UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ECOBEE TECHNOLOGIES ULC

Petitioner,

v.

OLLNOVA TECHNOLOGIES LTD.

Patent Owner.

Case IPR2024-00131

U.S. Patent No. 7,746,887

PETITION FOR *INTER PARTES* REVIEW

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TABLE OF ABBREVIATIONS

Abbreviation	Description
’887	U.S. Patent No. 7,746,887
’887FH	File History of U.S. Patent No. 7,746,887
Boaz	U.S. Patent Application Publication No. 2005/0270173
Carrier Litigation	*Ollnova Technologies Ltd. v. Carrier Global Corp.,* No. 9-22-cv-80388 (S.D. Fla., filed March 11, 2022)
Claims	Claims 1, 3-8, 14-15, and 18 of U.S. Patent No. 7,746,887
Cunningham	U.S. Patent No. 6,124,806
ecobee Litigation	*Ollnova Technologies Ltd. v. ecobee, Inc.,* No. 2-22-cv-00072 (E.D. Tex., filed March 8, 2022)
Ehlers	U.S. Patent No. 5,696,695
Emerson Litigation	*Ollnova Technologies Ltd. v. Emerson Electric Co. et al.,* 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.)
Garrod	U.S. Patent Application Publication No. 2003/0174070
Hitt	U.S. Patent Application Publication No. 2004/0100394
IPR	*Inter Partes* Review
Kates-505	U.S. Patent No. 7,102,505
Kates-528	U.S. Patent No. 7,230,528
Kates-711	U.S. Patent No. 7,528,711
Lareau	U.S. Patent Application Publication No. 2003/0137968
Littrell	U.S. Patent Application Publication No. 2005/0246593

Mueller	U.S. Patent No. 6,513,723
Neikirk	Declaration of Dr. Dean P. Neikirk
Petitioner	ecobee Technologies ULC
PMU	Portable monitoring unit
PO	Patent Owner; Ollnova Technologies Ltd.
POSITA	Person of Ordinary Skill in the Art
PTAB	Patent Trial and Appeal Board
USPTO	United States Patent and Trademark Office

LIST OF EXHIBITS

Exhibit ("Ex.")	Description
1001	U.S. Patent No. 7,746,887
1002	Declaration of Dr. Dean P. Neikirk
1003	File History of U.S. Patent No. 7,746,887
1004	U.S. Patent No. 7,528,711 to Kates
1005	U.S. Patent Application Publication No. 2004/0100394 to Hitt
1006	U.S. Patent Application Publication No. 2005/0246593 to Littrell
1007	U.S. Patent No. 5,696,695 to Ehlers
1008	U.S. Patent Application Publication No. 2005/0270173 to Boaz
1009	*Ollnova Technologies Ltd. v. Emerson Electric Co.*, 4:22-cv-01387 (E.D. Mo.) Defendants' Opening Claim Construction Brief (October 27, 2022)
1010	*Ollnova Technologies Ltd. v. Emerson Electric Co.*, 4:22-cv-01387 (E.D. Mo.) Plaintiff Ollnova Technologies Ltd.'s Responsive Claim Construction Brief (November 17, 2022)
1011	*Ollnova Technologies Ltd. v. Emerson Electric Co.*, 4:22-cv-01387 (E.D. Mo.) Defendants' Reply Claim Construction Brief (December 1, 2022)
1012	*Ollnova Technologies Ltd. v. Emerson Electric Co.*, 4:22-cv-01387 (E.D. Mo.) Plaintiff Ollnova Technologies Ltd.'s Sur-Reply Claim Construction Brief (December 15, 2022)
1013	*Ollnova Technologies Ltd. v. Emerson Electric Co.*, 4:22-cv-01387 (E.D. Mo.) Joint Claim Construction Statement (December 20, 2022)

1014	*Ollnova Technologies Ltd. v. Carrier Global Corp.*, 9:22-cv-80388 (S.D. Fla.) Plaintiff Ollnova Technologies Ltd.'s Opening Claim Construction Brief (November 4, 2022)
1015	*Ollnova Technologies Ltd. v. Carrier Global Corp.*, 9:22-cv-80388 (S.D. Fla.) Carrier Global Corp.'s Responsive Claim Construction and Indefiniteness Brief (November 18, 2022)
1016	*Ollnova Technologies Ltd. v. Carrier Global Corp.*, 9:22-cv-80388 (S.D. Fla.) Plaintiff Ollnova Technologies Ltd.'s Reply Claim Construction Brief (November 30, 2022)
1017	*Ollnova Technologies Ltd. v. Carrier Global Corp.*, 9:22-cv-80388 (S.D. Fla.) Joint Claim Construction Chart (December 5, 2022)
1018	U.S. Patent No. 6,124,806 to Cunningham
1019	U.S. Patent Application Publication No. 2003/0174070 to Garrod
1020	U.S. Patent Application Publication No. 2003/0137968 to Lareau
1021	U.S. Patent No. 7,230,528 to Kates
1022	U.S. Patent No. 7,102,505 to Kates
1023	*Ollnova Technologies Ltd. v. ecobee Technologies, ULC*, 2:22-cv-00072 (E.D. Tex.) P.R. 4-3 Joint Claim Construction and Prehearing Statement (January 10, 2023)
1024	Standing Order Governing Proceedings (OGP) 4.1—Patent Cases (W.D. Tex.) (April 14, 2022)
1025	*Ollnova Technologies Ltd. v. Emerson Electric Co.*, 4:22-cv-01387 (E.D. Mo.) Plaintiff's Preliminary Disclosure of Asserted Claims and Infringement Contentions (July 7, 2022)
1026	Redline comparison between the specifications of U.S. Patent No. 7,746,887 and U.S. Patent No. 7,102,505
1027	*Reserved*

1028	*Reserved*
1029	*Reserved*
1030	*Reserved*
1031	U.S. Patent No. 6,513,723 to Mueller
1032	*Reserved*
1033	*Reserved*
1034	*Reserved*
1035	Lex Machina: Overview for E.D. Mo. (Jan. 29, 2023) (retrieved from https://law.lexmachina.com/court/moed)
1036	*Reserved*
1037	*Reserved*
1038	*Reserved*
1039	*Reserved*
1040	*Reserved*
1041	U.S. Patent No. 7,268,581 to Trimberger
1042	U.S. Patent No. 7,254,691 to Ebeling
1043	*Ollnova Technologies Ltd. v. Emerson Electric Co.*, 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	*Ollnova Technologies Ltd. v. ecobee Technologies, ULC*, 2:22-cv-00072 (E.D. Tex.) Ollnova Technologies Ltd.'s Opening Claim Construction Brief (January 31, 2023)
1045	*Reserved*

1046	M. R. Barbacci, C. B. Weinstock and J. M. Wing, "Programming at the processor-memory-switch level," Proc. [1989] 11th Int. Conf. on Software Eng'g, Singapore, 1988, pp. 19-28
1047	Declaration of Jonathan Bradford
1048	Copeland's Petition in IPR2023-00626

CHALLENGED CLAIMS

Claim	Text
[1.pre]	A wireless automation device, comprising:
[1.a]	a transceiver operable to wirelessly communicate packets of information over a wireless network;
[1.b]	a sensor operable to generate a indicator for a sensed condition;
[1.c]	a controller configured to poll the sensor at a polling interval to read the indicator during a current period of the polling interval and to selectively operate the transceiver to communicate information associated with the reading of the indicator; and
[1.d]	a memory, the controller storing a reading of the indicator during the current period in the memory, where the memory stores at least one prior reading of the indicator, the prior reading of the indicator made during a prior period of the polling interval,
[1.e]	wherein the transceiver is configured to transmit a most recent reading of the indicator stored in the memory during a period of a transmission interval in response to detecting a change in the sensed condition outside a predetermined range and wherein transmission of the most recent reading of the indicator stored in the memory during the period of the transmission interval is suspended in response to detecting a change in the sensed condition within the predetermined range.
[3]	The wireless automation device of claim 1 where an upper limit and a lower limit of the predetermined range may be varied.
[4]	The wireless automation device of claim 3 where the upper limit and lower limit may be varied according to an analysis of the most current reading of the indicator and the at least one prior reading of the indicator.
[5]	The wireless automation device of claim 1 where the transceiver is configured to transmit the most recent reading of the indicator stored in

	the memory during a period of the transmission interval in response to detecting a sensed condition beyond a band limit.
[6]	The wireless automation device of claim 5 where an upper band limit and a lower band limit may be varied.
[7]	The wireless automation device of claim 5 where the upper band limit and lower band limit may be varied according to an analysis of the most current reading of the indicator and the at least one prior reading of the indicator.
[8]	The wireless automation device of claim 1 where the transceiver is configured to transmit the most recent reading of the indicator stored in the memory in response to an externally-received transmission control signal received over the wireless network.
[14]	The wireless automation device of claim 1 where the memory stores timing data associated with the most recent reading and the at least one prior reading of the indicator.
[15]	The wireless automation device of claim 1 where the transceiver is configured to transmit the timing data.
[18]	The wireless automation device of claim 1, where the sensor is configured to sense an environmental condition.

Pursuant to §§311-319 and §42.1,ecobee Technologies ULC ("Petitioner") petitions for *inter partes* review ("IPR") of claims 1, 3-8, 14-15, and 18 ("Claims") of U.S. Patent 7,746,887 ("'887") (Ex. 1001), assigned to Ollnova Technologies Ltd. ("PO").[1] There is a reasonable likelihood–and it is highly likely—that at least one challenged claim is unpatentable as explained herein. Petitioner requests review of the Claims, and judgment finding them unpatentable under §103.

I. INTRODUCTION

The '887 is directed to systems and methods for wirelessly reporting sensed conditions. '887, Abstract, 1:6-7. The problem purportedly addressed by the '887 is the "need for a system for reducing an amount of communication over a wireless automated system using dynamic value reporting." '887, 1:47-49. The Claims are directed to a "wireless automation device" within such a system that comprises well-known components configured to perform well-known functions. *See* '887, claim 1. During prosecution, the Examiner stated in the reasons for allowance that the Claims were allowable based on the amendment of claim 1 to recite a "wherein"

[1] Section cites are to 35 U.S.C. (pre-AIA) or 37 C.F.R. as context indicates. All emphasis/annotations added unless noted. Annotations added to the figures herein generally quote the language of the Challenged Claims for reference. All citations herein are exemplary and not meant to be limiting.

clause requiring a transceiver to be configured to "suspend[]" the transmission of a "most recent reading of" a sensor indicator when the reading is "within [a] predetermined range"—*i.e.*, sensor readings that are not outside a predetermined range are not transmitted. '887, claim 1; *see* §VI below. Neikirk, ¶32.

Yet this process of transmitting only sensor data that is outside a "predetermined range" was well-known in the art. For example, **Kates-711** (Ex. 1004) and **Kates-505** (Ex. 1022) each disclose conserving power by transmitting sensor data in response to a sensor condition being outside a predetermined range, and not transmitting data when it falls within that range. **Mueller** (Ex. 1031) likewise discloses transmitting sensor data when a change in sensor conditions exceeds a predetermined value, and **Littrell** (Ex. 1006) teaches specific formulas for calculating such thresholds. Neikirk, ¶¶33-34

As demonstrated herein, the prior art renders obvious the Claims, which are directed to a simple combination of well-known prior art elements combined according to known methods to yield predictable results. The claimed elements and the claimed arrangement of elements are rendered obvious by **Kates-711** in view of **Hitt** (which provides teachings of memory in a wireless node) and/or **Littrell**, and by **Kates-505** in view of **Hitt, Littrell,** and/or **Mueller**. At most, the combination amounts to nothing more than a "predictable use of prior art elements according to

their established functions." *KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). Neikirk, ¶35.

The USPTO did not consider **Kates-711**, **Kates-505**, **Hitt**, **Littrell**, **Mueller**, or any other reference providing analogous disclosures during the '887's prosecution.

Petitioner requests that the Board institute trial and find the Claims unpatentable.

II. MANDATORY NOTICES (§42.8)

A. Real Party-In-Interest

Pursuant to §42.8(b)(1), Petitioner identifies ecobee Technologies ULC, ecobee Ltd., Generac Power Systems, Inc., and Generac Holdings Inc. as real parties-in-interest.

B. Related Matters

The '887 is currently the subject of the following district court litigations: Ollnova *Technologies Ltd. v. ecobee, Inc.,* No. 2-22-cv-00072 (E.D. Tex., filed 3/8/2022) ("ecobee Litigation"), and *Ollnova Technologies Ltd. v. Emerson Electric Co. et al.,* No. 4-22-cv-01387 (E.D. Mo.) (transferred to E.D. Mo. 12/29/2022 after originally being filed 4/5/2022 in W.D. Tex.) ("Emerson Litigation"). The '887 was also the subject of the following district court litigations that have since been terminated: *Ollnova Technologies Ltd. v. Google LLC,* No. 6-

22-00246 (W.D. Tex., filed 3/8/2022) ("Google Litigation"), *Ollnova Technologies Ltd. v. Carrier Global Corp.*, No. 9-22-cv-80388 (S.D. Fla., filed 3/11/2022) ("Carrier Litigation"), *Ollnova Technologies Ltd. v. Resideo Technologies, Inc*, No. 6-22-cv-00390 (W.D. Tex., filed 4/15/2022) ("Resideo Litigation).

C. Lead and Back-Up Counsel and Service Information

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III. PAYMENT OF FEES

The undersigned authorizes the Office to charge the fee required by §42.15(a) and any additional fees that might be due to Deposit Account No. 22-0261.

IV. REQUIREMENTS FOR INTER PARTES REVIEW

A. Grounds for Standing

Pursuant to §42.104(a), Petitioner certifies the '887 is available for IPR. Petitioner is not barred or estopped from requesting IPR challenging the claims of the '887 on the grounds identified herein. In this regard, as this Petition is accompanied by a Motion for Joinder, the time limit under 37 C.F.R. § 42.101(b) and 35 U.S.C. § 315(b) does not apply.

B. Identification of Challenge

Pursuant to §42.104(b), Petitioner requests IPR of the Claims, and that the Board cancel the same as unpatentable.

1. The Specific Art on Which the Challenge Is Based

Petitioner relies upon the following prior art:

Name	Ex.	Patent / Publication	Priority Date	Issued / Published	Prior Art Under at Least §102
Kates-711	1004	U.S. 7,528,711	12/19/2005	5/5/2009	(e)
Hitt	1005	U.S. 2004/0100394	10/28/2002	5/27/2004	(b)
Littrell	1006	U.S. 2005/0246593	4/19/2004	11/3/2005	(a)/(e)
Kates-505	1022	U.S. 7,102,505	5/27/2004	9/5/2006	(e)
Mueller	1031	U.S. 6,513,723	9/28/2000	2/4/2003	(b)

2. Statutory Grounds on Which the Challenge Is Based

Petitioner respectfully requests cancellation of the Claims on the following grounds:

§103 Grounds	Claims	Prior Art
1	1, 3-8, 18	Kates-711
2	1, 3-8, 18	Kates-711 in view of Hitt
3	1, 3-8, 14-15, 18	Kates-711 in view of Littrell
4	1, 3-8, 14-15, 18	Kates-711 in view of Hitt and Littrell
5	1, 3-8, 18	Kates-505[2]
6	1, 3-8, 18	Kates-505 in view of Hitt
7	1, 3-8, 14-15, 18	Kates-505 in view of Littrell
8	1, 3-8, 14-15, 18	Kates-505 in view of Hitt and Littrell
9	1, 3-8, 18	Kates-505 in view of Mueller
10	1, 3-8, 18	Kates-505 in view of Mueller and Hitt
11	1, 3-8, 14-15, 18	Kates-505 in view of Mueller and Littrell
12	1, 3-8, 14-15, 18	Kates-505 in view of Mueller, Hitt, and Littrell

[2] While PO has taken the position that the '887 is entitled to a priority date of 4/12/2006 (*see* §X.D), to the extent PO argues that the '887's priority date predates **Kates-711** (it does not), Grounds 5-12 rely instead on **Kates-505**, which is entitled to an earlier priority date. **Kates-505** shares the same core critical disclosures with **Kates-711**.

3. How the Claims Are Unpatentable

Petitioner provides the information required under §§42.104(b)(4)-(5) in §X.

V. '887 PATENT

The Claims generally recite a wireless automation device that transmits a sensor reading in response to a sensed condition being outside a predetermined range. '887, Abstract, claim 1. Fig. 2 shows an embodiment of the device ('887, 6:58-65, Fig. 2):

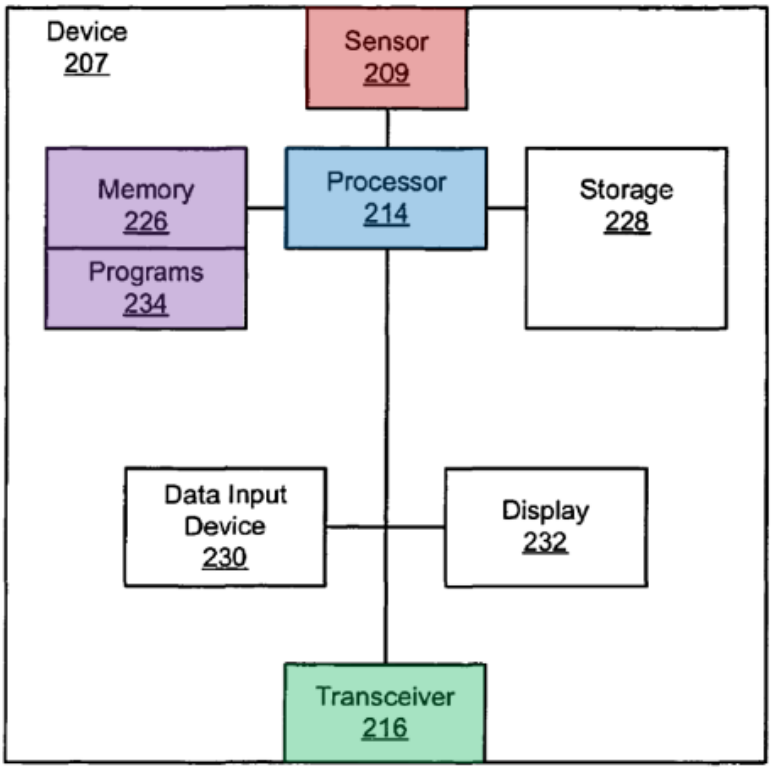


Figure 2

As shown, the device of Fig. 2 comprises a "**transceiver**," "**sensor**," "**processor**," and "**memory**." '887, Fig. 2. The **sensor** may be configured as a

combination of a temperature and humidity sensor, and senses conditions, parameters, and/or events and generates information or data in response. '887, 8:46-65. The **memory** stores programs that are executed by the **processor** and readings from the **sensor**. '887, 7:30-34, 7:65-66, 9:51-67. The **processor** reads information generated by the sensor and processes it according to a control process. *Id.*, 7:48-66, 8:50-51, 8:66-9:4. When the **processor** determines that a change in a sensed condition is beyond a limit or outside a range, it controls **transceiver 216** to communicate over a "network" information including, *e.g.*, the triggering event, values or "indicators," and timing data. 10:57-11:44.

The limits or range used to determine whether the **transceiver** communicates information may be varied. *Id.*, Abstract, 3:40-44. For example, when sensed conditions show little change over time, a limit may be reduced so that smaller changes may be detected; and conversely, when sensed conditions show large changes over time, a limit may be increased. *Id.*, 12:11-13:35. Neikirk, ¶¶36-37.

VI. '887 PROSECUTION HISTORY

Application 11/402,743, which matured into the '887, was filed 4/12/2006. Ex. 1003 ("'877FH"), 3-37. In a Non-Final Office Action, the Examiner rejected all pending claims as being anticipated by Garrod (U.S. 2003/0174070) (Ex. 1019). '877FH, 59-71. In response, Applicant amended the independent claims to incorporate claim elements from several dependent claims, including limitations

directed to a memory storing "at least one prior reading of the indicator" and "selectively communicating information … in response to detecting a change in the sensed condition outside a variable range," and argued that Garrod did not disclose the same. '877FH, 72-83.

In a Final Office Action, the Examiner indicated that pending dependent claims 7-10 contained allowable subject matter, but otherwise maintained the previous rejections over Garrod. '877FH, 91-103. Pending claim 7 recited that "a transmission of the most recent reading of the indicator stored in the memory during a period of the transmission interval is suspended in response to detecting a change in the sensed condition within the predetermined range," and pending claims 8-10 depended on claim 7. '877FH, 74. The Examiner did not provide any explanation as to why he withdrew the anticipation rejection of claims 7-10, nor did Applicant previously present any arguments with respect to claims 7-10.

In an After-Final Response, Applicant amended independent claim 1 to incorporate the limitations of pending claim 7 and its intervening pending claims 4-6 in element [1.e], and canceled all other independent claims and their dependents. '877FH, 116-122. The Examiner then issued a Notice of Allowance, in which the Examiner cited to the Applicant's remarks adding this language from pending claim 7 as the basis for allowance. '877FH, 126-131, 117, 121.

More than a decade after the '887 patent issued (and just prior to filing its complaints in the district courts), Applicant submitted two requests for certificates of correction, one under §1.322 (alleging Examiner's mistake; amending claim limitation "chance" to "change") and one under §1.323 (alleging Applicant's Mistake; amending element reciting "associated reading of the indicator" to "associated with the reading of the indicator"). Both were approved. '877FH, 153-173, 176. Neikirk, ¶¶38-42.[3]

VII. THE BOARD SHOULD NOT EXERCISE ITS DISCRETION TO DENY INSTITUTION

A. §325(d)

Considering the two-part framework discussed in *Advanced Bionics, LLC v. Med-El Elektromedizinische Gerate GMBH*, IPR2019-01469, Pap. 6, *8-9, the Board should not exercise its §325(d) discretion to deny institution.

The grounds raised by this Petition are not the same or substantially the same as the art and arguments raised during '887's prosecution. The Examiner did not consider **Kates-711**, **Kates-505**, **Hitt**, **Littrell**, or **Mueller**, or art with

[3] Patent Owner indicated that "chance" in [1.e] means "change." Ex. 1013, 1. Neikirk, ¶42. While not an issue considered in IPRs, the second amendment impermissibly broadened the Claims; Copeland is raising this issue in district court.

substantially the same disclosures (or the same or substantially the same arguments) as those herein. Although the Examiner initially cited Garrod "par [23, 28-29]" as disclosing the limitations of then-pending claim 7 that were subsequently incorporated into element [1.e], the Examiner subsequently withdrew the rejection over Garrod without any explanation or discussion with/to/from Applicant. '887FH, 63, 101.

The cited paragraphs from Garrod do not include the disclosure of at least suspending transmission as required by [1.e]. *See* Ex. 1019. This feature is disclosed by the art cited in this Petition as discussed in detail below. *See* §X.

Even if the art and arguments were substantially the same, the Examiner erred in a manner material to the patentability of the Claims. Where the "Examiner did not expressly consider" **Kates-711**, **Kates-505**, **Hitt**, **Littrell**, and **Mueller**, it is difficult, if not impossible, to explain "why the Examiner allowed the claims" or "how the Examiner might have considered the arguments presented in the Petition." *Bowtech, Inc. v. MCP IP, LLC*, IPR2019-00379, Pap. 14, *20 (declining to exercise §325(d) discretion). Even if the Examiner had considered substantially the same art as that relied on herein, the Examiner would have erred in allowing the claims. Specifically, to the extent the Examiner considered references (including Garrod) that purportedly teach suspending transmission when a change in a sensed condition is in a predetermined range, the Examiner erred in failing to reject the

Claims over a combination of any of those references and art teaching wireless automation devices with sensors.

Further, the Board already instituted the Copeland IPR based on the prior art presented herein. Thus, the Board should not exercise its §325(d) discretion to deny institution here.

B. §314(a)

Apple Inc. v. Fintiv, Inc., IPR2020-00019, Paper 11 (Mar. 20, 2020) (precedential) weighs against exercising discretion in this case. This Petition simply seeks to join an already-instituted IPR. Thus, this matter will conserve judicial resources because the Board is already proceeding with the instituted Copeland IPR.

Also, the trial in the counterpart ecobee Litigation did not involve any invalidity challenge to the '887 patent. Thus, there is no risk of the overlap of issues or judicial inefficiencies inasmuch as this IPR presents "grounds that the parallel district court will not resolve." *Memorandum for the Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation* (the Guidance Memo"), issued June 21, 2022, p. 8.

Therefore, the Board should not exercise its discretion to deny this petition.

VIII. LEVEL OF ORDINARY SKILL

A person of ordinary skill in the art ("POSITA"), at the time the '887 was filed, would have had a minimum of a bachelor's degree in electrical engineering,

or a related field, along with at least two years of professional experience in sensors, controls, and/or wireless communications. Additional graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education. Neikirk, ¶¶43-47.

IX. CLAIM CONSTRUCTION

Claim terms in IPR are construed using *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005). Only terms necessary to resolve the controversy need to be construed. Because the prior art asserted herein discloses embodiments within the indisputable scope of the claims, the Board need not construe the outer bounds of the Claims. Copeland has maintained that all claim terms should be construed according to their plain and ordinary meaning as would have been understood by a POSITA in view of the specification. Neikirk, ¶48.[4]

[4] While different constructions for certain terms (*e.g.*, Ex. 1015, 5-12; Ex. 1017, 1-2; Ex. 1023, 17-18) have been proposed in related litigations, unless otherwise indicated, Copeland has maintained that such terms should be given their plain meaning and are not means-plus-function limitations. PO has taken the same position. *See* Ex. 1014, 10-14, 24-27; Ex. 1016, 7-10, 15-16, 18-21; Ex. 1017, 1-2; Ex. 1044, 4-7. Nonetheless, the prior art discloses the Claims under any reasonable interpretation as set forth in §X. Neikirk, ¶¶51-52.

A. Preamble ([1.pre])

Regardless of whether the preamble is limiting, the prior art discloses the preamble. *See* §X.A.2; Neikirk, ¶49.

B. "information associated reading of the indicator" (claim limitation [1.c])

In the Emerson Litigation, Copeland and PO dispute whether this term requires transmission of (1) the reading; (2) information associated with the reading; or (3) both, as well as whether the issued Certificate of Correction, which requires option (2), is valid. Ex. 1009, 2-10; Ex. 1010, 3-8; Ex. 1011, 5-10; Ex. 1012, 4-7. However, regardless of the outer bounds of this term, the prior art discloses this limitation because it discloses transmitting both the "reading" and associated "information." *See* §X.A.2.[1.c]; Neikirk, ¶50.

X. GROUNDS OF UNPATENTABILITY

Although the '887 purports to have invented a method in which transmission of a sensor reading occurs in response to a sensed condition being outside a predetermined range, such a method was well known in the art. As explained below, the Claims are unpatentable as obvious. Neikirk, ¶¶53-54.

The prior art renders the Claims unpatentable under each of the Grounds. For **Ground 1**, **Kates-711** teaches a sensor system in a building that includes wireless automation devices and renders obvious using memory on such a device, while in **Ground 2**, **Hitt** affirmatively discloses such memory. For **Grounds 3-4**, **Littrell**

provides additional detailed teachings of band limit thresholds and time stamping sensor data. For **Grounds 5-8**, to the extent PO argues that the '887's priority date predates **Kates-711** (it does not), **Kates-505** shares the same core critical disclosures with **Kates-711**, and is entitled to an earlier priority date. For **Grounds 9-12**, **Mueller** provides additional detailed teachings of detecting changes in sensed conditions. Neikirk, ¶¶55-57.

This Petition is supported by the Declaration of Dr. Neikirk, which describes the prior art's scope and content at the time of the '887. Neikirk, ¶¶1-31.

A. Ground 1: Claims 1, 3-8, and 18 Are Rendered Obvious by Kates-711

1. Overview of Kates-711

Kates-711 discloses a "sensor system that provides sensor information … for alerting building or complex management … to a potential problem detected by the sensor system." Kates-711, 1:65-2:2. The system sensors use "adjustable threshold[s] [that] allow[] the sensor[s] to adjust to ambient conditions, aging of components, and other operational variations while … providing a relatively sensitive detection capability for hazardous conditions" and being operable for "extended period[s] of operability without maintenance or recalibration." Kates-711, 3:62-67. "When one or more of the sensor units detects an anomalous condition[,] the sensor unit communicates with [a] base unit and provides data regarding the

anomalous condition." Kates-711, 4:6-9. *See also* Kates-711, 4:17-6:19. The sensor unit "conserves power by not transmitting data that falls within a normal range." Kates-711, 13:14-16. Neikirk, ¶58.

Figure 2 shows an embodiment of sensor unit 102.

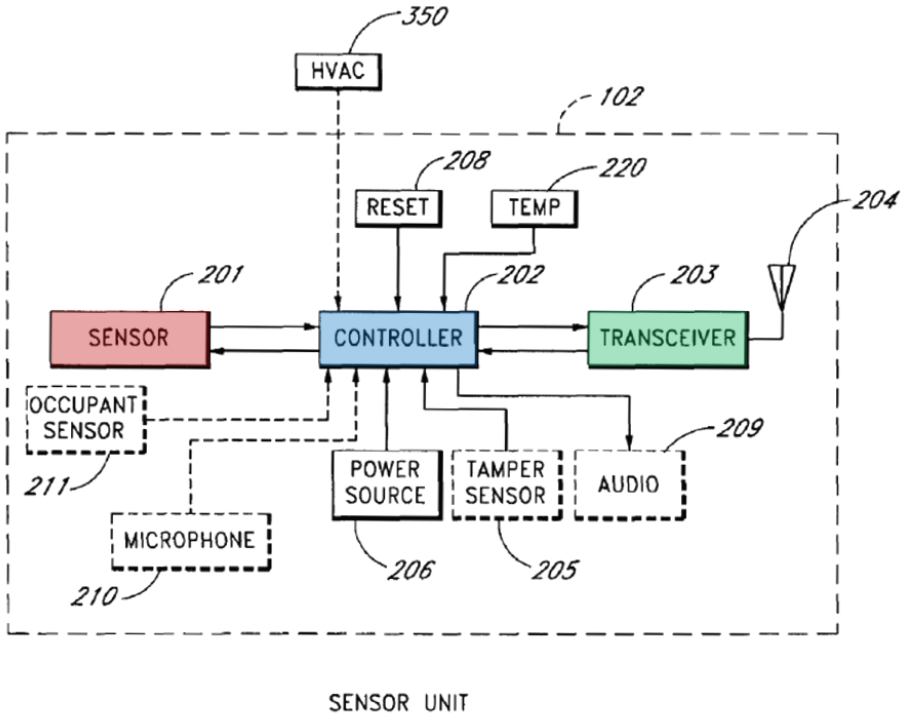


FIG. 2

Sensor unit 102 includes **sensor 201** for sensing conditions including a smoke sensor, thermistor, and humidity sensor; **controller 202**, which evaluates sensor data by, *e.g.*, comparing sensor data to threshold values; and **transceiver 203** for transmitting sensor data, e.g., when the sensor data falls outside a threshold value or in response to a command. Kates-711, 12:47-13:28, 15:10-16:7. Neikirk, ¶59.

Kates-711 discloses several examples of threshold values, including high, low, high-low, and range thresholds. Kates-711, 13:16-23. These threshold values are adjustable based on various factors, *e.g.*, an average, a long-term average, and/or a time-weighted average of sensor measurements. Kates-711, 19:64-20:11. Neikirk, ¶60.

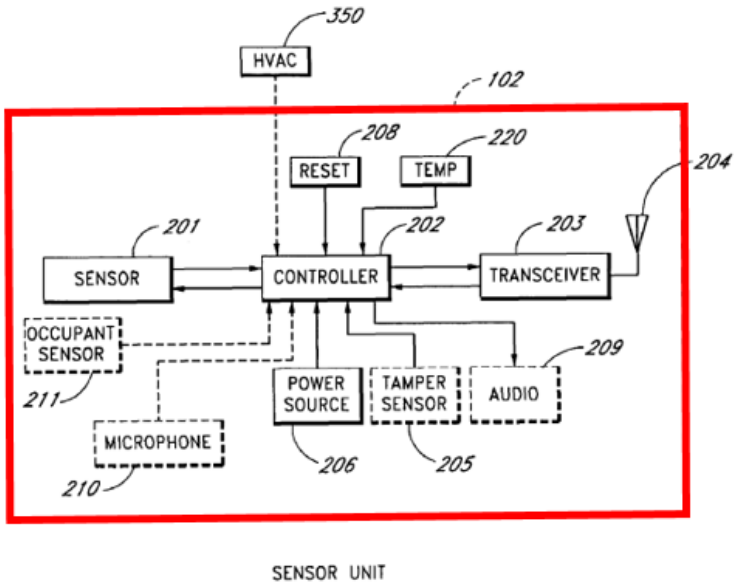
Kates-711 not only renders obvious, but affirmatively discloses, that such a sensor unit includes memory to store instructions and sensor values. **Kates-711** teaches that the device maintains past sensor measurements enabling the time weighting of such measurements (Kates-711, 19:64-20:9), and is "programmed" to perform sensor measurements—which requires storing such programmed instructions (Kates-711, 4:59-64, 8:43-63, 20:1-6). Neikirk, ¶61-62; *see* Ex. 1046, 2 (conventional processor fetches, decodes, and executes instructions stored in memory). **Kates-711** also teaches implementing the controller as a conventional programmable microcontroller or a Xilinx FPGA; a POSITA would have understood, and at least found obvious, both to include and/or use memory. Kates-711, 12:61-66; Ex. 1041, 4:9-35 (Xilinx FPGA including block RAM and interconnect to external memory); Ex. 1042, 1:9-22, 1:66-2:14 (Xilinx FPGA including block RAM for control information and data); Neikirk, ¶63-64; *see also* Littrell, [0006]-[0008], [0030], [0033], [0035]; Ehlers (Ex. 1007), 8:28-34, 17:41-

18:36; Cunningham (Ex. 1018), 31:59-33:3; Garrod (Ex. 1019), [0029]; Lareau (Ex. 1020), [0076]-[0077].

Kates-711 discusses "embodiments" that, based on these disclosures, a POSITA would have understood to be optional features that would have been advantageously combined with one another; and at minimum, it would have been obvious to combine the non-mutually-exclusive features to advantageously obtain their benefits. Neikirk, ¶65; *Bos. Sci. Scimed, Inc. v. Cordis Corp.*, 554 F.3d 982, 991 (Fed. Cir. 2009) ("Combining two embodiments disclosed adjacent to each other in a prior art patent does not require a leap of inventiveness.").

2. Claim Chart

'887 Patent	Kates-711
[1.pre] A wireless automation device, comprising:	**Kates-711 discloses a wireless automation device** (e.g., a "wireless sensor unit[]" that automatically detects and communicates "anomalous condition[s]"). ***E.g.*, Kates-711:** **Kates-711** discloses a wireless "sensor unit" that detects and communicates data about anomalous conditions. Kates-711, 5:30-33, 7:45-48, 12:47-51. This "sensor unit" is an automation device because, e.g., it automatically detects and communicates an "anomalous" condition as part of a larger system for process control based on sensing and reacting to potentially dangerous building conditions. Kates-711, 1:6-11, 4:35-48, 7:45-48, 16:36-17:44. Even if "automation device" requires control of another system or function, **Kates-711** teaches configuring a sensor unit to automatically "control[] a gas shutoff valve," *e.g.*, when "dangerous

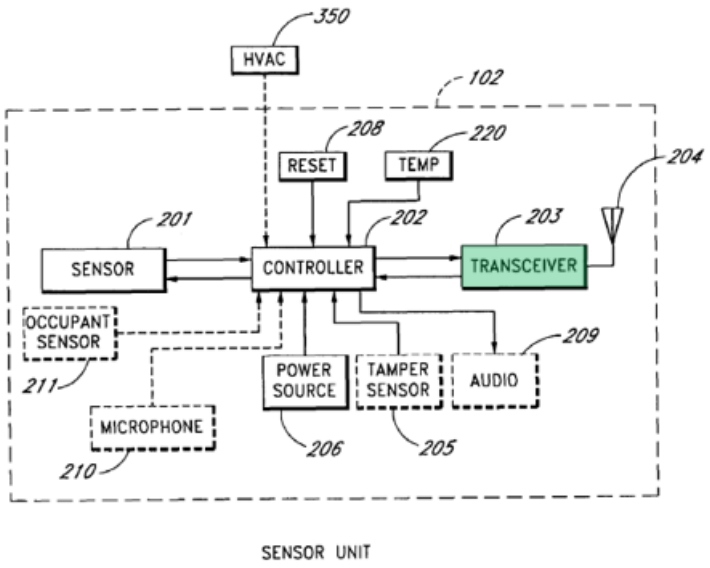
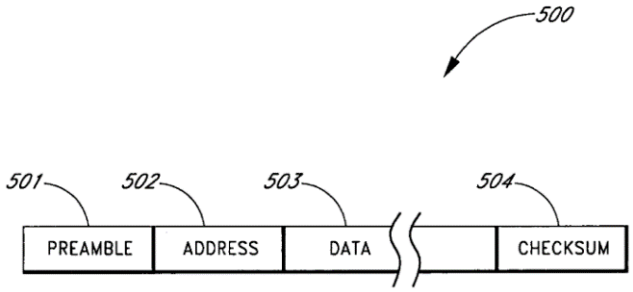
'887 Patent	Kates-711
	conditions … are detected." Kates-711, 16:56-17:2. Neikirk, ¶¶66-68.[5] • **Fig. 2:**  *FIG. 2* • **4:35-42** ("*[T]he sensor system includes a number of sensor units located throughout a building* that sense conditions and report anomalous results back to a central reporting station. The sensor units measure conditions that might indicate a fire, water leak, etc. *The sensor units report the measured data to the base unit whenever the sensor unit determines that the measured data is sufficiently anomalous to be reported.*")

[5] **Kates-711** thus discloses this element under proposed constructions from various parties as well. Neikirk, ¶69; *see also* [1.a]-[1.e]; *supra* n.3.

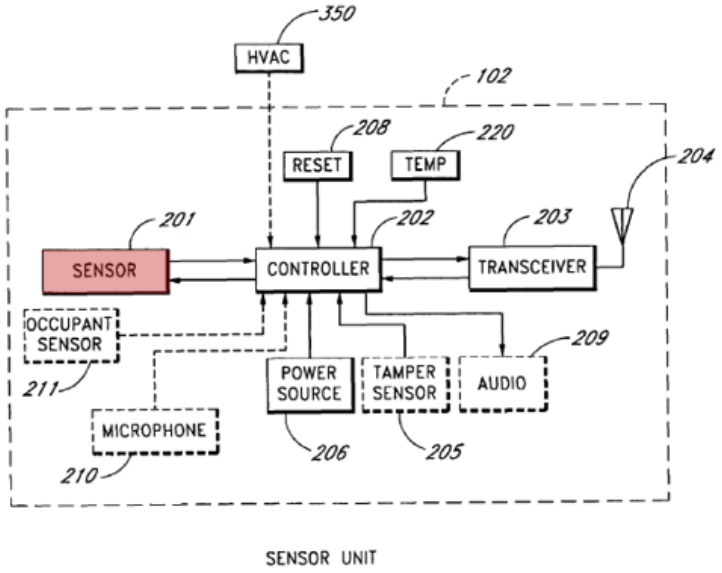
’887 Patent	Kates-711
	• **5:30-33** (“[T]he repeater only communicates with designated *wireless sensor units* whose IDs appear in the repeater's database.”) • **6:6-19** (“*[B]ase unit* automatically performs routine maintenance by *sending commands to each sensor to run a self-diagnostic and report the results.* The base unit collects such diagnostic results. In one embodiment, *the base unit sends instructions to each sensor* telling the sensor how long to wait between “wakeup” intervals. In one embodiment, *the base unit schedules different wakeup intervals to different sensors* based on the sensor's health, battery health, location, etc. In one embodiment, *the base unit sends instructions to repeaters to route sensor information around a failed repeater*.”) • **7:45-48** (“*When the sensor unit 102 detects an anomalous condition (e.g., smoke, fire, water, etc.) the sensor unit communicates with the appropriate repeater unit 110* and provides data regarding the anomalous condition.”) • **12:47-51** (“FIG. 2 is a block diagram of *the sensor unit 102*. In the sensor unit 102, *one or more sensors 201 and a transceiver 203 are provided to a controller 202*. The controller 202 typically provides power, data, and control information to the sensor(s) 201 and the transceiver 202.”) • **16:56-17:2** (“In one embodiment, a remote shutoff valve 810 is provided, so that *the monitoring system 100 can shutoff the water supply to the water heater when a leak is detected*. In one embodiment, *the shutoff valve is controlled by the sensor unit 102*. In one embodiment, the sensor unit 102 receives instructions from the base unit 112 to shut off the water supply to the heater 801. … Similarly, in one embodiment, *the sensor unit 102 controls a gas shutoff valve 811 to shut off the gas*

’887 Patent	Kates-711
	supply to the water heater 801 and/or to a furnace (not shown) when dangerous conditions (such as, for example, gas leaks, carbon monoxide, etc.) *are detected*.”) • ***See also* Abstract, 7:45-8:42, 11:7-10, 13:8-28, 15:45-16:35, 18:37-59, 19:35-21:36.**
[1.a] a transceiver operable to wirelessly communicate packets of information over a wireless network;	**Kates-711 discloses a transceiver** (e.g., “transceiver”) **operable to wirelessly communicate packets of information over a wireless network** (e.g., sensors communicate “outgoing communication packets” and “receiv[e] wireless data” using “network communication packet[s]”). ***E.g.*, Kates-711:** **Kates-711** discloses that the sensor unit includes a “transceiver” that wirelessly communicates “network communication packets” over a wireless network. Neikirk, ¶¶70-72.[6]

[6] **Kates-711** thus discloses this element under proposed constructions from various parties as well. Neikirk, ¶73; *see also* [1.e]; *supra* n.3.

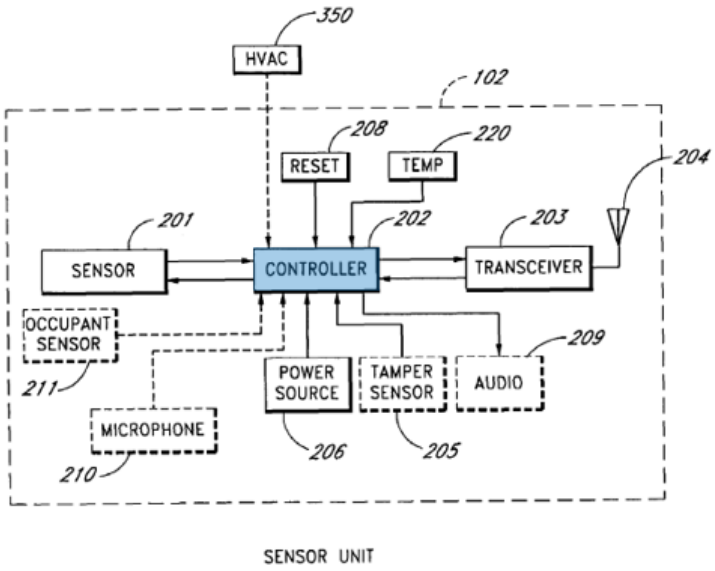
’887 Patent	Kates-711
	• **Fig. 2:**  *FIG. 2* • **Fig. 5:**  *FIG. 5* • **5:21-25** (“*[E]*ach sensor unit has an Identification code (ID) and *the sensor unit[] attaches its ID to outgoing communication packets*. In one embodiment, *when receiving wireless data*, each sensor unit ignores data that is addressed to other sensor units.”)

'887 Patent	**Kates-711**
	• **6:29-30** ("FIG. 5 shows *a network communication packet used by the sensor units*, repeater units, base unit, and PMU.") • **11:30-34** ("*[T]he sensor units 102-106* and/or the repeater units 110-111 *measure the signal strength of the wireless signals received* (e.g., the sensor unit 102 measures the signal strength of the signals received from the repeater unit 110….") • **12:26-30** ("*[T]he sensor units communicate with the repeater units, base 112, or PMU 125 on the 900 MHz band*. This band provides good transmission through walls and other obstacles….") • **12:47-51** (*see* [1.pre]) • **See also 13:58-61, 14:15-24, Figs. 1, 3.**
[1.b] a sensor operable to generate a indicator for a sensed condition;	**Kates-711 discloses a sensor** (e.g., "sensor 201") **operable to generate a indicator** (e.g., generate "sensor data" including a sensor "reading") **for a sensed condition** (e.g., "measur[ing]" "smoke," "humidity," and "temperature"). ***E.g.*, Kates-711:** **Kates-711** discloses the sensor unit including "sensor 201," which generates sensor data including a sensor "reading." Neikirk, ¶¶74-76.

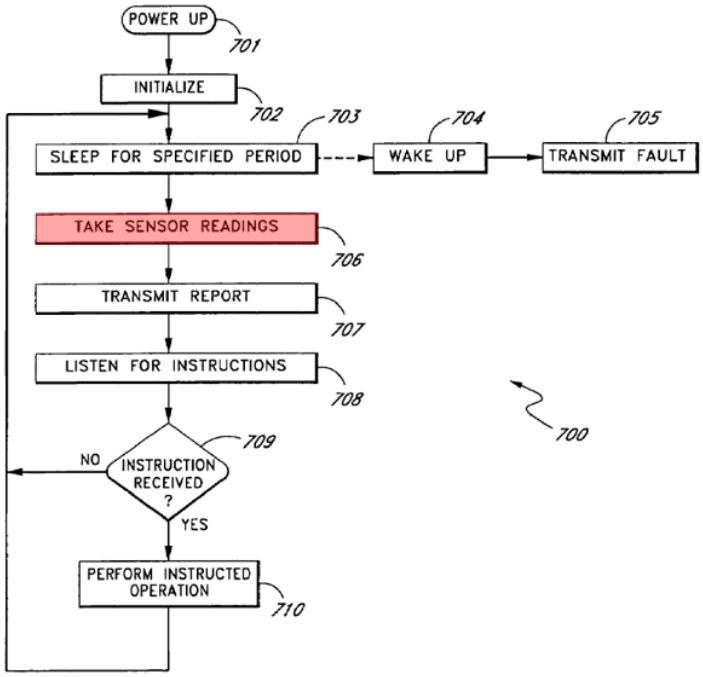
'887 Patent	Kates-711
	• **Fig. 2**  *FIG. 2* • **7:13-23** ("[S]ensor units 102-106 include *sensors to measure conditions, such as, for example, smoke, temperature*…, *humidity, carbon monoxide*…, etc. *Different sensor units can be configured with different* … *combinations of sensors*. Thus, for example … sensor units 102 and 104 could be configured with smoke and/or temperature sensors….") • **12:47-51** (*see* [1.pre]) • **12:66-13:9** ("In one embodiment, the sensor 201 includes an optoelectric *smoke sensor* with a smoke chamber. In one embodiment, the sensor 201 includes a *thermistor*. In one embodiment, the sensor 201 includes a *humidity sensor*. In one embodiment, the sensor 201 includes a sensor, such as, for example, *a water level sensor*, *a water temperature sensor*, *a carbon monoxide sensor*, *a moisture sensor*, *a water flow sensor*, *natural gas sensor*, *propane sensor*, etc. [¶] *The controller 202 receives sensor data from the sensor(s) 201*.")

'887 Patent	Kates-711
	• **13:7-23** ("*The controller 202 receives sensor data from the sensor(s) 201.* Some sensor(s) 201 produce digital data. However, for many types of sensors 201, the sensor data is analog data. *Analog sensor data is converted to digital format by the controller 202.* In one embodiment, *the controller evaluates the data received from the sensor(s) 201 and determines whether the data is to be transmitted to the base unit 112*. The sensor unit 102 generally conserves power by not transmitting data that falls within a normal range. In one embodiment, *the controller 202 evaluates the sensor data by comparing the data value to a threshold value* (e.g., a high threshold, a low threshold, or a high-low threshold). *If the data is outside the threshold* (e.g., above a high threshold, below a low threshold, outside an inner range threshold, or inside an outer range threshold), *then the data is deemed to be anomalous and is transmitted to the base unit 112.*") • **15:50-16:7** ("FIG. 7 is a flowchart showing one embodiment of *operation of the sensor unit 102 wherein periodic monitoring is provided*…. After initialization, the sensor unit 102 enters a low-power sleep mode…. If no fault occurs during the sleep period, then *when the specified sleep period has expired, the process enters a block 706 where the sensor unit 102 takes a sensor reading from the sensor(s) 201*. *The sensor data is subsequently sent to the monitoring computer 113 in a report block 707.* After reporting, the sensor unit 102 enters a listen block 708 where the sensor unit 102 listens … for instructions from monitoring computer 708. If an instruction is received, then the sensor unit 102 performs the instructions, otherwise, the process returns to the sleep block 703. In one embodiment, the sensor 201 and transceiver 203 are normally powered down. *The controller 202 powers up the sensor 201 during execution of the block 706. The controller 202 powers up the transceiver during execution of the blocks*

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	705, 707, and 708. The monitoring computer 113 can send instructions to the sensor unit 102 to change the sleep period used in block 703, the listen period used in block 708, etc.”) • **21:1-5** (“*[S]ensor unit 102 obtains a number of sensor data readings from the sensor 201*”) • **See also 4:35-53, 7:60-8:5, 10:61-63, 13:8-14, 16:31-32, 17:42-19:14, 19:46-53, 20:1-49, 21:1-16.**
[1.c] a controller configured to poll the sensor at a polling interval to read the indicator during a current period of the polling interval and to selectively operate the transceiver to communicate information associated with the reading of the indicator; and	**Kates-711 discloses a controller** (e.g., “controller”) **configured to poll the sensor at a polling interval to read the indicator during a current period of the polling interval** (e.g., “powers up the sensor” during “periodic monitoring” and “takes a sensor reading from the sensor(s)”) **and to selectively operate the transceiver to communicate information associated reading of the indicator** (e.g., “powers up the transceiver” to transmit “sensor data” and “an Identification code (ID)”). ***E.g.*, Kates-711:** *See* [1.pre]-[1.b]. **Kates-711** also discloses that the sensor unit includes a “controller” that provides control information to the sensor. Kates-711, 12:47-51. During periodic monitoring, the controller powers up the sensor to take a sensor reading. Kates-711, 15:50-16:7. The controller evaluates the sensor data, and if the sensor data is “deemed to be anomalous,” the controller powers up and operates the transceiver to communicate the sensor data and related information such as the sensor unit’s ID code. Kates-711, 5:18-23, 7:60-8:12, 13:7-23, 15:50-16:7. Because both the reading and the associated ID code information are transmitted, this element

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	is met regardless of how it is interpreted (*see* §IX.B); Neikirk, ¶¶77-79.[7] • **Fig. 2:**  *FIG. 2*

[7] **Kates-711** thus discloses this element under proposed constructions from various parties as well. Neikirk, ¶80; *see also supra* n.3.

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	• **Fig. 7**  *FIG. 7* • **5:18-23** (“In one embodiment … *each sensor unit has an Identification code (ID) and the sensor units attaches its ID to outgoing communication packets*.”) • **12:47-51** (*see* [1.pre]) • **13:7-23** (*see* [1.b]) • **13:57-14:5** (“*[C]ontroller 303 includes a table or list of identification codes for wireless sensor units 102*. The repeater 303 forwards packets received from, or sent to, sensor units 102 in the list…. In one embodiment, the controller 303 determines when a transmission is expected from the sensor units 102 in the table of sensor units and places the repeater 110 (e.g., the transceivers 302, 304) in a low-power mode when no transmissions are expected from the transceivers on the list. In one embodiment, *the controller 303 recalculates the times for low-power operation when a command to change reporting interval is forwarded to one of the sensor*

'887 Patent	Kates-711
	units 102 in the list (table) of sensor units or when a new sensor unit is added to the list (table) of sensor units.") • **15:50-16:7** (*see* [1.b]) • **See also 7:60-8:12, 8:30-42, 9:43-50, 11:16-22, 13:26-28, 12:62-66.**
[1.d] a memory, the controller storing a reading of the indicator during the current period in the memory, where the memory stores at least one prior reading of the indicator, the prior reading of the indicator made during a prior period of the polling interval,	**Kates-711 discloses a memory, the controller storing a reading of the indicator and storing at least one prior reading of the indicator, the prior reading of the indicator made during a prior period of the polling interval** (e.g., "controller" stores both "recent" and "less recent" "sensor measurements" from the "periodic monitoring"). ***E.g.*, Kates-711:** **Kates-711** discloses that the controller is a conventional programmable microcontroller, and that the controller calculates values such as "a time-weighted average" based on "recent sensor readings" and "less recent sensor readings." Kates-711, 12:62-64, 19:64-20:9, 21:1-16. Sensor readings are taken once per period of the periodic monitoring, so the "less recent" sensor readings are from periods of periodic monitoring prior to the "recent" sensor readings. Kates-711, 15:50-16:7. Kates-711 further discloses that the sensor unit includes a processor such as a Xilinx FPGA, which as understood or found obvious by a POSITA, would have used memory. Kates, 12:62-66; Neikirk, ¶¶81-83. As discussed in §X.A.1, **Kates-711's** teachings of calculating an average using readings from a current period and from prior periods, and assigning different weights to those readings, using a processor such as a Xilinx FPGA, not only renders obvious, but affirmatively discloses, this element because a POSITA would have understood that a memory is used by the sensor unit for storage and retrieval of

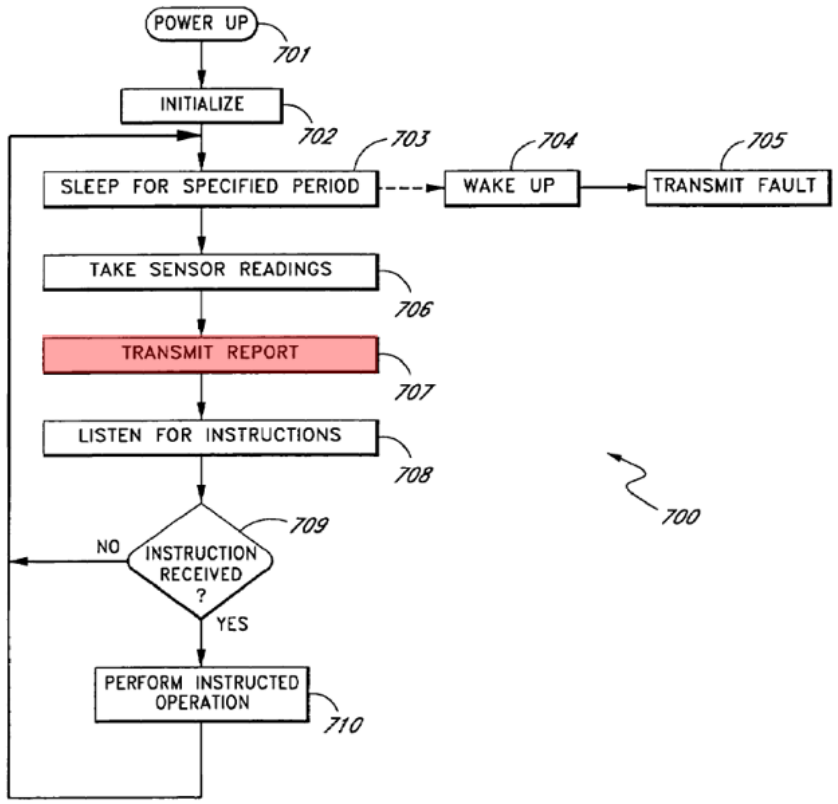
’887 Patent	Kates-711
	sensor data for use by the processor in those calculations during later periodic monitoring cycles. Neikirk, ¶84. • **12:62-66** (“*[T]he controller 202 is a conventional programmable microcontroller*. In one embodiment, *the controller 202 is based on a Field Programmable Gate Array (FPGA), such as, for example, provided by Xilinx Corp*.”) • **15:50-16:7** (*see* [1.b]) • **19:64-20:9** (“[S]ensor unit 102 is configured as an *adjustable-threshold sensor* that computes a threshold level. In one embodiment, the *threshold is computed as an average of a number of sensor measurements*. In one embodiment, the average value is *a relatively long-term average*. In one embodiment, the average is *a time-weighted average* wherein *recent sensor readings* used in the averaging process are weighted differently than *less recent sensor readings*. In one embodiment, more recent sensor readings are weighted relatively more heavily than less recent sensor readings. In one embodiment, more recent sensor readings are weighted relatively less heavily than less recent sensor readings…. *The average is used to set the threshold level*.”) • **See also 4:17-34, 4:56-64, 8:43-63, 20:9-49.**
[1.e] wherein the transceiver is configured to transmit a most recent reading of the indicator stored in the memory during a period of a transmission interval in	**Kates-711 discloses wherein the transceiver** (*see* [1.a]) **is configured to transmit a most recent reading of the indicator stored in the memory** (e.g., “sensor data” is stored in memory (*see* [1.d]) and “sent to the monitoring computer”) **during a period of a transmission interval** (e.g., during a “report block 707” of the “periodic monitoring”) **in response to detecting a change in the sensed condition outside a predetermined range** (e.g., controller “compar[es] the data value to a threshold value,” including the threshold “for the sensor reading and for the rate of rise,” and transmits “data” that does not “fall[] within

’887 Patent	Kates-711
response to detecting a change in the sensed condition outside a predetermined range and wherein transmission of the most recent reading of the indicator stored in the memory during the period of the transmission interval is suspended in response to detecting a change in the sensed condition within the predetermined range.	a normal range”) **and wherein transmission of the most recent reading of the indicator stored in the memory during the period of the transmission interval is suspended in response to detecting a change in the sensed condition within the predetermined range** (e.g., controller does “not transmit[] data that falls within a normal range” in response to detecting a change by “comparing the data value to a threshold value”). ***E.g.*, Kates-711:** *See* [1.pre]-[1.d]. **Kates-711** also discloses that during each period of “periodic monitoring,” the sensor unit takes a sensor reading and enters a “report block 707” for reporting the sensor reading to a monitoring computer. Kates-711, 15:50-16:4. **Kates-711** further discloses that the sensor unit conserves power by not transmitting data that falls within a normal range: when the controller receives sensor data from the sensor (including a most recent reading), the controller evaluates the sensor data to determine if the sensor data should be transmitted. Kates-711, 13:8-23. Neikirk, ¶¶85-87. The sensor data may be evaluated, e.g., against a “high-low threshold” or an “inner range threshold.” *Id.* If the sensor data is outside those thresholds (*i.e.*, the sensor data is outside the range of the high-low or inner range threshold), the data is deemed considered “sufficiently anomalous” and “necessary” to transmit, and transmission occurs. Kates-711, 4:39-42, 5:12-16, 13:8-23. If the sensor data does not exceed, and is within, those threshold ranges, then transmission of the sensor data is suspended “by not transmitting data that falls within a normal range.” Kates-711, 13:8-23. Alternatively, as part of determining whether a sensor value is “within a normal range,” Kates-711 further teaches that “separate thresholds are computed for the sensor reading and

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	for the rate of rise.” Kates-711, 20:9-49.[8] These alternative disclosures each not only render obvious, but affirmatively disclose, that transmission is suspended in response to both exceeding value and rate-of-change thresholds (including, e.g., “high-low” or “inner range” thresholds) and that the transmission is of a most recent reading stored in the memory because the reading is held in memory during the evaluation and prior to transmission, enabling the device to condition transmission of the reading depending on whether the value satisfies this threshold test. Neikirk, ¶¶88-89.[9] The threshold values are set prior to their use and therefore “predetermined.” Kates-711, 13:16-23, 20:9-49. Additionally, threshold values may be programmed into the sensor unit, programmed via instruction, set based on computations, set during a calibration procedure during power up, or fixed pre-programmed values used during a calibration period—in each situation, the threshold value is set or determined prior to its next use in an evaluation and is

[8] The ’887 similarly discloses these same two alternatives forms of detecting the change: “The change may be determined according to detecting a value for the condition outside a variable range. The change may also be determined according to detecting differences in the value from values detected in prior intervals.” ’887, Abstract; *see also id.* 3:11-15, 3:32-36; Neikirk, ¶¶88-89; *see also* Ex. 1031 (Mueller), 4:26-27, 8:66-9:6, 11:60-12:9 (discussing the understanding of a POSITA regarding rate-of-rise thresholds).

[9] **Kates-711** thus discloses this element under proposed constructions from various parties as well. Neikirk, ¶90; *see also supra* n.3.

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	therefore “predetermined.” Kates-711, 13:23-26, 18:39-41, 19:64-20:9, 20:50-59. Neikirk, ¶89. • **Fig. 7**  *FIG. 7* • **4:6-9** (“*When one or more of the sensor units detects an anomalous condition* (e.g., smoke, fire, water, etc.) *the sensor unit* communicates with the base unit and *provides data regarding the anomalous condition*.”) • **4:39-42** (“The sensor units *report the measured data* to the base unit *whenever the sensor unit determines that the measured data is sufficiently anomalous* to be reported.”) • **5:12-17** (“In one embodiment, *the sensor unit* provides two wake-up modes, *a first wake-up mode for taking measurements (and reporting such measurements if deemed necessary), and a second wake-up mode for*

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	listening for commands from the central reporting station. The two wake-up modes, or combinations thereof, can occur at different intervals”) • **13:8-23** (“The controller 202 receives sensor data from the sensor(s) 201…. *[T]he controller evaluates the data received from the sensor(s) 201 and determines whether the data is to be transmitted to the base unit 112. The sensor unit 102 generally conserves power by not transmitting data that falls within a normal range*. In one embodiment, the controller 202 evaluates the sensor data by comparing the data value to a threshold value (e.g., a high threshold, a low threshold, or a *high-low threshold*). *If the data is outside the threshold (e.g., above a high threshold, below a low threshold, outside an inner range threshold*, or inside an outer range threshold), then *the data is deemed to be anomalous and is transmitted* to the base unit 112.”) • **15:50-16:4** (*see* [1.b]) • **20:9-49** (“*When the sensor readings rise above the threshold level, the sensor indicates a notice condition.* In one embodiment, the sensor indicates a notice condition *when the sensor reading rises above the threshold value for a specified period of time*. In one embodiment, the sensor indicates a notice condition when a statistical number of sensor readings (e.g., 3 of 2, 5 of 3, 10 of 7, etc.) are above the threshold level. … In one embodiment, *the sensor unit 102 computes the notice level according to how far the sensor readings have risen above the threshold and how rapidly the sensor readings have risen*. For example, for purposes of explanation, the level of readings and the rate of rise can be quantified as low, medium, and high.…

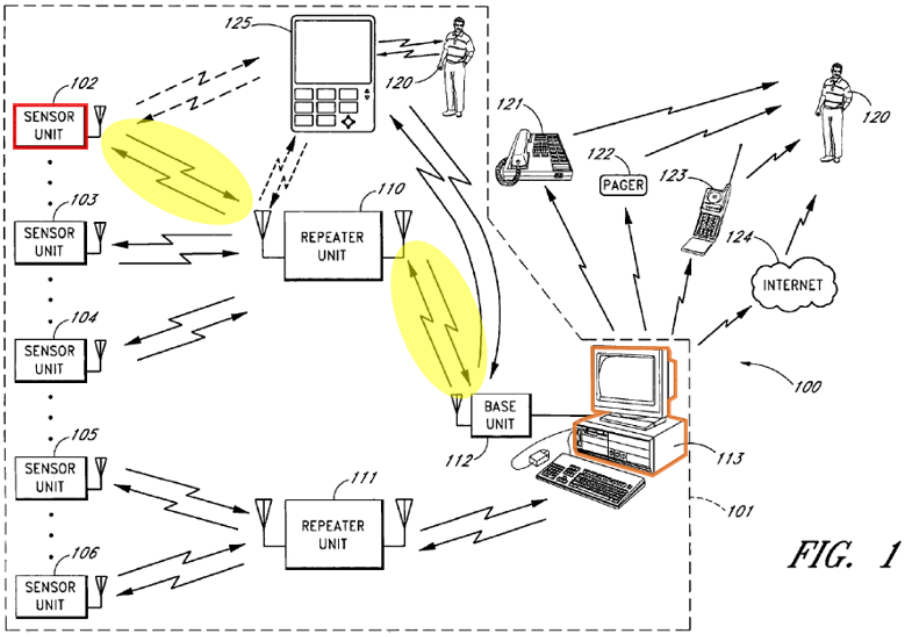
’887 Patent	Kates-711
	TABLE 1 Sensor Reading Level (as compared to the threshold) Rate of Rise: High Medium Low / Warning Notice Notice / Alarm Warning Warning / Alarm Alarm Alarm Low Medium High In one embodiment, *separate thresholds are computed for the sensor reading and for the rate of rise*.”) • ***See also* 7:63-8:5, 8:23-29, 13:23-26, 18:39-41, 19:64-20:9, 20:50-59.**
[3] The wireless automation device of claim 1 where an upper limit and a lower limit of the predetermined range may be varied.	***See* [1].** **Kates-711 discloses that an upper limit and a lower limit of the predetermined range** (e.g., high and low limits of “high-low threshold” or “inner range threshold”) **may be varied** (e.g., “threshold” values are “adjustable”). ***E.g.*, Kates-711:** *See* [1.pre], [1.c], [1.e]. **Kates-711** also discloses that the sensor unit has an “adjustable-threshold” calculated by using, *e.g.*, an average of a number of sensor measurements.” Kates-711, 19:64-20:9. Such thresholds are defined as, *e.g.*, “high,” “low,” “high-low” or “inner range” thresholds that have high and/or low limit values. Kates-711, 13:16-23, 20:20-49. Adjusting the limits of such thresholds—*e.g.*, a “high-low” or “inner range” threshold—not only renders obvious, but affirmatively discloses, changing one or both of the upper limit and the lower limits of the threshold (*e.g.*, to increase or reduce the minimum or maximum threshold temperatures to increase or reduce the system’s sensitivity to changes in temperature to more accurately issue alerts caused by a change in a sensor value, or to update the thresholds based on a change on more recent average sensor values). Kates-711, 1:46-54, 3:62-67, 24:7-16; Neikirk, ¶¶91-93.

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	• **Abstract** (“A *sensor system that provides an adjustable threshold level* for the sensed quantity is described. The *adjustable threshold allows the sensor to adjust* …. The *adjustable threshold sensor* can operate for extended periods….”) • **13:16-26** (“[T]he controller 202 evaluates the sensor data by *comparing the data value to a threshold value (e.g.*, a high threshold, a low threshold, or *a high-low threshold*). If the data is outside the threshold (e.g., above a high threshold, below a low threshold, outside *an inner range threshold*, or inside an outer range threshold), then the data is deemed to be anomalous and is transmitted to the base unit 112.”) • **19:64-20:9** (*see* [1.d]) • **20:20-49** (*see* [1.e]) • ***See also* 4:17-34, 20:51-59, 21:49-53.**
[4] The wireless automation device of claim 3 where the upper limit and lower limit may be varied according to an analysis of the most current reading of the indicator and the at least one prior reading of the indicator.	***See* [3].** **Kates-711 discloses that the upper limit and lower limit** (e.g., the upper and lower limit of the “high-low” and “inner range” thresholds) **may be varied according to an analysis of the most current reading of the indicator and the at least one prior reading of the indicator** (e.g., varied according to “an average value of the sensor reading” based on “recent” and “less recent” “sensor readings”). ***E.g.*, Kates-711:** *See* [3]. As discussed for [3], **Kates-711** discloses that the upper and lower limit of the predetermined range are automatically varied based on, e.g., an “average value of the sensor reading” over the current and prior readings of the indicator—disclosing this element. Kates-711, 19:64-20:9. Neikirk, ¶¶94-96.
[5] The wireless automation	***See* [1].**

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device of claim 1 where the transceiver is configured to transmit the most recent reading of the indicator stored in the memory during a period of the transmission interval in response to detecting a sensed condition beyond a band limit.	**Kates-711 discloses that the transceiver is configured to transmit the most recent reading of the indicator stored in the memory** (e.g., “take[]” and then “sen[d] to the monitoring computer” the “sensor reading”; *see* [1.d]) **during a period of the transmission interval** (e.g., during a “report block 707” of the “periodic monitoring”) **in response to detecting a sensed condition beyond a band limit** (e.g., “controller 202 evaluates the sensor data by comparing the data value to…a high-low threshold,” and “transmitt[ing] to the base unit” the sensor value if the data is “above a high threshold, below a low threshold, [or] outside an inner range threshold”)**.** ***E.g.*, Kates-711:** As discussed for [1.d]-[1.e] and [3], **Kates-711** discloses transmitting the most recent reading of the indicator stored in the memory during the period of the transmission interval in response to detecting a sensed condition outside a predetermined range such as an “inner range threshold” that has upper and lower limits based on either a value or rate-of-change. This discloses a band limit because the thresholds are used to issue “alerts” when a sensor value changes. Kates-711, 20:20-49. For example, **Kates-711** teaches using a rate-of-change threshold to trigger a “warning” or “alarm” based on “high,” “medium,” or “low” changes in sensor readings.” *Id.*[10] A POSITA therefore would have understood that detecting whether a sensed condition that falls outside of both upper and lower limits of an inner range threshold discloses detecting a sensed condition beyond a band limit. Neikirk, ¶¶97-99.

[10] This threshold sensitivity is similar to the ’887’s teaching of using a “band limit” to detect an “extreme condition” based on a “difference” between sensor values using different limits. *See* ’887, 3:32-35, 10:23-30; Neikirk, ¶99.

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[6] The wireless automation device of claim 5 where an upper band limit and a lower band limit may be varied.	***See* [5].** **Kates-711 discloses that an upper band limit and a lower band limit may be varied** (*see* [3]). **Kates-711** discloses this claim for the same reasons as discussed for [3] (which recites similar limitations with respect to "upper" and "lower" limits rather than "band" limits) and [5] (which recites a band limit). Neikirk, ¶¶100-102.
[7] The wireless automation device of claim 5 where the upper band limit and lower band limit may be varied according to an analysis of the most current reading of the indicator and the at least one prior reading of the indicator.	***See* [5].** **Kates-711 discloses that the upper band limit and the lower band limit may be varied according to an analysis of the most current reading of the indicator and the at least one prior reading of the indicator** (*see* [4]-[5]). **Kates-711** discloses this claim for the same reasons as discussed for [4] (which recites similar limitations with respect to "upper" and "lower" limits rather than "band" limits) and [5] (which recites a band limit). Neikirk, ¶¶103-105.
[8] The wireless automation device of claim 1 where the transceiver is configured to transmit the most recent reading of the indicator stored in the memory in response to an externally-	***See* [1].** **Kates-711 discloses that the transceiver is configured to transmit the most recent reading of the indicator stored in the memory** (*see* [1.d]-[1.e]) **in response to an externally-received transmission control signal received over the wireless network** (e.g., "controller 202 obtains sensor data and transmits the data when commanded by the computer 113," via a command communicated "through a computer network connection"). ***E.g.*, Kates-711:** *See* [1.pre]-[1.e].

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received transmission control signal received over the wireless network.	**Kates-711** also discloses that a device’s sensor unit performs measurements using a “combination[]” of both periodic measurements and measurements in response to external commands from, *e.g.*, computer 113; measurements in response to such external commands meet this element. Neikirk, ¶¶106-108. • **Fig. 1**  *FIG. 1* • **4:56-64** (“*In one embodiment, while in the low-power mode, the sensor unit takes regular sensor readings*, adjusts the threshold level, and evaluates the readings to determine if an anomalous condition exists. If an anomalous condition is detected, then the sensor unit “wakes up” and begins communicating with the base unit or with a repeater. *At programmed intervals, the sensor also “wakes up” and sends status information to the base unit (or repeater) and then listens for commands for a period of time.*”) • **5:12-17** (*see* [1.e]) • **6:57-63** (“*Sensor units 102-104 communicate with the repeater 110.* Sensor units 105-106 communicate with

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	the repeater 111. *The repeaters 110-111 communicate with the base unit 112. The base unit 112 communicates with a monitoring computer system 113 through a computer network connection such as…, wireless Ethernet…, Bluetooth*, etc.”) • **8:23-29** (“In one embodiment, the sensor unit 102 provides two wake-up modes, a first wake-up mode for taking measurements (and reporting such measurements if deemed necessary), and a second wake-up mode for *listening for commands from the central reporting station*. *The two wake-up modes, or combinations thereof, can occur at different intervals.*”) • **13:26-28** (“In one embodiment, the *controller 202* obtains sensor data and *transmits the data when commanded by the computer 113*.”) • ***See also* 8:5-19, 10:61-65, 16:21-26.**
[18] The wireless automation device of claim 1, where the sensor is configured to sense an environmental condition.	***See* [1].** **Kates-711 discloses that the sensor is configured to sense an environmental condition** (e.g., configured to sense conditions such as “temperature” and “humidity”). ***E.g.*, Kates-711:** *See* [1.b]. **Kates-711** also discloses that the sensor is configured to sense environmental conditions such as smoke, temperature, or humidity. Neikirk, ¶¶109-111. • **12:66-13:7** (see [1.b]) • **See also 4:3-9, 4:35-39, 4:46-53.**

B. Ground 2: Claims 1, 3-8, and 18 Are Rendered Obvious by Kates-711 in view of Hitt

While **Kates-711**'s teachings not only render obvious but also disclose the "memory" elements ([1.d]-[1.e], [5]), **Hitt** provides explicit teachings of a memory storing information as claimed.

1. Overview of Hitt and Motivation to Modify Kates-711 with Hitt's Teachings

Similar to **Kates-711**, **Hitt** discloses a device for "providing environmental monitoring and control," which is a part of "a network of wireless nodes, the wireless nodes includ[ing] an array of sensor nodes and an array of actuator nodes." Hitt, Abstract. A block diagram of wireless node 150 (which may be configured as a sensor node or an actuator node) is shown in Figure 2A below.

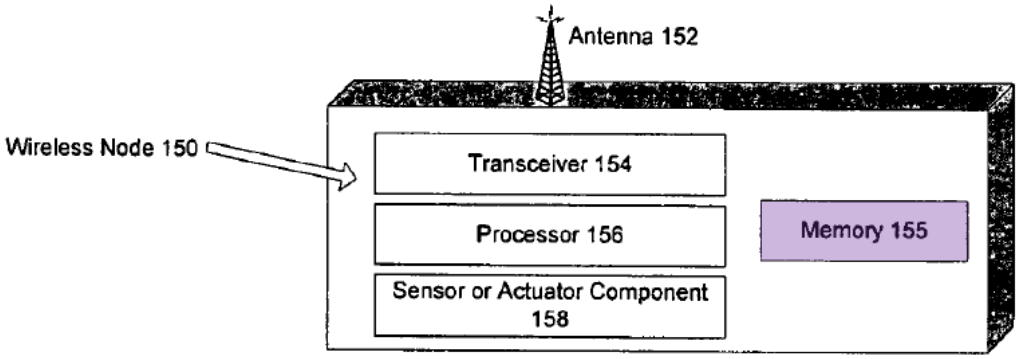


Figure 2A

Hitt, [0046]. Wireless node 150 includes antenna 152, wireless transceiver 154, processor 156, and node component 158 (*e.g.*, a sensor component). Hitt, [0046]. Processor 156 processes sensor data received from the sensor component and directs

sensor data to be transmitted through the transceiver. Hitt, [0048]. **Memory 155** stores instructions for execution by processor 156 and also stores periodically sampled sensor data for retrieval by the processor for processing and/or transmission. Hitt, [0065], [0067]-[0068]. Neikirk, ¶112.

Kates-711 and **Hitt** are in the same field as the '887—sensors, controls, and/or wireless communications—and reasonably pertinent to the alleged problem(s) identified in the '887—*e.g.*, a need to reduce communications over a wireless system. '887, Abstract, 1:6-19, 1:34-49 ("there is a need for a system for reducing an amount of communication over a wireless automated system"); Kates-711, 1:5-11, 13:14-16 ("conserv[ing] power by not transmitting data that falls within a normal range"); Hitt, [0003], [0019]. Neikirk, ¶113.

While **Kates-711** does not explicitly state that its device includes "memory," **Hitt** expressly teaches including a "memory" within a sensor unit to store sensor data that has been periodically sampled or aggregated so that the sensor data is available for further processing and transmission. Hitt, [0046], [0049], [0067]-[0068]; Neikirk, ¶114. A POSITA thus would have been motivated to modify **Kates-711's** sensor units with **Hitt's** teachings of "memory" to achieve the beneficial and predictable result of utilizing a memory to securely store sensor readings. Neikirk, ¶114.

First, **Hitt** provides more explicit teachings of the memory implicitly disclosed in **Kates-711**. **Kates-711** broadly teaches that the controller computes threshold values as "an average of a number of sensor measurements," "a relatively long-term average," or "a time-weighted average wherein recent sensor readings … are weighted differently than less recent sensor readings" (*see* Kates-711, 19:64-20:9). A POSITA would have understood based on these teachings that **Kates-711** not only renders obvious, but affirmatively discloses, that the sensor unit includes "memory" for the storage and retrieval of both the older and newer sensor data used in those calculations. *See* §X.A.1; Neikirk, ¶115; Barbacci (Ex. 1046), 2. A POSITA therefore would have been motivated to modify **Kates-711** with **Hitt's** explicit and detailed teachings of memory to advantageously effectuate **Kates-711's** teachings of storing sensor readings by providing the storage medium for doing so. Neikirk, ¶115.

Second, **Hitt** provides additional detailed teachings of using memory in a manner known to improve the reliability of the system. **Kates-711** discloses that the sensor readings are taken at periodic intervals, and that readings are used to calculate averages over time come from at least two different sampling periods in the device. Kates-711, 8:1-3, 15:48-50. **Hitt** provides additional teachings of tracking the storage of sensor values in memory in a manner ensuring that the values are available for calculations and not unintentionally lost or erased, *e.g.*, due to power outages or

interruptions. Hitt, [0067]-[0068]. It was known to a POSITA that using memory to store such values advantageously improves the reliability of the system. Ehlers (Ex. 1007), 9:28-34; Neikirk, ¶116. A POSITA therefore would have been motivated to modify **Kates-711** by storing these sensor values in memory as taught by **Hitt** to improve the reliability of **Kates-711's** system. Neikirk, ¶116.

In light of the above teachings, a POSITA also would have had a reasonable expectation of success in applying **Hitt's** teachings of memory to **Kates-711's** sensor unit. Indeed, **Kates-711** discloses that its controller may be a "conventional programmable microcontroller"; such microcontrollers were well-understood to commonly use a memory to, *e.g.*, track data variables used for control applications. Neikirk, ¶117; *see also* Littrell, [0006]-[0008], [0030], [0033], [0035]; Ehlers (Ex. 1007), 8:28-34, 17:63-66; Cunningham (Ex. 1018), 31:59-33:3; Garrod (Ex. 1019), [0029]; Lareau (Ex. 1020), [0076]-[0077].

2. Hitt Discloses Memory Elements ([1.d]-[1.e], [5])

With respect to [1.d], **Hitt discloses a memory and storing a reading of the indicator during the current period in the memory** (e.g., storing "sensor data" "in the memory"), **where the memory stores at least one prior reading of the indicator, the prior reading of the indicator made during a prior period of the polling interval** (e.g., "periodically sampl[ing] the sensor" and "aggregat[ing] [the

sensor data] into a local memory for processing and/or transmission"). *E.g.*, Hitt, [0046], [0049], [0067]-[0068].

In addition to **Kates-711's** teachings of computations using "recent" and "less recent" sensor measurements, **Hitt** explicitly discloses a "memory" for storing periodically sampled sensor data, which is aggregated in the memory for processing and transmission. Hitt, [0067]-[0068]. As discussed in §X.B.1, a POSITA would have been motivated to modify **Kates-711** with this teaching to advantageously allow the sensor device to track prior sensor readings to, *e.g.,* effectuate **Kates-711**'s teachings of performing calculations using current and prior sensor readings. Neikirk, ¶¶118-120. In modifying **Kates-711** with this teaching, a POSITA would have found it obvious to utilize a memory to securely store readings from a current period and prior readings from prior periods. Neikirk, ¶120; *see also* [0046], [0049].

Similarly, with respect to [1.e], **Hitt discloses a most recent reading of the indicator stored in the memory and retrieved from the memory for processing and/or transmission** (e.g., "periodically sampl[ing] the sensor" and "aggregat[ing] [the sensor data] into a local memory for processing and/or transmission"). Neikirk, ¶¶121-123. *See* above discussion of [1.d]; Hitt, Fig. 2A, [0046], [0049], [0067]-[0068]. Each successive sensor data sampled and stored in memory is a most recent reading stored in the memory. Neikirk, ¶123. As discussed in §X.B.1, a POSITA would have been motivated to modify **Kates-711** with **Hitt's** teachings of

aggregating sensor data in the memory for processing and transmission to yield a system in which the most recent reading of the indicator is stored in memory before transmission (*e.g.*, when it represents an anomalous condition). As discussed in §X.B.1, using memory as a storage and retrieval space for sensor data to be processed and transmitted advantageously improves the reliability of the system by, *e.g.*, protecting from data loss due to power outages and interruptions. Neikirk, ¶123.

And with respect to [5] and [8], **Hitt further discloses "most recent reading of the indicator stored in the memory"** for the same reasons explained for [1.d]-[1.e]. Neikirk, ¶¶124-126.

Kates-711 in view of **Hitt** therefore further renders obvious claims 1, 5, and 8 (and their dependents). *Id.*

C. Grounds 3-4: Claims 1, 3-8, 14-15, and 18 Are Rendered Obvious by Kates-711 in view of Littrell, and Kates-711 in view of Hitt and Littrell

1. Overview of Littrell

Littrell discloses a "method for indicating an alarm condition" that includes "measuring a parameter," "determining at least one parameter limit as a function of the parameter," and "comparing the parameter to the parameter limit … when the parameter is outside of a bound set by the parameter limit." Littrell, Abstract. Neikirk, ¶127.

Littrell discloses an example of parameter limits in the form of a band limit (*e.g.*, established bounds with an upper limit and lower limit centered around an average value) where the upper limit (*e.g.*, "upper acceptance limit") and the lower limit (*e.g.*, "lower acceptance limit") are varied based on current and prior readings (*e.g.*, "redetermin[ing]" limits "utilizing … statistical functions to determine one or more alert limits," the statistical functions including averages and standard deviations) in order to account for changes in sensor readings, rather than relying on static limits. Littrell, [0006], [0015]-[0022]; *see also* [0003], [0008], [0023]-[0030]. These functions allow a sensor to differentiate between a smaller, "'normal' variation of a parameters" and a "sudden change" that may indicate an "alarm condition indication." *Id.*, [0015].

Littrell discloses tracking a parameter using limits according to the formulas:

"$D=average(A)+B\times std_dev(A)+C$," and

"$E=average(A)-B\times std_dev(A)-C$,"

where "D" is a "time-varying upper acceptance limit," "E" is a "time-varying lower acceptance limit," "A" is a value associated with the parameter, and "B" and "C" are constants. Littrell, [0015]-[0022]. These formulas thus show that **Littrell** discloses tracking a band limit in which "D" and "E" are upper and lower limits centered around the average value of "A," and in which the band limit varies according to an

analysis of current and prior readings of the parameter by using an average and standard deviation of the parameter. Neikirk, ¶128.

Littrell further discloses storing and transmitting timestamps of measurements from a sensor device to a computer. Littrell, [0032]. In particular, **Littrell** discloses that "parameter measurements are time-stamped" at the sensor device when sent to a networked computer such that, when the computer identifies an "alarm indication," "the time stamp information can be logged." Littrell, [0032]; Fig. 2. A diagram of a process according to **Littrell** is shown below in Fig. 1 (dashed lines and parenthetical numbers inserted to show which processes and components are attributable to (1) the machine that exhibits operating characteristics subject to alarm conditions, (2) the sensor and data acquisition system that sense and acquire parameter measurements representative of operating characteristics, or (3) the computer that processes parameter measurements to determine alarm limits and to raise an alarm when alarm limits are exceeded). Littrell, [0014]-[0022]. Neikirk, ¶129. The time stamp information is thus transmitted from sensor device (2) to computer (3).

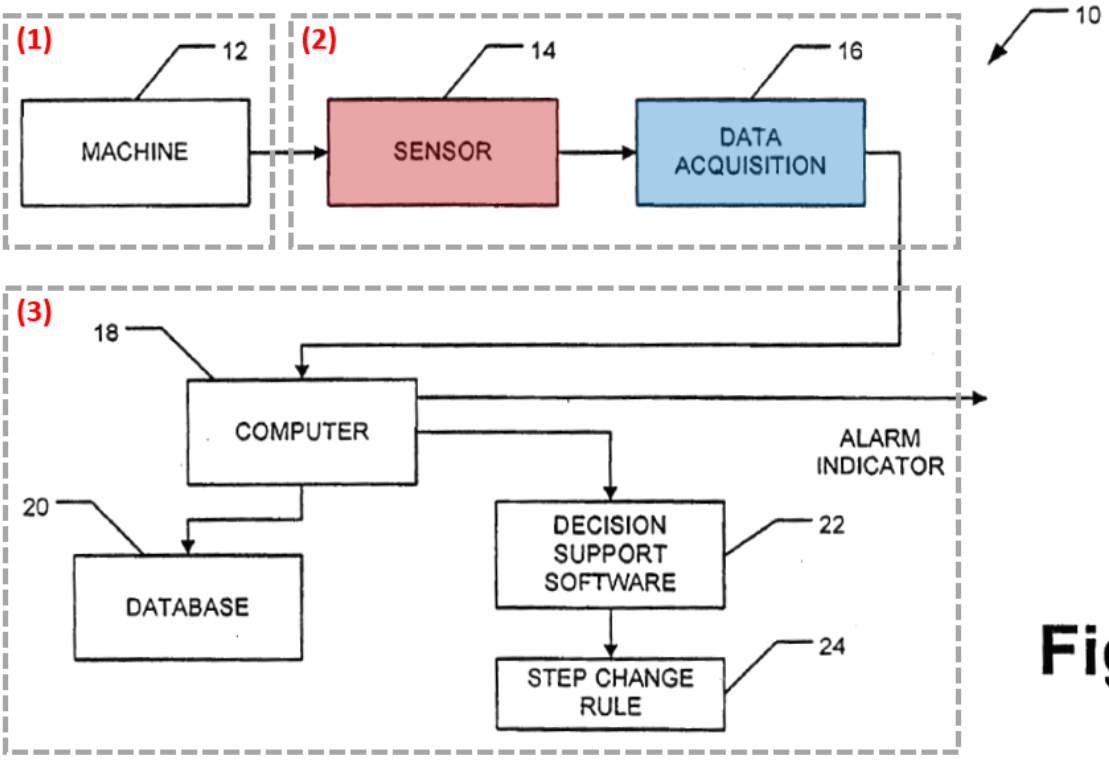


Fig. 1

Littrell discloses storing time-stamps with their associated measurements when sensor data is taken by **sensor 14** and acquired by **data acquisition system 16** (which is a "data collection unit" or "computer" that "receives data from one or more **sensors 14**") because "the parameter measurements are timestamped." Littrell, [0014]-[0015], [0032], Fig. 2. Furthermore, **data acquisition system 16** is "networked…to computer 18," which analyzes the data according to "decision support software," and when computer 18 determines that an alarm should be raised, the computer then "log[s]" "the time stamp information." Littrell, [0014]-[0015], [0029], [0031]-[0032]. As shown in Fig. 2, parameter measurements received and

latched by the computer include timestamp information. Littrell, [0006]-[0008], [0030].

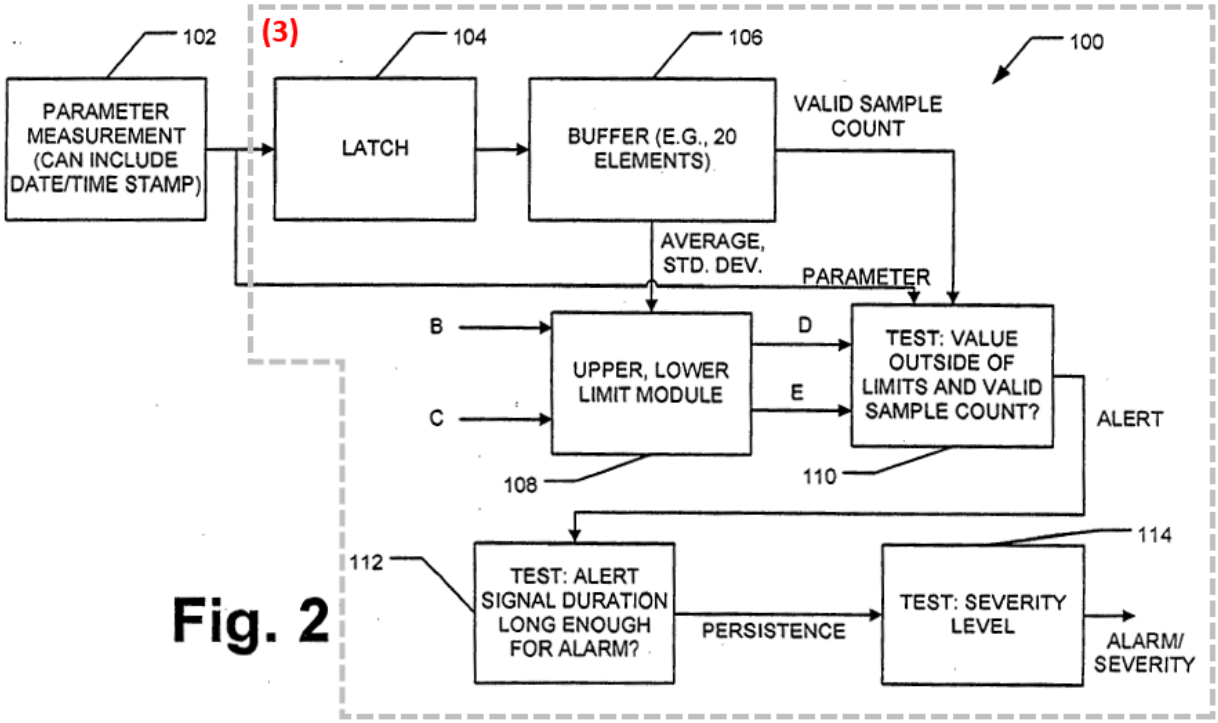


Fig. 2

Accordingly, the time-stamp information is included and/or transmitted with the parameter measurements from **sensor 14** when transmitted from **data acquisition system 16** to computer 18 over the "network." *Id.;* Neikirk, ¶130.

Littrell discusses "embodiments" that, based on these disclosures, a POSITA would have understood to be optional features that would have been advantageously combined with one another; and at minimum, it would have been obvious to combine the non-mutually-exclusive features to advantageously obtain their benefits. Neikirk, ¶131.

2. Motivation to Modify Kates-711 (and Kates-711 in view of Hitt) with Littrell's Teachings

Kates-711, Hitt and **Littrell** are in the same field as the '887—sensors, controls, and/or wireless communications—and/or reasonably pertinent to the alleged problem(s) identified in the '887—*e.g.*, a need to reduce communications over a wireless system. *See* §X.B.1; Littrell, [0002]-[0004] and [0039] (sensing and warning of parameter values in industrial processes, manufacturing facilities, "and any other appropriate applications"). Neikirk, ¶132.

While **Kates-711** teaches various processes that imply the use of timing data associated with sensed conditions, it leaves to a POSITA the details of how such timing data is acquired. Neikirk, ¶133. For example, **Kates-711** discloses that a monitoring computer "maintains a history of humidity readings for various sensor units." Kates-711, 17:63-67, *see also* 17:45-19:14 (making use of "a time average of humidity readings" and "a time history of humidity readings"). **Kates-711** also discloses detecting water leaks by calculating water usage from a water flow sensor and "watch for water leaks, by, for example, looking for water flow when there should be little or no flow." Kates-711, 19:35-55. Similarly, while **Kates-711** discloses various thresholds (*e.g.*, high-low, inner range, outer range) and the ability to adjust the thresholds (e.g., as an average of a number of sensor readings), it leaves to a POSITA how thresholds and adjustments would be implemented in practice—

by way of particular functions or equations. A POSITA therefore would have been motivated to modify **Kates-711** with **Littrell**. Neikirk, ¶133.

First, applying **Littrell's** teachings of communicating time stamp information along with sensor readings advantageously improves the accuracy of time-based measurements within the system. As discussed above, **Kates-711** teaches monitoring conditions using a "time history of" readings from a sensor. *E.g.*, Kates-711, 17:45-19:14. **Littrell** teaches time-stamping sensor data and making this time-stamp information available to computers networked to the sensors and their data acquisition systems. Littrell, [0014]-[0015], [0029],[0031]-[0032]. **Littrell** further teaches that parameters and their associated upper and lower limits are tracked and analyzed based on times. Littrell, [0031], [0034]-[0038], and Fig. 3 (measuring the length of time a change persists). A POSITA would have been motivated to modify **Kates-711's** time history teachings with **Littrell's** teachings of communicating timing data to facilitate computing "time" averages, establishing "time" histories, and making determinations related to "when" conditions occur. Neikirk, ¶134. Indeed, it was understood in the art that storing timing data representative of the time when the sensor data was read was most useful for providing accurate and exact records of sensor data, which would have been useful for providing accurate and exact records for the histories used in **Kates-711**. Neikirk, ¶134; Boaz (Ex. 1008), [0019], [0060]; *see also* Ehlers, 7:19-24, 7:31-36, 9:28-34 ("historical

data…desirably retained even during power outages and interruptions"), 13:8-41 (describing data structures containing timestamped histories of monitored events). Accordingly, a POSITA would have been motivated to maintain timing data with the sensor readings, as taught by **Littrell**, which are stored in memory, as taught and/or rendered obvious by **Kates-711** alone and in view of **Hitt** (*see* §§X.A-X.B), and to transmit the timing data with the sensor readings to a computer for analysis, as taught by **Littrell**, to provide accurate time representations of the sensor data for use in **Kates-711's** processes. Neikirk, ¶134.

Second, **Kates-711** provides broad teachings of various thresholds (*e.g.*, high-low, inner range, outer range), and the ability to adjust the thresholds (*e.g.*, as an average of a number of sensor readings) to determine the existence of anomalous conditions. Kates-711, 13:16-26, 19:64-20:9. *See* §X.A. **Littrell** provides additional mathematical details for implementing the types of thresholds taught by **Kates-711.** Littrell, [0015]-[0028]; Neikirk, ¶135. A POSITA would have been motivated to modify **Kates-711** to use **Littrell's** particular formula (or obvious variations thereof), to advantageously effectuate **Kates-711's** adjustable thresholds and calculate upper and lower limits based on a time-based average. Neikirk, ¶135.

Third, adjustable thresholds, like those disclosed by both **Kates-711** and **Littrell**, allow sensors to "avoid false alarms" typically associated with static thresholds and to "adjust to ambient conditions, aging of components, and other

operational variations while still providing a relatively sensitive detection capability" (Kates-711, Abstract, 1:49-54, 3:62-67), and, instead of reusing already-known thresholds, allows for the thresholds to be tuned "optimally in all conditions" (Littrell, [0002]). Since **Kates-711** does not provide specific formulas for adjusting thresholds, a POSITA would have turned to **Littrell**, which does provide exemplary formulas to adjust thresholds used to track sensor values, to effectuate the same in **Kates-711**. Neikirk, ¶136. Applying a known technique (**Littrell's** specific formula for adjusting thresholds) to a known device (**Kates-711's** sensor units that use and adjust thresholds) to yield a predictable result (varying thresholds according to **Littrell's** disclosed formula) would have been obvious to a POSITA. *KSR*, 550 U.S. at 417. Neikirk, ¶136.

In light of the above teachings, a POSITA also would have had a reasonable expectation of success in applying **Littrell's** teachings of timing data and adjustable thresholds to **Kates-711's** sensor system (alone or in view of **Hitt,** which further teaches storing the data in memory), which makes use of time-related functions and calculations and adjusts thresholds. Indeed, **Kates-711** already teaches that some timing data is used in its system (*e.g.*, to calculate the "time-weighted" averages), that other information is attached to the sensor data, such as ID codes of sensor units, and that its sensor unit performs calculations based on equations. Kates-711, 4:20-22, 4:65-5:6, 5:21-23, 8:33-38, 14:33-15:3, 20:1-9, 21:6-9, 21:47-53. *See also* Boaz,

[0019], [0060]; Lareau, [0109]; Kates-528 (Ex. 1021), 9:54-67. A POSITA would have found it obvious and straightforward to store and transmit the timing data and to implement **Littrell's** exemplary equations. Neikirk, ¶137.

3. Littrell Further Discloses "information associated reading of the indicator" ([1.e]) (Claims 1, 3-8, 18)

To the extent additional disclosure of "information associated with the reading of the indicator" [1.e] is required, Littrell discloses communicating information associated with the reading of the indicator. As explained in greater detail below for claims 14 and 15 and above in §X.C.1, **Littrell** teaches that sensor data are time-stamped and that the time-stamp information is further made available to computers networked to the sensors and their data acquisition systems—disclosing that the time-stamp information associated with a sensor reading is also communicated. Littrell, [0014]-[0015], [0029],[0031]-[0032]. Neikirk, ¶¶138-139.

As explained in §X.C.2, a POSITA would have been motivated to modify **Kates-711** with **Littrell's** teaching of time-stamps to advantageously effectuate **Kates-711's** time-based processes using accurate time representations of the sensor data, yielding a system in which **Littrell's** time stamp information is communicated along with readings of the indicator from **Kates-711's** sensor to, *e.g.*, facilitate more accurate analysis of that data. Neikirk, ¶140.

Accordingly, **Kates-711** in view of **Littrell**, and **Hitt** and **Littrell** renders obvious claim 1, as well as dependent claims [3]-[8] and [18] that depend therefrom, for the reasons set forth here as well as in §§X.A-X.B. Neikirk, ¶141.

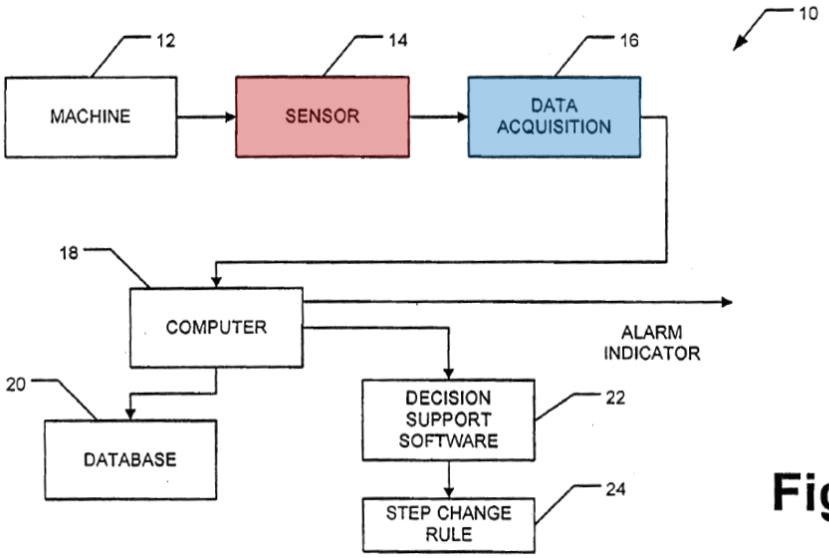
4. Littrell Further Discloses both that "an upper limit and a lower limit of the predetermined range may be varied" and a "band limit" (Claims 3-7)

Kates-711 already discloses varying a threshold based on "an average of a number of sensor measurements," meeting this element of Claim 3. *See* §X.A.2. To the extent additional disclosure is required, **Littrell further discloses that an upper limit** (e.g., "upper acceptance limit") **and a lower limit** (e.g., "lower acceptance limit") **of the predetermined range may be varied** (e.g., "redetermin[ing]" limits "utilizing the determined statistical functions to determine one or more alert limits"). Littrell, [0006]-[0008], [0015]-[0023], [0030]; Neikirk, ¶¶142-144. **Littrell** discloses varying a threshold by using "statistical functions" to calculate such "upper" and "lower" "acceptance limits"—which are limits of thresholds—using time-based averages and standard deviations of variations of a "parameter tracked by … sensors." Littrell, [0006], [0015]-[0022]; *see also id.*, [0003], [0008], [0023]-[0030]; §X.C.1. **Littrell's** limits further disclose a band limit because the formulas allow the sensor to detect and differentiate between "normal" and "sudden" changes in parameters, and issue alarms based on sudden changes. Littrell, [0015], [0023], [0028]; Neikirk, ¶¶144.

As discussed in §X.C.2, a POSITA would have been motivated to modify **Kates-711** with **Littrell's** detailed teachings of varying the range of thresholds based on averaging to, *e.g.*, advantageously adapt to changes in conditions and avoid false alarms. Neikirk, ¶145. **Kates-711** in view of **Littrell** and in view of **Hitt** and **Littrell** therefore further renders obvious claim 3 and claims 4-7 depending therefrom. *See also* §X.A-X.B; Neikirk, ¶145.

5. Claim Chart (Claims 14-15)

'887 Patent	Kates-711 in view of Hitt and Littrell
[14] The wireless automation device of claim 1 where the memory stores timing data associated with the most recent reading and the at least one prior reading of the indicator.	***See* [1] in §X.A.2.** **Kates-711, alone and alternatively in view of Hitt, discloses and at least renders obvious that the memory stores the most recent reading and the at least one prior reading of the indicator.** *See* [1.d] in §X.A.2. **Littrell discloses timing data associated with readings of the indicator** (e.g., "parameter measurements are time-stamped")**.** ***E.g.*, Littrell:** In addition to **Kates-711's** and **Hitt's** teachings of storing recent and prior readings of the indicator in memory, **Littrell** discloses storing and transmitting timestamps of parameter measurements. Littrell, [0032]. As discussed in §X.C.1, **Littrell** discloses that time-stamp information is maintained with its associated measurement when the sensor data is taken by sensor 14 and acquired by data acquisition system 16. Littrell, [0014], [0032], Fig. 2. The time stamp is stored with the measurement because it is then transmitted with the sensor data to computer 18 for analysis. Littrell, [0014]-[0015], [0030], [0032], Fig. 1. When the computer detects an

'887 Patent	Kates-711 in view of Hitt and Littrell
	alarm condition, the time stamp is logged. Littrell, [0032]. Neikirk, ¶¶146-149. As discussed in §X.C.2, a POSITA would have been motivated to modify **Kates-711** in view of **Hitt** with this teaching to store and transmit timing data, which provides accurate time representations of the sensor data to effectuate **Kates-711's** timing-based processes. Neikirk, ¶150. • **Fig. 1**  **Fig. 1** • **[0014]** ("[R]eferring to FIG. 1, an industrial machine or apparatus 12 (hereinafter "machine") has an operating characteristic that is subject to alarm conditions…. *The operating characteristic subject to alarm conditions is sensed by one or more sensors 14.* A non-exhaustive list of operating conditions that can be sensed by the one or more sensors 14 include pressure, temperature, position, acceleration, velocity, power, current, and flow…. *A data acquisition system 16 receives data from the one or more sensors 14.* Data acquisition system 16 can comprise, for example, networked hardware, a portable data collection unit, an internal computer or controller, or a data acquisition card in a computer system. *Data acquisition system 16 is networked in some*

'887 Patent	Kates-711 in view of Hitt and Littrell
	configurations to a computer 18, which in some configurations, includes or otherwise has access to a database 20. *Computer 18 executes a program comprising decision support software or firmware 22, which, in turn, includes a step change rule module 24.* In some configurations, database 20 contains variables that can be used for adjusting the sensitivity of step change rule module 24 in accordance with the type of machine 12 being monitored and the time—varying parameter or parameters measured by sensor 14.") • **[0015]** ("*Step change rule module 24 is configured to track a "normal" variation of a parameter. A sudden change in this parameter will cause decision support software 22 to instruct computer 18 to raise an alarm indication.* … Step change rule module 24 provides an upper and a lower bound for each parameter tracked by the one or more sensors 14. For example, one time-varying parameter is tracked utilizing limits D and E…") • **[0032]** ("In configurations in which *parameter measurements are time-stamped*, the *time stamp information can be logged when an alarm indication is raised*.")
[15] The wireless automation device of claim 1 where the transceiver is configured to transmit the timing data.	***See* [1] in §X.A.2.** **Littrell discloses transmitting the timing data** (e.g., "parameter measurements are time-stamped" at sensor 14 and/or data acquisition system 16, and "the time stamp information can be logged when an alarm indication is raised" at computer 18)**.** ***E.g.*, Littrell:** *See* [14]. In addition to **Kates-711's** teachings of transmitting recent and prior readings of the indicator (*see* [1.e]), **Littrell** discloses transmitting timestamps of parameter

'887 Patent	Kates-711 in view of Hitt and Littrell
	measurements, as discussed in §X.C.1. Littrell, [0014]-[0015], [0032]. As discussed for [14] and in §X.C.2, a POSITA would have been motivated to modify **Kates-711** with this teaching to transmit the timing data and provide accurate time representations of the sensor data to effectuate **Kates-711's** timing-based processes. Neikirk, ¶¶151-153.

D. Grounds 5-8: Claims 1, 3-8, and 18 Are Rendered Obvious by Kates-505 alone (Ground 5) and in view of Hitt (Ground 6), and Claims 1, 3-8, 14-15, and 18 Are Rendered Obvious by Kates-505 in view of Littrell (Ground 7) and in view of Hitt and Littrell (Ground 8)

In its Preliminary Infringement Contentions in the parallel litigation, PO was required to "identify the priority date (i.e., the earliest date of invention) for" the Claims and produce "all documents evidencing conception and reduction to practice for each claimed invention." Ex. 1024, 2. PO took the position that the '887 is entitled to a priority date of 4/12/2006, and stated that it is "unaware of" any such documents relating to conception or reduction to practice. Ex. 1025, 5. Nonetheless, to the extent PO contends the '887 is entitled to an earlier priority date, **Kates-505** is §102(e) prior art with a priority date of 5/27/2004 and shares the same core critical disclosures with **Kates-711.** Neikirk, ¶154.

1. Kates-505's Substantially Similar Disclosures to Kates-711

Kates-505, like **Kates-711**, discloses a "wireless sensor system that provides an extended period of operability without maintenance" using "sensor units [that]

detect[] an anomalous condition" and "communicate[] with [a] base unit and provide[] data regarding the anomalous condition." Kates-505, 1:41-2:3. **Kates-711** and **Kates-505** share the same core critical disclosures. *See* Ex. 1026 (redline comparison). Neikirk, ¶155.

While Grounds 1-4 rely on **Kates-711** because of its additional teachings of an "adjustable threshold" that do not appear in **Kates-505** (referred to below as "Adjustable Threshold Disclosures"), **Kates-505** already discloses calculating a humidity threshold based on a "time average of humidity readings":

> *[S]ensor unit 102 transmits humidity data when it determines that the humidity data fails a threshold test*. … In one embodiment, *the baseline humidity is computed at least in part as a time average of humidity readings from a number of humidity sensors*. In one embodiment, the baseline humidity is computed at least in part as *a time average of humidity readings from a humidity sensor*.

Kates-505, 15:27-44, *see also* 16:27-42 (describing using water flow measurements over time to detect changes in water flow). Accordingly, while **Kates-711** provides additional teachings of, *e.g.*, limits of a predetermined range that may be "varied" as recited in [3], **Kates-505** already teaches varying a threshold because it is calculated based on a "time average" of humidity readings; because such readings vary over time, this discloses that the threshold is varied for the same reasons explained in §X.A.2. Neikirk, ¶156. These disclosures are thus sufficient to not only render

obvious, but affirmatively disclose, adjustable thresholds for the same reasons explained above for Grounds 1-4. Neikirk, ¶156.

Additionally, while **Kates-711** also explicitly discloses an HVAC unit (*see, e.g.*, Kates-711, Fig. 2) (indicated below as "HVAC Disclosures"), the Claims are not limited to HVAC applications. Neikirk, ¶157. **Kates-505** discloses a sensor that measures conditions, including both "temperature" and "humidity," for both normal operation and to issue alert notifications. Kates-505, 1:13-36, 1:60-2:8, 3:20-32, 4:54-64, 6:59-64, 8:44-9:1, 13:10-19, 15:36-16:26. Discussions of **Kates-711's** temperature (*e.g.*, higher or lower temperature thresholds) teachings therefore apply equally to **Kates-505**'s teachings of both humidity and temperature measurements. Neikirk, ¶157.

A POSITA would have been motivated to modify **Kates-505** with **Hitt** (Ground 6) and further with **Littrell** (Grounds 7-8) for the same reasons as set forth above with respect to **Kates-711. Kates-505** is in the same field as **Kates-711** (as well as the '887, **Hitt,** and **Littrell**)—as reflected in their overlapping disclosures. *See* Kates-505, 9:61-63 (same disclosure of relevant field); Neikirk, ¶158; *see* §§X.A-X.C. And because of the **Kates-711** disclosures that are common with the **Kates-505** disclosures, a POSITA would have been motivated to modify **Kates-505** with the same teachings from **Hitt** and **Littrell** for the same reasons discussed in §§X.B.1, X.C.1-2.

Accordingly, as set forth in the claim chart in the next section, **Kates-505** alone (Ground 5), in view of **Hitt** (Ground 6), **Littrell** (Ground 7), and/or **Hitt and Littrell** (Ground 8) renders obvious the Claims. Neikirk, ¶159.

2. Chart Comparing Kates-711 with Kates-505

As set forth below, **Kates-505** and **Kates-711** share the same core critical disclosures cited for Grounds 1-4 (§§X.A-X.C), and the Claims are therefore unpatentable under Grounds 5-8 based on the same reasoning set forth in those sections. The last column of the table below addresses differences in cited disclosures. Differences that have no bearing on the reasoning discussed for Grounds 1-4 are indicated as "Non-Material." Grammar/spelling differences are reflected in Ex. 1026 (redline comparison), and are not addressed below. Neikirk, ¶160.

Claim	Kates-711	Kates-505	Differences
[1.pre]	Fig. 2	Fig. 2	HVAC Disclosures.
	Abstract	Abstract	Non-Material.
	1:6-11	1:6-10	Non-Material.
	4:35-48	1:57-2:3	
	5:30-33	2:54-56	Non-Material.
	6:6-19	3:33-47	
	7:45-48	5:19-22	
	7:45-8:42	5:19-6:16	Non-Material.
	11:7-10	8:52-55	

	12:47-51	9:30-34	
	13:8-28	9:55-10:9	
	15:45-16:35	12:27-13:19	
	16:36-17:44	13:14:31	
	18:37-59	15:27-50	
	16:56-17:2	13:41-55	
	19:35-21:36	16:27-56	Adjustable Threshold Disclosures.
[1.a]	Fig. 1	Fig 1	Non-Material.
	Figs. 2-3	Figs. 2-3	HVAC Disclosures.
	Fig. 5	Fig. 5	
	5:21-25	2:43-48	
	6:29-30	3:58-60	Non-Material.
	11:30-34	9:9-14	
	12:26-30	6:37-40	
	12:47-51	9:30-34	
	13:58-61	10:39-42	
	14:15-24	10:63-11:5	Non-Material.
[1.b]	Fig. 2	Fig 2	HVAC Disclosures.
	4:35-53	1:57-2:8	
	7:13-23	4:54-64	
	7:60-8:5	5:34-46	
	10:61-63	8:38-40	
	12:47-51	9:30-34	
	12:66-13:9	9:46-56	
	13:8-14	9:55-61	
	15:50-16:7	12:32-57	
	16:31-32	13:10-16	
	17:42-19:14	14:29-16:6	

	19:46-53	16:28-33	
	20:1-49, 21:1-5, 21:16	—	Adjustable Threshold Disclosures.
[1.c]	Fig. 2	Fig 2	HVAC Disclosures.
	Fig. 7	Fig. 7	
	5:18-23	2:40-46	
	7:60-8:12	5:34-53	
	8:30-42	6:4-16	
	9:43-50	7:18-25	
	11:16-22	8:62-9:1	
	12:47-51	9:30-34	
	12:62-66	9:42-46	
	13:7-23	9:55-10:3	
	13:26-28	10:7-9	
	13:57-14:5	10:39-53	
	15:50-16:7	12:32-57	
[1.d]	4:17-34	—	Adjustable Threshold Disclosures.
	4:56-64	2:12-20	
	8:43-63	6:17-36	
	12:62-66	9:42-46	
	15:50-16:7	12:32-57	
	19:64-20:49 21:1-16	—	Adjustable Threshold Disclosures.
[1.e]	Fig. 7	Fig. 7	
	4:6-9	1:46-49	
	4:39-42	1:61-64	
	5:12-16	2:34-38	

	7:63-8:5	5:37-46	
	8:23-29	5:64-6:3	
	13:8-23	9:55-10:3	
	13:14-16	9:61-63	
	13:16-23	9:63-10:3	
	13:23-26	10:3-7	
	15:50-16:4	12:32-54	
	18:39-41	15:29-31	
	19:64-20:44 20:50-59	—	Adjustable Threshold Disclosures.
[3]	13:16-26	9:64-10:5	
	Abstract 1:46-54 3:62-67 4:17-34 19:64-20:9 20:51-59 21:49-53	—	Adjustable Threshold Disclosures.
[4]-[7]	19:64-20:9	—	Adjustable Threshold Disclosures.
[8]	Fig. 1	Fig 1	Non-Material.
	4:49-53	2:4-8	
	4:56-64	2:12-20	
	5:12-17	2:34-39	
	6:57-63	4:31-38	
	8:5-9	5:46-50	
	8:13-19	5:54-63	
	8:23-29	5:64-6:3	
	10:61-65	8:38-42	

	13:26-28	10:7-9	
	16:21-26	13:5-9	
[14]-[15]	Abstract 1:46-54 3:62-67 4:20-22 4:65-5:6 19:64-20:9 21:6-9 21:47-53	—	Adjustable Threshold Disclosures.
	5:21-23	2:43-46	
	8:33-38	6:7-12	
	13:16-21	9:64-10:5	
	14:33-15:3	11:14-51	
	17:63-67	14:51-55	
	17:45-19:14	14:32-16:6	
	19:35-55	16:27-37	
[18]	4:3-9	1:44-49	
	4:35-39	1:57-61	
	4:46-53	2:1-8	
	12:66-13:7	9:46-56	

E. Grounds 9-12: Claims 1, 3-8, and 18 Are Rendered Obvious by Kates-505 in View of Mueller (Ground 9) and in View of Hitt (Ground 10), and Claims 1, 3-8, 14-15, and 18 Are Rendered Obvious by Kates-505 in View of Mueller and Littrell (Ground 11) and in View of Mueller, Hitt, and Littrell (Ground 12)

1. Overview of Mueller

Mueller discloses the use of "remote sensors transmitting temperature information to a thermostat, while reducing or eliminating transmission interference and providing increased user control" by, *e.g.*, "only transmit[ting] temperature information on a sensed change in temperature." Mueller, Abstract, 1:8-11. Neikirk, ¶161.

Mueller discloses a remote temperature sensor that transmits sensor data to a controlling thermostat. Mueller, 3:18-31, 5:19-23, 6:62-7:3, 8:63-66. Sensing and transmitting are performed at variable intervals, and, moreover, transmission "only occur[s] if the new sensed temperature is different by a pre-defined amount from a previous transmitted temperature." Mueller, 2:16-21, 2:37-49, 8:67-9:6, 12:5-7. For example, transmission may occur only if, based on a comparison of a current sensed temperature with a previous sensed temperature, a difference "more than $^{2}/_{16}$° F" is determined. Mueller, 2:43-49, 9:3-6, 11:61-65. Neikirk, ¶162.

2. Motivation to Modify Kates-505 (and Kates-505 in view of Hitt and/or Littrell) with Mueller's Teachings

Like Kates-505, **Hitt**, and **Littrell**, **Mueller** is in the same field as the '887 and/or reasonably pertinent to the alleged problem(s) identified in the '887. *See*

§§X.B.1; X.C.1; X.D.1; Mueller, 1:40-49, 1:61-2:61 (minimizing wireless transmissions by transmitting "only on a predetermined temperature change"). Neikirk, ¶163.

Kates-505 teaches transmitting changed sensor values, transmitting a sensed value when it exceeds a given threshold (*e.g.*, a high-low threshold or inner range threshold), and not transmitting data that falls within a normal range. Kates-505, 1:57-2:3 (sending "anomalous" "quantitative measured data (e.g., … temperature rate of rise, etc."), 13:16-19 (detecting "rapid temperature rise"), 13:28-32 (detecting a severe leak by "measuring the rate of rise in the water level"), 9:61-10:36, 15:27-29. **Mueller** further teaches transmitting sensor data upon detection of a change in sensor value beyond a specified amount. Mueller, 2:43-49, 9:3-6, 11:61-65. For several reasons, a POSITA would have been motivated to modify **Kates-505** by applying **Mueller's** teachings of a rate-of-change threshold, yielding a system that uses both **Kates-505's** value-based thresholds and **Mueller's** rate-of-change thresholds. Neikirk, ¶164.

First, transmitting sensor readings in response to changes enhances the responsiveness of the automation system to emergency conditions. **Kates-505** teaches that high rates-of-change in sensor values detected by a sensor may be indicative of harmful conditions like fires and gas or water leaks that require immediate attention. Kates-505, 1:57-2:3, 3:20-30, 5:20-33, 15:36-16:26. A

POSITA therefore would have been motivated to modify **Kates-505** by adding **Mueller's** teachings of a threshold based on a change in temperature value used to transmit a most recent sensor reading—*e.g.*, detecting a value reflecting a sensor value change greater than a predetermined amount indicative of a harmful condition. Applying these teachings, yields a system that uses **Kates-505's** value-based thresholds for normal system operation, and **Mueller's** rate-of change setpoints to detect emergency conditions, such as a fire or water leak. Neikirk, ¶165.

Second, conditioning the transmission of sensor readings upon detection of a change beyond a predetermined range increases the reliability of the automation system by reducing wireless noise and interference. **Mueller** teaches that using multiple wireless devices, such as **Kates-505's** multiple sensor units, advantageously reduces installation costs associated with wired devices while allowing for more complex control systems, but at the expense of the well-known increased risk of wireless transmission interference and collisions. Mueller, 1:15-49, 2:6-8. **Mueller** teaches techniques for mitigating such interference and collisions by, *e.g.*, transmitting sensed conditions upon predetermined changes in a sensed condition. Mueller, 2:16-21, 2:37-49, 8:67-9:6, 11:61-12:7. A POSITA therefore would have been motivated to modify **Kates-505** to transmit a most recent sensor reading in response to detecting a certain level change, *i.e.*, a difference

greater than a predetermined amount, as taught by **Mueller**, to mitigate such interference. Neikirk, ¶166.

In light of the above teachings, a POSITA also would have had a reasonable expectation of success in applying **Mueller's** teachings of detecting a change by determining differences between sensor readings to **Kates-505's** sensor system (alone or in view of **Hitt**, which further teaches storing the data in memory, and/or **Littrell**, which further teaches band limit thresholds and time stamping—including similar emergency-based rate of change thresholds), which selectively transmits sensor data determined to be anomalous. Indeed, **Kates-505** already teaches that the detection of changes between sensor readings is important to detecting, and responding to, emergency conditions. Kates-505, 1:57-2:3, 3:20-30, 5:20-33, 13:20-59. And **Hitt's** and **Littrell's** teachings would be applicable to the combination including **Mueller** for the same reasons explained in §X.D.1 (e.g., storing rate-of-rise sensor information as taught by **Hitt**, and using **Littrell's** teachings to adjust **Mueller's** rate-of-rise thresholds). *E.g.*, Hitt, [0067]-[0068]; Littrell, [0015]. A POSITA would have found it obvious and straightforward to transmit sensor readings in response **Mueller's** detected changes. Neikirk, ¶167.

3. Mueller Further Discloses "transmit[ting] a most recent reading … in response to detecting a change in the sensed condition outside a predetermined range and … [suspending transmission] in response to detecting a change in the sensed

condition within the predetermined range" ([1.e]) and a "band limit" (Claim 5)

To the extent additional disclosure of transmitting "in response to detecting a change in the sensed condition outside a predetermined range" or suspending transmission when "within the predetermined range" in [1.e] is required, Mueller discloses "only transmit[ting] temperature information on a sensed change in temperature," such as "if the new sensed temperature is different by a pre-defined amount from a previous transmitted temperature." Mueller, Abstract, 1:8-11, 2:16-21, 2:37-49, 4:26-27, 8:66-9:6, 11:60-12:9. As explained in §§X.E.1-X.E.2, **Mueller** teaches comparing a most recent sensed temperature to a previous temperature and transmitting the temperature if the difference between the temperatures is, *e.g.*, "more than $^{2}/_{16}$° F"—disclosing that transmission occurs in response to detecting a change outside a predetermined range and otherwise suspending the transmission when the change is within the predetermined range. *Id.* These teachings further disclose a band limit as recited in [5] because the determination of whether to transmit a sensor reading is evaluated using a difference between a current and prior temperature—similarly to the discussion of a band limit in the '887. *See id.*; §A.2 ([5], discussing the '887); Neikirk, ¶168-170.

As explained in §X.E.2, a POSITA would have been motivated to modify **Kates-505** with **Mueller's** teaching of detecting changes to advantageously

effectuate **Kates-505's** selective transmissions based on detections of anomalous sensor readings, yielding a system in which **Mueller's** detection of a change causes **Kates-505's** sensor to selectively transmit sensor readings, advantageously allowing the system to respond to emergency conditions (in addition to user-based thresholds as taught by Kates-505). Neikirk, ¶171.

Accordingly, **Kates-505** in view of **Mueller**, **Hitt** and/or **Littrell,** renders obvious claim 1, as well as dependent claims [3]-[8], [14]-[15] and [18] that depend therefrom, for the reasons set forth here as well as in §§X.A-X.D. Neikirk, ¶172.

XI. SECONDARY CONSIDERATIONS

There is no evidence in the prosecution history of the '887 or any related application that any arguments regarding secondary considerations exist, let alone that any such arguments could overcome the strong showing of obviousness above or that there is a sufficient nexus to any of the Claims. *See generally* '887FH; Neikirk, ¶173. Indeed, as demonstrated by the prior art referenced herein, any purported solutions to problems or unexpected results in the '887 were already well known. Neikirk, ¶173. To the extent PO asserts the existence of any secondary considerations in its responses, Petitioner reserves the right to address any such evidence.

XII. CONCLUSION

Substantial, new, and noncumulative technical teachings have been presented for the ’887’s Claims, which are rendered obvious for the reasons set forth above. There is a reasonable likelihood—and its is highly likely—that Petitioner will prevail as to claims 1, 3-8, 14-15, and 18. *Inter partes* review of these Claims is accordingly requested.

Dated: November 2, 2023

Respectfully submitted,

/Justin J. Oliver/
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CERTIFICATE OF COMPLIANCE

Pursuant to 37 CFR §42.24(a) and (d), the undersigned hereby certifies that this Petition for Inter Partes Review complies with the type-volume limitation of 37 CFR §42.24(a)(i) because, exclusive of the exempted portions, it contains 13,954 words as counted by the word processing program used to prepare the paper.

Dated: November 2, 2023

/Justin Oliver/
Justin J. Oliver
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CERTIFICATE OF SERVICE

The undersigned certifies service pursuant to 37 C.F.R. §§42.6(e) and 42.105(b) on the Patent Owner via Priority Mail Express of a copy of this Petition for *Inter Partes* Review and supporting materials at the correspondence address of record for the '887 patent:

DAYLIGHT LAW, P.C.
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UNIT #531
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Courtesy copies of the same documents were also served at the following email address of record for Ollnova Technologies Ltd.'s IPR counsel in the Copeland IPR:

Ollnova_Counsel@b-clg.com

Dated: November 2, 2023

By: /Justin Oliver/
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