input device and during the timeslot specified in the upstream packet, a downstream packet comprising a status of the button using the frequency specified in the upstream packet.” Neither Lefevre nor Chandran discloses or suggests these aspects of claim 20. The Petition seems to rely on its incorporation of analysis corresponding to elements 10[f], 19[e], 7[b], and 17[a] to satisfy these recitations. Pet., 99.

But the Petition's discussion in element 10[f] (Pet., 93) does not speak to sending an upstream packet with a timeslot and a frequency and, again, mixes

together citations from different embodiments of Lefevre. The Petition first cites to ¶[0147] of Lefevre which corresponds to an “*analog* identification of a localisation module” (emphasis supplied). Thus, this embodiment does not show a “packet” since it is referring to an analog (not digital) embodiment of Lefevre. *Cf.* Lefevre, ¶[0147] (“the localisation modules to be activated can be identified in an analog or digital manner.”). The Petition next cites to ¶[0240] of Lefevre in the common signal embodiment of Lefevre, which states, “Still according to a particular embodiment, since the localisation modules only emit during timeslots assigned to them, the central processing system is able to identify from which localisation module the received data originate.” Lefevre, ¶[0240]. This passage says nothing about the frequency used for transmission, or sending the frequency in an upstream packet. Similarly, the Petition’s citations of Chandran (Pet., 93-94) do not show or explain how the frequency recitations of elements 20[d] and 20[f] are allegedly disclosed or suggested.

Petitioner’s analysis for other elements also lacks the requisite frequency recitations. Specifically, the Petition’s analysis of element 19[e] (Pet., 96) (which refers to the analysis of element 10[e] (Pet., 91-92)), the analysis of element 7[b] (Pet., 86) (which refers to the analysis of element 1[c] (Pet., 75-77)), and the analysis of element 17[a] (Pet., 96) (which refers to the analysis of elements 7[a] (Pet., 86) and 7[b] (which refers to the analysis of element 1[c] (Pet., 75-77))) also

does not address the frequency recitations.

Accordingly, the Petition fails to establish that Ground 4 discloses or suggests the features of independent claim 20 and its challenged dependent claims.

With that, the Petition's challenges fail in full. The challenges advanced establish no likelihood of success, and do not warrant institution. They should be denied on the merits.

V. CONCLUSION

For the reasons presented above, the Petition should be denied, and no *inter partes* review should be instituted.

Dated: December 23, 2025

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The undersigned certifies that the foregoing PATENT OWNER'S PRELIMINARY RESPONSE complies with the type-volume limitation in 37 C.F.R. § 42.24(b)(1). According to the word-processing system's word count, the brief contains 7,482 words, excluding the parts of the brief exempted by 37 C.F.R. § 42.24(a).

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