

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COPELAND COMFORT CONTROL LP,

Petitioner,

v.

OLLNOVA TECHNOLOGIES LTD.,

Patent Owner.

Case IPR2023-00624

U.S. Patent No. 8,224,282

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

	Page
TABLE OF ABBREVIATIONS	ii
LIST OF EXHIBITS	iv
I. CLAIM CONSTRUCTION	1
A. “multi-sensor package” ([1.a], [7.a], [20.a])	2
B. “receive sensor control information related to sensor data in control” ([1.e]).....	5
C. “second automation component in communication with the building automation system” [1.e]	7
II. MCFARLAND AND AHMED-629 DISCLOSE “A MULTI-SENSOR PACKAGE”	11
A. McFarland’s “sensor 209” that is a “combination[]” of multiple sensors discloses a “multi-sensor package”	12
B. Ahmed-629’s “MEMS sensors incorporated into a single substrate” discloses a multi-sensor package	15
III. MCFARLAND AND STONER DISCLOSE “RECEIV[ING] SENSOR CONTROL INFORMATION RELATED TO SENSOR DATA IN CONTROL”	16
A. McFarland’s “report instruction” “specific to the sensor” is used for control and thus discloses sensor control information	17
B. Stoner’s received operational information used to determine and display the sensor controlling the automation system also discloses the claimed sensor control information	19
IV. MCFARLAND, STONER, AND KATES-089 EACH DISCLOSE A “SECOND AUTOMATION COMPONENT IN COMMUNICATION WITH THE BUILDING AUTOMATION SYSTEM” (GROUNDS 1, 3, 9).....	20
V. CONCLUSION.....	25

TABLE OF ABBREVIATIONS

Abbreviation	Description
'282	U.S. Patent No. 8,224,282
'282FH	File History of U.S. Patent No. 8,224,282
Ahmed-629	U.S. Patent Application Publication No. 2005/0268629
Ahmed-773	U.S. Patent Application Publication No. 2006/0071773
Carrier Litigation	<i>Ollnova Technologies Ltd. v. Carrier Global Corp.</i> , No. 9-22-cv-80388 (S.D. Fla., filed March 11, 2022)
Claims / Challenged Claims	Claims 1-5, 7-11, 13-17, 20-21 of U.S. Patent No. 8,224,282
Cummins	WIPO International Application Publication WO 2007/036922
ecobee Litigation	<i>Ollnova Technologies Ltd. v. ecobee, Inc.</i> , No. 2-22-cv-00072 (E.D. Tex., filed March 8, 2022)
Emerson Litigation	<i>Ollnova Technologies Ltd. v. Emerson Electric Co. et al.</i> , No. 4-22-cv-01387 (E.D. Mo.) (transferred to E.D. Mo. December 29, 2022 after originally being filed April 5, 2022 in W.D. Tex.)
Hitt	U.S. Patent Application Publication No. 2004/0100394
IPR	<i>Inter Partes</i> Review
Kates-089	U.S. Patent Application Publication No. 2006/0071089
Kates-236	U.S. Patent No. 7,455,236
Kriz	WIPO International Application Publication WO 1999/017477
McFarland	U.S. Patent Application Publication No. 2007/0242688
Neikirk	Declaration of Dr. Dean P. Neikirk

Abbreviation	Description
Neikirk Reply	Supplemental Declaration of Dr. Dean P. Neikirk
Petitioner	Emerson Electric Co.
PO	Patent Owner; Ollnova Technologies Ltd.
POSITA	Person of Ordinary Skill in the Art
PTAB	Patent Trial and Appeal Board
Simon	U.S. Patent Application Publication No. 2006/0186214
Stoner	U.S. Patent No. 8,276,829
Tice	U.S. Patent No. 6,392,536
USPTO	United States Patent and Trademark Office
Wang	U.S. Patent Application Publication No. 2007/0026107

LIST OF EXHIBITS

Exhibit ("Ex.")	Description
1001	U.S. Patent No. 8,224,282
1002	Declaration of Dr. Dean P. Neikirk
1003	File History of U.S. Patent No. 8,224,282
1004	<i>Reserved</i>
1005	U.S. Patent Application Publication No. 2004/0100394 to Hitt
1006-1008	<i>Reserved</i>
1009	<i>Ollnova Technologies Ltd. v. Emerson Electric Co.</i> , 4:22-cv-01387 (E.D. Mo.) Defendants' Opening Claim Construction Brief (October 27, 2022)
1010	<i>Ollnova Technologies Ltd. v. Emerson Electric Co.</i> , 4:22-cv-01387 (E.D. Mo.) Plaintiff Ollnova Technologies Ltd.'s Responsive Claim Construction Brief (November 17, 2022)
1011	<i>Ollnova Technologies Ltd. v. Emerson Electric Co.</i> , 4:22-cv-01387 (E.D. Mo.) Defendants' Reply Claim Construction Brief (December 1, 2022)
1012	<i>Ollnova Technologies Ltd. v. Emerson Electric Co.</i> , 4:22-cv-01387 (E.D. Mo.) Plaintiff Ollnova Technologies Ltd.'s Sur-Reply Claim Construction Brief (December 15, 2022)
1013	<i>Ollnova Technologies Ltd. v. Emerson Electric Co.</i> , 4:22-cv-01387 (E.D. Mo.) Joint Claim Construction Statement (December 20, 2022)
1014	<i>Ollnova Technologies Ltd. v. Carrier Global Corp.</i> , 9:22-cv-80388 (S.D. Fla.) Plaintiff Ollnova Technologies Ltd.'s Opening Claim Construction Brief (November 4, 2022)

Exhibit ("Ex.")	Description
1015	<i>Ollnova Technologies Ltd. v. Carrier Global Corp.</i> , 9:22-cv-80388 (S.D. Fla.) Carrier Global Corp.'s Responsive Claim Construction and Indefiniteness Brief (November 18, 2022)
1016	<i>Ollnova Technologies Ltd. v. Carrier Global Corp.</i> , 9:22-cv-80388 (S.D. Fla.) Plaintiff Ollnova Technologies Ltd.'s Reply Claim Construction Brief (November 30, 2022)
1017	<i>Ollnova Technologies Ltd. v. Carrier Global Corp.</i> , 9:22-cv-80388 (S.D. Fla.) Joint Claim Construction Chart (December 5, 2022)
1018-1022	<i>Reserved</i>
1023	<i>Ollnova Technologies Ltd. v. ecobee Technologies, ULC</i> , 2:22-cv-00072 (E.D. Tex.) P.R. 4-3 Joint Claim Construction and Prehearing Statement (January 10, 2023)
1024	<i>Reserved</i>
1025	<i>Ollnova Technologies Ltd. v. Emerson Electric Co.</i> , 4:22-cv-01387 (E.D. Mo.) Plaintiff's Preliminary Disclosure of Asserted Claims and Infringement Contentions (July 7, 2022)
1026	<i>Reserved</i>
1027	U.S. Patent Application Publication No. 2007/0242688 to McFarland
1028	U.S. Patent Application Publication No. 2006/0186214 to Simon
1029	U.S. Patent Application Publication No. 2006/0071089 to Kates
1030	U.S. Patent No. 8,276,829 to Stoner
1031	<i>Reserved</i>
1032	U.S. Patent No. 7,455,236 to Kates

Exhibit ("Ex.")	Description
1033	WIPO International Application Publication WO 1999/017477 to Kriz
1034	<i>Reserved</i>
1035	Lex Machina: Overview for E.D. Mo. (Jan. 29, 2023) (retrieved from https://law.lexmachina.com/court/moed)
1036	U.S. Patent Application Publication No. 2005/0268629 to Ahmed
1037	U.S. Patent Application Publication No. 2006/0071773 to Ahmed
1038	WIPO International Application Publication WO 2007/036922 to Cummins
1039	U.S. Patent Application Publication No. 2007/0026107 to Wang
1040	U.S. Patent No. 6,392,536 to Tice
1041-1042	<i>Reserved</i>
1043	<i>Ollnova Technologies Ltd. v. Emerson Electric Co.</i> , 6:22-cv-00358-ADA (W.D. Tex.) Declaration of Erik De La Iglesia in Support of Plaintiff Ollnova Technologies Ltd.’s Responsive Claim Construction Brief
1044	<i>Ollnova Technologies Ltd. v. ecobee Technologies, ULC</i> , 2:22-cv-00072 (E.D. Tex.) Ollnova Technologies Ltd.’s Opening Claim Construction Brief (January 31, 2023)
1045	U.S. Provisional Patent Application No. 61/037,739
1046	<i>Reserved</i>
1047	Declaration of Jonathan Bradford

Exhibit ("Ex.")	Description
1048	<i>Ollnova Technologies Ltd. v. Emerson Electric Co.</i> , 4:22-cv-01387-JAR (E.D. Mo.) Memorandum and Order, Dkt. 79 (April 5, 2023)
1049	Memorandum from Director Vidal dated June 21, 2022
1050	U.S. Patent Application Publication No. 2006/0028997 to McFarland
1051	U.S. Patent Application Publication No. 2005/0275530 to Kates
1052	Supplemental Declaration of Dr. Dean P. Neikirk
1053	<i>Ollnova Techs Ltd. v. ecobee Techs. ULC</i> , No. 2:22-cv-00072-JRG (" <i>ecobee</i> "), Dkt. No. 237 (E.D. Tex. Oct. 5, 2023)

As the Petition details, the asserted unpatentability Grounds render obvious claims 1-5, 7-11, 13-16, and 20-21 (“Challenged Claims”). Indeed, a jury recently found claims 1, 3, and 21 obvious. *Ollnova Techs Ltd. v. ecobee Techs. ULC*, No. 2:22-cv-00072-JRG (“*ecobee*”), Dkt. No. 237 (E.D. Tex. Oct. 5, 2023) (Ex. 1053).

For Grounds 1-8, Patent Owner (“PO”) challenges only the art’s disclosures of the “multi-sensor package,” “receive sensor control information related to sensor data in control,” and “a second automation component in communication with the building automation system” limitations. And for Ground 9, PO challenges only Kates-089’s and Ahmed-629’s disclosure of the “multi-sensor package” and “receive sensor control information” limitations. PO does not dispute, and has therefore waived, any other arguments challenging the Grounds. Pap. 13, 9. As detailed below, PO’s arguments rely on flawed claim constructions that deviate from the terms’ plain meaning and mischaracterizations of the prior art when applying those constructions—*e.g.*, by cherry-picking quotations and omitting context. Regardless, the Challenged Claims are obvious under any of the proposed constructions. Ex. 1052 (“Neikirk Reply”), ¶¶1-7.

I. CLAIM CONSTRUCTION

Claim construction is unnecessary here because the prior art meets the limitations of the Challenged Claims under either party’s proposed constructions, as further explained in §§III-IV below and in the Petition. Pet., 11-13. But to the extent

any terms are construed, PO's constructions are improper. Tellingly, each of the positions taken by PO here differs from the positions it took in both *ecobee* and PO's district court action against Petitioner. PO cannot treat the claims as a "nose of wax" to be "twisted and turned in any direction" to suit its needs. *White v. Dunbar*, 119 U.S. 47, 51 (1886); Neikirk Reply, ¶¶8-10.

A. "multi-sensor package" ([1.a], [7.a], [20.a])

In its district court case against Petitioner, PO agreed that a "multi-sensor package" is a "single packaged sensor device, not a group of individual sensors." (Ex. 1013, 1; Pet., 12; Neikirk ¶52). PO now requires multiple sensors to also be "operational." POR, 9. While claim 1 already separately recites that the multi-sensor package is "configured to detect a plurality of variables and generate sensor data for each detected variable," it appears that PO's proposed construction purports to distinguish the art from the '282 claims by erroneously requiring **all** contained sensors to be "operational," e.g., at the same time. *See, e.g.*, POR, 28-30 (arguing that McFarland does not disclose "how multiple operational sensors would be distinguished and processed"), 40 (arguing Ahmed-629 discloses "only one sensor functionality is enabled in a particular sensor module."). The intrinsic evidence does not support this requirement. Neikirk Reply, ¶¶11-12.

First, the term “multi-sensor package” is a “single packaged sensor device, not a group of individual sensors”—as the parties already agreed. Adding the requirement that each of the sensors in the package be “operational” injects ambiguity because it is unclear what “operational” means. For example, it could mean all sensors must operate simultaneously or that they all must be used as part of a system. The claims already separately recite how the package must operate—e.g., it must be “configured to detect a plurality of variables and generate sensor data for each detected variable.” ’282, Cls. 1, 13; *see also id.*, Cls. 7, 20 (reciting similar language). Neikirk Reply, ¶13.

Second, the ’282 specification and prosecution history also do not impose this “operational” requirement. The specification provides that “[t]he sensor package 220 **may be configured** to sense or detect a variety of variables such as, for example, temperature, humidity, carbon dioxide, carbon monoxide, volatile organic compounds, etc.” ’282, 6:25-29. This optional language does not require all sensors to be “operational.” PO’s cited specification disclosures fare no better. PO’s excerpts state that the automation component “scans each of the sensors operating within the sensor package 220,” but this merely states that certain sensors may be operating in the package—not that all the sensors are operational. POR, 7-8. Moreover, PO omits the rest of the disclosure: “each of the sensors operating within the sensor package 220 **and/or the sensor data stored in the memory 204**”—further confirming

that multiple sensors operating at once is optional. '282, 8:65-67, 9:43-46; Neikirk Reply, ¶¶14-16.

PO cites prosecution history discussions of a Petite reference (POR 8-9), but Applicant distinguished Petite by arguing that it discloses “utilizing one or more individual sensors” and not a single, combination multi-sensor package. Ex. 1003, 109-113. The Applicant stated that, in contrast, “a multi-sensor package ***is configured to detect values and variables related to multiple sensed properties.***” *Id.*, 90; POR, 8. This does not require each sensor in the package to be “operational” or that they must be operational at the same time. Moreover, to distinguish Petite, Applicant made corresponding claim amendments to separately recite that the multi-sensor package is “***configured to detect a plurality of variables*** and generate sensor data for each detected variable.” Ex. 1003, 83, 86; POR, 8. Thus, the only configuration or operability required of the multi-sensor package is separately recited. Neikirk Reply, ¶¶17-18.

Finally, to the extent PO argues “operational” requires all sensors to be accessed at once, PO’s own citations bely this argument. For example, the '282 discloses configuring only “some of the sensors” with a “high power requirement” “to operate periodically or on a set schedule” to save power. '282, 6:47-51; *see also* POR 7. The '282 also discloses that, at a given time only a “certain sensor and

sensor data is currently being analyzed and/or is primary or controlling...”—disclosing an embodiment in which other sensors are unused. ’282, 9:9-13; POR, 7. Neikirk Reply, ¶¶19-20.

Regardless, as further detailed in §III below, any difference between PO’s newly proposed construction (and its improper interpretation of that construction) and PO’s previously agreed-upon construction is inconsequential. McFarland and Ahmed-629 each disclose a “multi-sensor package” under either the parties’ agreed-upon construction and PO’s newly proposed construction.¹ Neikirk Reply, ¶21.

B. “*receive sensor control information related to sensor data in control*” ([1.e])

Again, while Petitioner disagrees with PO’s proposed construction of this term, the limitation is met under either party’s or the *ecobee* court’s construction for the reasons discussed in the Petition and below in §IV. To the extent that the term is to be construed, however, its plain and ordinary meaning should be applied. Neikirk Reply, ¶22.

While the *ecobee* court’s construction is flawed, it doesn’t impact this IPR. The *ecobee* court construed the term to mean “receive information that identifies

¹ The POR references “multi-sensor package” arguments as appearing in [1.e]. *E.g.*, POR, 36, 38, 43-44. These references appear to be typos intended to reference element [1.a], which recites this term.

which sensor or sensor value is driving or controlling a second automation component in communication with the building automation system.” Ex. 2002, 14. The construction rewrites “related to” to require that the sensor control information “**identifies** which sensor or sensor value is driving or controlling....” Not only does the plain meaning of the term not support this rewrite, but the specification likewise is clear that “sensor usage or control information,” which describes this element, either “relates to **or** identifies the sensor values and routines that are controlling and driving the receiving device.” ’282, 9:13-21. This disjunctive “or” “plainly designates that a series describes alternatives”—i.e., that “relates to” and “identifies” are alternatives. *SkinMedica, Inc. v. Histogen Inc.*, 727 F.3d 1187, 1199 (Fed. Cir. 2013). Neikirk Reply, ¶¶23-24.

The *ecobee* construction also changes “in control **at** a second automation component” to “controlling or driving a second automation component.” The intrinsic evidence again does not support this change to the term’s scope. Nevertheless, this issue does not appear to be material to either party’s arguments. Neikirk Reply, ¶25.

PO further modifies the *ecobee* court’s construction by replacing the *ecobee* construction’s use of “second automation component” with “receiving device.” See POR 11 (citing Ex. 2002, 14). This change introduces further ambiguity into PO’s construction. Neikirk Reply, ¶26.

PO distorts the construction even further in trying to distinguish the prior art (McFarland). PO argues that, under its construction, this element is not met by data that is “self-identifying as the driving or controlling information” because it comes from a device that does not include “multiple operable sensors.” POR, 32. Instead, according to PO, because there are multiple sensors, the sensor control information must expressly call out a single type of sensor data as the data in control. Restated, PO wants to introduce a negative limitation excluding any “self-identifying” control information. Again, PO provides no basis for rewriting the claim in this manner. *See Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003) (holding that negative limitations must find support either in “the words of the claim” or through an “express disclaimer or independent lexicography in the written description that would justify adding that negative limitation”) (citing *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366–67 (Fed. Cir. 2002)). Neikirk Reply, ¶27.

Regardless, McFarland and Stoner disclose “receiv[ing] sensor control information related to sensor data in control at a second automation component” under either party’s construction, as further detailed below in §IV. Neikirk Reply, ¶28.

C. “second automation component in communication with the building automation system” [1.e]

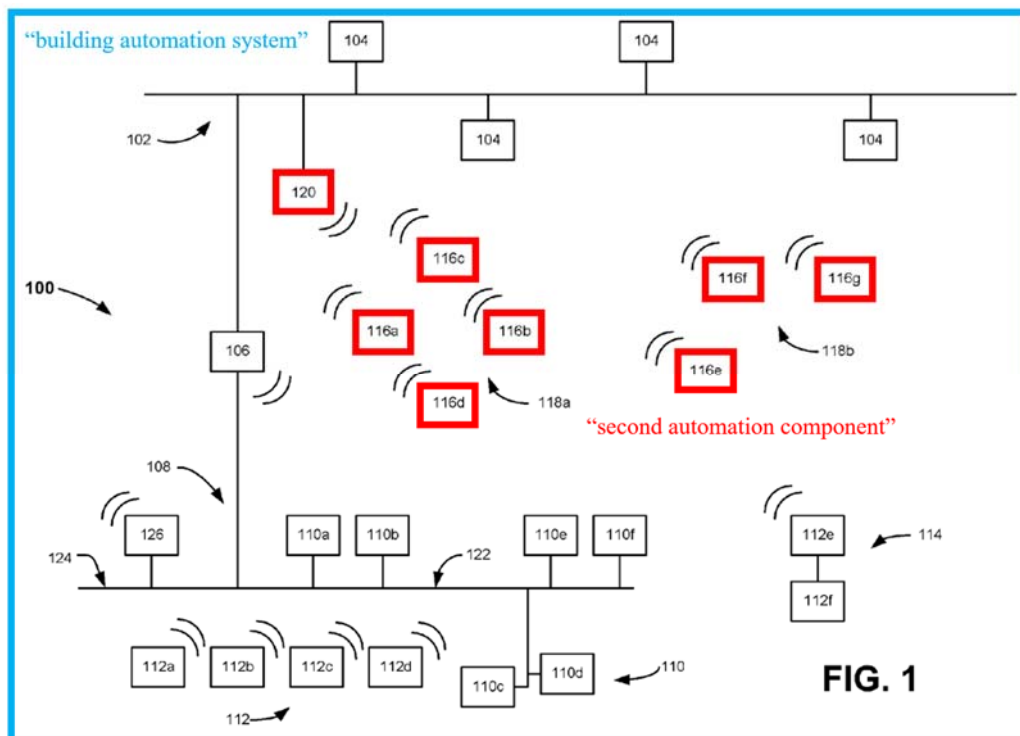
PO’s proposed construction, “an automation component that communicates with, **but is not within**, the building automation system,” again introduces a flawed

negative limitation—excluding any second automation component that is “within” the system. POR 11-12, 15. Not only does this conflict with the aforementioned caselaw concerning negative limitations, but it is also contrary to the plain meaning of the terms “with” and “within.” The Board should give this term its plain meaning. Neikirk Reply, ¶29.

Nothing in the claim language precludes a second automation device from being within the system. The claim merely recites that the second automation component is “in communication with” the system; it does not specify whether the component is within or outside the system. PO argues that the claim recites “in communication with,” as opposed to “in communication within” (POR 11-12), but those two terms are not mutually exclusive. For example, a person **within** a group can communicate **with** that group as a whole. Likewise, a computer **within** a networked system (such as a smart home) can, and commonly does, communicate **with** other system devices, such as other computers, printers, or smart devices, that are also **within** that network system. In each of these uses, “with” describes another party to the communication, “within” describes the location where communication occurs. The same is true of the claim language cited by PO: the preamble recites that the component is configured “for wireless communication **within** a building operating system”—specifying the location of and not another party to the communication—while a processor “in communication **with** the wireless communications component”

(and the other uses of “with” that PO quotes) each identify the other parties to, not the location of, the communication. See POR 14 (quoting elements of claims 1, 7, and 20). Thus, a device can both be located “within” a system and communicate “with” that system. Construing “with” to exclude “within” is inconsistent with the plain meaning of the term. Neikirk Reply, ¶¶30-31.

The specification also contradicts PO’s construction because it discloses first and second automation components that are both within the building automation system and communicate with the system. Figure 1 of the ’282 patent is an illustrative embodiment of the building automation system:



’282, Fig. 1, 4:47-49. Building automation system 100 includes both automation components 116a-116g, which are first and second automation components such as

“reduced function device[s],” and a field panel 120, which is a “receiving device” (another second automation component). ’282, 4:47-49, 5:13-51, 9:9-35.² Indeed, each of PO’s citations to the ’282 discloses an automation component “within” and communicating with the system or components within the system. See POR, 11-15; ’282, 2:29-57, 3:15-17, 3:54-60, 5:18-19, 5:44-49, 6:28-29, 6:63-65, 8:65-67; see also *id.*, 3:10-11, 4:47-49, 5:52-53. As PO acknowledges, an automation component is “any ... wired or wireless device operable ***within the BAS 100.***” ’282, 6:63-65. As the specification explains, the components “communicate with automation components ... within the mesh network”—a network within building automation system 100. ’282, 5:23-29; see also *id.* 4:47-5:51 (discussing communications with and within the building automation system). PO’s citations therefore each confirm that the second automation components can both communicate with and be within the system. Neikirk Reply, ¶¶32-34.

PO lacks any intrinsic support for its assertion that an automation component can only “be a device that is not within the building automation system.” POR, 14. PO instead relies exclusively on Mr. de la Iglesia’s declaration. But that declaration discusses only communication between components 112 and 116, subnets 118a and 118b, and networks 102, 108, 114, and 118. Each of these components is part of

² PO agrees that a “field panel or ‘a reduced function device (RFD)’” are each “second automation components.” POR 3 n.1; see also ’282, Fig. 1, 5:17-29.

building automation system 100, as shown in Fig. 1 above. Ex. 2008, ¶18; '282, Fig. 1, 4:57-5:51 (identifying components of BAS 100). Indeed, no embodiment of the '282 patent shows a second automation component outside a building automation system. See *generally* '282. Neikirk Reply, ¶¶35.

PO's dictionary definitions for "with" and "within" likewise do not support PO's arguments because they confirm that the terms are not mutually exclusive. *Contra* POR, 11. Rather, these definitions merely confirm that "with" and "within" have different meanings as discussed above. PO's cited definitions of "with" do not prohibit a device within a system from communicating with that system, and instead confirm that "with" is used to specify the other party(s) to the communication. See Ex. 2006 ("21. To : onto <Link your arm *with* your partner's.> ... 25. In relationship to <infatuated *with* a neighbor>"); Neikirk Reply, ¶36.

While PO's unsupported construction should be rejected, the prior art discloses the Challenged Claims even under that construction as discussed further below in §V. Neikirk Reply, ¶37.

II. MCFARLAND AND AHMED-629 DISCLOSE "A MULTI-SENSOR PACKAGE"

For the multi-sensor package elements, Grounds 1-4 rely on McFarland's teachings, while Grounds 5-9 rely on those teachings as modified by Ahmed-629. Both McFarland and Ahmed-629 disclose and at least render obvious a multi-sensor

package, including under PO's incorrect construction. Neikirk Reply, ¶138.

A. McFarland's "sensor 209" that is a "combination[]" of multiple sensors discloses a "multi-sensor package"

The Petition explains that McFarland's "sensor 209" discloses a multi-sensor package. As shown in Figure 2, sensor 209 is a component of a device 207 (an "automation component") in a building automation system:

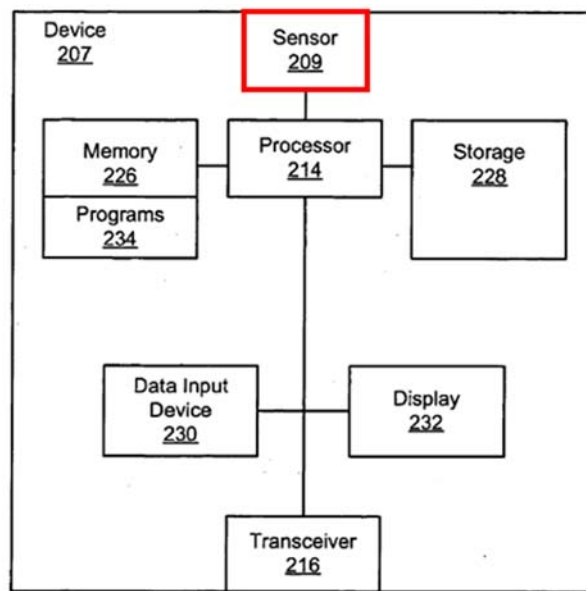


Figure 2

McFarland, Fig. 2. McFarland discloses implementing sensor 209 as a "combination[]" sensor, such that it "is configured as any of a temperature sensor, humidity sensor, fire sensor ... **combinations thereof**, or other now known or later developed sensors." McFarland, [0043]. McFarland further discloses implementing the sensor as a micro-electromechanical ("MEMS") sensor—which a POSITA would have understood to disclose integrating a combination sensor on a single substrate. Neikirk

¶72, 199; see Pet., 18-19, 69-70.. Each of the sensors within the combination generates sensed data because the sensor includes “**a collection of devices that sense conditions**, parameters, and/or events such as an environmental condition in a building,” including temperature, humidity, or fire. McFarland, [0043]. McFarland therefore discloses a multi-sensor package under both the term’s plain meaning, the parties’ prior agreed constructions, and PO’s new construction. See §I.A. Neikirk Reply, ¶39.

These disclosures bely PO’s assertion that McFarland “consistently describes the operation of its disclosed devices in the context of a single operational sensor.” *Contra* POR, 27. Indeed, PO quotes McFarland’s disclosure that a sensor “generates information or data related to the sensed or monitored condition” as purportedly supporting its argument (POR 29 (citing McFarland, [0043])), but ignores both the prior sentence disclosing that the sensor is a “collection of devices” as quoted above, as well as the immediately following sentences that disclose that this generated information is output “as one **or more signals** that may be read by the processor 214,” and that the signals are based on the “result of **sensing** or monitoring the **conditions or parameters**.” McFarland, [0043]. PO’s assertion that McFarland is “like Petite” discussed during prosecution (POR 28) also ignores that Petite’s “collection of devices” described separate individual sensors—not a single integrated combination sensor. Ex. 1003, 109-113; Neikirk Reply, ¶¶40-41.

PO's further argument that "McFarland does not teach or disclose how multiple operational sensors would be distinguished and processed" (POR, 28) is irrelevant to whether McFarland discloses a "multi-sensor package" because this element does not require a particular protocol for processing multiple sensor outputs. Regardless, PO's argument is again incorrect because it ignores McFarland's disclosure of a processor handling "a plurality of different types of sensors 209." McFarland, [0039]. For example, the processor handles "one **or more** signals" that are the "result of **sensing ... conditions or parameters.**" McFarland, [0043]. Thus, McFarland discloses multiple sensors in the single packaged sensor device, operating at the same time. Neikirk Reply, ¶42-43.

The fact that McFarland's processor handles multiple "signals" and "conditions or parameters" further undercuts PO's already confused argument that McFarland cannot handle multiple sensors because its goal was to "reduc[e] ... communication." *Contra* POR, 29. McFarland instead discloses addressing this purported problem using "dynamic value reporting" protocols—not by reducing the system's sensor functionalities. *E.g.*, McFarland, [0006]. Instead, McFarland discloses that the number of sensors can be "increased." *See id.* Neikirk Reply, ¶44.

McFarland discloses this element. And for the same reasons, McFarland discloses the similar elements in claims 7 and 20. Neikirk Reply, ¶45. *See also* Pet. 35-44.

B. Ahmed-629’s “MEMS sensors incorporated into a single substrate” discloses a multi-sensor package

To the extent additional disclosure is required, the Petition explains for Grounds 5-9 that Ahmed-629’s sensor suite 42 discloses a multi-sensor package. Ahmed-629 discloses multiple sensors combined on a single-substrate, generating multiple sensor outputs: “the *sensor suite 42 is a collection of MEMS sensors incorporated into a single substrate.*” Ahmed-629, [0048]; Pet., 69, Neikirk, ¶200. For example, Ahmed-629 discloses that integrating “multiple MEMS sensors,” including “both temperature and humidity sensor functions,” on a “single substrate” was “known” in “commercially available” products. Ahmed-629, [0047]. Ahmed-629 further discloses generating multiple sensor signals using such MEMS sensor modules, teaching that a microcontroller can configure the sensor module to select signals from a sensor. Ahmed-629, [0056]; *see also* Ahmed-629, [0051]. Ahmed’s teachings therefore also disclose a multi-sensor package. *See* Pet., 69-72; Neikirk, ¶202. Neikirk Reply, ¶¶46-47.

PO does not dispute Ahmed-629’s disclosures under this term’s plain meaning, and instead makes arguments that rely on PO’s incorrect construction requiring all sensors to be enabled. As explained in §II.A, this interpretation is incorrect. But even under PO’s incorrect constructions, its arguments fail. Neikirk Reply, ¶48.

PO argues that Ahmed-629 discloses “only one sensor functionality is enabled

in a particular sensor module” (POR 40), but relies on quoting disclosures out of context as support. PO argues Ahmed-629 discloses identifying “which sensor functionality to enable,” but ignores the prior sentence’s disclosure of setting up the sensor module to enable multiple “*sensors being used.*” Ahmed-629, [0052]. Ahmed-629 further discloses enabling multiple sensors using “configuration information” to define “which of *multiple possible sensor combinations* is to be provided by the sensor module 28.” Ahmed-629, [0054]; Pet., 70-71. Ahmed-629 also provides explicit examples of sensor modules that include “one *or more* sensors used to provide the function of protection,” including “a fire sensor, a smoke sensor, a chemical sensor and a biological sensor,” along with other sensors within a module that are outputting sensed data, as well as a security sensor suite including both a “biometric sensor, [and] a complementary metal oxide semiconductor (CMOS) camera” and other sensors within a module that are all used. Ahmed-629, [0074]-[0075]. Ahmed-629 thus discloses multiple operating sensors in a single packaged sensor device that outputs combinations of multiple sensor values. It is not limited to single-value outputs. Ahmed-629 discloses a multi-sensor package under either party’s construction. Neikirk Reply, ¶¶49-52. See §I.A.

III. MCFARLAND AND STONER DISCLOSE “RECEIV[ING] SENSOR CONTROL INFORMATION RELATED TO SENSOR DATA IN CONTROL”

As explained in the Petition, both McFarland (Grounds 1 & 3) and Stoner

(Ground 3) disclose the “receive sensor control information related to sensor data in control” element. Pet., 25-29, 58-64, 67-68. PO’s arguments are limited to only claims 1-5, and do not address any other Challenged Claims or Grounds.³ POR, 31-33, 36-38. Even for claims 1-5, PO’s arguments mischaracterize both the claim language and the references. POR, 31-33, 36-38; Neikirk Reply, ¶¶53-54.

A. McFarland’s “report instruction” “specific to the sensor” is used for control and thus discloses sensor control information

The Petition explains that McFarland discloses a “wireless automation device” (a first automation component) receiving a “report instruction” (sensor control information). McFarland, [0025]-[0026], [0043], [0060]-[0062]; Pet. 26. The “report instruction” is sensor control information at least because it is “specific to the sensor” used to “implement[] a control process ... based on” that sensor signal at a controller 508 (a second automation component). McFarland, [0039]-[0040]; Pet. 26; Neikirk, ¶¶87-88; Neikirk Reply, ¶55.

PO’s arguments in response fail. PO mischaracterizes the Petition as contending that data is “self-identifying” because McFarland “does not disclose or suggest multiple operable sensors.” POR 32. This argument relies on PO’s improper construction imposing a negative limitation excluding “self-identifying” information.

³ PO’s arguments would fail for the same reasons as set forth here even if the arguments were directed to other Challenged Claims or Grounds.

See §II.B. Regardless, even under that construction, PO’s argument also mischaracterizes both McFarland and the Petition. McFarland discloses using multiple sensors in the multi-sensor package (*see* §III.A). The Petition explains that the “report instruction” discloses and renders obvious the claimed “sensor control information” even under PO’s construction because the “report instruction” identifies for the wireless automation device (*i.e.*, first automation component) which sensor data to report. McFarland, [0060]-[0062]. That sensor data is then used by the wireless automation device to “process[] the information according to a control algorithm.” *Id.* The requested sensor data is driving or controlling at the controller (*i.e.*, second automation component) because the controller uses that data to “provide[] control functionality ... in response to an event reported by” the sensor—for example, the controller uses the sensor data to “provide[] an appropriate control signal to the actuator” by, e.g., controlling HVAC system actuators. McFarland, [0025]-[0026]. Pet., 25-26; Neikirk Reply, ¶59. And applying an “appropriate control signal” based on this sensor data discloses that the report instruction identifies a specific sensor in order to determine what control signal is appropriate. *See id.* Contrary to the POR, the Petition does not contend that “any information that may be communicated,” or mere “sensor data that is used by the second automation device,” without more, meets this element, and instead explains how the information identifies a specific sensor and then uses that sensor data to control a particular control process, and

therefore meets the requirements of this element. *Contra* POR 32. McFarland, as the Petition explains, therefore discloses this element under either party's or the *ecobee* construction. Neikirk Reply, ¶¶56-61.

B. Stoner's received operational information used to determine and display the sensor controlling the automation system also discloses the claimed sensor control information

While McFarland already discloses this element, to the extent additional disclosure is required, Stoner also discloses sensor control information. The Petition explains that Stoner discloses receiving "operational information" that includes "updated system status information, updated operational data, and/or other data" at a remote controller. Stoner, 9:11-42; Pet. 67-68. The remote controller uses this data to determine, and display to a user, the sensor and sensor data that is controlling the automation system. For example, the remote controller will notify the user when the system switches to use a different temperature sensor, or to display to the user both "updated sensed temperature readings, updated sensed humidity readings, ... and/or other data, as desired." Stoner, 9:11-42. The Petition further explains, and PO does not dispute, that a POSITA would have been motivated to modify McFarland's controller with these teachings, advantageously yielding a remote controller that has access to current sensor conditions for both monitoring and control purposes. Pet. 54-58. Neikirk Reply, ¶¶62-64.

PO does not substantively dispute Stoner's disclosures of this element, and instead quibbles about the Petition's structure. *See* POR 36-38. But PO's contention that the Petition's arguments are made "by reference to claim element [7.e], which does not even recite 'sensor control information'" misunderstands the Petition. *See* POR 36-37. The Petition explains that "[t]hese same teachings [that disclose [7.e]] also disclose [1.e]/[13.f]/[20.d]," and proceeds to explain how Stoner's "received operational information" discussed for [7.e] also discloses sensor control information. *See* Pet., 68. The Petition is not required to be repetitive when addressing similar elements. Stoner discloses this element under either party's or the *ecobee* construction. Neikirk Reply, ¶¶65-66.

IV. MCFARLAND, STONER, AND KATES-089 EACH DISCLOSE A "SECOND AUTOMATION COMPONENT IN COMMUNICATION WITH THE BUILDING AUTOMATION SYSTEM" (GROUNDS 1, 3, 9)

The Petition explains that McFarland, alone and in view of Stoner, and Kates each discloses and renders obvious second automation components in communication with the building automation system. *See* Pet. 25-26, 35-37, 54-60, 74-75. PO does not dispute the prior art's disclosures under the plain meaning of the claim language, and instead relies on its improper claim construction excluding second automation components from being "within" the building automation system. As

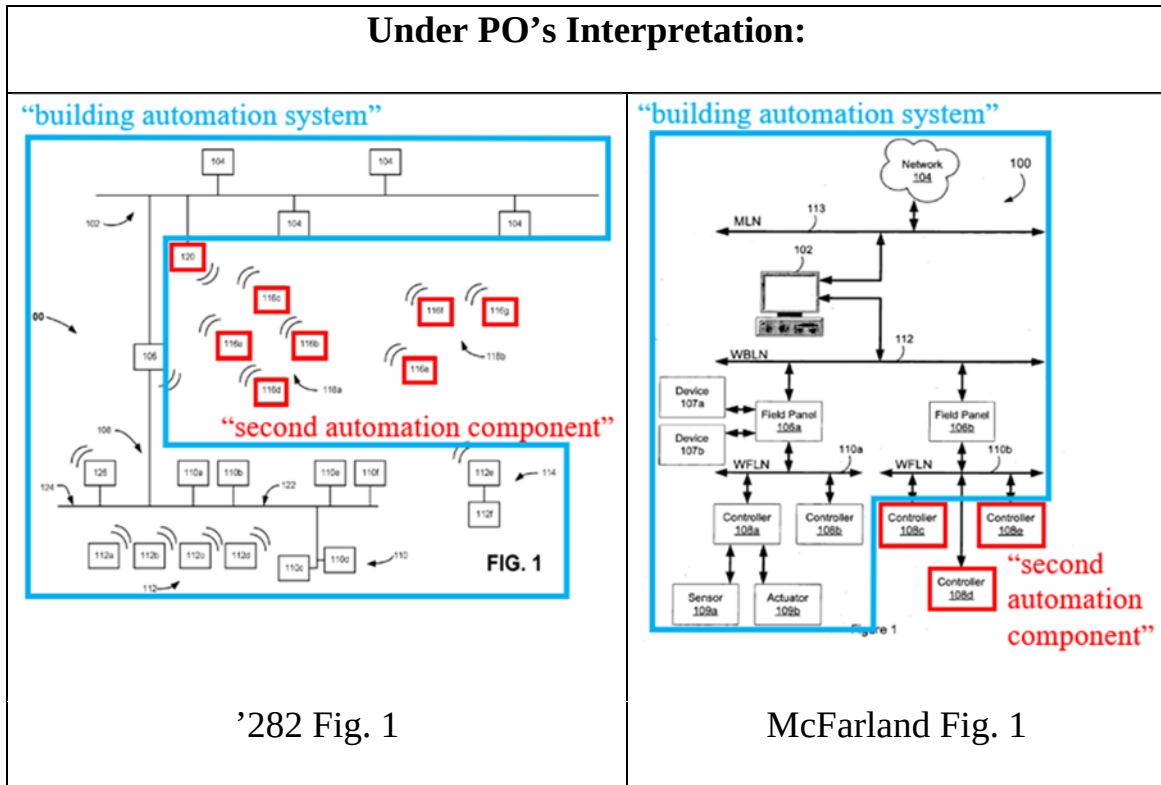
explained in §II.C, this construction is improper.⁴ Neikirk Reply, ¶¶67-69.

Regardless, in addition to meeting this element under this term's plain meaning, McFarland alone and in view Stoner, and Kates-089 each discloses and/or renders obvious this element under PO's incorrect construction. With respect to McFarland, controllers 108a-108e each function as second automation components that communicate with the building automation system. McFarland, [0025]-[0026], [0060]; Pet. 25-26. Neikirk Reply, ¶69..

To the extent the '282 specification supports PO's construction requiring that the controller must be **outside the system** (it does not), the same disclosures from McFarland discussed in the Petition still meet this element under that improper construction. PO's argument boils down to a box-drawing exercise. Based on PO's apparent argument that wireless building automation components 112 (first automation components) are part of the '282 claimed system but field panels and reduced function devices 120 and 116a-116g (which PO states are second automation components—see POR 3 n.1) are not, the same could be said for McFarland's building automation system as shown below. For example, under PO's logic, McFarland's wireless automation devices (first automation components—see Pet, 16-18) are part

⁴ PO does not raise this argument for claims 13-16 (Grounds 2, 4, 6, 8) or for Grounds 5 and 7. But its arguments would also fail with respect those claims/Grounds for the same reasons explained herein.

of the system and controllers 108c-108e (second automation components) are not—
e.g., because they are in a separate “wireless field (or floor) level network
(‘WFLN’s’).” McFarland, [0027], [0030]-[0031].⁵



Compare, e.g. ’282, Fig. 1, 5:13-38, with McFarland, Fig. 1, [0024]; see also Neikirk
Reply, ¶¶70-71.⁶

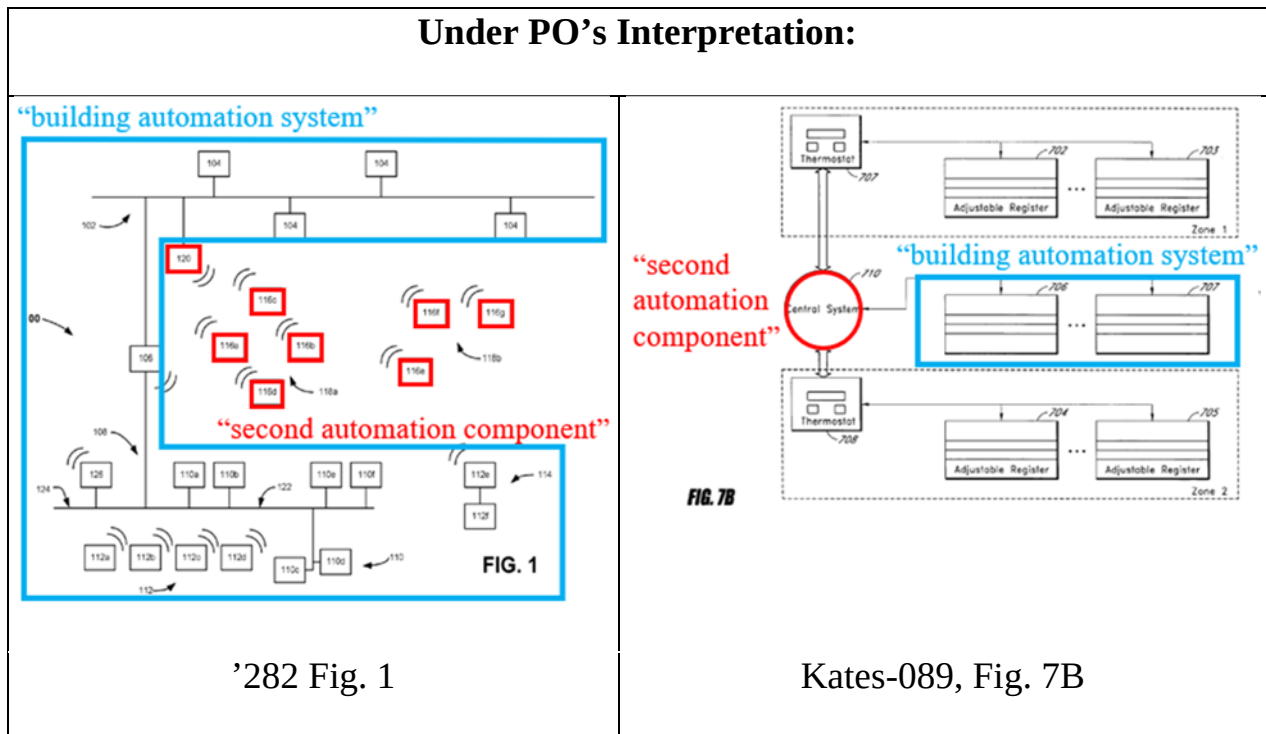
⁵ The POR 35 arguments about “Network 104” are irrelevant because Copeland is not relying on Network 104 for this element.

⁶ While the Petition’s specific discussion of this element focused on exemplary controller 108a as the “second automation component” (see Pet. 25-29), the Petition stated that McFarland renders obvious and discloses performing these same functions in each of controllers 108a-108e. Pet. 15-16, 29; McFarland, [0027] (the communicated information is “shared among or common to, controllers 108a-108e”). Neikirk Reply, ¶71.

To the extent further disclosure is required, for Ground 3, Stoner provides additional disclosures of an HVAC controller that is a “second automation component” that “communicate[s] with” various components of a building automation system (e.g., “one or more HVAC components of HVAC equipment 16” and “remote controller 14”). Stoner, 4:11-27. While PO contends that the Petition “does not argue that Stoner’s remote portable controller is not within the building automation system” (POR 37), the Petition explains and PO does not dispute that a POSITA would have been motivated to modify McFarland’s automation device with Stoner’s teachings of a remote portable controller to allow the user to advantageously adjust system settings from *any* location. See Pet. 51-52, 54-55; Stoner, Fig. 2, 3:40-50, 4:28-40, 4:54-63, 6:26-28; Neikirk, ¶167. Because “any” location for a remote device includes locations outside the system, this renders obvious this element even under PO’s construction. Neikirk Reply, ¶72.

The same is true for Kates-089 (Ground 9). Kates-089 discloses that a “central system” 710 (a second automation component) communicates with Electronically Controlled Register Vents (“ECRVs”) (first automation components). Kates-089, Fig. 7B, [0041], [0056], [0064]-[0065], [0078], [0080], [0090], [104]-[107]; Pet., 74-76; Neikirk ¶¶217-219. These disclosures also meet this element under PO’s flawed box-drawing exercise. For example, as shown below in Fig. 7B, Kates-089 discloses putting devices in its system into different building zones, each of which

is a building automation system. See Kates-089, Fig. 7B, [0056]-[0058]; Neikirk Reply, ¶73. For example, a zone comprising ECRVs 706 and 707 (as shown below) discloses a building automation system that communicates with, but does not include, Central System 710. *Id.* The central system is outside the building automation system because it is used to control multiple different building automation systems (i.e., different zones), including the system comprising ECRVs 706 and 707 (as shown below), but is not considered within those zones. Kates-089, Fig. 7B, [0056]-[0058]; Pet. 45-47, 74-75; Neikirk Reply, ¶73.



Compare, e.g., '282, Fig. 1, 5:13-38, with Kates-089, Fig. 7B, [0056]-[0062], [0084], [0090]-[0097], [0110]; see also Pet., 46-47, 74-76, Neikirk, ¶¶148, 217-219. Therefore, Kates-089's disclosures discussed in the Petition also disclose this element even under PO's incorrect construction.

Accordingly, while PO's arguments based on its improper construction should be rejected, even under PO's construction, the prior art in Grounds 1, 3, and 9 disclose and render obvious this element. Neikirk Reply, ¶74.

V. CONCLUSION

As set forth in the Petition and further explained herein, the prior art presented in the Petition's Grounds disclose and render obvious the Challenged Claims. The Challenged Claims should be found unpatentable.

Dated: March 22, 2024

Respectfully submitted,

/James L. Davis, Jr./

James L. Davis, Jr.

Reg. No. 57,325

Counsel for Petitioner
COPELAND COMFORT CONTROL
LP.

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. §42.24(a) and (d), the undersigned hereby certifies that this Petitioner's Reply to Patent Owner's Response complies with the type-volume limitation of 37 CFR §42.24(a)(i) because, exclusive of the exempted portions, it contains 5,002 words as counted by the word processing program used to prepare the paper.

Dated: March 22, 2024

/Daniel W. Richards/

Daniel W. Richards

Reg. No. 69,652

CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing PETITIONER'S RE-
PLY TO PATENT OWNER'S RESPONSE and EXHIBITS 1052-1053 were
served in its entirety by filing through the Patent Trial and Appeal Case Tracking
System (P-TACTS), as well as providing a courtesy copy via email to the follow-
ing attorneys of record for Patent

Owner listed below:

Lead Counsel	Backup Counsel
Brett Cooper, Reg. No. 55,085 BC Law Group, P.C. 200 Madison Avenue, 24th Floor New York, NY 10016 Telephone: 212-951-0100 bcooper@bc-lawgroup.com Ollnova_Counsel@b-clg.com	Robert A. Auchter, Reg. No. 38,069 Auchter PLLC 1629 K Street, NW, Suite 300 Washing- ton, DC 20006 Telephone: 703-585-5721 robert@auchterlaw.com

Courtesy copies of the same documents were also served at the following
email addresses of record for Ollnova Technologies Ltd.'s litigation counsel:

Anthony G. Simon, MO #38745 Paul J. Tahan, MO #73037 THE SIMON LAW FIRM, P.C. 800 Market Street, Suite 1700 St. Louis, Missouri 63101 Phone: (314) 241-2929 Fax: (314) 241-2029	Brett E. Cooper (NY SBN 4011011) bcooper@bc-lawgroup.com Seth Hasenour (TX SBN 24059910) shasenour@bc-lawgroup.com Drew B. Hollander (NY SBN 5378096) dhollander@bc-lawgroup.com
---	--

asimon@simonlawpc.com ptahan@simonlawpc.com	BC LAW GROUP, P.C. 200 Madison Avenue, 24th Floor New York, NY 10016 Tel.: (212) 951-0100 Fax: (646) 293-2201
--	---

Dated: March 22, 2024

By: /Jonathan Bradford/
Name: Jonathan Bradford
ROPES & GRAY LLP