

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

VUSIONGROUP SA,

Petitioner

v.

HANSHOW TECHNOLOGY CO., LTD.,

Patent Owner

Case No.: IPR2024-00857

Patent No. 11,540,216

PATENT OWNER'S RESPONSE

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EXHIBIT LIST

Exhibit Number	Description
Ex-2001	Fahey Declaration in Support of Motion for Pro Hac Vice Admission
Ex-2002	Eastern District of Texas Case No. 2:23-cv-00174-RWS-RSP, Dkt. 123 (Joint Claim Construction Chart)
Ex-2003	Eastern District of Texas Case No. 2:23-cv-00174-RWS-RSP, Dkt. 116 (Plaintiff's Opening Claim Construction Brief)
Ex-2004	Eastern District of Texas Case No. 2:23-cv-00174-RWS-RSP, Dkt. 121 (Defendant's Opening Claim Construction Brief)
Ex-2005	<i>Markman</i> Hearing Transcript in Eastern District of Texas Case No. 2:23-cv-00174-RWS-RSP
Ex-2006	Eastern District of Texas Case No. 2:23-cv-00174-RWS-RSP, Dkt. 136-1 (Preliminary Constructions Issued at the <i>Markman</i> Hearing of December 13, 2024)
Ex-2007	Eastern District of Texas Case No. 2:23-cv-00174-RWS-RSP, Dkt. 129 (Filed Jan. 13, 2025) (Claim Construction Order)
Ex-2008	Eastern District of Texas Case No. 2:23-cv-00174-RWS-RSP, Dkt. 136 (Plaintiff's Objection to Claim Construction Order)
Ex-2009	Preliminary Decision of European Patent Office Regarding Opposition to EP3820203 (Jul. 8, 2024)

Ex-2010	Certified Translation of Jap. Published Unexamined Pat. App. 2017-126872
Ex-2011	Certified Translation of Jap. Published Unexamined Pat. App. 2016-140368
Ex-2012	Deposition Transcript of Dr. Andrew Wolfe (Feb. 14, 2025)
Ex-2013	Declaration of Dr. Gavin D. Scott in Support of Patent Owner's Response

LISTING OF CHALLENGED CLAIMS¹

Reference	Claim Limitation
Claim 1	
1.0	An interactive electronic tag device communication system, comprising:
1.1	a background server, a base station, an electronic tag device and an external device;
1.2	wherein the electronic tag device comprises two communication paths: a first communication path and a second communication path;
1.2.1	the first communication path supports two monitoring modes: a normal monitoring mode and a fast monitoring mode;
1.2.2	and the base station comprises two wake-up modes: a normal wake-up mode and a fast wake-up mode;
1.3	the external device is configured to transmit first data to the electronic tag device through the second communication path;
1.4	the electronic tag device is configured to receive the first data, transmit the first data to the base station through the first communication path, and enter the fast monitoring mode;

¹ For convenience purposes only, Patent Owner adopt for this Response the numbering of claim limitations advanced by Petitioner in the Petition (Paper 2). Patent Owner does not concede the appropriateness of such grouping and numbering of claim limitations.

1.5	the base station is configured to receive the first data and transmit the first data to the background server;
1.6	the background server is configured to generate a control instruction and second data according to the first data, and transmit the control instruction and the second data to the base station;
1.7	the base station is further configured to receive the control instruction and the second data, communicate with the electronic tag device in the fast wake-up mode, and transmit a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and
1.8	the electronic tag device is further configured to receive the fast wake-up instruction, the control instruction and the second data, and switch to the normal monitoring mode after completing the communication.
Claim 2	
2	The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is configured to attach an ID of the electronic tag device to the first data when transmitting the first data to the base station.
Claim 3	
3.0	The interactive electronic tag device communication system according to claim 1, wherein when the first data is received by a plurality of base stations, the plurality of base stations are configured to attach respective energy value information of the plurality of base stations to the first data when transmitting the first data to the background server;
3.1	the background server is configured to determine an optimal base station among the plurality of base stations according to the respective energy value information of the plurality of base stations, and transmit the control instruction and the second data to the electronic tag device through the optimal base station.

Claim 4	
4	The interactive electronic tag device communication system according to claim 3, wherein the background server is further configured to perform deduplication processing on the first data uploaded by the plurality of base stations.
Claim 5	
5	The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is further configured to switch to the normal monitoring mode when the fast wake-up instruction transmitted by the base station is not received within a preset time range.
Claim 6	
6	The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is further configured to switch to the normal monitoring mode when the fast wake-up instruction is received but the control instruction and the second data are not received within a preset time range.
Claim 7	
7.0	An interactive electronic tag device communication method, comprising:
7.1	transmitting, by an external device, first data to an electronic tag device through a second communication path in the electronic tag device;
7.2	receiving, by the electronic tag device, the first data, transmitting the first data to a base station through a first communication path in the electronic tag device, and entering a fast monitoring mode;
7.3	receiving, by the base station, the first data and transmitting the first data to a background server;

7.4	generating, by the background server, a control instruction and second data according to the first data, and transmitting the control instruction and the second data to the base station;
7.5	receiving, by the base station, the control instruction and the second data, communicating with the electronic tag device in a fast wake-up mode, and transmitting a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and
7.6	receiving, by the electronic tag device, the fast wake-up instruction, the control instruction and the second data, and switching to a normal monitoring mode after completing the communication;
7.7	wherein the electronic tag device comprises two communication paths: the first communication path and the second communication path, the first communication path supports two monitoring modes: the normal monitoring mode and the fast monitoring mode, and the base station comprises two wake-up modes: a normal wake-up mode and the fast wake-up mode.
Claim 8	
8.0	The interactive electronic tag device communication method according to claim 7, wherein transmitting, by the electronic tag device, the first data to the base station comprises:
8.1	attaching an ID of the electronic tag device to the first data, and transmitting the ID of the electronic tag device and the first data to the base station.
Claim 9	
9	The interactive electronic tag device communication method according to claim 7, wherein receiving, by the base station, the first data and transmitting the first data to a background server comprises: attaching, by a plurality of base stations, respective energy value information of the plurality of base

	stations to the first data when receiving the first data, and transmitting, by the plurality of base stations, the first data and the respective energy value information of the plurality of base stations to the background server.
Claim 10	
10	The interactive electronic tag device communication method according to claim 9, further comprising: performing, by the background server, deduplication processing on the first data uploaded by the plurality of base stations.
Claim 11	
11	The interactive electronic tag device communication method according to claim 7, further comprising: switching, by the electronic tag device, to a normal monitoring mode when the fast wake-up instruction transmitted by the base station is not received within a preset time range.
Claim 12	
12	The interactive electronic tag device communication method according to claim 7, further comprising: switching, by the electronic tag device, to the normal monitoring mode when the fast wake-up instruction is received but the control instruction and the second data are not received within a preset time range.
Claim 13	
13	A computer device comprising a memory, a processor and a computer program stored on the memory and executable by the processor, wherein the processor implements, when executing the computer program, the method according to claim 7.
Claim 14	
14.0	A non-transitory computer-readable storage medium storing therein a computer program for executing an interactive electronic tag device communication method comprising:

14.1	transmitting, by an external device, first data to an electronic tag device through a second communication path in the electronic tag device;
14.2	receiving, by the electronic tag device, the first data, transmitting the first data to a base station through a first communication path in the electronic tag device, and entering a fast monitoring mode;
14.3	receiving, by the base station, the first data and transmitting the first data to a background server;
14.4	generating, by the background server, a control instruction and second data according to the first data, and transmitting the control instruction and the second data to the base station;
14.5	receiving, by the base station, the control instruction and the second data, communicating with the electronic tag device in a fast wake-up mode, and transmitting a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and
14.6	receiving, by the electronic tag device, the fast wake-up instruction, the control instruction and the second data, and switching to a normal monitoring mode after completing the communication;
14.7	wherein the electronic tag device comprises two communication paths: the first communication path and the second communication path, the first communication path supports two monitoring modes: the normal monitoring mode and the fast monitoring mode, and the base station comprises two wake-up modes: a normal wake-up mode and the fast wake-up mode.
Claim 15	
15.0	The non-transitory computer-readable storage medium according to claim 14, wherein transmitting, by the

	electronic tag device, the first data to the base station comprises:
15.1	attaching an ID of the electronic tag device to the first data, and transmitting the ID of the electronic tag device and the first data to the base station.
Claim 16	
16	The non-transitory computer-readable storage medium according to claim 14, wherein receiving, by the base station, the first data and transmitting the first data to a background server comprises: attaching, by a plurality of base stations, respective energy value information of the plurality of base stations to the first data when receiving the first data, and transmitting, by the plurality of base stations, the first data and the respective energy value information of the plurality of base stations to the background server.
Claim 17	
17	The non-transitory computer-readable storage medium according to claim 16, wherein the computer program further executes the act of: performing, by the background server, deduplication processing on the first data uploaded by the plurality of base stations.
Claim 18	
18	The non-transitory computer-readable storage medium according to claim 14, wherein the computer program further executes the act of: switching, by the electronic tag device, to a normal monitoring mode when the fast wake-up instruction transmitted by the base station is not received within a preset time range.
Claim 19	
19	The non-transitory computer-readable storage medium according to claim 14, wherein the computer program further executes the act of: switching, by the electronic tag device, to the normal monitoring mode when the fast wake-

	up instruction is received but the control instruction and the second data are not received within a preset time range..
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I. INTRODUCTION

Petitioner fails to prove that any of the challenged claims are invalid. U.S. Patent No. 11,540,216 (the “’216 Patent”) is directed to an interactive electronic tag device communication system and method that achieves response speeds desired by customers, without increasing battery power consumption or labor costs. It achieves this by carefully orchestrating the coordination between two (“normal” and “fast”) monitoring modes in an electronic tag device and two (“normal” and “fast”) wake-up modes in a base station. Petitioner’s prior art fails to teach this inventive concept.

By Petitioner’s own reckoning, the prior art relies upon fixed-period beacon notifications from access points to electronic rack labels, a rigid behavior pattern that is the very opposite from the ’216 Patent’s flexible mode-switching. As such, the art does not disclose or render obvious at least the two wake-up modes claimed by the ’216 Patent. The art likewise does not disclose the “fast wake-up instruction” limitation, closely tied to the two wake-up modes. In addition, Petitioner failed to meet its burden to show a motivation to combine the proffered prior art, relying instead on superficial similarities between the references while ignoring the fundamental differences in their problems to be solved and the approaches taken.

Petitioner has thus failed to meet its burden to prove any of the challenged claims is unpatentable, and the Board should affirm the patentability of all challenged claims.

II. BACKGROUND

A. Overview of the '216 Patent

The '216 Patent discloses an interactive electronic tag device communication system and method. Ex-1001, [Abstract]. By setting a normal monitoring mode and a fast monitoring mode in an electronic tag device, and setting a normal wake-up mode and a fast wake-up mode in a base station, the '216 Patent allows the customer experience requirements to be met without shortening the monitoring periods of all electronic tag devices, without increasing battery power consumption, and without increasing labor costs. *Id.*, [2:7-15]; Ex. 2001, ¶¶28-33.

B. Prosecution History of the '216 Patent

The '216 Patent issued from U.S. Application 17/257,570 on Dec. 27, 2022 without undergoing any substantive amendment to the parts relevant to the currently disputed issues. Ex-1001, [Cover].

III. ASSERTED PRIOR ART REFERENCES

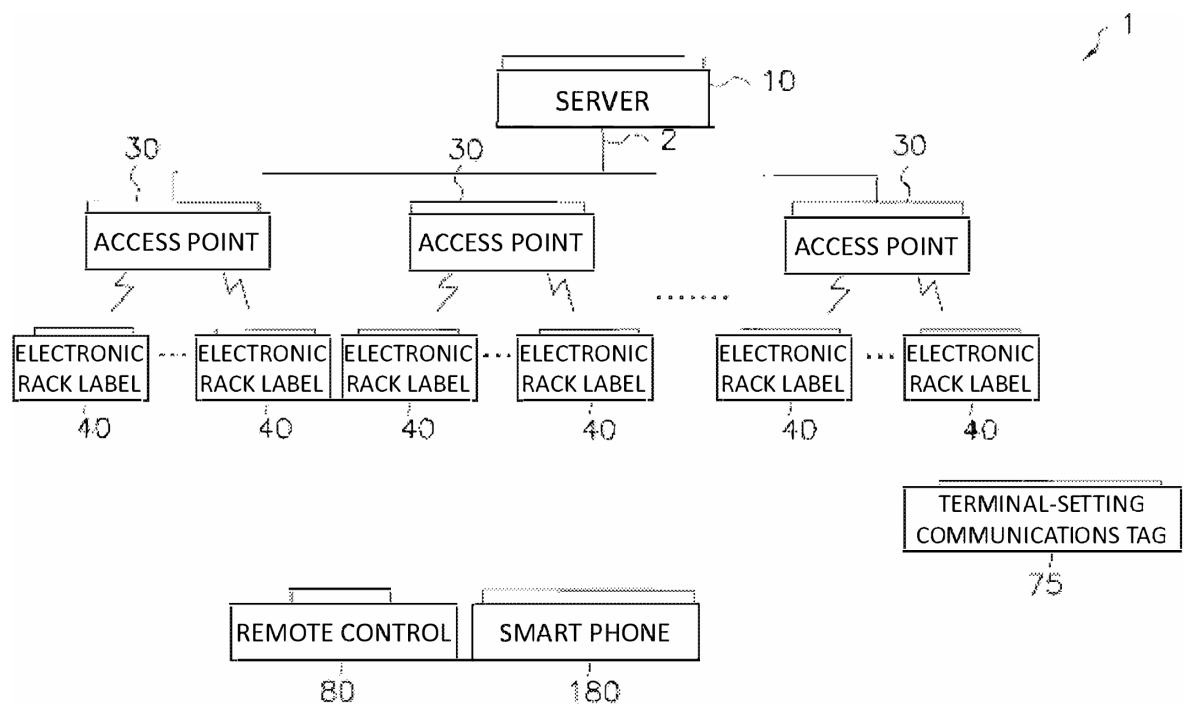
A. Nagata (Ex-2010²)

Nagata discloses a system that comprises, among others, a server 10, a plurality of electronic rack labels 40, and a plurality of access points 30. Ex-2010,

² Petitioner filed its certified translation of Nagata as Ex-1005. Patent Owner has identified certain errors in the translation filed by Petitioner, and accordingly filed

[0027], FIG. 1; Ex-2013, ¶35. Each electronic rack label exchanges information with the server 10 via its corresponding access point 30. Ex-2010, [0061]; Ex-2013, ¶¶36-40. Each access point 30 transmits, at a prescribed-time interval, a signal called a beacon, to notify the labels whether or not information will be transmitted. Ex-2010, [0033]; Ex-2013, ¶39.

FIG. 1



Ex-2010, FIG. 1.

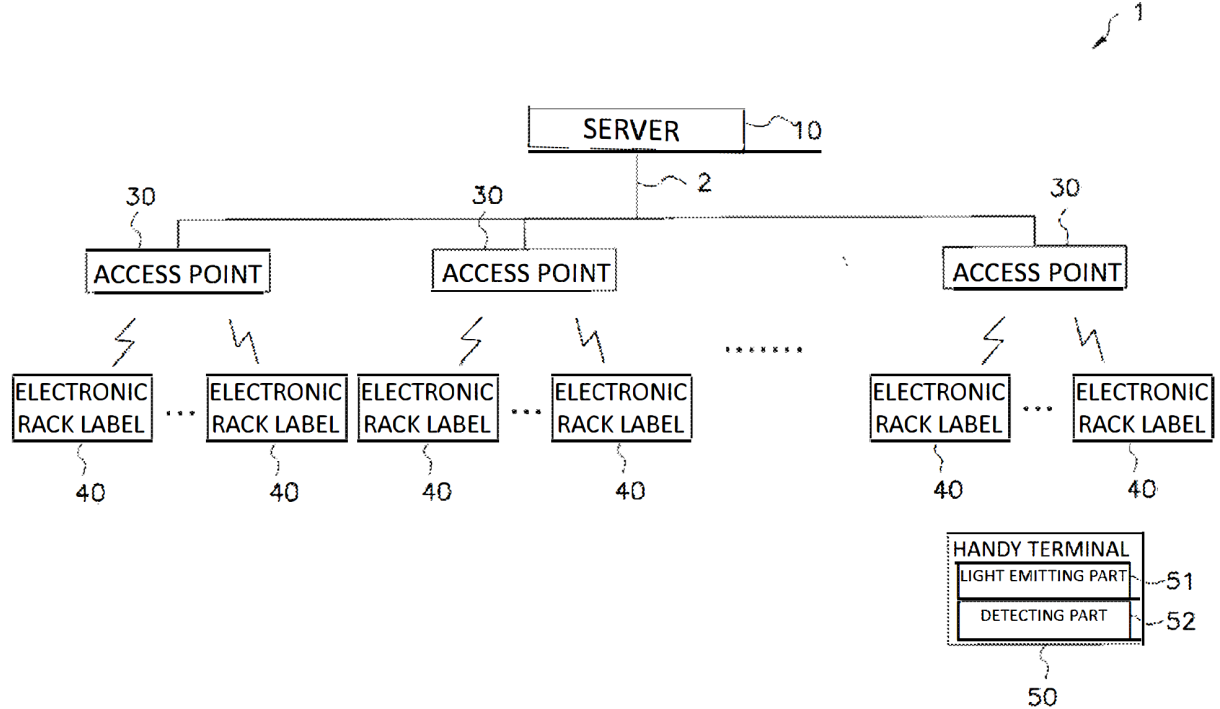
its certified translation of Nagata as Ex-2010. Patent Owner will use Ex-2010 in this Response except where the differences are discussed, in which case Patent Owner will cite to Ex-2010 and Ex-1005 as needed.

B. Hashiguchi (Ex-2011³)

Hashiguchi discloses a system, that, similar to Nagata's system, comprises electronic rack labels, access points, and a server. Ex-2011, [0028-0031]; Ex-2013, ¶¶41-45. Like Nagata, Hashiguchi's access points transmit at prescribed intervals (e.g., at 4 s intervals) a signal, which is called a beacon, for informing the electronic rack labels 40 of the presence/absence of a command transmission. Ex-2011, [0031]; Ex-2013, ¶¶42, 44, 45.

³ Petitioner filed its certified translation of Hashiguchi as Ex-1006. Patent Owner has identified certain errors in the translation filed by Petitioner, and accordingly filed its certified translation of Hashiguchi as Ex-2011. Patent Owner will use Ex-2011 in this Response except where the differences are discussed, in which case Patent Owner will cite to Ex-2011 and Ex-1006 as needed.

FIG. 1



Ex-2011, FIG. 1.

C. Thubert (Ex-1007)

Thubert is directed to selecting access points to form virtual access points (VAPs). Ex-1007, [0016-0017]; Ex-2013, ¶46. In some embodiments, a plurality of APs 302 receive a broadcasted network availability request 308, capture data including certain characteristics of the received request 308, report the captured data to a supervisory device 304, which then create a VAP. Ex-1007, [0052-0056], [0059]; Ex-2013, ¶¶47-48.

IV. LEVEL OF SKILL IN THE ART

For purposes of this IPR only, Patent Owner applies Petitioners' definition of a POSITA. Ex-2013, ¶¶22-26.

V. CLAIM CONSTRUCTION

Petitioner proposed plain and ordinary meanings for the claim terms. Paper 2, at 7. However, Petitioner proposed different constructions for “normal monitoring mode”, “fast monitoring mode”, “the base station comprises two wake-up modes: a normal wake-up mode and a[/the] fast wake-up mode”, “fast wake-up instruction”, and “external device” in the parallel District Court proceeding, and Patent Owner disputed them, proposing plain and ordinary meanings. *See generally e.g.* Ex-2002; Ex-2003; Ex-2004. On January 13th, 2025, the District Court issued its Claim Construction Order. *See* Ex-2007. Patent Owner has timely objected to this order. *See* Ex-2008.

There thus remains a controversy over the disputed claim terms involved in the parallel proceeding. Further, the meanings of several terms are implicated by Petitioner's challenge. “Claim terms. . . are construed to resolve a ‘controversy, and only to the extent necessary to resolve the controversy.’” *EmeraChem Holdings, LLC v. Volkswagen Grp. of Am., Inc.*, 714 F. App'x 995, 996-7 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir.

1999)). The Board should undertake claim construction to resolve the controversy between the Parties.⁴

A. The Board should conduct its own claim construction.

The construction determinations made by the District Court are proper subjects of consideration for the Board. 37 CFR §42.100(b). However, the Board is not bound by the District Court's determinations. *See Intel Corp. v. ParkerVision, Inc.*, IPR2020-01265, Paper 44 (PTAB Jan. 21, 2022), at 41 (adopting a different construction), *aff'd*, *ParkerVision, Inc. v. Vidal*, 88 F.4th 969, 977-78 (Fed. Cir. 2023). Here, the District Court erred at least in its constructions of “normal monitoring mode”, “fast monitoring mode”, “normal wake-up mode”, “fast wake-up mode” and “fast wake-up instruction”, and Patent Owner respectfully urges the Board to conduct its own construction and reconfirm their ordinary and accustomed meanings as understood by one of ordinary skill in the art at the time of the invention in the context of the patent. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005); *see also* Ex-2013, ¶49.

⁴ Patent Owner respectfully submits that the Board does not need to construe “external device”, because Patent Owner does not dispute Petitioner's arguments directed to this term in this proceeding.

B. A “monitoring mode” requires a periodic cycle.

First, a POSITA would understand that a “monitoring mode” requires a periodic cycle formed by monitoring (awake) intervals separated by non-monitoring (asleep) intervals. Ex-2013, ¶50.

Claims must be read in view of the specification, of which they are a part. *Phillips*, 415 F.3d at 1315. Here, the '216 Patent specifies that “a radio frequency module of the electronic tag device automatically wakes up every other time period (hereinafter referred to as a ‘monitoring period’ of the electronic tag device, such as 30 s) to monitor whether there is a communication request.” Ex-1001, [1:25-29]; Ex-2013, ¶51. It further specifies that “frequent monitoring of the electronic tag device will cause an increase of power consumption. In order to take into account communication speed and battery life, a longer monitoring period (such as 20 s) is usually adopted to reduce the power consumption, so as to improve the battery life.” Ex-1001, [1:42-50]; Ex-2013, ¶51. A POSITA would understand that an electronic tag device “monitors” incoming communication requests on its first communication path in “monitoring modes” that conform to the principles described in these specifications. Ex-2013, ¶51. In particular, a POSITA would understand that the specification describes a periodic behavior, in which the first communication path of the electronic tag device exhibits a periodic cycle formed by monitoring (awake) intervals separated by non-monitoring (asleep) intervals. Ex-2013, ¶52. Thus, a

mode exhibiting a continuously-awake state not punctuated with any asleep interval, or a non-periodic composition of awake and asleep intervals, cannot be a “monitoring mode” of the ’216 Patent. Ex-2013, ¶52. This is because, in a mode exhibiting a continuously awake state, the electronic tag device would not “automatically wake[] up” at all, as it remains in an awake state and does not take any action of “wak[ing] up.” Ex-2013, ¶53. Further, in a mode exhibiting a non-periodic composition of awake and asleep intervals, the electronic tag device would not automatically wake up *every other time period*, as “every other time period” connotes periodic behavior. *Id.*

A POSITA would understand that a periodic cycle formed by monitoring (awake) intervals separated by non-monitoring (asleep) intervals achieves the objective of monitoring for incoming communication requests and allowing the electronic tag device to react to them. Ex-2013, ¶54. Further, a POSITA would understand that such a periodic cycle allows the electronic tag device to manage its energy consumption through, for example, adjustment of the period, as disclosed in the ’216 Patent. *Id.* A POSITA would recognize this periodic-cycle arrangement as a conventional, well-known method to implement monitoring in the first communication path of the electronic tag device, as disclosed by the ’216 Patent itself. Ex-1001, [1:24]; Ex-2013, ¶55.

Therefore, a “monitoring mode” of the first communication path of the electronic tag device requires a periodic cycle formed by monitoring (awake) intervals separated by non-monitoring (asleep) intervals. Ex-2013, ¶56.

C. The “normal monitoring mode” and the “fast monitoring mode” differ in their monitoring periods.

In clarifying the term “monitoring mode”, the ’216 Patent’s specification also defined the term “monitoring period” of a monitoring mode as the time period between the consecutive waking-up points in the monitoring mode, that is, the length of a periodic cycle, equal to the sum of the length of one monitoring (awake) interval plus the length of one non-monitoring (asleep) interval. Ex-1001, [1:25-29]; Ex-2013, ¶57. This understanding is confirmed by the parties, by the District Court, and by the EPO. *See* Ex-2013, ¶57 (discussing Ex-2007, 16 n.4 and Ex-2009, 10).

The ’216 Patent then specifies that

“In order to improve the response speed of the electronic tag device, it is required to shorten the monitoring period (for example, 1 s). In a usage scenario of a large-scale electronic tag device, since it is uncertain which electronic tag devices need to interact, the monitoring periods of all electronic tag devices have to be shortened to meet customer experience requirements. In this way, the power consumption of monitoring the wake-up signal in the electronic tag device will increase significantly. For example, the original monitoring period is 20 s, while the existing monitoring period is 1 s. Under the existing monitoring period, the battery power consumption is 20 times of the original power consumption, and this situation will have a great impact on the battery life. For the usage scenarios of the large-scale electronic tag device, it will

cause more frequent replacements and increase labor costs.”

Ex-1001, [1:55-2:3].

The '216 Patent further specifies that

“It only needs to set a normal monitoring mode and a fast monitoring mode in an electronic tag device, and set a normal wake-up mode and a fast wake-up mode in a base station, then the customer experience requirements can be met without shortening the monitoring periods of all electronic tag devices, without increasing battery power consumption, and without increasing labor costs.”

Ex-1001, [2:9-14].

A POSITA would recognize that these two disclosures, one following the other closely, both discuss monitoring modes and monitoring periods in the context of response speed, battery power consumption and labor costs. Ex-2013, ¶¶58-60. The POSITA would then recognize that the existence of normal and fast monitoring modes in *an electronic tag device* allow customer experience requirements to be met without shorting the monitoring periods *of all electronic tag devices* by carefully adjusting the monitoring mode in *the* electronic tag device without requiring any change to the monitoring periods of *the other electronic tag devices*. Ex-2013, ¶60. The POSITA would further recognize that, in light of the earlier disclosure of monitoring periods affecting response speed, battery power consumption and labor costs, the normal and fast monitoring modes differ in their monitoring periods, with the normal (fast) monitoring mode possessing a longer (shorter) monitoring period

and therefore lower (higher) battery power consumption and lower (higher) labor cost but slower (faster) response speed. Ex-2013, ¶61.

The District Court, in its preliminary constructions, correctly reached the same conclusion. *See* Ex-2006, 2 (differing the two terms based on monitoring period length); Ex-2013, ¶62. However, following the *Markman* hearing in which Petitioner argued that the preliminary construction does not necessarily result in the fast monitoring mode having a faster responsive speed than the normal monitoring mode (Ex-2005, [36:9-40:19]), the District Court erroneously decided that the normal and fast monitoring modes differ not in the monitoring periods, but in their “duration[s] of the wake-up period.” *See* Ex-2007, 19 (construing “normal monitoring mode” as “a normal mode that is configured to wake-up the tag for a duration that is shorter than the duration of the wake-up period of the fast monitoring mode” and “fast monitoring mode” as “a mode configured to wake-up the tag for a duration that is longer than the duration of the wake-up period of the normal monitoring mode, which increases power consumption when compared to the normal monitoring mode”); Ex-2013, ¶62.

The District Court's constructions are wrong. Ex-2013, ¶63. It introduces the term “wake-up period”, a term that does not appear in the specifications nor in the Parties' briefings, and is inconsistent with the example offered by the specification itself (Ex-1001, [1:61-67]) where nothing is said about the supposed change in

“wake-up period”, but the monitoring period (a term that is explicitly defined in the specification and on the meaning of which the Parties largely agree) clearly changes. *Id.* The District Court thus improperly rewrote claim language. *See K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364 (Fed. Cir. 1999); Ex-2013, ¶63. In addition, the District Court’s erroneous change in construction fails to properly address the issue of how the fast monitoring mode is faster, because, in the mirror image of Petitioner’s example, a mode with a longer wake-up period (according to the District Court’s meaning of this term) but also longer monitoring period can also be slower. Ex-2013, ¶64. Thus the District Court’s constructions do not “give effect to the terms chosen by the patentee.” *See K-2*, 191 F.3d at 1364; Ex-2013, ¶64. The Board should not adopt them. Ex-2013, ¶¶63-64.

Further, the Board should not credit Petitioner’s argument against the (correct) preliminary constructions. *See* Ex-2013, ¶65. On one hand, Petitioner made this argument to support its proposed construction that “fast monitoring mode” is indefinite. *See* Ex-2004, v. The Board cannot cancel a claim for indefiniteness in an IPR proceeding. *See Oticon Medical AB et al v. Cochlear Bone Anchored Solutions AB*, IPR2017-01018, Paper 52, 14 n.9 (PTAB Aug. 21, 2018). Indeed, if this term is found indefinite, then, because of the essentialness of this term to all the claims, even if Petitioner could have established the obviousness of all other limitations over the prior art, the Board would still not be able to reach a decision on the merits as to

whether Petitioner has established the unpatentability of the claims. *See Samsung Elecs. Am., Inc. v. Prisia Eng'g Corp.*, 948 F.3d 1342, 1353 (Fed. Cir. 2020); *see also Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 813 (Fed. Cir. 2021) (giving examples – not applicable here -- where a finding of indefiniteness would not preclude the Board's adjudication). Therefore, Petitioner's proposal in the parallel proceeding is fatal to its position here, and the Board should not consider its arguments in support of that position. *See Intex Recreation Corp. v. Team Worldwide Corp.*, IPR2019-00243 & -00244, Paper 7 (PTAB May 8, 2019) (refusing to make findings about indefiniteness). Regardless, Petitioner's argument has no merit, because the monitoring period is the only variable mentioned in the specification between the two monitoring modes, and therefore a POSITA would understand that everything else stays the same. Ex-2013, ¶65. The District Court found, and VusionGroup conceded that, in this scenario, the fast monitoring mode would indeed be "faster." Ex-2005, [37:12-38:3]; Ex-2013, ¶65.

Therefore, the Board should look to the clear intrinsic and extrinsic evidence and construe the "normal monitoring mode" and the "fast monitoring mode" as differing in their monitoring periods, such that the "fast monitoring mode" possesses a shorter monitoring period than the "normal monitoring mode". Ex-2013, ¶66.

D. A “wake-up mode” is associated with a transmission duration (“wake-up duration”).

Further, a POSITA would understand that a “wake-up mode” of a base station of the '216 Patent is associated with a duration (termed “wake-up duration” in the specification) of the transmission (by the base station) of a “wake-up instruction.” Ex-2013, ¶67.

The '216 Patent specifies:

“If a base station device which communicates with the radio frequency module intends to communicate with a certain electronic tag device, the electronic tag device needs to be waked up at first for a period (hereinafter referred to as a ‘wake-up duration’ of the base station device, such as 35 s) longer than the monitoring period of the electronic tag device, and then instructions and data can be transmitted. In this case, it requires at least a duration longer than the ‘wake-up duration’ to transmit an instruction to an electronic tag device, so as to complete the communication with the electronic tag device.”

Ex-1001, [1:32-42].

The specification thus defines the term “wake-up duration” as a characteristic of the base station. *Id.*, [1:35-37]; Ex-2013, ¶68. In addition, a POSITA would understand that this language in the '216 Patent pertaining to “wake-up duration” indicates the electronic tag device needs to be waked up through an instruction the transmission of which lasts for the “wake-up duration.” Ex-2013, ¶69. That is, the transmission of the instruction needs to last for the “wake-up duration.” *Id.* In other words, the duration of the instruction transmission is the “wake-up duration.” *Id.*

A POSITA would understand that a different interpretation of “wake up duration” as a length of time for which an electronic tag device must remain in the awake state is incorrect. Ex-2013, ¶70. This is because it makes the “wake-up duration” a characteristic of the behavior of the *electronic tag device*, instead of the base station, thus contradicting the explicit disclosure (*see* Ex. 1001, [1:36]) and the claim language (*see e.g.*, Ex. 1001, [7:42-44]). *Id.* This (incorrect) interpretation also conflicts with the subsequent disclosure that the communication must be “at least ... longer than the ‘wake-up duration’” (Ex. 1001, 1:39-40). *Id.* An electronic tag device will not be able to complete a communication process that lasts longer than the “wake-up duration” if it only stays awake for the “wake-up duration.” *Id.*

Conversely, a POSITA would find that the interpretation of “wake up duration” as the duration of the instruction transmission is compatible with the invention claimed by the '216 Patent. Ex-2013, ¶71. Since an electronic tag device in a monitoring mode only stays awake for a fraction of its monitoring period, a base station initiating communication with the electronic tag device will not be able to know whether the electronic tag device is awake or asleep at any particular moment. *Id.* However, in the invention of the '216 Patent, the base station will know the actual monitoring mode (and therefore the actual monitoring period associated with that monitoring mode) of the electronic tag device that it is about to communicate with. *Id.* This is because the '216 Patent provides for a normal and a fast monitoring mode

in the first communication path of the electronic tag device, as well as a normal and a fast wake-up mode in the base station, and accordingly, intends the two “normal” modes to work together and the two “fast” modes to work together. *Id.*

In fact, the '216 Patent clearly contemplates that a base station would employ its “fast wake-up mode” when communicating with an electronic tag device that is in its “fast monitoring mode.” Ex-1001, [2:30-48], [2:53-3:4], [4:11-30], [5:37-56], [6:7-21], [7:50-60], [8:43-53], FIG. 2; Ex-2013, ¶72. A POSITA would understand that, by implication, a base station would employ its “normal wake-up mode” when communicating with an electronic tag device that is in its “normal monitoring mode.” Ex-2013, ¶72. A POSITA would further understand that this is how the '216 Patent achieves its objective of meeting the customer experience requirements “without shortening the monitoring period of all electronic tag devices, without increasing battery power consumption, and without increasing labor costs” through “only” setting the two monitoring modes in the electronic tag device and setting the two wake-up modes in the base station. Ex-1001, [2:7-15], [6:35-42]; Ex-2013, ¶72.

Therefore, a POSITA would understand that a base station initiating communication with the electronic tag device would know the actual monitoring period of the electronic tag device, but it would not know precisely where within that period the electronic tag device is in an awake interval. but it would not know precisely where within that period the electronic tag device is in an awake interval.

Ex-2013, ¶73. Since the monitoring period is the period of the cycle of awake and asleep intervals, a POSITA would understand that the base station ensures communication with the electronic tag device by setting the transmission duration of its wake-up instruction to be longer than the monitoring period of the electronic tag device, since the electronic tag device would be certainly awake *at some point* during a time interval equal in duration to the monitoring period, and thus be able to receive the wake-up instruction at that point. *Id.* This comports with the disclosure that the wake-up duration should be longer than the monitoring period of the electronic tag device. Ex-1001, [1:37-38]; Ex-2013, ¶74. This further comports with the disclosure that the communication lasts longer than the wake-up duration, since the wake-up instruction, which takes up the wake-up duration, is only a part of the communication (which also includes further instruction and data, *see* Ex-1001, [1:38-39]). Ex-1001, [1:39-42]; Ex-2013, ¶74.

In addition, a POSITA would understand that, since the “normal wake-up mode” is intended to work with the “normal monitoring mode” and the “fast wake-up mode” is intended to work with the “fast monitoring mode”, in each wake-up mode, the wake-up duration is set accordingly. Ex-2013, ¶75. Since the fast monitoring mode possesses a shorter monitoring period, the wake-up duration of the fast wake-up mode only needs to be set longer than this shorter monitoring period of the fast monitoring mode, but shorter than the monitoring period of the normal

monitoring mode (thus further shorter than the wake-up duration of the normal wake-up mode). *Id.* This allows the '216 Patent to achieve its objective of meeting customer experience requirements, since if the fast wake-up mode still employs a wake-up duration that last longer than the monitoring period of the normal monitoring mode, then the electronic tag device (in fast monitoring mode) will not be able to process instruction and data until this wake-up duration ends, thus the response will appear on the electronic tag device at least after the monitoring period of the normal monitoring mode, which can be as long as 20 or 30 seconds. Ex-1001, [1:25-27], [1:55-57], [1:63-65], [2:7-15], [6:35-42]; Ex-2013, ¶75.

Therefore, a POSITA would, in the context of the specification, understand that a “wake-up mode” is associated with a duration (“wake-up duration”) of the transmission of a “wake-up instruction” transmitted by a base station. *See Phillips*, 415 F.3d at 1313 (“the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification”); Ex-2013, ¶76.

E. The “normal wake-up mode” and the “fast wake-up mode” set requirements on their wake-up durations.

The District Court erroneously, in contradiction to the intrinsic and extrinsic evidence above, construed “the base station comprises two wake-up modes: a normal wake-up mode and a fast wake-up mode” as “the base station comprises two wake-

up modes, a normal wake-up mode wherein the base station is configured to have a wake-up duration that is at least longer than a wake-up duration of the normal monitoring mode of the electronic tag device, and a[/the] fast wake-up mode wherein the base station is configured to have a wake-up duration that is at least longer than a wake-up duration of the fast monitoring mode of the electronic tag device.” Ex-2007, 21-22.

This construction is wrong on two accounts. Ex-2013, ¶77. First, it erroneously introduced the term “a wake-up duration of the [normal/fast] monitoring mode”, whereas the ’216 Patent specification is clear that “wake-up duration” is a characteristic of the base station, not of the monitoring mode of the electronic tag device. Ex-1001, [1:36], [7:42-44]; Ex-2013, ¶78. In fact, nowhere in the ’216 Patent specification is the monitoring mode described as possessing a “wake-up duration.” Ex-2013, ¶78. Thus this construction improperly rewrites the claim and fails to give effect to the terms chosen by the patentee. *See K-2*, 191 F.3d at 1364; Ex-2013, ¶78. Second, the District Court’s construction failed to account for the fact that the wake-up duration in the fast wake-up mode needs to be shorter than the monitoring period of the normal monitoring mode so as to achieve the objectives of the ’216 Patent of meeting customer experience requirements (as discussed above). Ex-2013, ¶79.

In the parallel proceeding, Petitioner proposed indefiniteness for “the base station comprises two wake-up modes: a normal wake-up mode and a fast wake-up

mode.” Ex-2004, 7-10. But the Board should not credit Petitioner’s argument because this, again, would preclude a finding on the merits of the unpatentability, as discussed in Section V.C above. *See Otico*, IPR2017-01018, Paper 52, 14 n.9; *see also Samsung Elecs.*, 948 F.3d at 1353 (Fed. Cir. 2020).

Therefore, the Board should reject the erroneous constructions of the District Court, and, in accordance with the intrinsic and extrinsic evidence discussed earlier, find that the “normal wake-up mode” is associated with a wake-up duration longer than the monitoring period of the “normal monitoring mode”, and the “fast wake-up mode” is associated with a wake-up duration longer than the monitoring period of the “fast monitoring mode” but shorter than the monitoring period of the “normal monitoring mode.” Ex-2013, ¶80.

F. The transmission duration of a “fast wake-up instruction” is the wake-up duration of the “fast wake-up mode.”

Further, as discussed above, the “wake-up duration” is simply the transmission duration of the “wake-up instruction” sent by the base station in a particular “wake-up mode” in order to wake up an electronic tag device. Ex-2013, ¶81. Therefore, a “fast wake-up instruction” is a wake-up instruction transmitted in a “fast wake-up mode” and its transmission lasts for the “wake-up duration” of the “fast wake-up mode” – longer than the monitoring period of the “fast monitoring mode” but shorter than the monitoring period of the “normal monitoring mode.” *Id.*

The District Court, instead, erroneously construed “fast wake-up instruction” as “instruction from the base station to the electronic tag device requiring the electronic tag device to wake-up for a period that is longer than the wake-up period of the fast monitoring mode.” Ex-2008, 23-24. By focusing on the *effect* of the wake-up instruction instead of on the *transmission duration* of the instruction, the District Court interpreted the definitive language for “wake-up duration” erroneously. Ex-2013, ¶¶69-71, 82. Further, the District Court’s erroneous construction again relies upon the so-called “wake-up period” of monitoring periods – a term that has no support in the specifications. Ex-2013, ¶82.

In the parallel proceeding, Petitioner argued for “instruction from the base station to the electronic tag device requiring the tag to remain in fast monitoring mode such that data can be received by the electronic tag device” as the so-called “plain and ordinary meaning” of the term “fast wake-up instruction.” Ex-2004, vii. However, Petitioner’s proposed construction is wrong because it fails to give effect to the specification language that associates different transmission lengths of wake-up instructions to different wake-up modes, as discussed above. Ex-2013, ¶82.

Therefore, the Board should reject both the District Court’s erroneous construction and Petitioner’s proposed construction, and hold that a “fast wake-up instruction” is a wake-up instruction transmitted in a “fast wake-up mode” and its

transmission lasts for the “wake-up duration” of the “fast wake-up mode.” Ex-2013, ¶83.

VI. PETITIONER HAS NOT ESTABLISHED BY A PREPONDERANCE OF THE EVIDENCE ANY CLAIM IS UNPATENTABLE

Petitioner presents four obviousness grounds, two of which directed only to dependent claims. Paper 2, 2. None of the grounds establishes, by a preponderance of the evidence, any claim is unpatentable. *See* 35 U.S.C. §316(e); *see also* Ex-2013, ¶¶27, 84, 85-89, 151-155, 215.

A. Ground 1

1. Nagata fails to disclose or render obvious “a normal monitoring mode and a fast monitoring mode” ([1.2.1], [7.7], [14.7])

In ground 1, Petitioner argues that Nagata’s label has two “monitoring modes”, “(i) a monitoring mode that operates in accordance with a relatively short prescribed duration at elongated intervals (e.g., once every minute for one second), with slower communications because the access point must wait to communicate with the electronic rack label until the next waking period; and (ii) a monitoring mode where the second communications part may enter and maintain the awake state to keep the path active for faster communications that avoid the delay of waiting for the next interval to start.” Paper 2, 23; Ex-1003, ¶104. Petitioner argues that these “monitoring modes” teach the recited “normal monitoring mode” and “fast

monitoring mode.” Paper 2, 23; Ex-1003, ¶105. This argument is incorrect. Ex-2013, ¶¶90-114.

To start with, Petitioner's argument lacks support in Nagata. Ex-2013, ¶93. Petitioner identified [0029] and [0083] of Nagata as disclosing the two “monitoring modes.” Paper 2, 23; Ex-1003, ¶104. The former discusses the switching between a sleep state and an awake state *at a prescribed-time interval*, without mentioning any variation from this fixed periodic behavior. Ex-2010, [0029]; Ex-2013, ¶93. The latter specifies that the label “normally performs. . . repetitively” a switch from the sleep state to the awake state for just 1 second once a minute. Ex-2010, [0083]. It further specifies that “in the situation in which the second communications part 42 has entered the awake state and the second communications part 42 has received a beacon notifying it to the effect that information to be transmitted from the access point 30 has been transmitted, the switching part 44a, for example, maintains the operation state of the second communications part 42 as is in the awake state for 30 s.” *Id.* The latter disclosure offers the *only* possible support for Petitioner's “identification” of the second “monitoring mode”, which Petitioner clearly intended as teaching the claimed “fast monitoring mode.” Paper 2, 23 (“keep the path active for *faster* communications”) (emphasis added); Ex-2012, 70:6-71:13 (“it is descriptive of one aspect of the fast monitoring mode); Ex-2013, ¶93.

However, a close look reveals that this cannot be disclosing the “fast monitoring mode” of the ’216 Patent. Ex-2013, ¶94. For one, it discloses an action of *maintaining* the awake state, not of “enter[ing] and maintain[ing] the awake state” (Paper 2, 23) as Petitioner describes it. *Id.* Second, this disclosure does not teach any periodic cycle of monitoring intervals separated by non-monitoring intervals, which, as discussed in Section V.B above, is required by a “monitoring mode” of the ’216 Patent. *Id.* Finally, this mapping by Petitioner is incompatible with Petitioner’s mapping for “fast wake-up instruction”. Petitioner advances two alternative mappings for “fast wake-up instruction”, both of them involving a beacon. Paper 2, 39-40. If, as Petitioner argues in the first mapping, the beacon preceding information is the claimed “fast wake-up instruction”, then the action of [0083] happens *after* this beacon is received, contrary to the claimed sequence of entering the fast monitoring mode first, receiving a fast wake-up instruction, then switching to the normal monitoring mode. Ex-1001, [7:50-67]. If, as Petitioner argues in the alternative mapping, the beacon indicating absence of information is the claimed “fast wake-up instruction”, then there is no disclosure in [0083] of maintaining the awake state following this beacon. Either way, Petitioner’s mapping for “fast wake-up instruction” cannot be squared with the disclosure in [0083].

Even if one accepts Petitioner’s “identification” of the two “monitoring modes”, Petitioner’s argument still fails. Ex-2013, ¶95. Petitioner argues that

“Nagata’s monitoring mode with a longer prescribed time interval (i.e., period) and shorter awake time (i.e., wake-up duration)” teaches the claimed “normal monitoring mode” and that “Nagata’s monitoring mode with an increased awake time” teaches the claimed “fast monitoring mode.” Paper 2, 24, Ex-1003, ¶106. A “monitoring mode with a longer prescribed time interval” is still missing from Nagata, since Nagata only discloses a single example of such an interval (one minute) and nowhere discloses any variation to this interval. Ex-2010, [0083]; Ex-2013, ¶95. Petitioner hints at a possibility that this parameter may be dynamically adjusted by stating “Nagata discloses that the label’s second communications part may be *normally* set to wake for one second once every minute.” Paper 2, 22-23, Ex-1003, ¶103. But this is a misquote of Nagata, which, instead, states that “[t]he switching part 44a switches the operation state of the second communications part 42 from the sleep state to the awake state for just 1 s, for example, once a minute. The switching part 44a normally performs this repetitively.”⁵ Ex-2010, [0083].

Contrary to Petitioner’s misquote, Nagata does *not* disclose dynamically adjusting the interval parameter. Ex-2013, ¶96. Petitioner tacitly admitted to this when it stated “whereas Nagata varies the *duration* characteristic of the label’s

⁵ This is the only disclosure in Nagata where the word “normally” or “normal” is used in the context of the label’s behavior.

modes and holds the duration state constant, Hashiguchi varies the *rate* characteristic of the label's modes (how often the label switches into awake mode) while holding the duration of that mode constant (how long awake mode lasts)." Paper 2, 56-57 (emphasis original); Ex-1003, ¶159. Thus Petitioner concedes that the rate, or period, stays constant in Nagata. Ex-2013, ¶96.

Nagata does not disclose dynamic adjustments of the interval parameter because Nagata's access points rely on the predictability offered by a fixed, prescribed, system-wide waking-up period in order to effectively communicate with their corresponding electronic rack labels. Ex-2010, [0033]; Ex-2013, ¶¶96. Nagata explicitly disclosed that the access points send beacons at such a prescribed time interval so that the sending is "timed to when the operation state of the second communications parts 42 of the electronic rack labels 40 becomes the awake state." Ex-2010, [0033] (note the single "operation state" for the plural "electronic rack labels 40"); Ex-2013, ¶96. If any electronic rack label were allowed to carry on a periodic cycle with a different period, its corresponding access point would then not be able to correctly time the beacon to when its second communications part 42 becomes the awake state, and would not be able to correctly effect the communication with it. Ex-2013, ¶96. Even Petitioner acknowledged this fact by stating "POSITAs would have recognized Nagata's label-server communications through the access points require *system-wide* timing." Paper 2, 27 (emphasis added);

Ex-1003, ¶111. Therefore, a POSITA would understand that all the labels of Nagata maintain a fixed, prescribed, system-wide interval between the periodic waking-up instances. Ex-2013, ¶96. In fact, such a fixed interval is a central concept around which Nagata is designed. Ex-2013, ¶¶98-102.

Accordingly, Nagata's interval parameter (that is, the period between waking-up instances of a label), or "monitoring period" in the parlance of the '216 Patent⁶, is fixed, and there cannot be a mode with "a longer prescribed time interval" (that Petitioner argues to be "normal monitoring mode") in Nagata. Ex-2013, ¶97. Thus Petitioner's identification fails because its so-called "normal monitoring mode" does not exist. *Id.*

Essentially, Nagata utilizes two *states* of its electronic rack labels to implement a single fixed *communication interval*. Ex-2013, ¶¶103-105. This is fundamentally incompatible with the two monitoring modes of the '216 Patent, which requires different lengths in their monitoring periods (as discussed in Sections V.B and V.C above). Ex-2013, ¶¶87-88, 106-109. Further, a POSITA would not be

⁶ Petitioner's expert agrees that the "monitoring period" of the '216 Patent is "referring to how frequently the tag is awake." Ex-2012, 72:16-18. That is, the period between the periodic waking-up instances in Nagata corresponds to the "monitoring period" of the '216 Patent. Ex-2013, ¶97.

motivated to change the fixed communication interval paradigm of Nagata, because such a change is incompatible with the approach of Nagata, and because the change will fail to achieve advantages such as increased responsiveness. Ex-2013, ¶¶110-113.

Petitioner, in a different section, argues that the disclosure in Nagata [0116]⁷ of maintaining the awake state for a prescribed interval e.g. 30s or indefinitely as teaching the claimed “enter the fast monitoring mode” ([1.4]), Paper 2, 31-33; Ex-1003, ¶¶117-118. But this is wrong. On one hand, a “mode” with indefinite awake state cannot be a “monitoring mode” of the '216 Patent at all. This is because, as discussed above in Section V.B, a “monitoring mode” requires a periodic cycle formed by monitoring intervals separated by non-monitoring intervals. A “mode” with indefinite awake state, on the other hand, does *not* have such a periodic cycle. See Ex-2009, 10 (rejecting a similar challenge based on Nagata because “a

⁷ It is to be noted that this disclosure is *not* the same as the disclosure of Nagata [0083], since here the maintaining happens before any beacon is received. Also, there is no disclosure in [0083] of the alternative indefinite awake state. Petitioner never explained how they identify [0029] and [0083] as teaching the “fast monitoring mode”, yet argues this fundamentally different disclosure teaches “enter the fast monitoring mode.” Paper 2, 23, 31-33.

‘monitoring period’ is a time period separating the moments in which a tag (i.e. the ESL of [Nagata]) will automatically wake up, and that the operation states of the tag should not be mixed up with the monitoring modes[, t]herefore, an operation state in which the tag is permanently awake cannot be considered as a tag in a *‘fast monitoring mode’*, because it shows no time period separating moments in which the tag wakes up.”) (formatting original). On the other hand, the disclosure of maintaining the awake state disclosure does not entail any change to the interval parameter (which, as discussed above, is fixed, prescribed, and system-wide). Ex-2010, [0116]. This, therefore, cannot be the “fast monitoring mode” either, because, as discussed in Sections V.B and V.C above, a “fast monitoring mode” requires a *shorter* monitoring period than that of the “normal monitoring mode.”

Therefore, Nagata fails to disclose or render obvious the claimed “a normal monitoring mode and a fast monitoring mode” of [1.2.1], [7.7] and [14.7]. Ex-2013, ¶114.

2. Nagata fails to disclose or render obvious “a normal wake-up mode and a fast wake-up mode” ([1.2.2], [7.7], [14.7])

Petitioner then advances several theories of how Nagata renders obvious “a normal wake-up mode and a fast wake-up mode”, none prevails. Ex-2013, ¶¶115-136.

Petitioner starts by arguing that “[t]he access points communicate information to the labels from the server (and vice versa) while the labels are in those monitoring

modes but cannot communicate with the labels unless the labels are in an awake state.” Paper 2, 25; Ex-1003, ¶108. This juxtaposition between the so-called “monitoring modes” (which, as Petitioner admits, refers to periodic switching behavior between sleep and awake states at least for its identified “normal monitoring mode”) and the “awake state” is puzzling. In fact, if a label is in Petitioner’s identified “normal monitoring mode”, it would be only awake for a short period (e.g. 1 second) every prescribed time interval (e.g. one minute), thus there is a high chance (e.g. 59/60) that an access point will not be able to communicate with it at any given time. Ex-2010, [0029], [0083].

Nevertheless, starting from this faulty presumption, Petitioner then argues that “POSITAs would have understood the access points necessarily operate in a coordinated mode with the labels because the access points can only communicate with the labels when the labels are awake in those modes. Indeed, Nagata’s access points have modes corresponding to the labels’ modes so they can exchange transmissions.” Paper 2, 25; Ex-1003, ¶108. Petitioner cites Nagata [0033] for support. *Id.*

But Nagata [0033] does not disclose any such “modes [of access points] corresponding to the labels’ modes.” Ex-2013, ¶118. It only discloses that “each of the access points 30 transmits at a prescribed-time interval a signal called a beacon timed to when the operation state of the second communications parts 42 of the

electronic rack labels 40 becomes the awake state.” Ex-2010, [0033]. As discussed above, this prescribed-time interval is by design fixed and system-wide. Ex-2013, ¶118. Thus, contrary to Petitioner’s faulty summarization, Nagata [0033] only discloses *one* mode of the access points – to send beacons on a fixed, prescribed, system-wide time interval. *Id.*; *see also* Ex-2012, 78:11-13 (admitting that “the interval between beacons is fixed”). Petitioner’s supposition (Paper 2, 25-27; Ex-1003, ¶¶109-111) that embodiments of Nagata relate to remote control interactions does not change this fact. Ex-2013, ¶119. In fact, Petitioner ultimately admits that “POSITAs would have recognized Nagata’s label-server communications through the access points require *system-wide* timing.” Paper 2, 27 (emphasis added); Ex-1003, ¶111. Thus there are no such “modes” in the access points. Ex-2013, ¶119.

Still, Petitioner asserts – without explaining how this relates to its earlier discussions of “modes” -- that “POSITAs would have recognized Nagata’s label-server communications through the access points require system-wide timing that causes the access points to switch into an active state (“wake up”) at different rates of communication (“normal” and “fast”) according to the rate of communications of the labels to avoid wasted power and transmissions.” Paper 2, 27; Ex-1003, ¶111. This assertion is wrong on two accounts. Ex-2013, ¶120.

First, Petitioner never identified any disclosure in Nagata of the *access points* having multiple states (“active state” or else) between which they can switch. Ex-

2013, Ex-2013, ¶121. Petitioner's expert cites [0033], [0065], [0083], and [0111], but these disclosures, as summarized by Petitioner's expert himself, relate to the management of a *label's* state or to the handshake protocol for server-access point-label communications, not to any state of the *access points*. Ex-1003, ¶111. During his deposition, Petitioner's expert all but admitted that Nagata does not disclose the so-called "switch into an active. . . state" by his failure to identify any actual disclosure in Nagata and instead saying "I think that's what is being explained to a person of ordinary skill in the art through the description that's provided, but it is my language to describe what's being taught." Ex-2012, 80:7-81:17.

Petitioner's expert further points to Laroia (Ex-1013)'s disclosure of reducing base station transmissions in terms of frequency and/or power level. Ex-1003, ¶111. But Petitioner never identified Laroia as part of any ground. Further, Laroia is directed to problems posed by "some cellular coverage areas" where reduction of transmission power and/or interference is desirable, and relies on *wireless terminals* to trigger the switching of mode in base stations. Ex-1013, [1:35-40], [31:54-63]; Ex-2013, ¶134. Petitioner has never discussed why a POSITA would look to Laroia to form an understanding of Nagata's access points located in a controlled retail environment, or of Nagata's communication process in which the remote control does not directly communicate with the access point. Ex-2013, ¶134.

Petitioner then points to Nagata's communication process where the access points "receive instructions. . . via the labels" and the server "generates and transmits a command back to the access points." Paper 2, 25-27; Ex-1003, ¶¶109-110). But these "instructions" and "commands" are for the *labels* to change their behavior, not the *access points*. *E.g.* Ex-2010, [0114], [0123]. These disclosures do not and cannot create "states" or "switches" in the access points. Ex-2013, ¶122.

Petitioner thus failed to identify any disclosure in Nagata of the access points switching "into an active state". Ex-2013, ¶122.

Second, Petitioner has not identified any disclosure of "different rates of communication" in Nagata either. Ex-2013, ¶121. In fact, the word "rate" only appeared three times in Nagata, all in [0070], and all are part of the phrase "tax rate." Ex-2010, [0070]. Moreover, as discussed above in Section VI.A.1, there is only one system-wide, fixed, prescribed "rate of communication" as far as the access points are concerned.

During his deposition, Petitioner's expert attempts to cure the two problems by stating "what I'm doing here [in Ex-1003, ¶111] is distinguishing the state where [the access point] is actively preparing to send a message to the tag as opposed to an alternative state where it is not actively preparing to send a message to the tag" and "the [tag's] monitoring mode determines, at least probabilistically the rate at which [the tag and the access point] can communicate. If the tag is awake for large periods

of time, it's likely that the communication will be completed fast. If the tag is asleep most of the time, it's likely that the communication will be completed more slowly.” Ex-2012, 80:7-81:6, 84:18-85:9. He further describes how such probabilistic “rates of communication” allows avoidance of power wastage through sleeping – an action that is never associated with access points, only with tags, in Nagata. *Id.*, 81:19-83:20.

But this still misses the point of whether Nagata discloses a “normal” and a “fast wake-up mode” in the access point. At most, Petitioner’s expert argued that there might be different rates of communications. He did not point to different *behaviors* of Nagata’s access point where it “switch[es] into an active state (‘wake up’) at different rates of communication (‘normal’ and ‘fast’)” (Ex-1003, ¶111). This is because there is *no* such different behaviors of the access point, which *always* sends beacons on a fixed, prescribed, system-wide interval (*see e.g.* Ex-2012, 78:11-13 (admitting that “the interval between beacons is fixed”)). Ex-2013, ¶¶127-129. Essentially, Petitioner and its expert would have the Board find two “wake-up modes” in Nagata’s access point based on naked assertions and irrelevant citations.

Petitioner further suggests that a POSITA may look to standards such as “IEEE 802.15.4 and/or ZigBee™” and Bluetooth, without even explaining what exact operations the POSITA would choose from these standards, or proposing how a POSITA would be motivated and able to use these (unspecified) operation to

modify Nagata to achieve the normal and fast wake-up modes. Paper 2, 28-29; Ex-1003, ¶¶112-114; Ex-2013, ¶135. Petitioner's expert talked about managing power levels in Bluetooth through a receiving device "request[ing] that it get more power or less power from the transmitting device. . . based on a variety of criteria." Ex-2012, 86:2-91:12. But nowhere in this lengthy discussion did he tie the power level management in Bluetooth to his identification of the "modes", "states" and "rates of communication" in Nagata. Thus Petitioner's allusion to these standards adds nothing to its faulty mapping of the wake-up modes.

Regardless, Petitioner then abandoned its ill-developed theory of "switch[ing] into an active state. . . at different rates of communication", and advanced a different mapping in which "Nagata [allegedly] discloses or suggests each access point operates in both a short awake state at prescribed time-delay intervals longer, awake state ('fast wake-up mode') when communicating with the label. ('normal wake-up mode')." Paper 2, 28-29; Ex-1003, ¶114. Thus Petitioner introduced two new terms of "short awake state" and "long, awake state", ones completely missing from Nagata, and ones without any apparent connection to its earlier theory (since a POSITA would not find "short" and "long" as appropriate descriptions of "rates of communication"). This is no more than a conclusory statement without justification.

Petitioner's expert, offering a completely new theory not articulated in either the Petition or in his report, argues in his deposition that "[i]n one mode, [the access

point] sends the stay-awake beacon during that [fixed prescribed] interval, and in the other mode it sends the go-to-sleep beacon during that interval.” Ex-2012, 78:7-10. But this cannot be correct, because he did not – and indeed cannot – explain why a “mode” in which the access points sends a “go-to-sleep beacon” would be considered a “wake-up mode” at all.

Furthermore, as discussed in Sections V.D and V.E above, the two wake-up modes of the '216 Patent differ by their wake-up durations, and the wake-up durations need to be longer than the monitoring periods of the corresponding monitoring modes. Petitioner did not identify any disclosure in Nagata that corresponds to wake-up durations, and indeed cannot identify any, because Nagata discloses nothing about the transmission duration of beacons (the closest parallel to wake-up instructions and indeed mapped by Petitioner in one way or another to “fast wake-up instruction”). Further, a POSITA would not credit the notion that Nagata's beacon would have a transmission duration longer than the monitoring period of its electronic rack labels as required by the '216 Patent (as discussed in Section V.E above), Ex-2013, ¶136. Since the monitoring period is the same as the interval between beacons (Ex-2010, [0033]), if the transmission duration of beacons are longer than this monitoring period, then two consecutive beacons will collide, and this defeats the whole purpose of timing the beacon to the prescribed time intervals.

See Ex-2013, ¶136. Without a disclosure of different wake-up durations, there cannot be a mapping to the claimed normal and fast wake-up modes. *See id.*

In addition, Petitioner would not modify Nagata to implement '216 Patent's wake-up modes because the two are fundamentally incompatible, and because that will achieve any advantage in responsiveness. Ex-2013, ¶¶123-135.

Therefore, Nagata fails to disclose or render obvious the claimed “a normal wake-up mode and a fast wake-up mode” of [1.2.2], [7.7] and [14.7]. Ex-2013, ¶137.

3. Nagata fails to disclose or render obvious “fast wake-up instruction” ([1.7], [1.8], [7.5], [7.6], [14.5], [14.6])

Petitioner, relying on disclosures of [0121] and [0133] of Nagata, further argues that either the “presence”-indicating beacon or the “absence”-indicating beacon of Nagata discloses the “fast wake-up instruction” of the '216 Patent. Paper 2, 38-39, 41; Ex-1003, ¶¶124-126, 129. However, as discussed above in Sections V.D, V.E, and V.F, the transmission duration of the “fast wake-up instruction” of the '216 Patent must be longer than the monitoring period of the fast monitoring mode. Petitioner has not identified any disclosure in Nagata where either of these beacons would have such a transmission duration. Ex-2013, ¶140. As discussed above, the monitoring period here is just the system-wide fixed, prescribed time interval, and sending beacons with an even longer transmission duration is not compatible with this. Ex-2013, ¶136. Further, Nagata's system ensures that the beacons are only sent when the labels are in awake state. Ex-2010, [0033]. Thus

there is no need to use any significant transmission duration for Nagata's beacons, because a shorter duration can still ensure receipt by the labels. Ex-2013, ¶140.

Moreover, Petitioner argues that “[b]ecause the [‘presence’-indicating] beacon is sent to maintain the label in the fast-monitoring mode, POSITAs would have understood the beacon teaches a ‘fast wake-up instruction.’” Paper 2, 39; Ex-1003, ¶124. This is already inconsistent with the term “*fast wake-up instruction*” itself. Ex-2013, ¶144. And then Petitioner argues that “to the extent PO argues that the ‘fast wake-up instruction’ must revert the label to the normal low-power mode, Nagata teaches it [through the ‘absence’-indicating beacon].” Paper 2, 39; Ex-1003, ¶125. Petitioner cannot have it both ways as to whether the “fast wake-up instruction” of the ’216 Patent is supposed to maintain the label in the fast monitoring mode or to revert the label to the “normal low-power mode” (presumably meaning the normal monitoring mode). In any case, as discussed above, the extended-awake state cannot be the claimed “fast monitoring mode” and the so-called “normal low-power mode” cannot be the claimed “normal monitoring mode.” Ex-2013, ¶141. Thus Petitioner’s argument over what effect the beacon would have on the label’s monitoring state misses the point. Ex-2013, ¶141.

In addition, Petitioner failed to locate any disclosure of a beacon actually being sent to the labels in [0121] and [0133] of Nagata. Petitioner argues that a POSITA will understand, from [0033] and [0083], that a beacon precedes every

server-generated command to the label. Paper 2, 38-39; Ex-1003, ¶124. But this argument would preclude Petitioner's alternative mapping of the "absence"-indicating beacon as the "fast wake-up instruction", because the beacon preceding the command cannot be the "absence"-indicating variation. Thus under the alternative mapping there would be no disclosure of "transmit a fast wake-up instruction." Further, this argument is unsupported. Nagata [0033] discloses that access points periodically sends beacons to report the presence or absence of information transmission, and [0083] discloses that labels receive beacons. Nowhere does Nagata require every server-to-label communication to be preceded by a beacon. The operations in [0121] and [0133] are completely possible without a beacon preceding the command, and there is no reason to include this unnecessary beacon in the transmission.

Furthermore, a POSITA will not look to implement '216 Patent's "fast wake-up instruction" in Nagata because of the fundamental incompatibility between the two. Ex-2013, ¶¶142-146.

Accordingly, Nagata fails to disclose or render obvious the claimed "fast wake-up instruction" of [1.7], [1.8], [7.5], [7.6], [14.5], and [14.6]. Ex-2013, ¶¶138-139, 147-150.

Because Nagata fails to disclose or render obvious the above-discussed limitations, Petitioner has not shown that any of the claims 1, 7, and 14 (the three

independent claims) is unpatentable under ground 1. *A fortiori*, Petitioner has not shown that any of the remaining (dependent) claims is unpatentable under ground 1. Ex-2013, ¶151.

B. Ground 2

Petitioner attempts to use Hashiguchi to cure Nagata's deficiencies. Paper 2, 52-74. But Petitioner's arguments fail. *See* Ex-2013, ¶¶152-156.

1. Nagata and Hashiguchi fail to disclose or render obvious “a normal monitoring mode and a fast monitoring mode” ([1.2.1], [7.7], [14.7])

In ground 2, Petitioner argues that “POSITAs would have been motivated to use Hashiguchi's awake time ratios” and that “POSITAs would have been motivated to implement Hashiguchi's increasingly frequent awake times into Nagata's label switching processes at shorter durations.” Paper 2, 58; Ex-1003, ¶162. But Petitioner refrained from explicitly identifying anything in Hashiguchi as teaching the “normal monitoring mode” and “fast monitoring mode” limitations until its discussion of dependent claim 5, and even then through the use of brackets. Paper 2, 71; Ex-1003, ¶194.

Petitioner's proposition fails because it never made clear *what* specific changes that POSITAs are supposed to make to Nagata. Ex-2013, ¶¶157-160. POSITAs could “use Hashiguchi's awake time ratios” in Nagata in at least two different ways – keep Nagata's fixed-periodic behavior and adjust the awake time

durations so as to match Hashiguchi's awake time *ratios*, or change Nagata's fixed-periodic behavior and adjust the awake periods to match these *ratios*. See Ex-2013, ¶160. As for "implement Hashiguchi's increasingly frequent awake times into Nagata's label switching processes at shorter durations", the indiscriminate mixture of words like "increasingly frequent awake times" and "at shorter durations" (it is to be noted that Petitioner generally uses "duration" to refer to the time length of awake state, not the period of wake-up actions, *e.g.* Paper 2, 57; Ex-1003, ¶159) makes it nearly impossible to understand what is being proposed. Petitioner's unexplained decision of postponing the identification of the two monitoring modes in Hashiguchi further adds to the confusion of its theory. Perhaps Petitioner meant to keep the description unclear so as to possibly mold it in reply, but "[u]ltimately, it is the petitioner's burden to present a clear argument" in the petition. *Netflix, Inc. v. DivX, LLC*, 84 F.4th 1371, 1377 (Fed. Cir. 2023). The Board should reject Petitioner's arguments on this basis alone.

Moreover, Petitioner's proffered motivation to combine the two references is unsound. Ex-2013, ¶¶161-179. As discussed in Section VI.A.1 above, Nagata adjusts the awake duration of its labels, including occasionally departing from periodic behavior, but keeps constant the period of the labels' shared state-switching cycle. Hashiguchi, instead, use two periodic state-switching modes with different periods but the same awake state duration. Ex-2011, [0127-0129]. Petitioner

recognizes this. *See* Paper 2, 56-57; Ex-1003, ¶159. Petitioner has not shown why a POSITA will implement Hashiguchi's method to replace Nagata's own method.

According to Petitioner, POSITAs would understand that "Hashiguchi's label communication components are able to communicate more often using less battery power." Paper 2, 57; Ex-1003, ¶161. But this is not correct. Ex-2013, ¶¶161-180. To the contrary, a POSITA would understand that Hashiguchi's label communication components are *not* meant to or able to communicate more often than Nagata's. Ex-2013, ¶¶162-164. First, Hashiguchi is concerned with responsiveness to communications from the server. Ex-2011, [0007]. A POSITA would understand that the responsiveness requirement for such server-initiated communication is lower than that for user-initiated command (such as in Nagata). Ex-2013, ¶162. In fact, Hashiguchi explicitly disclosed a wake-up period (and a server-transmission interval) of 4 seconds. Ex-2011, [0071], [0127]. A POSITA would understand that this means Hashiguchi is contemplating an average delay of 2 seconds or maximum delay of 4 seconds as acceptable for its intended use scenario (server-initiated communications). Ex-2013, ¶162. But, as discussed in the '216 Patent, such delay may not be satisfactory when an operator operates in front of the label and expects immediate feedback (usually within 3 seconds). Ex-1001, [1:51-55]. Nagata, unlike Hashiguchi, is concerned with the latter scenario. *E.g.* Ex-2010, [0115]; *see also* Ex-2012, 102:11-14 ("[Hashiguchi] has the disadvantage that, unlike Nagata, a typical

customer can't walk up to the tag and cause the operation to begin.”). Therefore, Hashiguchi offers a solution designed for *less* frequent communications than Nagata. Second, Petitioner's argument that Hashiguchi allows the labels to communicate more often is based upon a comparison of normal exemplary wake-up frequency only. Paper 2, 57; Ex-1003, ¶160. But this argument overlooks the fact that Nagata's labels can stay awake for much longer than Hashiguchi's (30 seconds or longer, as compared to 150ms). Ex-2010, [0116]; Ex-2011, [0068]. By staying awake for such long time, Nagata's labels can respond to incoming communication (generated in response to user commands) *nearly instantaneously and without rate limit* during such extended awake period, thus resulting in much higher responsiveness. *See* Ex-2013, ¶163. Thus, while Hashiguchi's system at most allows communication frequency of once every 4 second or so because of its fixed-interval nature (*see* Ex-1003, ¶¶166-179), Nagata's system allows *theoretically unbound* communication frequency during the label's extended awake period. A POSITA would not be motivated to replace the behavior of Nagata's labels to match Hashiguchi's dual-periodic behavior, because this will result in *less satisfactory* responsiveness and *lower* supported communication frequency – thus resulting in an *inferior* solution to a problem that Nagata has already successfully addressed. *See Samsung Elecs. Co. v. Dynamics Inc.*, IPR2020-00499, Paper 63, 34 (Aug. 10, 2021) (petitioner failed to

explain why altering either reference would improve the functionality over what is expressly disclosed in each reference). *See* Ex-2013, ¶163.

Petitioner then argues that POSITAs would have also been motivated to combine Nagata and Hashiguchi – again, without clearly specifying *how* to combine them – because they “were compatible”, as evidenced by their shared “inventors, Applicants, content, and explanation for their similar disclosures.” Paper 2, 58-59; Ex-1003, ¶163. But this at most shows “one of ordinary skill in the art *could* combine these references, not that they *would* have been motivated to do so.” *InTouch Techs., Inc. v. VGo Communs., Inc.*, 751 F.3d 1327, 1352 (Fed. Cir. 2014) (emphasis original). In addition, Petitioner failed to explain why the same inventor, having *already* known the methods of Hashiguchi (filing date Jan. 29, 2015, *see* Ex-2011, [cover]), would *deliberately* choose to implement the labels differently in Nagata (filing date Jan. 13, 2016, *see* Ex-2010, [cover]). Ex-2013, ¶164. If Hashiguchi did offer such compelling advantage over Nagata as Petitioner argued *and* it is easy to combine them as Petitioner also argued, then this choice of the inventor would make no sense. One of these premises, or both, must be wrong⁸.

⁸ Petitioner cites *ZUP, LLC v. Nash Mfg, Inc.*, 896 F.3d 1365, 1371-73 (Fed. Cir. 2018) in support of their arguments. Paper 2, 58-59. *ZUP* does not hold that prior arts with shared inventors are automatically combinable, instead, it stands for the

Therefore, Petitioner has not shown that Nagata and Hashiguchi disclose or render obvious the claimed “a normal monitoring mode and a fast monitoring mode” of [1.2.1], [7.7] and [14.7]. Ex-2013, ¶¶165, 180.

2. Nagata and Hashiguchi fail to disclose or render obvious “the base station comprises two wake-up modes: a normal wake-up mode and a fast wake-up mode” ([1.2.2], [7.7], [14.7]).

Petitioner then points to Hashiguchi's “normal command transmission mode” and “rapid command transmission mode” and argues that Nagata and Hashiguchi renders obvious the claimed “normal wake-up mode” and “fast wake-up mode.” Paper 2, 59-64; Ex-1003, ¶¶164-174. However, Petitioner again, without explanation, postponed an explicit identification of what teaches “fast wake-up mode” until a later section and even then through the use of parentheses. Paper 2, 64-65; Ex-1003, ¶¶176, 178; Ex-2013, ¶183. In addition, Petitioner *never* explicitly identified anything in ground 2 as teaching “normal wake-up mode”. Ex-2013, ¶183. This is another example of Petitioner intentionally keeping its theory vague and forcing Patent Owner and Board to guess the theory based on random statements all

principle that motivation to combine can be found from many sources. 896 F.3d at 1371. It does not support Petitioner's attempt to shortcut the search for such motivation by generally alluding to the shared characteristics of the two prior arts.

throughout the petition. The Board should reject this unclear “mapping.” *See Netflix*, 84 F.4th at 1377.

Regardless, Petitioner's “mapping” is wrong. Ex-2013, ¶¶182-183. First, Petitioner has not identified any disclosure of different *transmission durations* of beacons (at least the beacon in the context of “rapid command transmission mode” has been identified by Petitioner as disclosing “fast wake-up instruction”, Paper 2, 65; Ex-1003, ¶179) in the two modes of Hashiguchi. Ex-2013, ¶184. Petitioner has likely failed to identify any disclosure of a *transmission duration* of beacons in either mode as longer than the corresponding monitoring period of the labels. Ex-2013, ¶184. In fact, as Petitioner acknowledges, Hashiguchi largely employs the same mechanisms as Nagata of beacons and prescribed time intervals for the communications from access points to labels. Paper 2, 55; Ex-1003, ¶79; Ex-2011, [0127]-[0129]. But, as discussed in Section VI.A.2 above, such mechanism is incompatible with setting transmission durations of beacons longer than the monitoring period of the labels, because that will result in beacon collision, rendering the system inoperable. Ex-2013, ¶184.

As discussed in Sections V.D and V.E above, the “wake-up modes” of the '216 Patent are associated with their transmission durations of wake-up instructions, with specific requirements for such durations in each wake-up mode. Ex-2013, ¶204. Because Petitioner failed to identify such durations in Hashiguchi,

Petitioner has failed to show that Nagata and Hashiguchi discloses or renders obvious the claimed “normal wake-up mode” and “fast wake-up mode.” Ex-2013, ¶¶184, 204.

Petitioner's “mapping” further fails because the two command transmission modes of Hashiguchi belong to the server, not to the access point (base station) as required by the '216 Patent. Ex-2013, ¶¶185, 190-192. Hashiguchi explicitly discloses that the *server* instructs the access points to transmit commands following beacons on normal or shortened intervals. Ex-2011, [0127-0129]. Hashiguchi further discloses that the commands are transmitted from the *server* in the normal or rapid command transmission mode. Ex-2011, [0143]. In contrast, Hashiguchi's access points possess only one mode of operation – to send beacons that are timed to the awake state of the labels according to instructions from the server. Ex-2011, [0031], [0127-0129]; Ex-2013, ¶¶185, 192. Hashiguchi *never* described the normal or rapid command transmission modes as belonging to the access point. Ex-2013, ¶¶185, 192. Even Petitioner tacitly admitted to this when it describes Hashiguchi as “the server may instruct the access point to transmit information following the beacons ‘at 4 s intervals.’” Paper 2, 59-60; Ex-1003, ¶165. Petitioner's *ipse dixit* repetition of the phrase “the access point's [rapid or normal] command transmission mode” (Paper 2, 59-60; Ex-1003, ¶165), unsupported by any disclosure from Hashiguchi, cannot transfer them from the server to the access point. Therefore, Petitioner has not shown

that Nagata and Hashiguchi discloses or renders obvious the claimed “the base station comprises two wake-up modes: a normal wake-up mode and a fast wake-up mode.” Ex-2013, ¶¶185, 193.

In addition, Petitioner's arguments for motivation to combine also fail. Ex-2013, ¶187. Petitioner argues that POSITAs would have been motivated to combine Nagata and Hashiguchi to implement Hashiguchi's rapid command transmission mode in the access points of Nagata's system “to improve the label's communication responsiveness and curtail its battery power consumption” and so that “the access point can transmit information more frequently (e.g., at 4 second intervals or less).” Paper 2, 61-62; Ex-1003, ¶¶168-169. Even if this is true – it is not --, Petitioner has failed to show, or even argue, that POSITAs would have been motivated to implement Hashiguchi's normal command transmission mode (or anything else that would form “normal wake-up mode”) in Nagata. Ex-2013, ¶187. In addition, as discussed above in Section VI.B.1, a POSITA will not find that Hashiguchi's teachings can improve Nagata's communication responsiveness, or allow Nagata's access points to transmit information more frequently. Ex-2013, ¶187. The shared inventor of Nagata and Hashiguchi, possessing all the teachings of Hashiguchi, rejected them and implemented a system that better solves the communication responsiveness problem. A POSITA will not be motivated to implement Hashiguchi's *inferior* solution in Nagata. *See Samsung*, Paper 63, 34.

Petitioner also argues that a POSITA would have a reasonable expectation of success in implementing Hashiguchi's rapid command transmission mode (again, without mentioning normal transmission mode) in Nagata's access points. Paper 2, 62-64; Ex-1003, ¶¶170-174. But Petitioner's argument completely ignored Hashiguchi's disclosure of the *server* setting the transmission modes. Ex-2013, ¶186. Thus Petitioner never addressed the question of what expectation of success a POSITA will have in implementing the change in the *server* of Nagata. In fact, a POSITA will likely find it necessary to change the server, the access points and the labels together to implement Hashiguchi's rapid command transmission mode, because the transmission involves all three. Ex-2011, [0127-0129], [0143]; Ex-2013, ¶186. Such coordinated change is unlikely to be as trivial as Petitioner's expert believes. *See* Ex-2012, 97:20-100:6 ("I don't think it would take any more effort to implement the combination than it would to implement Nagata alone."). Petitioner failed to account for such complexity and thus failed to establish the requisite reasonable expectation of success. Ex-2013, ¶186.

In addition, a POSITA would not look to implement '216 Patent's wake-up modes in Nagata or Nagata and Hashiguchi because of their fundamental incompatibilities. Ex-2013, ¶¶193-203.

Therefore, Petitioner has not shown that Nagata and Hashiguchi disclose or render obvious the claimed "the base station comprises two wake-up modes: a

normal wake-up mode and a fast wake-up mode” of [1.2.2], [7.7] and [14.7]. Ex-2013, ¶¶188-189, 205.

3. Nagata and Hashiguchi fail to disclose or render obvious “fast wake-up instruction” ([1.7], [1.8], [7.5], [7.6], [14.5], [14.6])

Petitioner further points to Hashiguchi's beacons in the rapid command transmission mode as disclosing “fast wake-up instruction.” Paper 2, 65-66, 68; Ex-1003, ¶¶179-180, 184. As Petitioner recognizes, Hashiguchi's beacons are not qualitatively different from Nagata's beacons. Paper 2, 65; Ex-1003, ¶179. As discussed above in Section VI.A.3, Nagata's beacons cannot be the claimed “fast wake-up instruction” because they do not have the required durations. Ex-2013, ¶¶207-208. The same reasoning applies unchanged to Hashiguchi's beacons. Ex-2013, ¶208.

Petitioner also argues for various motivations for implementing Hashiguchi's beacons in Nagata. Paper 2, 65-68; Ex-1003, ¶¶179-183. But these motivations all go to the other modifications (that Petitioner did not always make clear, as discussed above in Sections VI.B.1 and VI.B.2) instead of the proposed “modification” of implementing Hashiguchi's *beacons*. In fact, if Hashiguchi's beacons are not qualitatively different from Nagata's beacons, then there is nothing to modify in order to implement Hashiguchi's *beacons* in Nagata. Petitioner's motivation arguments thus miss the point. Moreover, as discussed in Section VI.A.3 above, Nagata does *not* disclose sending beacons to labels in the user-command-handling

sequence. Ex-2013, ¶208. As discussed in Section VI.B.1 above, modifying Nagata to implement Hashiguchi's teachings (and use beacons for the transmission of server-generated commands in response to user commands) would result in less responsiveness and less communication frequency when handling user commands. Ex-2013, ¶208. Thus, contrary to Petitioner's argument, a POSITA would not find it advantageous to carry out this modification. Ex-2013, ¶208. In addition, changing Nagata's potentially beacon-less mechanism (as discussed in Section VI.A.3 above) of transmitting server-generated commands in response to user commands into a beacon-based mechanism (as in Hashiguchi) is not trivial because it will require Nagata's system to postpone the transmission until the next beacon, instead of effecting the transmission immediately. Ex-2013, ¶209. Petitioner failed to address how a POSITA would have a reasonable expectation of success in making such modification. *Id.* Thus, even setting aside Petitioner's failure to identify disclosures for the required transmission duration, Petitioner's argument still fails because Petitioner has failed to establish motivation and reasonable expectation of success for the combination. *Id.*

In addition, a POSITA would not look to modify Nagata or Hashiguchi to implement '216 Patent's "fast wake-up instruction" because of their fundamental incompatibilities. Ex-2013, ¶¶211-214.

Therefore, Petitioner has not shown that Nagata and Hashiguchi disclose or render obvious the claimed “fast wake-up instruction” of [1.7], [1.8], [7.5], [7.6], [14.5], [14.6]. Ex-2013, ¶¶210, 215.

Because Nagata and Hashiguchi fail to disclose or render obvious the above-discussed limitations, Petitioner has not shown that any of the claims 1, 7, and 14 (the three independent claims) is unpatentable under ground 2. *A fortiori*, Petitioner has not shown that any of the remaining (dependent) claims is unpatentable under ground 2. Ex-2013, ¶216.

C. Grounds 3A and 3B

1. Nagata, Hashiguchi, and Thubert fail to disclose or render obvious “when the first data is received by a plurality of base stations, the plurality of base stations are configured to attach respective energy value information of the plurality of base stations to the first data when transmitting the first data to the background server” ([3.0]) or “determine an optimal base station among the plurality of base stations” ([3.1]).

For dependent claim 3, Petitioner tacitly concedes that Nagata (or Nagata and Hashiguchi) does not disclose the claimed “attach. . . energy value information” by failing to argue otherwise anywhere in the Petition. Instead, Petitioner argues (1) Nagata (or Nagata and Hashiguchi) discloses or suggests “received by a plurality of base stations”, (2) Thubert discloses “attach. . . energy value information”, and (3) a POSITA would be motivated and able to implement Thubert’s disclosure in Nagata

(or Nagata and Hashiguchi). Paper 2, 75-78; Ex-1003, ¶¶204-213. All three are incorrect. Ex-2013, ¶¶217-218, 220-221.

First, Petitioner solely relies on its translation of Nagata [0032] and Hashiguchi [0031] to argue that a label in Nagata or Hashiguchi communicates with multiple access points simultaneously. Paper 2, 75, 83-84; Ex-1003, ¶¶204, 222; Ex-2013, ¶¶219, 222. Petitioner's translation reads "[t]he installation locations and the installation spacing of the access points 30 are determined so that the electronic rack labels 40 installed inside the store can communicate with any of the access points 30." Ex-1005, [0032]; Ex-1006, [0031] (largely the same). Petitioner argues that because a label can communicate with "any of" the access points, more than one access point would be receiving a communication with the label. Paper 2, 75, 83-84; Ex-1003, ¶¶204, 222; Ex-2013, ¶¶219, 222.

To start with, a disclosure that a label *can* communicate with any of the access points is not the same as a label *does* communicate with more than one access point *simultaneously*. Ex-2013, ¶223. Petitioner failed to present any evidence of the latter in Nagata (or Nagata and Hashiguchi), therefore its conclusory argument cannot stand. But there is another problem -- Petitioner's translations are wrong. Ex-2013, ¶224. As shown in Patent Owner's certified translations, the disclosure is actually "[t]he installation locations and the installation spacing of the access points 30 are determined so that *an* electronic rack *label* 40 installed inside the store can

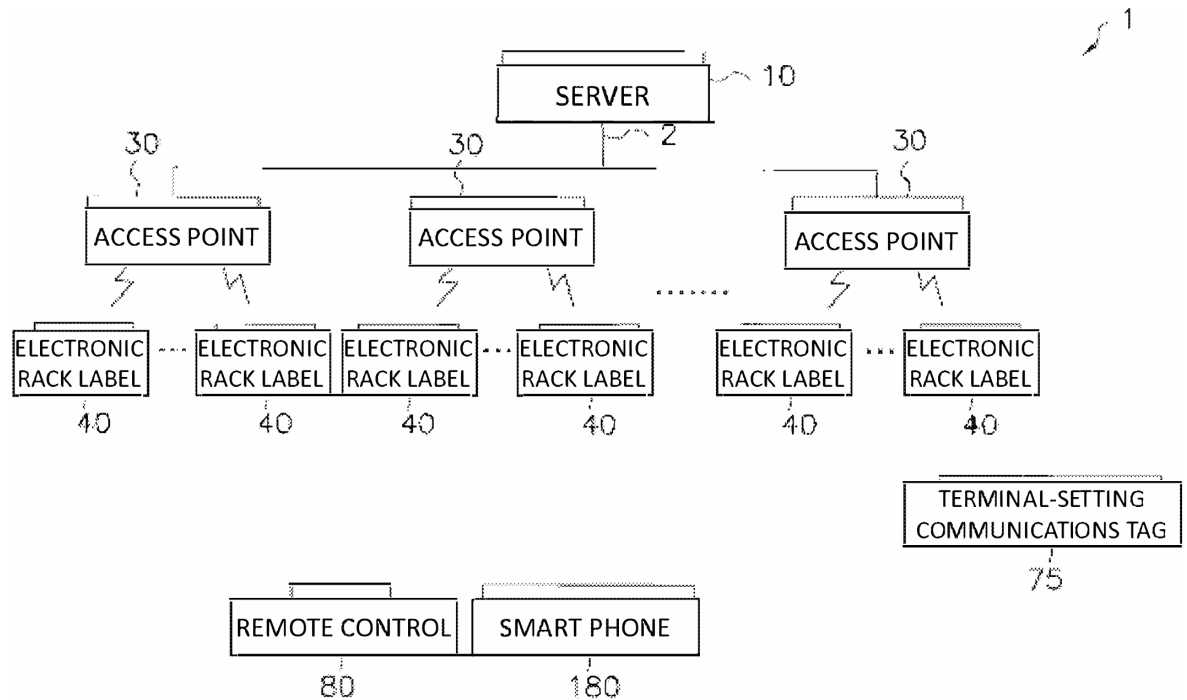
communicate with *one* of the access points 30.” Ex-2010, [0032] (emphasized to show difference); Ex-2011, [0031] (largely the same).

Petitioner's translation is wrong, and Patent Owner's translation is correct, because the latter is physically reasonable while the former is not. Ex-2013, ¶¶224-225. A POSITA would know that each access point and each label has a limited communication range. Ex-2013, ¶225. In fact, Thubert discloses such a range. Ex-1007, [0054], [0086]. Thus, a POSITA would understand that, if the access points and labels are arranged so that each label can communicate with “any of the access points”, then every single label and every single access point must be within the communication range of each other. Ex-2013, ¶225. This would require either extremely powerful communication units for *all* the labels and access points, with accompanying power consumption, complexity, and maintenance cost, or extremely congested arrangement that is unlikely to cover an average-sized retail space. Ex-2013, ¶225. On the other hand, for each label to be able to communicate with one access point, an even-spaced and hierarchical arrangement of labels and access points, well within the knowledge of any POSITA, would suffice. Ex-2013, ¶225.

In addition, the disclosures of Nagata and Hashiguchi are in harmony with Patent Owner's translation and not with Petitioner's translation. *See* Ex-2013, ¶223. Nagata and Hashiguchi both disclose in their respective Fig. 1 a hierarchical arrangement wherein each label is associated with one access point. *See* Ex-2013,

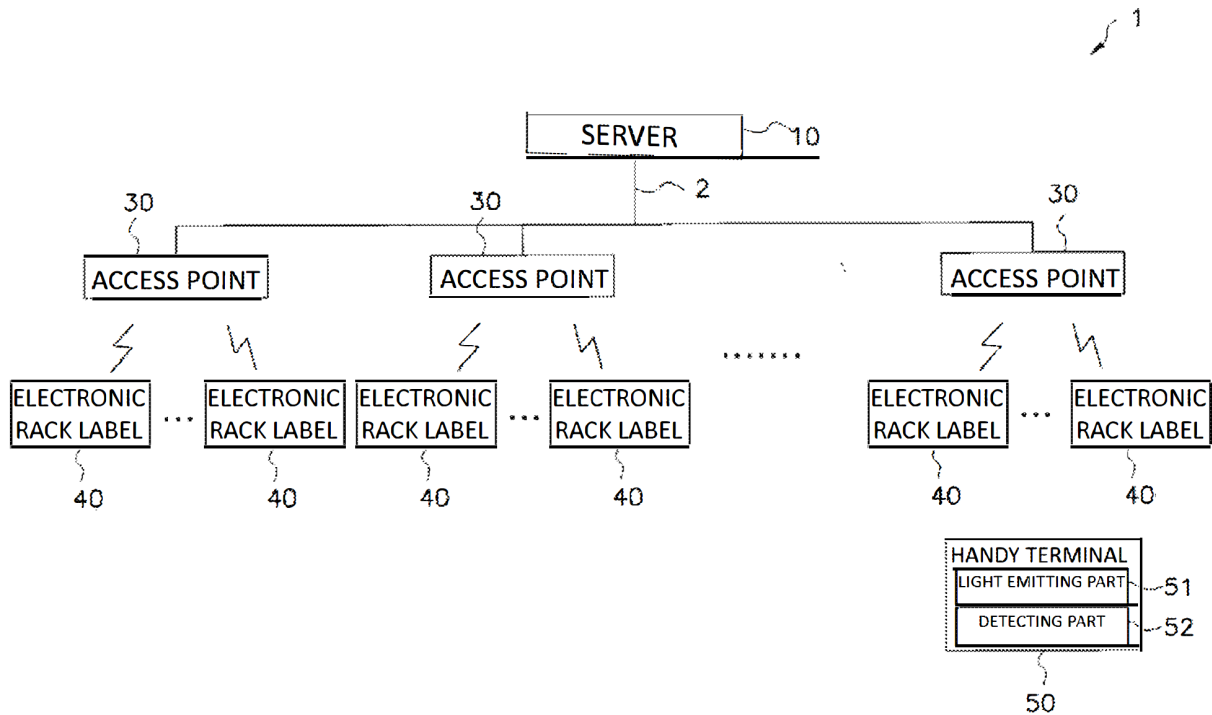
¶223. A POSITA would understand this disclosure as consistent with Patent Owner's translation but not with Petitioner's translation. *See* Ex-2013, ¶¶223-224.

FIG. 1



Ex-2010, FIG. 1.

FIG. 1



Ex-2011, FIG. 1.

Moreover, Nagata and Hashiguchi repeatedly disclose that a label has its “corresponding access point” (singular), and communicates with this “corresponding access point.” *E.g.* Ex-2010/Ex-1005, [0029], [0062], [0079]; Ex-2011/Ex-1006, [0037]. A POSITA would understand this disclosure as consistent with Patent Owner’s translation but not with Petitioner’s translation. Ex-2013, ¶223.

A POSITA would understand that the hierarchical design shown in FIGs. 1 of Nagata and Hashiguchi and described through language such as “corresponding access point” is essential to Nagata and Hashiguchi’s operations. Ex-2013, ¶226. A POSITA would understand that in both Nagata and Hashiguchi, each access point

has to be kept in synchronization with its corresponding labels for beacon transmission, and there is only a short time window at each synchronized time point to effect the beacon notification. Ex-2010/Ex-1005, [0033]; Ex-2011/Ex-1006, [0127-0129]; Ex-2013, ¶226. Introducing dynamic routing schemes through real-time selection of access points within the short time window will unnecessarily complicate the system and result in longer delays (because of the time spent on dynamic routing) that jeopardize the correct receipt of beacons.

Therefore, Petitioner's argument, that a label in Nagata or Hashiguchi communicates with multiple access points simultaneously, is wrong. Ex-2013, ¶223.

Second, Petitioner argues that Thubert discloses "energy value" through its disclosure of "signal strength, signal to noise ratio, signal quality." Paper 2, 75-76; Ex-1003, ¶¶206-208. But none of these refers to "energy." In fact, signal strength is usually measured in units of *power* (i.e. rate of energy transfer) such as dBm, and signal to noise ratio and signal quality are usually stated without units, and thus *none* of these is a measurement of *energy value* (measured in energy units such as joule). Petitioner never explained why these would be equated to the claimed "energy value", instead arguing, based on references *not* included in any ground, that "information throughput can be considered proportional to signal strength" – without

even employing the word “energy value.”⁹ Paper 2, 76; Ex-1003, ¶208. Petitioner thus failed to show that any of these is an “energy value.”

In addition, Thubert discloses access points sending “data 310 regarding the received network availability request 308” to supervisory device 304, wherein data 310 may contain at least one of these metrics. Ex-1007, [0055]. But this is not the same as the claimed “attach[ing]. . . energy value information of the plurality of base stations to the first data.” For one, Thubert does not disclose attaching the metrics (which are, again, *not* energy values) to the request 308, but forming a distinct data 310 out of information such as the metrics. For another, Thubert carefully distinguishes the terms “data” and “request.” Moreover, Thubert discloses that the metrics are for *the quality of the communication*. Ex-1007, [0054-0055]. There is no disclosure that the metrics are “of the plurality of base stations.”

Therefore, Petitioner's identification of disclosures in Thubert also fails.

Third and finally, contrary to Petitioner's argument, a POSITA would not be motivated and able to implement Thubert's disclosures in Nagata (or Nagata and Hashiguchi). Ex-2013, ¶227. Petitioner alleges certain advantages from dynamically

⁹ Petitioner's expert also refrained from equating “signal strength” with “energy value”, instead arguing that the latter “would be reflective” of the former – while also reflective of other things. Ex-2012, 62:20-64:4.

selecting access points. Paper 2, 76-78; Ex-1003, ¶¶208-213. But, as discussed above, such dynamic selection of access points is in conflict with the fundamental hierarchical design of Nagata and Hashiguchi. Ex-2013, ¶227. Petitioner completely failed to address this problem.

Therefore, Petitioner has not shown that Nagata and Thubert (or Nagata and Hashiguchi and Thubert) disclose or render obvious the additional limitation of [3.0] over claim 1. Ex-2013, ¶228. For the same reasons of no-multiple-base-station and no-motivation-to-combine (applied *mutatis mutandis* to Petitioner's arguments for [3.1]), Petitioner has not shown the obviousness of "determine an optimal base station among the plurality of base stations" of [3.1]. Ex-2013, ¶228. As Petitioner relies on the same argument for [9] and [16] (Paper 2, 81; Ex-1003, ¶217), Petitioner has not shown the invalidity of [9] or [16] either. Ex-2013, ¶218, 228.

2. Nagata, Hashiguchi, and Thubert fail to disclose or render obvious "the background server is further configured to perform deduplication processing on the first data uploaded by the plurality of base stations" ([4])

Petitioner argues that "multiple mapped APs 302f and 302g [of Thubert] may receive duplicate copies of the same message 702 from mutually-mapped node 306." Paper 2, 82; Ex-1003, ¶221. Petitioner further argues that "[Thubert's] server-controlled traffic engineering enables egress 600 to eliminate duplicate copies of the same message by comparing timestamps, tokens, MAC addresses, and other

information attributes of that message.” *Id.* These are the only disclosures Petitioner identified for “deduplication processing.” Ex-2013, ¶229-231.

But these disclosures occur in embodiments of “access points in a VAP mapping sending duplicate copies of a message received from a node.” Ex-1007, [0089]. Thus, in these embodiments, the VAP mapping is already established. Ex-2013, ¶232. But Thubert does not disclose taking measurements of energy values (as Petitioner maps this term, *see* Paper 2, 75) during the operations of already-established VAPs. Ex-2013, ¶232. Thubert only discloses taking such measurements in the process of establishing or re-establishing VAPs. Ex-1007, [0053-0057]; Ex-2013, ¶232. During such process, the node 306 does *not* send message 702 to the yet-to-be-mapped APs, instead, it broadcasts network availability request 308. Ex-1007, [0054]; Ex-2013, ¶232. The APs 302 that received the request 308 will send data 310 regarding the request 308 to supervisory device 304, thereby triggering the formation of a VAP for node 306. Ex-1007, [0055]; Ex-2013, ¶232. Each data 310 may include the identity of the AP 302 and at least one metric of the quality of the communication. [0055]; Ex-2013, ¶232. Thus the data 310 from APs 302 are not duplicate copies of a message received from the node, because request 308 is not a message and data 310 is not a copy. Ex-2013, ¶232. Further, data 310 from APs 302 are not duplicate copies among themselves because they contain different

information such as the identifies of the APs 302 and the metrics of quality. Ex-2013, ¶232.

Petitioner has not explained why a POSITA would be motivated to combine Thubert's disclosure of metric-taking (which appears in the VAP-establishing embodiment, without deduplication) and Thubert's disclosure of deduplication (which appears in another embodiment, without metric-taking). Ex-2013, ¶233. A POSITA will not have a reason to combine them because there is nothing to deduplicate during the establishing of VAP, and there is no reason to take metrics for *data* transmission (as opposed to specialized *request* transmission designed for VAP establishment purposes) during operation of established VAP, when the metrics are only needed for determining how to establish a VAP. Ex-2013, ¶233. Such combination would needlessly complicate the protocol design and negatively impact communication speed.

Petitioner instead argues only that a POSITA would be motivated and able to implement Thubert's disclosure of deduplication in Nagata (or Nagata and Hashiguchi). Paper 2, 83-84; Ex-1003, ¶¶221-223. But Claim 4 is dependent from Claim 3, and as such requires *both* deduplication *and* metric-taking. Ex-2013, ¶234. Petitioner relies on Thubert's disclosure of metric-taking for Claim 3. Paper 2, 75-78; Ex-1003, ¶¶205-213. Thus, in order to reach a combination that teaches Claim 4, Petitioner must show that a POSITA will be motivated and able to implement

simultaneously Thubert's disclosures of *both* deduplication *and* metric-taking in Nagata (or Nagata and Hashiguchi) in the context of a *same* communication process involving the first data. Ex-2013, ¶234. As discussed above, a POSITA would not be motivated to do so. Ex-2013, ¶234. In any case, Petitioner failed to make this argument. Ex-2013, ¶234.

In addition, Petitioner bases the motivation to combine on the faulty premise that “[b]oth Nagata and Hashiguchi disclose that each label can communicate with multiple access points.” Paper 2, 83; Ex-1003, ¶222. As discussed above in Section VI.C.1, this is incorrect. Ex-2013, ¶237.

Therefore, Petitioner has not shown that Nagata and Thubert (or Nagata and Hashiguchi and Thubert) disclose or render obvious the additional limitation of [4] over claim 3. Ex-2013, ¶¶235-236, 238. As Petitioner uses the same argument for [10] and [17] (Paper 2, 85; Ex-1003, ¶224), Petitioner has not shown the invalidity of [10] or [17] either. Ex-2013, ¶238.

VII. CONCLUSION

For at least the above reasons, Petitioner has not met its burden to show that any claim is unpatentable as obvious over the cited art.

Date: February 28, 2025

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CERTIFICATE OF WORD COUNT

I hereby certify that the foregoing PATENT OWNER'S RESPONSE includes 13,648 words (as calculated by Microsoft Word), excluding those in the table of contents, table of authorities, list of exhibits, list of claims, mandatory notices, signatures, certificate of word count, and certificate of service. Accordingly, this Response is under the word count limit of 14,000 words.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I hereby certify that, on February 28, 2025, a set of true and correct copies of PATENT OWNER'S RESPONSE and supporting materials has been served via e-mail to the Petitioner by serving the below-listed attorneys of record for Petitioner in the concurrent proceeding:

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