

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

OLLNOVA TECHNOLOGIES §
LTD., §
§
Plaintiff, §
§
VS. §
§
ECOBEE TECHNOLOGIES, ULC §
d/b/a ECOBEE, §
§
Defendant. §

Case No.
2:22-cv-00072-JRG

REMOTE VIDEOTAPED DEPOSITION OF

BRENT LAURENCE

Toronto, Ontario, Canada

April 12, 2023

10:03 a.m. EDT

Reported by:

Micheal A. Johnson, RDR, CRR

Job No. SY006970

1 REMOTE VIDEOTAPED DEPOSITION OF BRENT
2 LAURENCE, produced at the instance of the Plaintiff,
3 in the above-styled and numbered cause on the
4 12th day of April, 2023, at 10:03 a.m. EDT, before
5 Micheal A. Johnson, RDR, CRR, reported by realtime
6 stenographic means, at the location of the witness,
7 Toronto, Ontario, Canada, pursuant to Notice of Oral
8 Deposition, and in accordance with the Federal Rules
9 of Civil Procedure.

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19 Drayton Everson

20 ALSO PRESENT:

21 Everitt Long, ecobee

22

23

24

25

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1	DEPOSITION EXHIBITS		
2	BRENT LAURENCE		
3	April 12, 2023		
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1	DEPOSITION EXHIBITS		
2	BRENT LAURENCE		
3	April 12, 2023		
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1 PROCEEDINGS

2 THE VIDEOGRAPHER: We are now on the
3 record on April 12th, 2023, at approximately
4 10:03 a.m. Eastern Time for the remote video
5 deposition of Brent Laurence in the matter of
6 Ollnova Technologies Ltd. versus ecobee
7 Technologies, ULC doing business as ecobee.

8 My name is Drayton Everson and I'm
9 the videographer on behalf of TransPerfect.

10 Will counsel please introduce
11 themselves for the record and who they represent,
12 beginning with the party noticing this proceeding.

13 MR. HOLLANDER: This is Drew
14 Hollander with the BC Law Group on behalf of Ollnova
15 Technologies Ltd.

16 MR. DORSKY: This is Jason Dorsky of
17 Venable LLP on behalf of defendant ecobee, and
18 joining me is Everitt Long of the ecobee legal
19 department.

20 THE VIDEOGRAPHER: Thank you,
21 Counsel. Will our court reporter please swear in
22 the witness.

23 BRENT LAURENCE,
24 called as a witness, having been duly sworn, was
25 examined and testified as follows:

1 EXAMINATION

2 BY MR. HOLLANDER:

3 Q. Good morning. Can you please state your
4 full name for the record.

5 A. Good morning. My name is Brent Laurence.

6 Q. Mr. Laurence, have you ever been deposed
7 before?

8 A. Yes.

9 Q. How many times have you been deposed?

10 A. One time.

11 Q. And what case were you deposed in?

12 A. I'm not aware of the details, but a case
13 last fall.

14 Q. Do you recall the name of that case?

15 A. I do not recall.

16 Q. Have you ever testified in a court
17 proceeding?

18 A. No, I have not.

19 Q. Do you understand that you're under oath
20 and required to answer truthfully?

21 A. Yes.

22 Q. Is there any reason that would prevent
23 you from answering my questions fully and truthfully
24 today?

25 A. No.

1 Q. Who are you currently employed by?

2 A. Currently employed by ecobee.

3 Q. What is your current title at ecobee?

4 A. My current title at ecobee is vice
5 president hardware engineering.

6 Q. Can you please briefly explain your job
7 history at ecobee.

8 MR. DORSKY: Object to form.

9 A. Can you be more specific?

10 BY MR. HOLLANDER:

11 Q. Sure. Could you walk me through when you
12 started at ecobee, what your title was and your
13 progression through today as vice president of
14 hardware engineering.

15 MR. DORSKY: Object to form.

16 A. I started at ecobee in 2018 as director
17 hardware engineering.

18 BY MR. HOLLANDER:

19 Q. When were you promoted to vice president
20 of hardware engineering?

21 A. 2019.

22 Q. What are your job responsibilities as
23 vice president of hardware engineering?

24 MR. DORSKY: Object to form.

25 A. Schematic review.

1 BY MR. HOLLANDER:

2 Q. What do you mean by schematic review?

3 A. I review the schematics for errors and
4 omissions.

5 Q. How do you document errors and omissions
6 that you find or in your review of schematics?

7 A. Usually this is held in verbal design
8 reviews.

9 Q. Do you ever create written work product
10 with your findings of your review of the schematics?

11 MR. DORSKY: Object to form.

12 A. It can vary, but typically not.

13 BY MR. HOLLANDER:

14 Q. Are there ecobee employees that report to
15 you?

16 A. Yes.

17 Q. How many?

18 A. I don't know exactly. My team is
19 approximately 14 people.

20 Q. And what types of responsibilities does
21 your team have?

22 MR. DORSKY: Object to form.

23 A. Can you be more specific in your
24 question?

25 BY MR. HOLLANDER:

1 Q. Sure. What types of tasks and jobs does
2 your team perform?

3 MR. DORSKY: Object to form.

4 A. Schematic review.

5 BY MR. HOLLANDER:

6 Q. Do they do anything other than schematic
7 review?

8 A. Schematic design.

9 Q. What do you mean by schematic design?

10 A. Schematic design creates electrical
11 schematics.

12 Q. When you say electrical schematics, do
13 you mean documents, electrical documents, or
14 something else?

15 MR. DORSKY: Object to form.

16 A. In electrical schematics I'm referring to
17 drawings of the circuit board.

18 BY MR. HOLLANDER:

19 Q. Would those drawings be limited to
20 subparts of ecobee products or entire ecobee
21 products or both?

22 MR. DORSKY: Object to form.

23 A. Can you tell me what you mean by parts?

24 BY MR. HOLLANDER:

25 Q. Sure. Are the schematics limited to, for

1 example, certain printed circuit boards found in
2 ecobee products or are the schematics also of all
3 the components, hardware components, found in the
4 entirety of the product?

5 MR. DORSKY: Object to form.

6 A. The schematics are typically for printed
7 circuit boards of ecobee products.

8 BY MR. HOLLANDER:

9 Q. Do you have any patents?

10 A. I have one patent, I believe.

11 Q. Can you describe what that patent relates
12 to?

13 MR. DORSKY: Object to form.

14 A. I'm not a lawyer, so I'm not exactly sure
15 about what's in the patent, but I was asked some
16 questions during the development of a previous leak
17 sensor prototype.

18 BY MR. HOLLANDER:

19 Q. Are you a named inventor on that patent?

20 A. I don't know.

21 Q. In addition to review and creation of
22 schematics, what other experience do you have with
23 ecobee's line of thermostats and sensor accessories?

24 MR. DORSKY: Object to form.

25 A. Can you be more specific in your

1 question?

2 BY MR. HOLLANDER:

3 Q. Sure. Other than some of the schematics
4 that we just discussed, you know, your
5 responsibilities of reviewing and creating
6 schematics, are there other tasks that you perform
7 that relate to ecobee's line of thermostats and
8 sensor accessories?

9 MR. DORSKY: Object to form.

10 A. Printed circuit board layout review.

11 BY MR. HOLLANDER:

12 Q. Anything else?

13 A. Printed circuit board layout design.

14 Q. Anything else?

15 A. Test plan creation.

16 Q. Anything else?

17 A. Test plan -- test result reviews.

18 Q. Do you conduct any testing yourself?

19 A. I have conducted testing in the past, but
20 not frequently anymore.

21 Q. What type of testing have you conducted
22 in the past?

23 MR. DORSKY: Object to form.

24 A. Voltage ripple measurements.

25 BY MR. HOLLANDER:

1 Q. Anything else?

2 A. Current consumption.

3 Q. Anything else?

4 A. Signal integrity.

5 Q. What do you mean by signal integrity?

6 A. This would be the quality of voltage
7 waveform exchanged between two points on a printed
8 circuit board.

9 THE REPORTER: Counsel, we need to go
10 off the record to fix this audio.

11 MR. HOLLANDER: Okay.

12 THE VIDEOGRAPHER: The time is
13 10:14 a.m. We're going off the record.

14 (Recess taken from 10:14 a.m. to
15 10:20 a.m.)

16 THE VIDEOGRAPHER: The time is
17 10:20 a.m. and we are back on the record.

18 BY MR. HOLLANDER:

19 Q. Can you explain to me the types of
20 testing you've conducted for ecobee in the past?

21 MR. DORSKY: Object to form.

22 A. I have tested voltage DC levels.

23 BY MR. HOLLANDER:

24 Q. Any other types of testing?

25 A. Can you be more specific in your

1 question?

2 Q. Sure. Earlier you were explaining some
3 of the types of testing you have performed in the
4 scope of your employment for ecobee and we were
5 running through some of the examples. And I was
6 just wondering if there are any other examples that
7 you have not identified thus far.

8 MR. DORSKY: Object to form.

9 A. That's all that I can think of right now.
10 BY MR. HOLLANDER:

11 Q. Have you ever conducted testing on ecobee
12 products in the United States?

13 MR. DORSKY: Object to form.

14 A. No. As far as I know, I've never done
15 that.

16 BY MR. HOLLANDER:

17 Q. Okay. Let's start with our first
18 exhibit.

19 MR. HOLLANDER: I'm going to now drop
20 Exhibit 1 into the chat window here. This is
21 Ollnova's Rule 30(b)(6) deposition notice to ecobee.

22 (Deposition Exhibit 1 marked for
23 identification.)

24 BY MR. HOLLANDER:

25 Q. Are you able to open up Exhibit 1?

1 A. Not yet. Sorry, just need one more
2 second here.

3 Q. No problem.

4 A. Okay. I have the document open.

5 Q. Have you seen Ollnova Technology Ltd.'s
6 First Notice of Rule 30(b)(6) Deposition before?

7 A. No, I have not.

8 Q. Do you understand that you have been
9 designated to testify on the hardware aspects of
10 topics 2, 14, 39, 41, 52 and 54 in this notice?

11 A. I'm not sure exactly, but my attorneys
12 have -- have told me that I'm designated to
13 represent ecobee on behalf of hardware.

14 Q. Are you fully prepared to testify on
15 topics 2, 14, 39, 41, 52 and 54 as they relate to
16 hardware?

17 A. As long as those are topics for which
18 I've been designated and my attorneys have agreed,
19 then, yes.

20 Q. Can you tell me what you did to prepare
21 for your deposition today?

22 MR. DORSKY: Object to form. And I
23 will object based on privilege.

24 To the extent you can respond without
25 revealing the substance of any conversation or

1 advice you received from counsel, you may do so.

2 A. I have met with my attorneys on three
3 occasions and I have reviewed some documents.

4 BY MR. HOLLANDER:

5 Q. Which attorneys did you meet with?

6 MR. DORSKY: Same objection. Object
7 to form. Object to -- based on privilege.

8 You can identify attorneys but don't
9 reveal the substance of any communications or advice
10 you've received from counsel.

11 A. I have -- I met with Jason and Everitt
12 and that's all that I can remember.

13 BY MR. HOLLANDER:

14 Q. Now, you mentioned three different
15 occasions that you met with your attorneys. Do you
16 remember when the first time you met with your
17 attorneys to prepare for this deposition was?

18 A. Yes. That would be on Monday, April 3rd.

19 Q. And how long did you meet for?

20 A. I don't remember.

21 Q. Can you give me an estimate?

22 MR. DORSKY: Object to form.

23 A. I really can't remember.

24 BY MR. HOLLANDER:

25 Q. When was your second meeting with your

1 attorneys for the preparations for today's
2 deposition?

3 A. My second meeting was yesterday on
4 April 11th.

5 Q. And how long did you meet with your
6 attorneys on April 11th?

7 A. I don't remember.

8 Q. And when was the third occasion that you
9 met with your attorneys to prepare for today's
10 deposition?

11 MR. DORSKY: Object to form.

12 A. The third occasion that I met with my
13 attorneys was this morning.

14 BY MR. HOLLANDER:

15 Q. Did you speak to any nonattorneys in
16 preparing for your deposition?

17 MR. DORSKY: Object to form.

18 A. No, I did not.

19 BY MR. HOLLANDER:

20 Q. Now, you referenced reviewing some
21 documents in preparing for your deposition. Can you
22 describe to me what documents you reviewed?

23 MR. DORSKY: Object to form. Object
24 based on privilege.

25 To the extent -- you can respond to

1 the extent that the documents reviewed refreshed
2 your recollection in connection with the topics
3 you've been designated. Otherwise, the documents
4 discussed with attorneys including, you know, advice
5 and communications with the attorneys are
6 privileged. But otherwise you can respond and do
7 so.

8 A. There were a lot of documents. I don't
9 remember any specific document. There were lots.

10 BY MR. HOLLANDER:

11 Q. Can you describe the categories of
12 documents that you reviewed?

13 MR. DORSKY: Same caution, came
14 objection.

15 A. No, I really don't remember.

16 BY MR. HOLLANDER:

17 Q. Do you have any documents or notes with
18 you today?

19 A. No, I do not.

20 Q. Have you had any conversations with
21 Mr. John Martins concerning this case?

22 MR. DORSKY: Object to form.

23 A. I'm not certain who John Martin is.

24 BY MR. HOLLANDER:

25 Q. Have you had any conversations with

1 Shukri Souri concerning this case?

2 A. I'm not certain who that is either.

3 Q. Are you familiar with the APOGEE
4 automated building system developed by Siemens?

5 MR. DORSKY: Object to form.

6 A. No, I'm not familiar with that.

7 BY MR. HOLLANDER:

8 Q. Have you ever heard of the APOGEE system
9 developed by Siemens before?

10 A. I have never heard of that.

11 Q. Do you have any knowledge on the design
12 and operation of the Siemens APOGEE system?

13 MR. DORSKY: Object to form.

14 A. I have no knowledge of the system that
15 you're referring to.

16 BY MR. HOLLANDER:

17 Q. Okay. We'll turn to Exhibit 2. I'm
18 putting that in the chat box now.

19 MR. HOLLANDER: This Exhibit 2 are --
20 is ecobee's April 3rd, 2023, First Amended and
21 Second Supplemental Objections and Responses to
22 Plaintiff's First Set of Interrogatories.

23 (Deposition Exhibit 2 marked for
24 identification.)

25

1 BY MR. HOLLANDER:

2 Q. If you can just let me know when you've
3 downloaded the document and you have it open, I'd
4 appreciate it.

5 A. Okay. I have the document open.

6 Q. Okay. I'd like to turn your attention to
7 Interrogatory No. 1 that starts on page 6 of the
8 PDF.

9 A. Okay.

10 Q. Have you seen this interrogatory or this
11 document before?

12 A. I have never seen this document.

13 Q. Okay. So why don't you just quickly read
14 Interrogatory No. 1 and let me know when you're
15 finished.

16 A. Okay.

17 (Witness reviews document.)

18 A. Okay.

19 BY MR. HOLLANDER:

20 Q. Okay. So turning to pages 7 and 8 of the
21 PDF, you'll see a chart -- two charts with ecobee's
22 responses to Interrogatory No. 1. Let me know when
23 you see those two charts.

24 A. Okay. I can see those two charts.

25 Q. Okay. And third column is called

1 Internal Designation. Do you see that?

2 A. I can see the third column, yes.

3 Q. So reviewing the product names in the
4 first column and the part numbers in the second
5 column and the internal designation in the third,
6 are there any other names for these products that
7 you can think of that are not listed in either of
8 these charts?

9 MR. DORSKY: Object to form.

10 A. I can't think of any other names at this
11 time.

12 BY MR. HOLLANDER:

13 Q. For today's deposition, is it okay if I
14 refer to the list of products shown on pages 7 and 8
15 as the accused products? Is that okay?

16 MR. DORSKY: Object to form.

17 A. I would prefer if -- for each instance
18 that you refer to the specific product.

19 BY MR. HOLLANDER:

20 Q. Okay. I'm going to include Exhibit 3 now
21 into the chat function.

22 MR. HOLLANDER: This is a document
23 with the Bates stamp ecobee-Ollnova-0028182.

24 (Deposition Exhibit 3 marked for
25 identification.)

1 BY MR. HOLLANDER:

2 Q. Let me know when you have that document
3 available and opened.

4 A. Okay. I have the document open.

5 Q. Reviewing the first column is named
6 Project, the second column called Design and the
7 third column called Marketing Name and then the
8 fourth column called Type, are these descriptions
9 all accurate based on your understanding?

10 MR. DORSKY: Object to form.

11 A. Could I just have a quick minute just to
12 read through this document as I -- this isn't
13 something that I wrote.

14 BY MR. HOLLANDER:

15 Q. Of course.

16 (Witness reviews document.)

17 A. Okay. I've read it now. Sorry, can you
18 repeat the question?

19 BY MR. HOLLANDER:

20 Q. Sure. Is the list of project names and
21 marketing names accurate, to the best of your
22 understanding?

23 MR. DORSKY: Object to form.

24 A. I'm not aware of the marketing names that
25 we use, but the project internal names are names

1 that I'm familiar with.

2 BY MR. HOLLANDER:

3 Q. Are there any ecobee-branded thermostats
4 that you do not see a project name listed for here
5 in this document?

6 MR. DORSKY: Object to form.

7 A. We've made a lot of thermostats, so I
8 can't remember exactly, but the ones listed here I
9 am familiar with.

10 BY MR. HOLLANDER:

11 Q. Are there any other project names you're
12 aware of for ecobee thermostats not listed in this
13 document?

14 MR. DORSKY: Object to form.

15 A. Ares and Artemis are not listed here.

16 BY MR. HOLLANDER:

17 Q. What does Ares refer to?

18 MR. DORSKY: Object to form.

19 A. Ares refers to Smart Thermostat Premium.

20 BY MR. HOLLANDER:

21 Q. What does Artemis refer to?

22 MR. DORSKY: Object to form.

23 A. Artemis refers to Smart Thermostat
24 Enhanced.

25

1 BY MR. HOLLANDER:

2 Q. Can you describe to me the difference
3 between the Smart Thermostat Enhanced and the ecobee
4 Smart Thermostat Premium?

5 MR. DORSKY: Object to form, scope.

6 A. There are a lot of differences between
7 those products, but, you know, we'd have to go
8 through the schematics for those products to
9 identify all those differences.

10 BY MR. HOLLANDER:

11 Q. Are you aware of any high-level
12 functionality that is different between the ecobee
13 Smart Thermostat Premium and the ecobee Smart
14 Thermostat Enhanced?

15 MR. DORSKY: Object to form, scope.

16 A. Again, we'd really have to go through the
17 schematics to highlight the high-level differences.

18 BY MR. HOLLANDER:

19 Q. Okay. Turning back to Exhibit 3. Are
20 there any ecobee-branded sensors -- scratch that.
21 Strike that from the record.

22 Are you aware of any project names for
23 any ecobee-branded accessory sensors not listed in
24 this document?

25 MR. DORSKY: Object to form.

1 A. I'm not aware of which sensors ecobee has
2 branded.

3 BY MR. HOLLANDER:

4 Q. Okay.

5 MR. HOLLANDER: I'm going to put
6 Exhibits 4, 5, 6 and 7 into the chat window now.

7 Exhibit 4 is US patent number
8 7,746,887. Exhibit 5 is US patent number 8,264,371.
9 Exhibit 6 is US patent number 8,224,282. And
10 Exhibit 7 is US patent number 7,860,495.

11 (Deposition Exhibit 4 marked for
12 identification.)

13 (Deposition Exhibit 5 marked for
14 identification.)

15 (Deposition Exhibit 6 marked for
16 identification.)

17 (Deposition Exhibit 7 marked for
18 identification.)

19 BY MR. HOLLANDER:

20 Q. So let me know when you have Exhibit 4 up
21 in front of you.

22 A. Okay. I have Exhibit 4.

23 Q. Have you seen US patent number 7,746,887
24 before?

25 A. No, I have not.

1 Q. Okay. Turning to -- well, before I move
2 on, have you read any parts of US patent number
3 7,746,887?

4 MR. DORSKY: Object to form.

5 I'm going to object based on
6 privilege and just caution the witness to the
7 extent -- not to reveal any communications or advice
8 you received from counsel. Otherwise, you may
9 respond.

10 A. I have not read any part of this patent
11 before.

12 BY MR. HOLLANDER:

13 Q. Okay. Let's turn to Exhibit 5. Please
14 let me know when you have that up.

15 A. Okay. I have Exhibit 5 open.

16 Q. Have you ever seen US patent
17 number 8,264,371 before?

18 A. No, I have not.

19 Q. Have you read any parts of US patent
20 number 8,264,371 before?

21 MR. DORSKY: Object to form.

22 Same caution regarding privilege.

23 A. No, I have not read any parts of this
24 patent before.

25

1 BY MR. HOLLANDER:

2 Q. Okay. Let's pull up Exhibit 6 and please
3 let me know when you have that up.

4 A. Okay. I have Exhibit 6 open.

5 Q. Have you ever seen US patent
6 number 8,224,282 before?

7 A. No, I have not.

8 Q. Have you read any parts of US patent
9 number 8,224,282 before?

10 MR. DORSKY: Object to form.

11 Same caution regarding privilege.

12 A. No, I have never read this before.

13 BY MR. HOLLANDER:

14 Q. Okay. Let's turn to Exhibit 7. Please
15 let me know when you have that up.

16 A. Okay. I have the exhibit open.

17 Q. Have you ever seen US patent
18 number 7,860,495 before?

19 A. No, I have not.

20 Q. Have you read any parts of US patent
21 number 7,860,495?

22 MR. DORSKY: Object to form.

23 Same caution to privilege.

24 A. No, I have not.

25

1 BY MR. HOLLANDER:

2 Q. Have you conducted any analysis of
3 whether any ecobee product infringed any of the four
4 patents we just reviewed?

5 MR. DORSKY: Object to form,
6 privilege.

7 Please don't reveal the substance of
8 any communications you've had with counsel.
9 Otherwise, you may respond.

10 A. No, I have not.

11 BY MR. HOLLANDER:

12 Q. Do you have any opinions as to whether
13 any ecobee products infringe any of the four patents
14 we just reviewed?

15 MR. DORSKY: Object to form.

16 And same caution regarding privilege.

17 A. No, I have no opinion.

18 BY MR. HOLLANDER:

19 Q. Do you have any opinions regarding
20 whether any of the four patents we just reviewed are
21 valid?

22 MR. DORSKY: Object to form.

23 And same caution regarding privilege.

24 A. I have no opinion.

25

1 BY MR. HOLLANDER:

2 Q. Do you have any opinions whether any of
3 the four patents we reviewed are enforceable?

4 MR. DORSKY: Object to form.

5 Same caution regarding privilege.

6 A. I have no opinion.

7 BY MR. HOLLANDER:

8 Q. Does ecobee sell or has sold the Smart Si
9 thermostat in the United States?

10 MR. DORSKY: Object to form and
11 scope.

12 A. I'm not sure.

13 BY MR. HOLLANDER:

14 Q. Has ecobee sold the ecobee3 in the United
15 States?

16 MR. DORSKY: Object to form and
17 scope.

18 A. I don't know.

19 BY MR. HOLLANDER:

20 Q. Has ecobee sold the ecobee3 Lite in the
21 United States?

22 MR. DORSKY: Object to form and
23 scope.

24 A. I don't know.

25

1 BY MR. HOLLANDER:

2 Q. Has ecobee sold the ecobee4 in the United
3 States?

4 MR. DORSKY: Object to form, scope.

5 A. I don't know.

6 BY MR. HOLLANDER:

7 Q. Has ecobee sold the SmartThermostat with
8 voice control in the United States?

9 MR. DORSKY: Object to form and
10 scope.

11 A. I don't know.

12 BY MR. HOLLANDER:

13 Q. Has ecobee sold the Smart Thermostat
14 Premium in the United States?

15 MR. DORSKY: Object to form and
16 scope.

17 A. I don't know.

18 BY MR. HOLLANDER:

19 Q. Has ecobee sold the Smart Thermostat
20 Enhanced in the United States?

21 MR. DORSKY: Object to form and
22 scope.

23 A. I don't know.

24 BY MR. HOLLANDER:

25 Q. Has ecobee sold SmartSensor accessory in

1 the United States?

2 MR. DORSKY: Object to form and
3 scope.

4 A. I don't know.

5 BY MR. HOLLANDER:

6 Q. Does ecobee offer to sell its line of
7 thermostats and sensors in the United States?

8 MR. DORSKY: Object to form and
9 scope.

10 A. I don't know.

11 BY MR. HOLLANDER:

12 Q. Does ecobee test fully assembled
13 thermostats and sensor accessories in the United
14 States?

15 MR. DORSKY: Object to form and
16 scope.

17 A. Can you be more specific?

18 BY MR. HOLLANDER:

19 Q. Sure. Does ecobee test any of the
20 functionality of fully assembled thermostats in the
21 United States?

22 MR. DORSKY: Object to form and
23 scope.

24 A. Can you be more specific as to what you
25 mean by test?

1 BY MR. HOLLANDER:

2 Q. Does ecobee examine the wireless
3 communications functionality and capabilities of the
4 accused products in the United States?

5 MR. DORSKY: Object to form and
6 scope.

7 A. I don't know.

8 BY MR. HOLLANDER:

9 Q. Does ecobee conduct any testing of the
10 ecobee-branded thermostats and sensors in the United
11 States?

12 MR. DORSKY: Object to form and
13 scope.

14 A. Can you be more specific about what you
15 mean by testing?

16 BY MR. HOLLANDER:

17 Q. Sure. Earlier you testified that you
18 conducted some testing on ecobee products in the
19 scope of your employment. I was wondering if ecobee
20 conducts any of the types of testing that you
21 described in the United States.

22 MR. DORSKY: Object to form, scope.

23 A. I don't know.

24 BY MR. HOLLANDER:

25 Q. Does ecobee utilize any third-party

1 laboratories to conduct testing of its products in
2 the United States?

3 MR. DORSKY: Object to form and
4 scope.

5 A. I don't know.

6 BY MR. HOLLANDER:

7 Q. Does ecobee have any employees that work
8 in the United States?

9 MR. DORSKY: Object to form and
10 scope.

11 A. I don't know.

12 BY MR. HOLLANDER:

13 Q. Are you aware of any ecobee employees
14 that are based in the United States?

15 MR. DORSKY: Object to form and
16 scope.

17 A. I don't know of any.

18 BY MR. HOLLANDER:

19 Q. Okay.

20 MR. HOLLANDER: I'm going to put
21 Exhibit 8 now in the chat window. This is a
22 document bearing the states -- the Bates stamp
23 ecobee-01lnova-0031589.

24 (Deposition Exhibit 8 marked for
25 identification.)

1 BY MR. HOLLANDER:

2 Q. And if you can let me know when that
3 document is open, I would appreciate it.

4 A. Okay. I have the document open.

5 Q. Do you recognize this document?

6 A. Can you give me a moment to read it?

7 Q. Sure.

8 (Witness reviews document.)

9 A. Okay. Thank you. I've read it now.

10 BY MR. HOLLANDER:

11 Q. Do you recognize this document?

12 A. No, I do not.

13 Q. Do you know what this document is?

14 A. No, I do not.

15 Q. In the second box from the top we see a

16 UL LLC. Do you see that?

17 A. I do see that, yes.

18 Q. Do you know who UL LLC is?

19 MR. DORSKY: Object to form.

20 A. No, I do not.

21 BY MR. HOLLANDER:

22 Q. Do you dispute that UL LLC identifies an
23 address in Newton, Iowa?

24 MR. DORSKY: Object to form and

25 scope.

1 A. Can you be more specific about the
2 location -- the -- where I would find that address?

3 BY MR. HOLLANDER:

4 Q. Sure. In the second box under the
5 Laboratory Name we see an address. Do you see that?

6 A. I do see that address, yes.

7 Q. Do you have any reason to dispute the
8 accuracy of the address?

9 MR. DORSKY: Object to form, scope.

10 A. I don't know what that address is.

11 BY MR. HOLLANDER:

12 Q. Does this document identify ecobee
13 thermostats as representative tested models?

14 MR. DORSKY: Object to form, scope.

15 A. I don't know what was intended by this
16 document.

17 BY MR. HOLLANDER:

18 Q. In the third box from the top, the fifth
19 line, we see Representative (tested) Model.

20 Do you see that?

21 A. Yes, I can see that.

22 Q. And then we see three models; is that
23 right?

24 A. I can see three models listed, yes.

25 Q. Do you recognize those model names and

1 numbers?

2 MR. DORSKY: Object to form.

3 A. Those model names are not what we would
4 use in the hardware team, so I'm not exactly sure
5 what they refer to.

6 BY MR. HOLLANDER:

7 Q. Do they refer to ecobee products?

8 MR. DORSKY: Object to form, scope.

9 A. I don't know.

10 BY MR. HOLLANDER:

11 Q. Okay.

12 MR. HOLLANDER: I'm going to put the
13 next exhibit into the chat window. This is
14 Exhibit 9. It is a document bearing the Bates stamp
15 ecobee-Ollnova-0079994.

16 (Deposition Exhibit 9 marked for
17 identification.)

18 BY MR. HOLLANDER:

19 Q. And I guess please let me know when you
20 have that document up.

21 A. Okay. I have this document open.

22 Q. Do you recognize this document?

23 A. Yes.

24 Q. What is it?

25 A. This is the schematic design for Nike.

1 Q. What does Nike refer to?

2 MR. DORSKY: Object to form.

3 A. Nike was the hardware internal name for
4 this thermostat.

5 BY MR. HOLLANDER:

6 Q. When you say this thermostat, what
7 thermostat are you referring to?

8 MR. DORSKY: Object to form.

9 A. Nike is the internal name for the
10 thermostat that this schematic -- this schematic
11 describes.

12 BY MR. HOLLANDER:

13 Q. And what is the brand name for the
14 thermostat that is shown in this schematic?

15 MR. DORSKY: Object to form, scope.

16 A. I don't know.

17 BY MR. HOLLANDER:

18 Q. Does Nike refer to the ecobee3 Lite?

19 MR. DORSKY: Object to form.

20 A. I -- the internal name for this
21 thermostat is Nike, and how this -- that was
22 marketed, I'm not certain of.

23 BY MR. HOLLANDER:

24 Q. Are you familiar with the ecobee3 Lite?

25 MR. DORSKY: Object to form.

1 A. I am familiar with ecobee3 Lite, yes.

2 BY MR. HOLLANDER:

3 Q. Are you familiar with the internal name
4 for the ecobee3 Lite?

5 MR. DORSKY: Object to form.

6 A. Yes.

7 BY MR. HOLLANDER:

8 Q. And what's the internal name for the
9 ecobee3 Lite?

10 A. The internal name for ecobee3 Lite is
11 Nike.

12 Q. So are we looking at the schematic for
13 the ecobee3 Lite?

14 MR. DORSKY: Object to form.

15 A. This is the schematic for Nike. And,
16 again, I prefer to use the internal names as those
17 are what I'm more familiar with and not familiar
18 with the marketing names.

19 BY MR. HOLLANDER:

20 Q. Okay. On the first page close to the
21 bottom we see a notation to Gamma. Do you see that,
22 Nike Gamma?

23 A. Yes, I see that.

24 Q. What does Gamma refer to?

25 A. Gamma refers to the release name of the

1 design.

2 Q. Are there releases subsequent to Gamma of
3 the master design?

4 MR. DORSKY: Object to form.

5 A. I don't know.

6 BY MR. HOLLANDER:

7 Q. What is the most recent version of the
8 master design for the Nike product?

9 MR. DORSKY: Object to form.

10 A. I don't know.

11 BY MR. HOLLANDER:

12 Q. Are you aware of any versions of the Nike
13 schematic that postdate the Gamma release?

14 MR. DORSKY: Object to form.

15 A. I'm not aware of any subsequent releases.

16 BY MR. HOLLANDER:

17 Q. Does the Nike thermostat contain a
18 processor?

19 MR. DORSKY: Object to form.

20 A. The Nike thermostat contains many
21 components.

22 BY MR. HOLLANDER:

23 Q. Does the ecobee Nike thermostat contain a
24 processor?

25 A. The Nike thermostat contains a central

1 processor.

2 Q. Where in this document may I find the
3 central processor?

4 MR. DORSKY: Object to form.

5 A. Can you give me a couple minutes just to
6 look through the rest of the document?

7 BY MR. HOLLANDER:

8 Q. Sure. Let me know when you're ready.

9 A. Thanks.

10 (Witness reviews document.)

11 A. Okay. I'm ready.

12 BY MR. HOLLANDER:

13 Q. Okay.

14 A. The --

15 Q. Where in the -- yeah, okay. You can
16 answer if you remember the question. Actually, let
17 me re-ask it just so we have a clean record.

18 Where in this document may I find the
19 central processor?

20 MR. DORSKY: Object to form.

21 A. The central processor is on page 4.

22 BY MR. HOLLANDER:

23 Q. Before we get to page 4, can we turn to
24 page 3, and I would like to turn your attention to
25 the bottom right-most box. And there we see a

1 description. It says: Nike (iMX283 CPU).

2 Do you see that?

3 A. Yes, I can see that.

4 Q. What does iMX283 refer to?

5 MR. DORSKY: Object to form.

6 A. iMX283 refers to the model number of the
7 central processor.

8 BY MR. HOLLANDER:

9 Q. And then you said page 4 is the schematic
10 where I can find the central CPU; is that right?

11 MR. DORSKY: Object to form.

12 A. Page 4 is one of the -- is one of the
13 pages, yes.

14 BY MR. HOLLANDER:

15 Q. Now, on page 4 we see a large box towards
16 the left. And I see that it's identified as U11A.
17 Do you see that, a notation to U11A?

18 A. Yes, I do.

19 Q. How do I know what U11A is?

20 MR. DORSKY: Object to form.

21 A. U11A implies that it is part A of the
22 component with reference designator U11.

23 BY MR. HOLLANDER:

24 Q. Is there a document that identifies the
25 components that correspond to reference designator

1 U11?

2 MR. DORSKY: Object to form, scope.

3 A. The hardware team primarily uses
4 schematics like this.

5 BY MR. HOLLANDER:

6 Q. Are there documents that identify what
7 component corresponds to the notation U11A?

8 MR. DORSKY: Object to form, scope.

9 A. This document indicates that U11A
10 corresponds to the iMX283.

11 BY MR. HOLLANDER:

12 Q. Does the iMX283 contain memory?

13 MR. DORSKY: Object to form.

14 A. Can you be more specific?

15 BY MR. HOLLANDER:

16 Q. Does the iMX283 CPU chip contain either
17 volatile or nonvolatile memory?

18 MR. DORSKY: Object to form.

19 A. I don't know exactly which types, but
20 generally CPU processors like this one would contain
21 some memory.

22 BY MR. HOLLANDER:

23 Q. Does the Nike thermostat contain memory
24 other than memory that is contained inside this
25 central CPU?

1 MR. DORSKY: Object to form.

2 A. For a CPU of this type to operate, it is
3 mandatory to be connected to external memory.

4 BY MR. HOLLANDER:

5 Q. Can you identify for me in the Nike
6 master design document where I can find the memory
7 that is connected to the central CPU?

8 MR. DORSKY: Object to form.

9 A. When you refer to the document that you
10 just referenced, are you referring to Exhibit 9?

11 BY MR. HOLLANDER:

12 Q. That's right.

13 A. Okay. Yes. Let me just take a quick and
14 I'll find it for you.

15 Okay. If you go to page 15, there is
16 external memory.

17 Q. And what type of external memory is shown
18 on page 15?

19 MR. DORSKY: Object to form.

20 A. There is NAND flash memory.

21 BY MR. HOLLANDER:

22 Q. Anything else shown on page 15?

23 MR. DORSKY: Object to form.

24 A. There are also resistors shown on
25 page 15.

1 BY MR. HOLLANDER:

2 Q. Any other memory other than the NAND
3 flash memory that you identified?

4 A. There is DDR2-type memory.

5 Q. Does the DDR2-type memory communicate
6 with the processor? The central processor, that is?

7 MR. DORSKY: Object to form.

8 A. Can you be more specific about what you
9 mean by communicate?

10 BY MR. HOLLANDER:

11 Q. Sure. Does -- is data exchanged between
12 the central CPU and the DDR2-type memory?

13 MR. DORSKY: Object to form, scope.

14 A. The interface between the central
15 processor and the memory is a double data rate
16 electrical interface.

17 BY MR. HOLLANDER:

18 Q. Does that double data rate electrical
19 interface have a name?

20 A. As far as I know, the double data rate
21 interface does not have a name beyond that.

22 Q. Now, we've been talking about a central
23 CPU. Are -- is there any other CPU or processor
24 chip contained in the Nike schematic?

25 MR. DORSKY: Object to form.

1 A. There is a microcontroller.

2 BY MR. HOLLANDER:

3 Q. Where is that located?

4 A. The microcontroller is located on page 2.

5 Q. And if I wanted to identify the
6 microcontroller on page 2, how would I do so?

7 MR. DORSKY: Object to form.

8 A. There are a lot of ways to identify a
9 microcontroller.

10 BY MR. HOLLANDER:

11 Q. Based on this schematic, I see on the top
12 right of the box in the center of the page a
13 notation of U17. What does U17 refer to?

14 A. U17 refers to this microcontroller.

15 Q. And if I wanted to know what this
16 microcontroller was with the designation of U17, how
17 would I find that out?

18 MR. DORSKY: Object to form.

19 A. You could look at the lower right-hand
20 side of the microprocessor box. There is a --

21 BY MR. HOLLANDER:

22 Q. And what's -- I'm sorry, go ahead.

23 A. No, I was -- sorry. There was a part
24 number on the lower right-hand side.

25 Q. Can you identify that part number for me?

1 A. Sure. It's MKL14Z64VLK4.

2 Q. Thank you. Does this microcontroller
3 interface with the DDR2 memory we were discussing
4 previously?

5 MR. DORSKY: Object to form.

6 A. Can you be more specific what you mean by
7 interface?

8 BY MR. HOLLANDER:

9 Q. Does this microcontroller exchange data
10 with the DDR2 memory?

11 MR. DORSKY: Object to form, scope.

12 A. This microprocessor contains memory
13 internally by its design.

14 BY MR. HOLLANDER:

15 Q. Is this microprocessor connected to any
16 external memory?

17 MR. DORSKY: Object to form.

18 A. Sir, if you'll just give me a moment,
19 I'll just check if there is any external memory.

20 No, as far as I can tell, this
21 microcontroller does not connect to external memory.

22 BY MR. HOLLANDER:

23 Q. Does the Nike thermostat contain a
24 temperature sensor?

25 A. Yes, the Nike thermostat contains a

1 temperature sensor.

2 Q. Where in the schematic of Exhibit 9 can I
3 find the temperature sensor?

4 MR. DORSKY: Object to form.

5 A. If you'll just give me one moment, I'll
6 find it for you.

7 The temperature sensor can be found on
8 page 20 -- oh, sorry -- on page 33.

9 And if you don't mind, could we just take
10 a quick break for some water?

11 BY MR. HOLLANDER:

12 Q. Sure. Why don't we take -- is five
13 minutes enough?

14 A. Yeah, that sounds great.

15 THE VIDEOGRAPHER: Okay. The time is
16 11:12 a.m. and we are going off the record.

17 (Recess taken from 11:12 a.m. to
18 11:20 a.m.)

19 THE VIDEOGRAPHER: The time is
20 11:20 a.m. and we are back on the record.

21 BY MR. HOLLANDER:

22 Q. So looking at page 33 of Exhibit 9, can
23 you identify the temperature sensor for me?

24 A. Yes. The temperature sensor is the
25 SHT20.

1 Q. If you'll turn to page 18, I notice a
2 reference to a Thermistor. Do you see that?

3 MR. DORSKY: Object to form.

4 A. I do see a reference to a Thermistor,
5 yes.

6 BY MR. HOLLANDER:

7 Q. What is the purpose of the Thermistor in
8 the Nike thermostat?

9 MR. DORSKY: Object to form.

10 A. I don't know what the purpose of this
11 Thermistor is. The DNP symbols that you see over
12 the -- over top of the page indicate that this
13 circuit is not used in production, so these
14 components are not populated.

15 BY MR. HOLLANDER:

16 Q. So does the Nike thermostat utilize the
17 SHT20 for purposes of calculating temperature?

18 MR. DORSKY: Object to form and
19 scope.

20 A. I'm not aware of how the firmware
21 leverages the sensor inputs, but the SHT20 is
22 designed to produce temperature outputs.

23 MR. HOLLANDER: I'm going to
24 introduce Exhibit 10 into the chat window. This is
25 a document bearing the Bates stamp

1 ecobee-Ollnova-0075806.

2 (Deposition Exhibit 10 marked for
3 identification.)

4 BY MR. HOLLANDER:

5 Q. Let me know when you have that document
6 open.

7 A. Okay. I have opened the document.

8 Q. Do you recognize this document?

9 A. No, I do not recognize this document.

10 Q. Do you know if there's a final version of
11 this document?

12 A. I'm not aware of any other versions of
13 this document.

14 Q. Do you know a Mark Malchiondo who's
15 listed on the front page here?

16 A. I do know Mark Malchiondo.

17 Q. What is Mark Malchiondo's role at ecobee?

18 MR. DORSKY: Object to form and
19 scope.

20 A. I don't know what Mark does.

21 BY MR. HOLLANDER:

22 Q. Do you know Mr. Malchiondo's title?

23 MR. DORSKY: Object to form and
24 scope.

25 A. No, I do not.

1 BY MR. HOLLANDER:

2 Q. Do you know what department
3 Mr. Malchiondo works in?

4 MR. DORSKY: Object to form, scope.

5 A. No, I do not.

6 BY MR. HOLLANDER:

7 Q. On page 1 next to Mr. Malchiondo we see a
8 Jmet Review. Do you see that notation?

9 A. I do see that notation, yes.

10 Q. Do you know who Jmet is or refers to?

11 MR. DORSKY: Object to form.

12 A. I don't know who would -- who that would
13 refer to in this context.

14 BY MR. HOLLANDER:

15 Q. I'd like to turn your attention to page 6
16 of the PDF Bates ending in 5811, and specifically
17 Section 4.3. It's called Supported Sensors. And
18 let me know when you've read the section there.

19 (Witness reviews document.)

20 A. Okay. I have read 4.3.

21 BY MR. HOLLANDER:

22 Q. So I notice the first sentence states: A
23 single temperature/humidity sensor will be used. No
24 other sensors will be supported.

25 Do you see that?

1 A. I do see that on the document, yes.

2 Q. What does that mean?

3 MR. DORSKY: Object to form.

4 A. I don't know what the author would have
5 implied in that sentence -- in those two sentences.

6 BY MR. HOLLANDER:

7 Q. Were single temperature/humidity sensors
8 used in thermostat models prior to the Nike
9 thermostat?

10 MR. DORSKY: Object to form, scope.

11 A. We would have to go through each
12 schematic to know for certain how each thermostat
13 works.

14 BY MR. HOLLANDER:

15 Q. Okay. The next line we see a notation
16 from Jmet, an arrow, it says: Ahmed is
17 experimenting with Black Anodize Aluminum to mount
18 the Sensirion SHT20.

19 Do you see that first part of the
20 sentence?

21 A. I do see that, yes.

22 Q. Is Sensirion the manufacturing --
23 manufacturer, excuse me, of the SHT20 chip we were
24 discussing earlier in reference to Exhibit 9?

25 MR. DORSKY: Object to form.

1 A. Sensirion is the manufacturer of the
2 SHT20.

3 BY MR. HOLLANDER:

4 Q. The SHT20 is a single
5 temperature/humidity sensor package; is that right?

6 MR. DORSKY: Object to form.

7 A. We would have to look at the
8 specification for that sensor specifically to be
9 able to answer that.

10 BY MR. HOLLANDER:

11 Q. Do you understand that the SHT20 chipset
12 is capable of detecting temperature and humidity?

13 MR. DORSKY: Object to form.

14 A. I understand your -- can you be more
15 specific in your question, please?

16 BY MR. HOLLANDER:

17 Q. Sure. Based on your understanding, is
18 the SHT20 chipset capable of detecting both
19 temperature and humidity?

20 MR. DORSKY: Object to form.

21 A. The SHT20 is a temperature sensor on
22 Nike.

23 BY MR. HOLLANDER:

24 Q. Okay. Turning back -- let's turn back to
25 Exhibit 9. Does Nike also contain a humidity

1 sensor?

2 A. I can see a reference to a humidity
3 sensor on page 33.

4 Q. And what would -- strike that.
5 What is the humidity sensor shown on
6 page 33?

7 A. I don't know. I'd have to look at the
8 specific data sheet. I can't tell from this
9 schematic.

10 Q. Are you able to tell that there's a
11 humidity sensor on page 33 of the schematic?

12 MR. DORSKY: Object to form.

13 A. I can't make that conclusion without
14 looking at the specific specification of SHT20.
15 BY MR. HOLLANDER:

16 Q. Is there any -- strike that.

17 Are you aware of whether the Nike
18 thermostat is capable of measuring humidity?

19 MR. DORSKY: Object to form.

20 A. Can you be more specific, please?

21 BY MR. HOLLANDER:

22 Q. Based on your understanding, is the Nike
23 thermostat capable of measuring humidity?

24 MR. DORSKY: Object to form.

25 A. The Nike thermostat contains sensors or a

1 sensor whose purpose is to measure humidity.

2 BY MR. HOLLANDER:

3 Q. Where can I find the sensor whose purpose
4 is to measure humidity in Exhibit 9?

5 A. Again, on page 33 it appears that the
6 component is likely the SHT20, but I cannot confirm
7 that without looking at this -- the specification
8 for the SHT20.

9 Q. Are there other sensors in Exhibit 9
10 capable of detecting humidity?

11 MR. DORSKY: Object to form.

12 A. I don't know. We would have to go
13 through the specifications of each individual
14 component to be certain.

15 BY MR. HOLLANDER:

16 Q. Are you aware of whether ecobee has
17 produced the specifications for each individual
18 component --

19 MR. DORSKY: Object to form.

20 BY MR. HOLLANDER:

21 Q. -- found in the Nike thermostat?

22 MR. DORSKY: Object to form and
23 scope.

24 A. I don't know.

25

1 BY MR. HOLLANDER:

2 Q. As you sit here today, you're unaware of
3 any other sensors contained in the Nike thermostat
4 that would measure humidity; is that right?

5 MR. DORSKY: Object to form.

6 A. We would have to go through the data
7 sheets of each specific component in the schematics
8 to know for sure to precisely answer that question.

9 BY MR. HOLLANDER:

10 Q. Do you have any reason to believe there
11 is a sensor other than the SHT20 that serves the
12 purpose of measuring humidity in the Nike
13 thermostat?

14 MR. DORSKY: Object to form.

15 A. I can't say what the capabilities are of
16 all of the components in the design without going
17 through each of their data sheets.

18 BY MR. HOLLANDER:

19 Q. Does the Nike thermostat contain a
20 proximity sensor?

21 MR. DORSKY: Object to form.

22 A. The Nike thermostat contains an IR, an
23 infrared, transceiver.

24 BY MR. HOLLANDER:

25 Q. Can you identify the Nike infrared

1 transceiver for me in Exhibit 9?

2 A. Sure, I think so. If you'll just give me
3 a second. Page 16 has the name Proximity
4 Components, which would imply this would be the
5 infrared transceiver.

6 Q. Is the infrared transceiver denoted by
7 U18?

8 A. The component denoted by U18 has the part
9 number SI1141, but I'm not sure exactly what that
10 component does without its specification.

11 Q. If you during the ordinary course of
12 business wanted to go find the identity and the
13 specification for the part denoted as U18, how would
14 you figure that out?

15 MR. DORSKY: Object to form.

16 A. Typically I would look it up online, on
17 the Internet.

18 BY MR. HOLLANDER:

19 Q. What would you look up specifically?

20 A. Into Google I would type SI1141 and the
21 specification for that component would be readily
22 available.

23 Q. And what happens if you were interested
24 in ecobee's internal designation of U18, is there a
25 document that identifies the component that

1 corresponds to U18?

2 MR. DORSKY: Object to form.

3 A. The document which identifies which
4 component is referred to by U18 is this schematic
5 document.

6 BY MR. HOLLANDER:

7 Q. Is there a legend in this document or an
8 index that identifies U18 with further specificity?

9 MR. DORSKY: Object to form.

10 A. We would have to look through each page
11 to see if such a legend exists.

12 BY MR. HOLLANDER:

13 Q. Well, if an ecobee employee was
14 interested in knowing what the internal designation
15 of U18 meant, how would they go about figuring that
16 out?

17 A. Sure.

18 MR. DORSKY: Object to form.

19 A. They would open this document and search
20 for U18 and they would see the part number
21 associated with U18.

22 BY MR. HOLLANDER:

23 Q. And if they were unsure on the part
24 number, other than Internet searching, is there a
25 way an ecobee employee would be able to look this

1 information up?

2 MR. DORSKY: Object to form, scope.

3 A. I don't know.

4 BY MR. HOLLANDER:

5 Q. Does the Nike thermostat contain a WiFi
6 communications module?

7 MR. DORSKY: Object to form.

8 A. The Nike thermostat contains a wireless
9 radio.

10 BY MR. HOLLANDER:

11 Q. Can you identify the wireless radio for
12 me?

13 A. Sure.

14 MR. DORSKY: Object to form.

15 A. The wireless radio looks to be on
16 page 35.

17 BY MR. HOLLANDER:

18 Q. I see a reference to Atheros AR6103 WiFi
19 Module. Is that the wireless radio that you're
20 referring to?

21 A. Without opening the specific data sheet
22 for this component, I can't be certain, but I do
23 believe that this is the WiFi module for Nike.

24 Q. Does the Nike thermostat contain any
25 other communications modules other than the WiFi

1 module?

2 MR. DORSKY: Object to form.

3 A. Can you be more specific as to what you
4 mean by communications?

5 BY MR. HOLLANDER:

6 Q. Sure. Does the Nike thermostat contain a
7 module capable of communicating at a frequency of
8 900 megahertz?

9 A. The Nike thermostat contains a radio
10 transceiver that operates from 900 megahertz to, I
11 believe, 927 megahertz.

12 Q. Can you identify for me in Exhibit 9
13 where the radio transceiver that operates from
14 900 megahertz to that 927-megahertz frequency?

15 A. I believe it is on page 19.

16 Q. Is the 900-megahertz transceiver denoted
17 with the notation U21?

18 A. The 900 to 927-megahertz transceiver
19 looks to have the part number CC110L.

20 Q. Okay. Is the Nike thermostat capable of
21 communicating information over WiFi?

22 MR. DORSKY: Object to form, scope.

23 A. The Nike thermostat is capable of
24 modulating wireless signals over 802.11b, 802.11g
25 and 802.11n.

1 BY MR. HOLLANDER:

2 Q. When you refer to 802.11, are you
3 referring to the standard published by the IEEE?

4 A. Yes. When I refer to 802.11, I am
5 referring to the standard published by IEEE.

6 Q. And is the Nike thermostat also capable
7 of communicating information over the 900-megahertz
8 frequency channel?

9 MR. DORSKY: Object to form.

10 A. The Nike thermostat contains a
11 900-megahertz transceiver which modulates an FSK
12 signal over the 900-megahertz band.

13 BY MR. HOLLANDER:

14 Q. Is the Nike thermostat capable of
15 modulating and demodulating information or data
16 according to the 802.11 IEEE standard?

17 MR. DORSKY: Object to form.

18 A. The AR6103 Atheros module modulates data
19 over the 802.11b, g and n standard.

20 BY MR. HOLLANDER:

21 Q. Is the Nike thermostat capable of
22 modulating and demodulating information or data over
23 the 900-megahertz band?

24 MR. DORSKY: Object to form.

25 A. The CC110L is a 900 -- it's a

1 927-megahertz radio that modulates and receives --
2 receives modulations over frequency-shift keying in
3 the 900-megahertz band.

4 BY MR. HOLLANDER:

5 Q. Are you familiar with a document or a set
6 of documents called Bill of Materials?

7 MR. DORSKY: Object to form.

8 A. Can you be more specific?

9 BY MR. HOLLANDER:

10 Q. Does ecobee keep documents or produce
11 documents that are titled Bill of Materials?

12 MR. DORSKY: Object to form, scope.

13 A. I'm not sure.

14 BY MR. HOLLANDER:

15 Q. Do you know if ecobee maintains documents
16 that identify all of the components identified in
17 the Nike schematic along with their pricing?

18 MR. DORSKY: Object to form and
19 scope.

20 A. The hardware team primarily uses
21 schematics like we're looking at here. I'm -- I
22 don't know about other documents.

23 BY MR. HOLLANDER:

24 Q. Okay. Let's look at an example, then.

25 MR. HOLLANDER: I'm going to put in

1 as Exhibit 11 into the chat an Excel spreadsheet
2 with the Bates stamp ecobee-Ollnova-0023667.

3 (Deposition Exhibit 11 marked for
4 identification.)

5 BY MR. HOLLANDER:

6 Q. Let me know when you have that document
7 opened.

8 A. Okay. I have that document open.

9 Q. Okay. The third line -- it's the third
10 row, I see a notation to Wistron Production Stuffing
11 BOM. Do you see that?

12 A. I do see the line that says Wistron
13 Production Stuffing BOM.

14 Q. What does that mean to you?

15 MR. DORSKY: Object to form.

16 A. It -- I -- can you be more specific in
17 your question?

18 BY MR. HOLLANDER:

19 Q. Sure. What's Wistron?

20 MR. DORSKY: Object to form.

21 A. Wistron is a manufacturer.

22 BY MR. HOLLANDER:

23 Q. Does Wistron manufacture ecobee
24 thermostats?

25 MR. DORSKY: Object to form.

1 A. Wistron has manufactured ecobee
2 thermostats in the past, yes.

3 BY MR. HOLLANDER:

4 Q. Okay. Are you aware of other
5 manufacturers that have manufactured ecobee
6 thermostats, either in the past or present?

7 MR. DORSKY: Object to form.

8 A. I can't think of any others.

9 BY MR. HOLLANDER:

10 Q. Okay. If we scroll down starting at
11 row 16, we see several columns starting with Item,
12 Quantity, Reference, Part, Vendor. Do you see
13 row 16 and the different columns?

14 A. Yes, I can see row 16 and the columns.

15 Q. So in row 16, column C, we see a
16 Reference, and then if you follow the column down we
17 see different letters and numbers. Do you see
18 those?

19 A. I do see those, yes.

20 Q. Do those letters and numbers correspond
21 to the components we were just reviewing in
22 Exhibit 9?

23 MR. DORSKY: Object to form.

24 A. Can you be more specific as to which
25 components in Exhibit 9?

1 BY MR. HOLLANDER:

2 Q. Sure. One of the components we were
3 discussing was U17. So that's row 157.

4 A. Okay. I can see row 157.

5 Q. Does the notation of U17 in this document
6 correspond to the same part found in Exhibit 9
7 denoting U17?

8 MR. DORSKY: Object to form.

9 A. I'd have to check if this part number
10 here in U17 both match to Exhibit 9. Would you like
11 me to do that?

12 BY MR. HOLLANDER:

13 Q. Sure.

14 A. I can see that row 157 contains both a
15 reference to U17 as well as to MKL14Z64VLK4.

16 Q. And so to clarify, this document properly
17 identifies U17 as the MKL chipset shown in
18 Exhibit 9; is that right?

19 MR. DORSKY: Object to form.

20 A. I can see that this document makes
21 reference to both of those part numbers.

22 BY MR. HOLLANDER:

23 Q. Does the hardware team maintain documents
24 similar to the document we are looking at now where
25 the internal designations provide the component name

1 and part numbers?

2 MR. DORSKY: Object to form and
3 scope.

4 A. I don't know. The hardware team
5 primarily uses the schematics for our work.

6 BY MR. HOLLANDER:

7 Q. Okay.

8 MR. HOLLANDER: I'm going to share
9 now Exhibit 12, which is a document bearing the
10 Bates ecobee-Ollnova-0085371. We'll see if I can
11 get this in here. There we go.

12 (Deposition Exhibit 12 marked for
13 identification.)

14 BY MR. HOLLANDER:

15 Q. Okay. And let me know when you have that
16 document.

17 A. Okay. I have that document.

18 Q. Do you recognize this document?

19 A. I do not recognize this document, no.

20 Q. Do you know what eLite QC refers to?

21 A. I do not know what eLite QC refers to.

22 Q. Are you familiar with the ecobee Smart Si
23 thermostat?

24 MR. DORSKY: Object to form.

25 A. I am aware that we have previously

1 designed the Smart Si thermostat.

2 BY MR. HOLLANDER:

3 Q. Do you know the internal designation for
4 the Smart Si thermostat?

5 A. That was a long time ago, so I don't know
6 the internal designation for that one offhand.

7 Q. Who at ecobee would be familiar with the
8 schematics for the Smart Si thermostat?

9 MR. DORSKY: Object to form.

10 A. I'm definitely the best person for that.
11 It's just been a really, really long time.

12 BY MR. HOLLANDER:

13 Q. Do you understand this document,
14 Exhibit 12, to be the master design document for the
15 ecobee Smart Si?

16 MR. DORSKY: Object to form.

17 A. Can I have a few minutes to go over the
18 document first?

19 BY MR. HOLLANDER:

20 Q. Of course.

21 (Witness reviews document.)

22 A. Okay. Thank you. I have had a chance to
23 review.

24 BY MR. HOLLANDER:

25 Q. So based on your review of this document,

1 Exhibit 12, is it your understanding that this
2 schematic represents the Smart Si thermostat?

3 A. Yes, based on my review, that looks to be
4 what we're looking at here.

5 Q. Does the Smart Si thermostat contain a
6 processor?

7 MR. DORSKY: Object to form.

8 A. The schematic design for the Smart Si
9 thermostat has a CPU.

10 BY MR. HOLLANDER:

11 Q. Can you identify the CPU for me?

12 A. Sure. The first instance of the CPU
13 would be on page -- I believe on page 4.

14 Q. Okay. And can you identify the CPU
15 model?

16 A. Yes. The CPU model is denoted by
17 MCIMX283DVM4B.

18 Q. Does that CPU contain memory?

19 MR. DORSKY: Object to form.

20 A. I'd have to access the specific data
21 sheet specification for that component to be
22 certain, but most all CPUs do contain internal
23 memory.

24 BY MR. HOLLANDER:

25 Q. Is there external memory in the Smart Si

1 thermostat?

2 MR. DORSKY: Object to form.

3 A. The Smart Si thermostat does contain
4 external memory, which would be mandatory for the
5 CPU to operate.

6 BY MR. HOLLANDER:

7 Q. Can you identify the external memory in
8 the Smart Si thermostat for me?

9 A. Yes.

10 Q. And where is that located?

11 A. Can you be more specific? Where is what
12 located?

13 Q. In the schematic of the Smart Si
14 thermostat, Exhibit 12, can you identify on which
15 page the external memory can be found?

16 MR. DORSKY: Object to form.

17 A. Of course. Just give me one quick second
18 here. If you go to page 15.

19 BY MR. HOLLANDER:

20 Q. Okay.

21 A. The external memory is the NAND flash as
22 well as the DDR2 memory.

23 Q. Can you identify the name of the
24 component comprising the DDR2 memory?

25 A. Yes. The component part number is

1 MT47H64M16.

2 Q. Thank you. Does that DDR2 memory
3 exchange data with the central CPU of the Smart Si
4 thermostat?

5 MR. DORSKY: Object to form, scope.

6 A. Can you be more specific about what you
7 mean by exchange data?

8 BY MR. HOLLANDER:

9 Q. Sure. Does the central CPU communicate
10 information to the DDR2 memory and the DDR2 memory
11 also communicate -- receive and communicate
12 information from the central CPU?

13 MR. DORSKY: Object to form, scope.

14 A. The DDR2 memory is wired to the CPU over
15 a double data rate memory interface.

16 BY MR. HOLLANDER:

17 Q. Is there a second CPU in the Smart Si
18 thermostat?

19 MR. DORSKY: Object to form.

20 A. If you'll just give me a quick moment
21 just to look.

22 (Witness reviews document.)

23 A. Okay. I've finished looking. Would you
24 mind restating your question?

25

1 BY MR. HOLLANDER:

2 Q. Sure. Is there a second CPU in the Smart
3 Si thermostat, so a CPU other than the central CPU?

4 MR. DORSKY: Object to form.

5 A. No, there is not a second microcontroller
6 in the Smart Si thermostat.

7 BY MR. HOLLANDER:

8 Q. Does the Smart Si thermostat contain a
9 temperature sensor?

10 A. Yes, the Smart Si thermostat does contain
11 a temperature sensor.

12 Q. Can you identify the temperature sensor
13 for the Smart Si thermostat in Exhibit 12?

14 A. The Smart Si thermostat temperature
15 sensing looks to take place on page 10 on the
16 right-hand side midway down.

17 Q. When you say temperature sensing, is that
18 a temperature sensor or a Thermistor or something
19 else?

20 MR. DORSKY: Object to form.

21 A. The functional block that's denoted by
22 the area with the label Temperature Sensing,
23 collectively, that functional block is intended to
24 measure temperature.

25

1 BY MR. HOLLANDER:

2 Q. Is the temperature sensing functional
3 block a chipset sold by a particular manufacturer?

4 MR. DORSKY: Object to form.

5 A. The schematics here show that these
6 individual components are used to measure
7 temperature.

8 BY MR. HOLLANDER:

9 Q. Are the individual components used to
10 measure temperature, do they comprise of a
11 Thermistor?

12 MR. DORSKY: Object to form.

13 A. Yes. I would have to look at the
14 specific data sheet, but it does appear that there
15 is a Thermistor.

16 BY MR. HOLLANDER:

17 Q. Are there other components utilized to
18 measure temperature in the Smart Si thermostat?

19 A. I'd have to look at the individual data
20 sheets for each component to be certain to be able
21 to accurately answer that question.

22 Q. Other than the temperature sensing
23 component block here on page 10, are there any other
24 temperature sensors in the Smart Si thermostat?

25 MR. DORSKY: Object to form.

1 A. I would have to look through the data
2 sheets of all the components in the schematics to be
3 certain to be able to answer that question
4 accurately.

5 BY MR. HOLLANDER:

6 Q. Does the Smart Si thermostat utilize the
7 SHT temperature sensor we discussed in relation to
8 the Nike thermostat?

9 A. We'd have to look through all of -- all
10 the documents of the schematic to be certain, but I
11 do not believe that that same component is used.

12 Q. Does the Smart Si thermostat use --
13 utilize any generation of the Sensirion SHT chipset
14 for measuring temperature?

15 MR. DORSKY: Object to form.

16 A. I'd have to look at all of the pages of
17 the schematic to be certain, but insofar as I can
18 tell from my review today, I don't see any reference
19 to the Sensirion or any generation of a Sensirion
20 temperature sensor.

21 BY MR. HOLLANDER:

22 Q. So does the Smart Si -- excuse me.
23 Strike that.

24 Does the Smart Si thermostat contain a
25 humidity sensor?

1 A. Yes, the Smart Si thermostat does have a
2 functional block intended to measure humidity.

3 Q. Where is the functional block intended to
4 measure humidity found in Exhibit 12?

5 A. The functional block intended to measure
6 humidity looks like it would also be found on
7 page 10 at the bottom of the page, just at the top
8 left corner of the title block.

9 Q. Does the functional block intended to
10 measure humidity include a sensor chipset?

11 MR. DORSKY: Object to form.

12 A. The functional block intended to measure
13 humidity consists of the components that are
14 included in this schematic here now which are
15 individual discrete components.

16 BY MR. HOLLANDER:

17 Q. Are any of those discrete components a
18 humidity sensor chipset?

19 MR. DORSKY: Object to form.

20 A. The collective function of those
21 components together is intended to measure humidity.

22 BY MR. HOLLANDER:

23 Q. Does the Smart Si thermostat contain a
24 proximity sensor?

25 A. If you'll just give me a quick moment, I

1 would -- I'll do another review.

2 (Witness reviews document.)

3 A. Okay. I found it here. Thank you. Yes,
4 the Smart Si thermostat does contain a circuit
5 intended to measure proximity, which is also located
6 on page 10.

7 BY MR. HOLLANDER:

8 Q. Does the proximity sensing circuit
9 contain a chipset?

10 MR. DORSKY: Object to form.

11 A. The proximity sensing circuit is the
12 functional block denoted by the title Proximity
13 Sensing.

14 BY MR. HOLLANDER:

15 Q. Within that functional block, is there
16 any sensor chipset identified?

17 A. Can you be more specific about what you
18 mean by chipset?

19 Q. Sure. Is there a part, a semiconductor
20 chip that's purpose is to determine or measure
21 proximity or occupancy?

22 MR. DORSKY: Object to form.

23 A. The components collectively grouped under
24 the Proximity Sensing heading are all required to
25 effectively measure proximity.

1 BY MR. HOLLANDER:

2 Q. And I see there is a notation to --
3 excuse me here -- to a part labeled U1000. Can you
4 identify that part for me?

5 MR. DORSKY: Object to form.

6 A. Sorry, what do you mean by identify that
7 part?

8 BY MR. HOLLANDER:

9 Q. Do you know the name of that component?

10 MR. DORSKY: Object to form.

11 A. Sorry, can you clarify which component?

12 BY MR. HOLLANDER:

13 Q. The component under the Proximity Sensing
14 header that is denoted with U1000.

15 A. The part number for that component is
16 SI1102.

17 Q. Does the Smart Si thermostat contain a
18 WiFi module?

19 MR. DORSKY: Object to form.

20 A. The Smart Si thermostat does contain the
21 ability -- does contain an 802.11b, g and n wireless
22 transceiver.

23 BY MR. HOLLANDER:

24 Q. Can you identify for me the 802.11
25 wireless transceiver in the Smart Si thermostat?

1 A. Sure. The 802.11 wireless transceiver
2 can be found on page 11, which is an 802.11b, g and
3 n transceiver.

4 Q. On page 11, is there a specific part
5 number for the 802.11 wireless transceiver?

6 A. The part number for the wireless
7 transceiver is AR6103G-BM2D.

8 Q. Does the Smart Si thermostat contain a
9 wireless transceiver for communicating at
10 900 megahertz?

11 MR. DORSKY: Object to form.

12 A. Can you clarify what you mean by
13 communicate, please?

14 BY MR. HOLLANDER:

15 Q. Sure. Does the Smart Si thermostat
16 contain a module capable of modulating or
17 demodulating data communicated over the
18 900-megahertz band?

19 MR. DORSKY: Object to form.

20 A. If you'll just allow me a minute here,
21 I'll just take a quick look to see.

22 (Witness reviews document.)

23 A. No. The Smart Si thermostat does not
24 contain a transceiver capable of modulating wireless
25 signals over the 900 to 927-megahertz band.

1 BY MR. HOLLANDER:

2 Q. Does the Smart Si thermostat contain any
3 other transceivers other than the 802.11 transceiver
4 you identified earlier for me?

5 MR. DORSKY: Object to form.

6 A. I'd have to look through the data sheets
7 for each specific component on -- in the schematics
8 to be able to answer that question accurately.

9 BY MR. HOLLANDER:

10 Q. Based on your understanding of the ecobee
11 Smart Si thermostat, is the Smart Si thermostat able
12 to communicate information over WiFi?

13 MR. DORSKY: Object to form.

14 A. Based on my understanding of the Smart Si
15 thermostat, it possesses an 802.11b, g and n
16 wireless transceiver.

17 BY MR. HOLLANDER:

18 Q. Based on your understanding of the ecobee
19 Si thermostat, does the thermostat possess any other
20 wireless transceivers other than the 802.11 wireless
21 transceiver?

22 MR. DORSKY: Object to form.

23 A. I would have -- in order to answer that
24 question accurately, I would have to look through
25 the data sheets of all of the components on the

1 board.

2 BY MR. HOLLANDER:

3 Q. Is the Smart Si thermostat capable of
4 communicating on a wireless network other than an
5 802.11 network?

6 MR. DORSKY: Object to form.

7 A. Can you describe what you mean by
8 network?

9 BY MR. HOLLANDER:

10 Q. How about we just change the question up.
11 Is the Smart Si thermostat capable of
12 exchanging data over any wireless protocol other
13 than the 802.11 protocol?

14 MR. DORSKY: Object to form.

15 A. I'd have to look through the data sheets
16 of all the individual components to know how to
17 precisely answer -- or to provide a precise answer
18 for that question.

19 BY MR. HOLLANDER:

20 Q. Okay.

21 MR. HOLLANDER: Why don't we go off
22 the record.

23 THE VIDEOGRAPHER: The time is
24 12:25 p.m. We're going off the record.

25 (Recess taken from 12:25 p.m. to

1 1:15 p.m.)

2 THE VIDEOGRAPHER: The time is
3 1:15 p.m. and we are back on the record.

4 MR. HOLLANDER: So I'm now
5 introducing what will be Exhibit 13. It is a
6 document bearing the Bates ecobee-Ollnova-0000469.

7 (Deposition Exhibit 13 marked for
8 identification.)

9 BY MR. HOLLANDER:

10 Q. And if you can just let me know when you
11 have that document available, that would be great.

12 A. Okay. I have the document.

13 Q. Do you recognize this document?

14 A. Yes, I do.

15 Q. And what is it?

16 A. This is the electrical schematic design
17 for Athena.

18 Q. What does Athena refer to?

19 MR. DORSKY: Object to form.

20 A. Athena refers to thermostat design that
21 this schematic describes.

22 BY MR. HOLLANDER:

23 Q. Does Athena refer to the ecobee3
24 thermostat?

25 A. Yes, as far as I know that's the case,

1 but that's -- the marketing terms I'm less familiar
2 with.

3 Q. Is this an accurate -- strike that.

4 Is this the master -- the final master
5 design document for the Athena thermostat?

6 MR. DORSKY: Object to form.

7 A. Could I have a couple minutes just to
8 look through it first to make sure I can answer that
9 accurately?

10 BY MR. HOLLANDER:

11 Q. Of course.

12 (Witness reviews document.)

13 A. Thank you. I've had time to look over
14 the document now. Could you repeat your question?

15 BY MR. HOLLANDER:

16 Q. Is this the final master design document
17 for the Athena thermostat?

18 MR. DORSKY: Object to form.

19 A. I believe this -- this schematic
20 accurately represents the Athena thermostat.

21 BY MR. HOLLANDER:

22 Q. Does the Athena thermostat contain a
23 processor?

24 MR. DORSKY: Object to form.

25 A. The Athena thermostat contains a CPU.

1 BY MR. HOLLANDER:

2 Q. Can you identify the Athena CPU in
3 Exhibit 13?

4 MR. DORSKY: Object to form.

5 A. Yes.

6 BY MR. HOLLANDER:

7 Q. Where can I find the Athena CPU in
8 Exhibit 13?

9 A. Page 4 has the first mention of the CPU
10 in Athena.

11 Q. And can you identify the part number for
12 the Athena CPU?

13 MR. DORSKY: Object to form.

14 A. Yes.

15 BY MR. HOLLANDER:

16 Q. What is that number?

17 A. Which number?

18 Q. The part number for the Athena CPU.

19 A. Sorry, is that a -- can you rephrase
20 that?

21 Q. Sure. Can you identify the part number
22 for the Athena CPU?

23 A. Yes. It is MCIMX283DVM4B.

24 Q. Does the Athena CPU contain memory?

25 MR. DORSKY: Object to form.

1 A. I can't know for certain without
2 reviewing the data sheet for the Athena CPU, but
3 most CPUs, to my knowledge, contain internal memory.

4 BY MR. HOLLANDER:

5 Q. Other than the CPU you just identified,
6 are there any other CPUs in the Athena thermostat?

7 MR. DORSKY: Object to form.

8 A. There is a microcontroller in the Athena
9 thermostat.

10 BY MR. HOLLANDER:

11 Q. Where in Exhibit 13 can I find the
12 microcontroller of the Athena thermostat?

13 A. The microcontroller for the Athena
14 thermostat can be found on page 2.

15 Q. Can you identify the part number for the
16 microcontroller shown on page 2 of Exhibit 13?

17 A. Yes. It is MKL14Z64VLK4.

18 Q. Does the microcontroller shown on page 2
19 contain memory?

20 MR. DORSKY: Object to form.

21 A. I don't know for certain without seeing
22 the data sheet for this specific part.

23 BY MR. HOLLANDER:

24 Q. Does the Athena thermostat contain memory
25 external to either the main CPU or the

1 microcontroller?

2 MR. DORSKY: Object to form.

3 A. Yes, there is external memory on Athena.

4 BY MR. HOLLANDER:

5 Q. Where in Exhibit 13 is the external
6 memory in the Athena thermostat?

7 A. The external memory is described on
8 channel 15.

9 Q. Can you identify the external memory
10 shown on page 15 of Exhibit 13?

11 A. Yes.

12 Q. What is the external memory shown on
13 page 15 of Exhibit 13?

14 MR. DORSKY: Object to form.

15 A. The external memory is DDR2.

16 BY MR. HOLLANDER:

17 Q. Can you identify the part number for the
18 DDR2 memory shown on page 15?

19 A. Yes. The part number --

20 Q. What is that --

21 A. Yeah. The part number is MT47H64M16.

22 Q. Is there any other external memory shown
23 on page 15 of Exhibit 13?

24 MR. DORSKY: Object to form.

25 A. Yes.

1 BY MR. HOLLANDER:

2 Q. What additional external memory is shown
3 other than the DDR2 memory?

4 A. NAND flash.

5 Q. Is there a communication bus that
6 connects the host CPU to the DD2 memory?

7 MR. DORSKY: Object to form.

8 A. Can you clarify what you mean by
9 communication bus?

10 BY MR. HOLLANDER:

11 Q. Sure. Is there a component or a means
12 for the host CPU to exchange data or information
13 with the DD2 memory?

14 MR. DORSKY: Object to form.

15 A. There is a DDR2, a double data rate
16 memory interface between the DDR2 memory and the
17 CPU.

18 BY MR. HOLLANDER:

19 Q. Is there a DDR2 memory interface between
20 the DDR2 memory and the microcontroller?

21 MR. DORSKY: Object to form.

22 A. If you'll give me a moment, I'll take a
23 closer look.

24 (Witness reviews document.)

25 A. Thanks. I had a chance to take a closer

1 look. Could you restate your question, please?

2 BY MR. HOLLANDER:

3 Q. Sure. Is there a DDR2 memory interface
4 between the DDR2 memory and the microcontroller?

5 MR. DORSKY: Object to form.

6 A. No, there is not a double data rate 2
7 interface between the DDR memory and the
8 microcontroller.

9 BY MR. HOLLANDER:

10 Q. Does the Athena thermostat contain a
11 temperature sensor?

12 A. Yes, the Athena thermostat has the
13 capability to measure temperature.

14 Q. Where may I find the components necessary
15 to measure temperature in the Athena thermostat?

16 MR. DORSKY: Object to form.

17 A. The components required to measure
18 temperature can be found on page 33.

19 BY MR. HOLLANDER:

20 Q. What is the U18 component identified on
21 page 33 of Exhibit 13?

22 MR. DORSKY: Object to form.

23 A. The U18 component is -- has part number
24 Si7020.

25

1 BY MR. HOLLANDER:

2 Q. Are there any other temperature sensors
3 other than the U18 component in the Athena
4 thermostat that is used for measuring temperature?

5 MR. DORSKY: Object to form.

6 A. Can you be more specific about where
7 those sensors might be?

8 BY MR. HOLLANDER:

9 Q. So other than what we're looking at on
10 page 33, are you aware of any other temperature
11 sensors or Thermistors used to measure temperature
12 in the Athena thermostat?

13 MR. DORSKY: Object to form.

14 A. I can't answer that question accurately
15 without reviewing the specific data sheet of every
16 component on the board.

17 BY MR. HOLLANDER:

18 Q. In terms of the schematic shown in
19 Exhibit 13, are you aware of any other temperature
20 sensors or Thermistors used to measure temperature
21 in the Athena thermostat?

22 A. I would have to look through the data
23 sheets of each specific component in the schematics
24 to be able to provide any accurate response.

25 Q. Does the Athena thermostat contain a

1 humidity sensor?

2 A. Yes, the Athena thermostat has the
3 capability to measure humidity.

4 Q. What component or components does the
5 Athena thermostat utilize to measure humidity?

6 MR. DORSKY: Object to form.

7 A. I can't know for certain without being
8 able to review the specific data sheets for the
9 components, but the previous page we were looking
10 at, page 33, indicates temperature and humidity
11 sense in the title block.

12 BY MR. HOLLANDER:

13 Q. Is it your understanding that component
14 U18 comprises both a temperature and humidity sensor
15 package?

16 MR. DORSKY: Object to form.

17 A. Unless I have the data sheet for that
18 specific component, I'm not certain if it measures
19 humidity and temperature.

20 BY MR. HOLLANDER:

21 Q. Other than the components shown on
22 page 33 of Exhibit 13, are you aware of any other
23 sensors or Thermistors utilized by the Athena
24 thermostat to measure humidity?

25 MR. DORSKY: Object to form.

1 A. Without reviewing the data sheets for
2 every component in the schematics, I cannot answer
3 that question accurately.

4 BY MR. HOLLANDER:

5 Q. Does the Athena thermostat contain a
6 proximity sensor?

7 A. If you'll just allow me a quick moment,
8 I'll just read through the document.

9 (Witness reviews document.)

10 A. Thank you. I've had a chance to review
11 the document. Can you restate your question?

12 BY MR. HOLLANDER:

13 Q. Does the Athena thermostat contain a
14 proximity sensor?

15 A. Yes. The Athena thermostat has the
16 capability to measure -- or to detect proximity.

17 Q. Can you identify where within Exhibit 13
18 I can find the proximity sensor of the Athena
19 thermostat?

20 A. Yes. On page 18.

21 Q. And can you please identify the part
22 number of the proximity sensor utilized by the
23 Athena thermostat?

24 MR. DORSKY: Object to form.

25 A. The components required to measure

1 proximity in the Athena thermostat are all of the
2 components on this page.

3 BY MR. HOLLANDER:

4 Q. Does the Athena thermostat contain a WiFi
5 module?

6 MR. DORSKY: Object to form.

7 A. The Athena thermostat contains a 802.11b,
8 g and n wireless transceiver.

9 BY MR. HOLLANDER:

10 Q. Can you identify where within Exhibit 13
11 the 802.11 wireless transceiver can be found?

12 A. Yes. The 802.11b, g and n transceiver
13 can be found on page 35.

14 Q. Can you identify for me the part number
15 of the 802.11 wireless transceiver of the Athena
16 thermostat?

17 MR. DORSKY: Object to form.

18 A. The part number for the 802.11b, g and n
19 wireless transceiver is AR6103G-BM2.

20 BY MR. HOLLANDER:

21 Q. Is the Athena thermostat capable of
22 communicating information over WiFi?

23 MR. DORSKY: Object to form.

24 A. Can you be more specific about what you
25 mean by information?

1 BY MR. HOLLANDER:

2 Q. Sure. Is the Athena thermostat capable
3 of modulating and demodulating data pursuant to the
4 IEEE 802.11 standard?

5 MR. DORSKY: Object to form.

6 A. The wireless transceiver is capable of
7 modulating 802.11b, g and n wireless signals.

8 BY MR. HOLLANDER:

9 Q. Does the Athena thermostat contain a
10 900-megahertz communication module?

11 A. The Athena thermostat contains a wireless
12 transceiver capable of modulating over the band from
13 900 megahertz to 927 megahertz.

14 Q. Can you identify for me where within
15 Exhibit 13 I can identify the wireless transceiver
16 capable of communicating on the 900-megahertz band?

17 MR. DORSKY: Object to form.

18 A. Sure. If you'll just give me a moment,
19 please, to read the document.

20 (Witness reviews document.)

21 A. Thank you. I've had a moment to read
22 now. Could you restate the question, please?

23 BY MR. HOLLANDER:

24 Q. Can you identify where within Exhibit 13
25 I can identify the wireless transceiver capable of

1 communicating on the 900-megahertz channel?

2 MR. DORSKY: Object to form.

3 A. Yes. This can be found on page 19.

4 BY MR. HOLLANDER:

5 Q. Can you identify the part number of the
6 wireless transceiver capable of communicating at
7 900 megahertz?

8 A. The wireless 900 to 927-megahertz
9 transceiver has the part number CC110L.

10 Q. Okay. We can turn to our next exhibit,
11 which will be Exhibit 14.

12 MR. HOLLANDER: I'm going to add that
13 to the chat box now. Exhibit 14 is a document
14 bearing the Bates ecobee-Ollnova-0076733.

15 (Deposition Exhibit 14 marked for
16 identification.)

17 BY MR. HOLLANDER:

18 Q. Let me know when you have that document
19 available.

20 A. Okay. I have the document.

21 Q. Do you recognize this document?

22 A. Yes, I do.

23 Q. What is it?

24 A. This Exhibit 14 document is the
25 electrical schematic design for the Apollo

1 thermostat.

2 Q. What is the Apollo thermostat?

3 MR. DORSKY: Object to form.

4 A. The Apollo thermostat is what's described
5 by this schematic document.

6 BY MR. HOLLANDER:

7 Q. Are you familiar with the ecobee4
8 thermostat?

9 A. Yes.

10 Q. Do you know the internal name for the
11 ecobee4 thermostat?

12 A. Not as familiar with the external
13 marketing names, but as far as I know, the internal
14 name for ecobee4 is Apollo.

15 Q. Now, at the near bottom right corner, I
16 notice a notation of Apollo Gamma. Do you see that?

17 A. Yes, I can see where Apollo Gamma is
18 written.

19 Q. What does Gamma refer to?

20 MR. DORSKY: Object to form.

21 A. Gamma refers to a Greek symbol.

22 BY MR. HOLLANDER:

23 Q. What does it mean in the context of
24 Apollo and this schematic?

25 MR. DORSKY: Object to form.

1 A. I can't say for certain, but likely the
2 number of revisions that took place prior to
3 reaching this version.

4 BY MR. HOLLANDER:

5 Q. Are you aware of any revisions to the
6 master design document for the Apollo thermostat
7 that came after the Gamma revision?

8 MR. DORSKY: Object to form.

9 A. No, I'm -- I don't know of any revisions
10 that came after.

11 BY MR. HOLLANDER:

12 Q. Do you agree that this schematic
13 accurately represents the Apollo thermostat?

14 MR. DORSKY: Object to form.

15 A. I believe that this schematic represents
16 the electrical hardware in the Apollo thermostat.

17 BY MR. HOLLANDER:

18 Q. Does the Apollo thermostat contain a
19 processor?

20 MR. DORSKY: Object to form.

21 A. The Apollo thermostat contains a CPU.

22 BY MR. HOLLANDER:

23 Q. Can you identify the Apollo CPU within
24 Exhibit 14?

25 A. Yes.

1 Q. Where can I find the Apollo CPU in
2 Exhibit 14?

3 MR. DORSKY: Object to form.

4 A. The first instance of the CPU can be
5 found on page 4.

6 BY MR. HOLLANDER:

7 Q. Can you identify the part number of the
8 Athena -- excuse -- strike that.

9 Can you identify the part number for the
10 Apollo CPU?

11 MR. DORSKY: Object to form.

12 A. Yes. The Apollo part number is iMX283.

13 BY MR. HOLLANDER:

14 Q. Does the Apollo CPU contain memory?

15 MR. DORSKY: Object to form.

16 A. I can't know for certain without
17 reviewing this specific data sheet for the CPU, but
18 most CPUs contain memory.

19 BY MR. HOLLANDER:

20 Q. Other than the iMX283 CPU, are there any
21 other processors in the Apollo thermostat?

22 MR. DORSKY: Object to form.

23 A. If you'll just allow me a moment, I'll
24 look more closely at the schematics to be able to
25 answer your question.

1 BY MR. HOLLANDER:

2 Q. No problem.

3 A. Thanks.

4 (Witness reviews document.)

5 A. Thank you for the time. I've had a
6 chance to review. Could you repeat your question?

7 BY MR. HOLLANDER:

8 Q. Sure. Other than the iMX283 CPU, are
9 there any other processors utilized by the Apollo
10 thermostat?

11 A. There is a microcontroller on the Apollo
12 thermostat.

13 Q. Can you identify for me within Exhibit 14
14 where the Apollo microcontroller is located?

15 MR. DORSKY: Object to form.

16 A. Yes. The microcontroller for Apollo is
17 located on page 2.

18 BY MR. HOLLANDER:

19 Q. Can you identify for me the part number
20 of the Apollo microcontroller shown on page 2?

21 A. Yes. The part number is MKL15Z128VLK4.

22 Q. Does the Apollo microcontroller contain
23 memory?

24 MR. DORSKY: Object to form.

25 A. I can't answer that question accurately

1 without reviewing the data sheet specific to this
2 microcontroller, but most microcontrollers contain
3 memory.

4 BY MR. HOLLANDER:

5 Q. Other than the memory of the main CPU and
6 the microcontroller, does the Apollo thermostat
7 contain external memory?

8 MR. DORSKY: Object to form.

9 A. Yes, the Apollo thermostat contains
10 external memory.

11 BY MR. HOLLANDER:

12 Q. Can you identify for me where within
13 Exhibit 14 where I can identify the external memory
14 of the Apollo thermostat?

15 MR. DORSKY: Object to form.

16 A. Yes. If you'll allow me a moment, I'll
17 review the document and locate the external memory.

18 (Witness reviews document.)

19 A. Thank you. I've had the chance to review
20 the document. Could you repeat your question,
21 please?

22 BY MR. HOLLANDER:

23 Q. Sure. Can you identify where within
24 Exhibit 14 the external memory of the Apollo
25 thermostat can be located?

1 A. The external memory for the Apollo
2 thermostat is described by the schematic on page 15.

3 Q. Can you identify the part number for the
4 external memory of the Apollo thermostat shown on
5 page 15 of Exhibit 14?

6 MR. DORSKY: Object to form.

7 A. Can you be more specific for which
8 external memory?

9 BY MR. HOLLANDER:

10 Q. Sure. Why don't we start with the
11 128-megabyte DDR2 memory. Can you identify the part
12 number of the DDR2 memory shown on page 15?

13 A. Yes. The part number for the DDR2 memory
14 is MT47H64M16.

15 Q. Does the DDR2 memory exchange data or
16 information with the host CPU of the Apollo
17 thermostat?

18 MR. DORSKY: Object to form.

19 A. Can you be more specific as to what you
20 mean by data and information?

21 BY MR. HOLLANDER:

22 Q. Sure. Is information exchanged to and
23 from the host CPU to and from the DDR2 memory?

24 A. There are electrical voltages that are
25 driven and sensed as defined by the double data

1 rate 2 memory standard.

2 Q. Does the DDR2 memory exchange information
3 with the microcontroller of the Apollo thermostat?

4 MR. DORSKY: Object to form.

5 A. Can you be more specific as to what you
6 mean by exchange information?

7 BY MR. HOLLANDER:

8 Q. Sure. Is data exchanged to and from the
9 microcontroller to and from the DDR2 memory?

10 MR. DORSKY: Object to form.

11 A. If you'll allow me a moment, I'll just
12 take a look through the schematic to be able to
13 answer that question.

14 (Witness reviews document.)

15 A. Thank you. I've had a chance to review
16 the schematic. Could you repeat the question,
17 please?

18 BY MR. HOLLANDER:

19 Q. Sure. Is data exchanged to and from the
20 microcontroller to and from the DDR2 memory?

21 A. Can you be more specific as to what you
22 mean by data exchanged?

23 Q. Is information communicated between the
24 microcontroller and the DDR2 memory.

25 MR. DORSKY: Object to form.

1 A. The microcontroller and the DDR2 memory
2 are not wired together.

3 BY MR. HOLLANDER:

4 Q. Turning back to page 15 of Exhibit 14,
5 can you identify the part number for me for the
6 128-megabyte 8-bit NAND flash memory?

7 A. Sure. The part number for the 128 8-bit
8 NAND flash is S34ML01G100BHI000.

9 Q. Now, above the notation for the
10 128-megabyte 8-bit NAND flash on page 15, we see a
11 note. The note says: Change from 256Micron to
12 128Spansion March 17, 2017.

13 Do you see that?

14 A. Yes, I do see that note.

15 Q. What does that note mean?

16 MR. DORSKY: Object to form.

17 A. I don't know exactly what is meant by
18 that note.

19 BY MR. HOLLANDER:

20 Q. Does the NAND flash memory communicate
21 with the host CPU of the Apollo thermostat?

22 A. Can you be more specific as to what you
23 mean by communicate?

24 Q. Sure. Is information or data exchanged
25 to and from the host CPU to and from the NAND flash

1 memory of the Apollo thermostat?

2 MR. DORSKY: Object to form.

3 A. The CPU of the Apollo thermostat and the
4 NAND flash are wired together over a 8-bit interface
5 where voltages are asserted and sensed between the
6 devices.

7 BY MR. HOLLANDER:

8 Q. Is information or data exchanged to and
9 from the microcontroller to and from the NAND flash
10 memory of the Apollo thermostat?

11 MR. DORSKY: Object to form.

12 A. Can you be more specific as to what you
13 mean by exchanged?

14 BY MR. HOLLANDER:

15 Q. Sure. Is information or data
16 communicated between the microcontroller and the
17 NAND flash memory of the Apollo thermostat?

18 A. If you'll allow me a moment, I'll just
19 review this schematic more closely to be able to
20 accurately answer your question.

21 (Witness reviews document.)

22 A. Thank you. I've had a chance to review
23 the document. Could you restate your question,
24 please?

25

1 BY MR. HOLLANDER:

2 Q. Is information or data communicated
3 between the microcontroller and the NAND flash
4 memory of the Apollo thermostat?

5 MR. DORSKY: Object to form.

6 A. The microcontroller of the Apollo
7 thermostat and the NAND flash are not wired
8 together.

9 BY MR. HOLLANDER:

10 Q. Does the Apollo thermostat contain a
11 temperature sensor?

12 A. The Apollo thermostat has the capability
13 to measure temperature.

14 Q. Where within Exhibit 14 can I find the
15 components responsible for measuring temperature?

16 MR. DORSKY: Object to form.

17 A. If you'll just allow me a minute, I'll
18 review the schematics to locate the temperature
19 sensing.

20 (Witness reviews document.)

21 A. Thank you. I've had a chance to review.
22 Could you restate your question?

23 BY MR. HOLLANDER:

24 Q. Where within Exhibit 14 can I find the
25 components responsible for measuring temperature?

1 A. The components associated with
2 temperature measurement can be found on page 35.

3 Q. Can you identify for me the part number
4 of the temperature sensor shown on page 35 of
5 Exhibit 14?

6 A. Not certain exactly which component on
7 this -- on page 35 is the temperature sensor. I
8 would have to review the data sheet of all these --
9 all of the components.

10 Q. Are you familiar with the SHT20 chipset?

11 A. I am familiar with the SHT20, but without
12 the data sheet, I can't answer specific questions
13 about its capabilities.

14 Q. Are there any other sensors shown on
15 page 35 that are responsible for measuring
16 temperature other than the SHT20?

17 MR. DORSKY: Object to form.

18 A. Resistors, capacitors and TVS diodes can
19 be associated with sensing circuits.

20 BY MR. HOLLANDER:

21 Q. But to clarify, the only sensor shown on
22 page 35 of Exhibit 14 is the SHT20 chipset; is that
23 correct?

24 MR. DORSKY: Object to form.

25 A. All of the components on this schematic

1 page are associated with the temperature measurement
2 capability of the Apollo thermostat.

3 BY MR. HOLLANDER:

4 Q. What is the SHT20?

5 MR. DORSKY: Object to form.

6 A. The SHT20 is a component in the Apollo
7 design.

8 BY MR. HOLLANDER:

9 Q. What is the purpose of the SHT20?

10 MR. DORSKY: Object to form.

11 A. The purpose of the SHT20 in the Apollo
12 design is a aspect of the temperature measurement
13 sensing.

14 BY MR. HOLLANDER:

15 Q. Other than what is depicted on page 35 of
16 Exhibit 14, are you aware of any other sensors
17 utilized by the Apollo thermostat for determining
18 temperature?

19 MR. DORSKY: Object to form.

20 A. I would have to look through the data
21 sheet of all of the components in the Apollo design
22 to be able to accurately answer that question.

23 BY MR. HOLLANDER:

24 Q. Does the Apollo thermostat contain a
25 humidity sensor?

1 A. The Apollo thermostat has the capability
2 to measure humidity.

3 Q. Where within Exhibit 14 can I find the
4 capability of the Apollo thermostat to measure
5 humidity?

6 A. If you'll just allow me a moment, I'll
7 review through the schematics and be able to answer
8 your question.

9 (Witness reviews document.)

10 A. Thank you. I've had a chance to review.
11 Could you restate your question?

12 BY MR. HOLLANDER:

13 Q. Sure. Where within Exhibit 14 can I find
14 the humidity sensing capabilities of the Apollo
15 thermostat?

16 MR. DORSKY: Object to form.

17 A. The components involved with the humidity
18 sensing feature of the Apollo thermostat can be
19 found on page 35.

20 BY MR. HOLLANDER:

21 Q. Is the SHT20 sensor package responsible
22 for measuring humidity in the Apollo thermostat?

23 MR. DORSKY: Object to form.

24 A. Can you be more specific as to what you
25 mean by package?

1 BY MR. HOLLANDER:

2 Q. Sure. I'm referring to the SHT20
3 chipset. So is the SHT20 chipset the sensor
4 utilized for measuring humidity in the Apollo
5 thermostat?

6 MR. DORSKY: Object to form.

7 A. The components required to measure
8 humidity are all of the components contained within
9 this page.

10 BY MR. HOLLANDER:

11 Q. Other than the components shown on
12 page 35 of Exhibit 14, are you aware of any other
13 sensors utilized for measuring humidity in the
14 Apollo thermostat?

15 MR. DORSKY: Object to form.

16 A. I would have to look through the specific
17 data sheets for all of the components to be able to
18 accurately answer that question.

19 BY MR. HOLLANDER:

20 Q. Does the Apollo thermostat contain a
21 proximity sensor?

22 A. Yes. The Apollo thermostat has the
23 capabilities to detect proximity.

24 Q. Where within Exhibit 14 are the
25 components that provide the Apollo thermostat with

1 the capability to detect proximity?

2 A. If you'll just allow me a quick moment,
3 I'll just review the schematics to be able to answer
4 your question accurately.

5 (Witness reviews document.)

6 A. Thank you. I've had a chance to review
7 the question -- to review the document. Could you
8 restate your question?

9 BY MR. HOLLANDER:

10 Q. Sure. Where within Exhibit 14 are the
11 components that provide the Apollo thermostat with
12 the capability to detect proximity?

13 A. The components required to detect
14 proximity can be found on page 16.

15 Q. Can you identify the part number of the
16 component with the internal designation of U19?

17 A. Based on this schematic page, the part
18 number designated by U19 is Si1141.

19 Q. Thank you. Does the Apollo thermostat
20 contain a WiFi module?

21 MR. DORSKY: Object to form.

22 A. The Apollo thermostat contains a
23 transceiver capable of modulating over 802.11b, g
24 and n.

25

1 BY MR. HOLLANDER:

2 Q. Where within Exhibit 14 is the
3 transceiver capable of modulating over 802.11?

4 MR. DORSKY: Object to form.

5 A. If you'll just allow me a moment, I'll
6 review the schematic to locate that page.

7 (Witness reviews document.)

8 A. Thank you. I've had a chance to review
9 this schematic. Could you restate your question?

10 BY MR. HOLLANDER:

11 Q. Where within Exhibit 14 could I find the
12 transceiver capable of communicating pursuant to the
13 802.11 standard?

14 MR. DORSKY: Object to form.

15 A. The transceiver capable of transceiving
16 over the 802.11b, g and n standard can be found on
17 page 36.

18 And if you don't mind, could we just take
19 a quick water break?

20 MR. HOLLANDER: Yeah, let's go off
21 the record.

22 THE VIDEOGRAPHER: The time is
23 2:17 p.m. and we are going off the record.

24 (Recess taken from 2:17 p.m. to
25 2:25 p.m.)

1 THE VIDEOGRAPHER: The time is
2 2:25 p.m. We are back on the record.

3 BY MR. HOLLANDER:

4 Q. Turning to page 36 of Exhibit 14, can you
5 identify the part number of the WiFi transceiver?

6 A. Yes. On page 36 of the Apollo
7 schematics, the 802.11b, g and n transceiver part
8 number is AR6103G-BM2D.

9 Q. Does the Apollo thermostat contain a
10 900-megahertz communications transceiver?

11 MR. DORSKY: Object to form.

12 A. Yes, the Apollo thermostat contains a
13 radio capable of transceiving FSK modulations over
14 the band of 900 to 927 megahertz.

15 BY MR. HOLLANDER:

16 Q. Where within Exhibit 14 is the
17 900-megahertz communications transceiver identified?

18 A. Can you be more specific about what you
19 mean by communications transceiver?

20 Q. Sure. You mentioned previously that the
21 Apollo thermostat contains a radio capable of
22 transceiving FSK modulations over the band of 900 to
23 927 megahertz. I would like to know within
24 Exhibit 14 where that component is located.

25 A. Thank you. If you'll just allow me a

1 moment, I'll just take a look through the schematics
2 to identify it.

3 (Witness reviews document.)

4 A. Thank you. I've had a chance to review
5 these schematics. Could you restate your question,
6 please?

7 BY MR. HOLLANDER:

8 Q. Where within Exhibit 14 is the component
9 responsible for transceiving FSK modulations over
10 the 900 to 927-megahertz band?

11 A. Thank you. This can be found on page 19
12 of the Apollo schematics.

13 Q. Can you identify the part number for the
14 radio capable of transceiving FSK modulations over
15 the 900 to 927-megahertz band?

16 A. It looks like there are two components
17 involved in this transceiving. Can you be more
18 specific as to which one you'd like?

19 Q. Can you identify each of them for me,
20 each of the two?

21 A. The first component has the part number
22 SI4463. And an additional component in -- that
23 supports this communication over the 900 to
24 927-megahertz band is CG2179M2-C4.

25 Q. I'd like to turn your attention to

1 page 20 of Exhibit 14. At the top of the page
2 there's a notation Apple Coprocessor. Do you see
3 that?

4 A. Yes.

5 Q. Can you explain to me the purpose of the
6 Apple coprocessor?

7 MR. DORSKY: Object to form.

8 A. The Apple coprocessor is a mandatory
9 requirement for inclusion in this schematic design
10 by Apple.

11 BY MR. HOLLANDER:

12 Q. And why would Apple be able to demand
13 certain schematic designs in ecobee's products?

14 MR. DORSKY: Object to form.

15 A. I'm not sure exactly what this component
16 does, but it is mandatory for our thermostats to
17 interact with Apple products.

18 MR. HOLLANDER: I'm going to -- now
19 going to introduce Exhibit 15 into the chat.
20 Exhibit 15 is a document bearing the Bates
21 ecobee-01lnova-0085455.

22 (Deposition Exhibit 15 marked for
23 identification.)

24 BY MR. HOLLANDER:

25 Q. Please let me know when you have

1 Exhibit 15 available.

2 A. Okay. Thank you.

3 Q. Do you recognize this document?

4 A. Yes, I do recognize this document.

5 Q. What is it?

6 A. This is the schematic design for the
7 Vulcan thermostat.

8 Q. What ecobee thermostat does Vulcan refer
9 to?

10 A. I'm not certain about how our thermostats
11 are marketed, so I can't answer that exactly.

12 Q. Are you familiar with the ecobee
13 SmartThermostat with voice control?

14 A. Yes, I am familiar with that.

15 Q. Do you know the internal code name for
16 the ecobee SmartThermostat with voice control?

17 A. I do believe the internal name for the
18 ecobee SmartThermostat with voice control is Vulcan.

19 Q. Is it your understanding that Exhibit 15
20 is the master design document for the ecobee
21 SmartThermostat with voice control?

22 MR. DORSKY: Object to form.

23 A. I do believe that this schematic design
24 represents the Vulcan thermostat.

25

1 BY MR. HOLLANDER:

2 Q. At the bottom right corner of page 1
3 there's a notation Vulcan Gamma. Do you see that?

4 A. Yes, I do see that.

5 Q. Can you explain to me what Gamma refers
6 to?

7 MR. DORSKY: Object to form.

8 A. Gamma likely indicates the number of
9 revisions for this design prior to this release.

10 BY MR. HOLLANDER:

11 Q. Are you aware of any revisions to the
12 master design document for the Vulcan thermostat
13 that came after the Gamma revision?

14 MR. DORSKY: Object to form.

15 A. I am not aware of any revisions that
16 would have come after this document.

17 BY MR. HOLLANDER:

18 Q. Do you agree that this schematic
19 accurately represents the Vulcan thermostat?

20 MR. DORSKY: Object to form.

21 A. This schematic design accurately
22 represents the electrical hardware in the Vulcan
23 thermostat.

24 BY MR. HOLLANDER:

25 Q. Does the Vulcan thermostat contain a

1 processor?

2 MR. DORSKY: Object to form.

3 A. Yes, the Vulcan thermostat contains a
4 CPU.

5 BY MR. HOLLANDER:

6 Q. Where within Exhibit 15 is the Vulcan CPU
7 identified?

8 A. If you'll just allow me a moment, I'll
9 just review these schematics to be able to answer
10 your question.

11 (Witness reviews document.)

12 A. Thank you. I've had a chance to review
13 the schematics. Could you restate your question?

14 BY MR. HOLLANDER:

15 Q. Where within Exhibit 15 is the Vulcan CPU
16 identified?

17 A. The first instance of the Vulcan CPU can
18 be found on page 5.

19 Q. Can you identify the part number for the
20 Vulcan thermostat CPU?

21 A. Yes. The part number for the Vulcan
22 thermostat CPU is MT8167A/S, forward slash S.

23 Q. Does the Vulcan thermostat CPU contain
24 memory?

25 MR. DORSKY: Object to form.

1 A. Without reviewing the specific data sheet
2 for the Vulcan CPU, I can't answer that with
3 certainty, but most CPUs contain internal memory.

4 BY MR. HOLLANDER:

5 Q. Other than the CPU identified here on
6 page 5 of Exhibit 15, does the Vulcan thermostat
7 contain any other processors?

8 A. If you'll just allow me a moment to
9 review the schematic, I'll be able to answer that
10 question accurately.

11 (Witness reviews document.)

12 A. Thank you. I've had a chance to review
13 the schematic. Can you restate the question,
14 please?

15 BY MR. HOLLANDER:

16 Q. Other than the CPU identified on page 5
17 of Exhibit 15, does the Vulcan thermostat contain
18 any other processors?

19 MR. DORSKY: Object to form.

20 A. The Vulcan thermostat contains a
21 microcontroller, which can be found on page 3.

22 BY MR. HOLLANDER:

23 Q. Can you identify the part number for the
24 microcontroller identified on page 3 of Exhibit 15?

25 A. The part number for the microcontroller

1 on page 3 for Exhibit 15 is MKL15Z128VLK4.

2 Q. Does the microcontroller identified on
3 page 3 contain memory?

4 MR. DORSKY: Object to form.

5 A. Without access to the specific data sheet
6 for this microcontroller, I couldn't answer that
7 question with certainty, but most microcontrollers
8 contain some internal memory.

9 BY MR. HOLLANDER:

10 Q. Aside from the internal memory of the
11 central CPU and the microcontroller, does the Vulcan
12 thermostat contain external memory?

13 MR. DORSKY: Object to form.

14 A. Yes. The Vulcan thermostat contains
15 external memory.

16 BY MR. HOLLANDER:

17 Q. Where within Exhibit 15 is the external
18 memory of the Vulcan thermostat identified?

19 A. If you'll just allow me a moment, I'll
20 just review the schematics and then I'll be able to
21 answer your question.

22 (Witness reviews document.)

23 A. Thank you. I've had a chance to review
24 the schematics. Could you restate your question,
25 please?

1 BY MR. HOLLANDER:

2 Q. Where within Exhibit 15 is the external
3 memory of the Vulcan thermostat identified?

4 A. The external memory of the Vulcan
5 thermostat can be identified on page 13.

6 Q. Starting on the left-hand side of
7 page 13, can you identify the product number of the
8 DDR4 512-megabyte memory?

9 MR. DORSKY: Object to form.

10 A. The part number of the DDR4 512-megabyte
11 memory is NT5AD256M16D4-HR.

12 BY MR. HOLLANDER:

13 Q. Is there additional external memory
14 identified on page 13?

15 A. There is a label above the functional
16 block towards the right above the component
17 designated by U19 that reads eMMC. And so it's
18 implied that this is also likely external memory.

19 Q. What does eMMC 4 gigabytes refer to?

20 MR. DORSKY: Object to form.

21 A. eMMC 4 gigabytes refers to 4 gigabytes of
22 nonvolatile memory.

23 BY MR. HOLLANDER:

24 Q. Can you identify the part number for the
25 eMMC 4-gigabyte memory?

1 A. Yes. The part number for the 4-gigabyte
2 eMMC memory is EMMC04G-M627-E02U.

3 Q. Is the host CPU of the Vulcan thermostat
4 capable of exchanging data or otherwise
5 communicating with the DDR4 512-megabyte memory?

6 MR. DORSKY: Object to form.

7 A. The host CPU is wired to the double data
8 rate 4 memory through a interface defined by the
9 double data rate 4 standard.

10 BY MR. HOLLANDER:

11 Q. Is the microcontroller of the Vulcan
12 thermostat capable of exchanging data or otherwise
13 communicating with the eMMC 4 -- strike that
14 question.

15 Is the host CPU of the Vulcan thermostat
16 capable of exchanging data or otherwise
17 communicating with the eMMC 4 gigabyte memory?

18 MR. DORSKY: Object to form.

19 A. The host CPU is wired to the 4 gigabytes
20 of eMMC over a 8-bit interface.

21 BY MR. HOLLANDER:

22 Q. Is the microcontroller of the Vulcan
23 thermostat capable of exchanging data or otherwise
24 communicating with the DDR4 512-megabyte memory?

25 MR. DORSKY: Object to form.

1 A. If you'll just allow me a moment, I'll
2 just check the schematic to understand if a
3 connection is present.

4 BY MR. HOLLANDER:

5 Q. No problem.

6 (Witness reviews document.)

7 A. Thank you. I've had a chance to review
8 the schematics. Can you restate your question?

9 BY MR. HOLLANDER:

10 Q. Is the microcontroller of the Vulcan
11 thermostat capable of exchanging data or otherwise
12 communicating with the DDR4 512-megabyte memory?

13 MR. DORSKY: Object to form.

14 A. The microcontroller on the Vulcan
15 thermostat is not wired directly to the DDR4 memory.

16 BY MR. HOLLANDER:

17 Q. Is the microcontroller of the Vulcan
18 thermostat capable of exchanging data or otherwise
19 communicating with the eMMC 4-gigabyte memory?

20 MR. DORSKY: Object to form.

21 A. If you'll allow me just a moment, I'll
22 check if that connection exists.

23 (Witness reviews document.)

24 A. Thank you. I've had a chance -- I've had
25 a chance to review the schematic. Could you restate

1 your question, please?

2 BY MR. HOLLANDER:

3 Q. Is the microcontroller of the Vulcan
4 thermostat capable of exchanging data or otherwise
5 communicating with the eMMC 4-gigabyte memory?

6 MR. DORSKY: Object to form.

7 A. The microcontroller on the Vulcan
8 thermostat is not wired to the eMMC memory.

9 BY MR. HOLLANDER:

10 Q. Does the Vulcan thermostat contain a
11 temperature sensor?

12 A. Yes. The Vulcan thermostat has the
13 capability to measure temperature.

14 Q. Where within Exhibit 15 are the
15 components for the Vulcan thermostat that are
16 responsible for measuring temperature?

17 A. If you'll just allow me a moment, I will
18 locate the components associated with Vulcan's
19 ability to measure temperature.

20 (Witness reviews document.)

21 A. Thank you. I've had a chance to review
22 the schematic design. Could you restate your
23 question, please?

24 BY MR. HOLLANDER:

25 Q. Where within Exhibit 15 are the

1 components for the Vulcan thermostat that are
2 responsible for measuring temperature?

3 A. Thank you. The components associated
4 with measuring temperature are on page 38.

5 Q. Turning to page 38 of Exhibit 15, can you
6 identify for me the part number of the temperature
7 sensor?

8 MR. DORSKY: Object to form.

9 A. All of the components on this page are
10 likely associated with measuring temperature.

11 BY MR. HOLLANDER:

12 Q. How many chipsets are identified on
13 page 38 of Exhibit 15?

14 MR. DORSKY: Object to form.

15 A. Can you be more specific as to what you
16 mean by chipsets?

17 BY MR. HOLLANDER:

18 Q. Sure. How many microprocessors do you
19 see on the schematic shown on page 38?

20 A. I am not aware of whether any of the
21 components on page 38 contain a microprocessor.

22 Q. Do you know what part is identified as
23 U51 on page 38?

24 A. I can see on the schematic that U51
25 indicates the part number SHTC3.

1 Q. Are you aware of who manufactures the
2 SHTC3?

3 MR. DORSKY: Object to form.

4 A. I don't know exactly. I would have to
5 look at the data sheet for that specific part to be
6 certain.

7 BY MR. HOLLANDER:

8 Q. Other than the components shown on
9 page 38 of Exhibit 15, are you aware of any other
10 sensors or Thermistors utilized by the Vulcan
11 thermostat to determine temperature?

12 MR. DORSKY: Object to form.

13 A. If you'll just allow me a moment, I can
14 check if there are other components.

15 (Witness reviews document.)

16 A. I think without reviewing the specific
17 data sheets for all of the components on -- in the
18 schematics, I wouldn't be able to answer that
19 question accurately.

20 BY MR. HOLLANDER:

21 Q. Does the Vulcan thermostat contain a
22 humidity sensor?

23 A. The Vulcan thermostat has the capability
24 to measure humidity.

25 Q. Where within Exhibit 15 can I find the

1 components utilized by the Vulcan thermostat for
2 measuring humidity?

3 MR. DORSKY: Object to form.

4 A. If you'll just allow me a moment, I'll
5 just review the schematic.

6 (Witness reviews document.)

7 A. Thank you. I've had a chance to review
8 the schematic. Could you restate your question,
9 please?

10 BY MR. HOLLANDER:

11 Q. Where within Exhibit 15 are the
12 components utilized by the Vulcan thermostat for
13 measuring humidity?

14 MR. DORSKY: Object to form.

15 A. It appears that the components associated
16 with humidity measurement can be found on page 38.

17 BY MR. HOLLANDER:

18 Q. Other than the components identified on
19 page 38, are you aware of any other sensors or
20 Thermistors utilized by the Vulcan thermostat for
21 measuring humidity?

22 A. I'd have to review the data sheets of all
23 components in the design to be able to answer that
24 question accurately.

25 Q. Does the Vulcan thermostat contain a

1 proximity sensor?

2 A. Yes, the Vulcan thermostat has the
3 capability to measure proximity.

4 Q. Where within Exhibit 15 are the
5 components utilized by the Vulcan thermostat for
6 determining or measuring proximity?

7 A. If you'll just allow me a moment, I'll
8 take a look for them.

9 (Witness reviews document.)

10 A. Thank you. I've had a chance to review
11 the schematic. Could you restate your question?

12 BY MR. HOLLANDER:

13 Q. Where within Exhibit 15 are the
14 components utilized by the Vulcan thermostat for
15 determining or measuring proximity?

16 MR. DORSKY: Object to form.

17 A. The components associated with the
18 measurement of proximity can be found on page 17.

19 BY MR. HOLLANDER:

20 Q. Can you identify for me the part number
21 of the component with the internal designation of
22 U27?

23 A. Based on this schematic document on
24 page 17 of Exhibit 15, the part number associated
25 with U27 is Si1141.

1 Q. Does the Vulcan thermostat contain a WiFi
2 module?

3 MR. DORSKY: Object to form.

4 A. The Vulcan thermostat contains a wireless
5 transceiver capable of transmitting over 802.11a, b,
6 g, n and ac.

7 BY MR. HOLLANDER:

8 Q. Where within Exhibit 15 is the wireless
9 transceiver capable of transmitting data over
10 802.11a, b, g and ac?

11 A. Just allow me a moment. I'll review the
12 schematics to locate the 802.11-associated
13 components.

14 (Witness reviews document.)

15 A. Thank you. I've had a chance to review.
16 Could you restate your question, please?

17 BY MR. HOLLANDER:

18 Q. Where within Exhibit 15 is the 802.11
19 wireless transceiver?

20 A. The 802.11 transceiver can be found
21 within Exhibit 15 on page 14.

22 Q. Can you identify the part number of the
23 802.11 transceiver in the Vulcan thermostat?

24 A. Yes. The 802.11 transceiver within the
25 Vulcan thermostat has the part number MT7658CSN.

1 Q. Does the Vulcan thermostat contain a
2 900-megahertz communications transceiver?

3 MR. DORSKY: Object to form.

4 A. Can you clarify what you mean by
5 communications?

6 BY MR. HOLLANDER:

7 Q. Does the Vulcan thermostat contain a
8 transceiver capable of modulating or demodulating
9 signals on the 900-megahertz band?

10 MR. DORSKY: Object to form.

11 A. Yes. The Vulcan thermostat contains a
12 transceiver capable of modulating FSK signals in the
13 band of 900 megahertz to 927 megahertz.

14 BY MR. HOLLANDER:

15 Q. Is the band of 900 megahertz to
16 927 megahertz a lower bandwidth than the radio bands
17 utilized by the 802.11 standard?

18 MR. DORSKY: Object to form.

19 A. The bandwidth of a 900 to 927 megahertz
20 ISM band is, I believe, around 25 megahertz and the
21 bandwidth used for most WiFi channels is
22 20 megahertz. So I don't believe that they're
23 different, but I'm not an expert in wireless bands.

24 BY MR. HOLLANDER:

25 Q. We can turn to our next exhibit now,

1 which is Exhibit 16.

2 MR. HOLLANDER: I'm going to add that
3 to the chat window now. Exhibit 16 is a document
4 bearing the Bates stamp ecobee-01lnova-00097210.

5 (Deposition Exhibit 16 marked for
6 identification.)

7 BY MR. HOLLANDER:

8 Q. And let me know when you have Exhibit 16
9 up in front of you.

10 A. Okay. I have the document here.

11 Q. Do you recognize this document?

12 A. Yes.

13 Q. What is it?

14 A. This is the schematic design document
15 that describes Ares and Artemis.

16 Q. What ecobee thermostat does Ares refer
17 to?

18 MR. DORSKY: Object to form.

19 A. I'm not sure exactly, as I'm not involved
20 in the product marketing. But I do believe the Ares
21 may refer to Smart Thermostat Premium.

22 BY MR. HOLLANDER:

23 Q. What ecobee thermostat does the Artemis
24 internal name refer to?

25 MR. DORSKY: Object to form.

1 A. I'm not an expert in our product
2 marketing terminology, so I'm not certain, but I
3 believe it refers to ecobee Smart Thermostat
4 Enhanced.

5 BY MR. HOLLANDER:

6 Q. Are there separate master design
7 documents for the Ares thermostat and the Artemis
8 thermostat?

9 A. The schematics between the Ares and the
10 Artemis design are identical with the exception of
11 which components are soldered onto the board and
12 which components are not.

13 Q. Are you aware of an example of a
14 component that would be included on the board in one
15 model but not the other?

16 MR. DORSKY: Object to form.

17 A. Yes, I'm aware.

18 BY MR. HOLLANDER:

19 Q. And what component are you thinking of
20 that is different between the Ares and the Artemis
21 thermostats?

22 MR. DORSKY: Object to form.

23 A. Specifically I am thinking of the Ares'
24 ability to support two HVAC transformers and
25 Artemis' ability to support only one.

1 BY MR. HOLLANDER:

2 Q. Are there any other components that you
3 can think of that are different between the Ares and
4 the Artemis thermostats?

5 MR. DORSKY: Object to form.

6 A. Yes.

7 BY MR. HOLLANDER:

8 Q. Can you identify the components that you
9 are thinking of?

10 A. I'm thinking of the two-wire accessory
11 terminals.

12 Q. Which model contains the two-wire
13 accessory terminals?

14 A. The Ares model supports the two-wire
15 accessory terminals.

16 Q. Are there any other components that you
17 can think of that are included in either the Ares or
18 the Artemis that are not included in the other?

19 MR. DORSKY: Object to form.

20 A. Yes.

21 BY MR. HOLLANDER:

22 Q. And what components are you thinking of?

23 MR. DORSKY: Object to form.

24 A. I am thinking of the Y2 terminal.

25

1 BY MR. HOLLANDER:

2 Q. What about the Y2 terminal is different
3 between the Artemis and the Ares models?

4 A. In Ares I believe there is a Y2, while in
5 Artemis this would not be populated. However, I'm
6 not exactly certain which configuration the
7 marketing team ultimately decided to go with, as the
8 hardware design allows for these configurations to
9 be swapped.

10 Q. Now, turning to Exhibit 16, is this an
11 accurate representation of the hardware components
12 found in the Ares and Artemis thermostats?

13 MR. DORSKY: Object to form.

14 A. I don't have any way to know with
15 certainty what the marketing teams have decided to
16 use in the products in mass production, but these
17 schematics appear to be a up-to-date representation
18 of the physical printed circuit board.

19 BY MR. HOLLANDER:

20 Q. To try and streamline some of our
21 discussion here, I'm going to ask the questions in
22 relation to both Ares and Artemis. And to the
23 extent you believe there is a distinction that needs
24 to be made, feel free to say so, if that's okay with
25 you.

1 So do the Ares and Artemis thermostats
2 contain a processor?

3 MR. DORSKY: Object to form.

4 A. Yes. The Ares and Artemis thermostats
5 contain a processor.

6 BY MR. HOLLANDER:

7 Q. Where within Exhibit 16 would I find the
8 processor utilized by the Ares and Artemis
9 thermostats?

10 A. If you'll just allow me a moment, I will
11 review these schematics and I'll be able to answer
12 your question.

13 (Witness reviews document.)

14 A. Thank you. I've had a chance to review
15 the schematics. Could you restate your question?

16 BY MR. HOLLANDER:

17 Q. Where within Exhibit 16 is the processor
18 utilized by the Ares and Artemis thermostats
19 identified?

20 MR. DORSKY: Object to form.

21 A. Could you be more specific as to what you
22 mean by processor?

23 BY MR. HOLLANDER:

24 Q. Let's start with the central CPU. Where
25 within Exhibit 16 is the central CPU utilized by the

1 Ares and Artemis thermostats?

2 MR. DORSKY: Object to form.

3 A. I'm not familiar with the terminology
4 central CPU. Could you be more specific?

5 BY MR. HOLLANDER:

6 Q. I'm interested in the primary processor,
7 or I believe you have referred to host process --
8 host CPU in the past in describing other models.

9 So can you identify within Exhibit 16
10 where the primary processor utilized by the Ares and
11 Artemis thermostats is identified?

12 MR. DORSKY: Object to form.

13 A. The CPU on Ares and Artemis can be found
14 in Exhibit 16 on page 19.

15 BY MR. HOLLANDER:

16 Q. Can you identify the part number of the
17 CPU of the Ares and Artemis thermostats?

18 A. Yes. The part number is MT8518.

19 Q. Does the MT8518 CPU contain memory?

20 MR. DORSKY: Object to form.

21 A. Without reviewing the specific data sheet
22 for the MT8518, I can't answer that question
23 accurately, but I do believe most CPUs contain
24 memory.

25

1 BY MR. HOLLANDER:

2 Q. Other than the MT8518 CPU, are there
3 other processors utilized by the Ares and Artemis
4 thermostats?

5 MR. DORSKY: Object to form.

6 A. Yes. There is a microcontroller.

7 BY MR. HOLLANDER:

8 Q. Where within Exhibit 16 is the
9 microcontroller utilized by the Ares and Artemis
10 thermostats identified?

11 A. If you'll just allow me a moment, I will
12 review the schematics and I can answer your
13 question.

14 (Witness reviews document.)

15 A. Thank you. I've had a chance to review
16 the documents. Can you restate your question,
17 please?

18 BY MR. HOLLANDER:

19 Q. Where within Exhibit 16 is the
20 microcontroller utilized by the Ares and Artemis
21 thermostats identified?

22 A. The microcontroller used by the Ares and
23 Artemis thermostats can be found on page 11.

24 Q. Can you identify the part number of the
25 microcontroller utilized by the Ares and Artemis

1 thermostats?

2 A. Yes. It is EFR32MG12P433F1024GM68-C.

3 Q. Aside from the MT8518 CPU and the
4 microcontroller shown here on page 11, are there any
5 other processors utilized by the Ares and Artemis
6 thermostats?

7 MR. DORSKY: Object to form.

8 A. Without reviewing the data sheets for
9 each specific component individually, I can't answer
10 that question accurately.

11 BY MR. HOLLANDER:

12 Q. Does the microcontroller utilized by the
13 Ares and Artemis thermostats contain memory?

14 MR. DORSKY: Object to form.

15 A. The microcontroller used by the Ares and
16 Artemis thermostats, I don't know without reviewing
17 its specific data sheet to be certain if it contains
18 internal memory, but most microcontrollers contain
19 internal memory.

20 BY MR. HOLLANDER:

21 Q. Other than the memory of the central CPU
22 and the microcontroller, do the Ares and Artemis
23 thermostats contain external memory?

24 MR. DORSKY: Object to form.

25 A. Yes, the Ares and Artemis thermostats

1 contain external memory.

2 BY MR. HOLLANDER:

3 Q. Where within Exhibit 16 is the external
4 memory utilized by the Ares and Artemis thermostats
5 identified?

6 MR. DORSKY: Object to form.

7 A. If you'll just allow me a moment, I'll
8 take a look through these schematics.

9 (Witness reviews document.)

10 A. Thank you. I've had a chance to review
11 the schematics. Could you restate your question,
12 please?

13 BY MR. HOLLANDER:

14 Q. Where within Exhibit 16 is the external
15 memory utilized by the Ares and Artemis thermostats
16 identified?

17 MR. DORSKY: Object to form.

18 A. The external memory for the Ares and
19 Artemis thermostats can be found on page 15.

20 BY MR. HOLLANDER:

21 Q. How many external memories are identified
22 on page 15?

23 A. There appears to be two external memories
24 on page 15.

25 Q. Can you identify both of the external

1 memories identified on page 15 of Exhibit 16?

2 MR. DORSKY: Object to form.

3 A. The first external memory can be found
4 towards the bottom of the page with the label eMMC
5 4 gigabytes. The part number is KLM4G1FETE-B041.

6 BY MR. HOLLANDER:

7 Q. Can you identify the second memory
8 identified on page 15 of Exhibit 16?

9 MR. DORSKY: Object to form.

10 A. The second memory is a nonvolatile memory
11 under the heading RAM 512 megabytes and its part
12 number is NTC -- oh, sorry -- NT5CC256M16ER-EK.

13 If you don't mind, could we just take a
14 quick water break?

15 BY MR. HOLLANDER:

16 Q. Sure.

17 MR. HOLLANDER: Let's go off the
18 record.

19 THE VIDEOGRAPHER: The time is
20 3:29 p.m. and we're going off the record.

21 (Recess taken from 3:29 p.m. to
22 3:39 p.m.)

23 THE VIDEOGRAPHER: The time is
24 3:39 p.m. and we are back on the record.

25

1 BY MR. HOLLANDER:

2 Q. So turning back to page 15 of Exhibit 16,
3 does the host CPU of the Ares and Artemis
4 thermostats communicate or otherwise exchange data
5 with the RAM 512-megabyte memory?

6 MR. DORSKY: Object to form.

7 A. The CPU on Ares and Artemis is interfaced
8 to the 512-megabyte RAM chip over a double data
9 rate 3 interface.

10 BY MR. HOLLANDER:

11 Q. Is the microcontroller of the Ares and
12 Artemis thermostats capable of exchanging data or
13 otherwise communicating with the eMMC 4-gigabyte
14 memory?

15 MR. DORSKY: Object to form.

16 A. Sorry, could you clarify which processor
17 you were referring to? I think I missed it.

18 BY MR. HOLLANDER:

19 Q. Yeah, I think I also misspoke.

20 Is the CPU of the Ares and Artemis
21 thermostats capable of exchanging data or otherwise
22 communicating with the eMMC 4-gigabyte memory?

23 MR. DORSKY: Object to form.

24 A. The CPU on Ares and Artemis is wired to
25 the 4 gigabytes of eMMC over a 8-bit bus.

1 BY MR. HOLLANDER:

2 Q. Is the microcontroller of the Ares and
3 Artemis thermostats capable of exchanging data or
4 otherwise communicating with the RAM 512-megabyte
5 memory?

6 MR. DORSKY: Object to form.

7 A. If you'll just allow me a moment, I'll
8 just review the schematics to check if they are
9 connected.

10 (Witness reviews document.)

11 A. Thank you. I've had a chance to review
12 the schematics. Could you restate the question?

13 BY MR. HOLLANDER:

14 Q. Is the microcontroller of the Ares and
15 Artemis thermostats capable of exchanging data or
16 otherwise communicating with the 512-megabyte RAM
17 memory?

18 MR. DORSKY: Object to form.

19 A. The microcontroller on Ares and Artemis
20 is not wired to the 512-megabyte RAM.

21 BY MR. HOLLANDER:

22 Q. Is the microcontroller of the Ares and
23 Artemis thermostats capable of exchanging data or
24 otherwise communicating with the eMMC 4-gigabyte
25 memory?

1 MR. DORSKY: Object to form.

2 A. If you'll just allow me a moment, I'll
3 just review and determine if they're connected.

4 (Witness reviews document.)

5 A. Thank you. I've had a chance to review.
6 Could you restate your question, please?

7 BY MR. HOLLANDER:

8 Q. Is the microcontroller of the Ares and
9 Artemis thermostats capable of exchanging data or
10 otherwise communicating with the eMMC 4-gigabyte
11 memory?

12 A. The microcontroller is not wired to the
13 4 gigabytes of eMMC memory.

14 Q. Do the Ares and Artemis thermostats
15 contain a temperature sensor?

16 A. The Ares and Artemis boards have the
17 capability to measure temperature.

18 Q. Where within Exhibit 16 may I find the
19 components utilized by the Ares and Artemis
20 thermostats for measuring temperature?

21 MR. DORSKY: Object to form.

22 A. If you'll just allow me a moment, I'll
23 just look through the document.

24 (Witness reviews document.)

25 A. Thank you. I've had a moment to review.

1 Could you restate the question, please?

2 BY MR. HOLLANDER:

3 Q. Where within Exhibit 16 are the
4 components utilized by the Ares and Artemis
5 thermostats for measuring temperature identified?

6 A. I believe these are shown on page 42.

7 Q. On page 42 of Exhibit 16 I notice some
8 diagrams with Xs on them. Can you explain what the
9 Xs signify?

10 MR. DORSKY: Object to form.

11 A. I can't explain in this case what the Xs
12 might indicate.

13 BY MR. HOLLANDER:

14 Q. At the top right corner of page 42 there
15 is a box that says Sensirion temp - humidity sensor.
16 Do you see that?

17 A. Yes, I can see that box.

18 Q. Is the Sensirion temperature and humidity
19 package responsible for measuring temperature and
20 humidity for the Ares and Artemis thermostats?

21 MR. DORSKY: Object to form.

22 A. The Sensirion part is I believe the
23 primary means on Ares and Artemis for measuring
24 temperature.

25

1 BY MR. HOLLANDER:

2 Q. Do the Ares and Artemis thermostats
3 contain a humidity sensor?

4 A. Yes, the Ares and Artemis designs have
5 the capability to measure humidity.

6 Q. Where within Exhibit 16 is the component
7 or components utilized by Ares and Artemis for
8 determining humidity?

9 MR. DORSKY: Object to form.

10 A. The Ares and Artemis components
11 associated with humidity -- well, actually, if
12 you'll just give me a moment, I'll just review the
13 schematic to be certain to answer your question.

14 (Witness reviews document.)

15 A. Thank you. I had a chance to review.
16 Could you restate your question?

17 BY MR. HOLLANDER:

18 Q. Sure. Where within Exhibit 16 is the
19 component or components utilized by the Ares and
20 Artemis thermostats for determining humidity?

21 A. The functional block associated for
22 determining humidity in these schematics is on
23 page 42.

24 Q. Is the Sensirion chip identified on the
25 top of page 42 the chipset responsible for

1 determining or measuring humidity?

2 MR. DORSKY: Object to form.

3 A. A Sensirion temperature and humidity
4 sensor is the primary functional component for
5 measuring humidity.

6 BY MR. HOLLANDER:

7 Q. Now, I notice right under the Sensirion
8 box there is a box that identifies a Bosch Pressure
9 Temp Humidity Sensor.

10 Do you see that?

11 A. Yes, I do.

12 Q. Do you know the purpose of the Bosch
13 sensor in the Ares and Artemis thermostats?

14 MR. DORSKY: Object to form.

15 A. The Bosch sensor was evaluated as a
16 candidate to measure temperature and humidity but
17 proved to have insufficient accuracy.

18 BY MR. HOLLANDER:

19 Q. Do the Ares and Artemis thermostats
20 contain a proximity sensor?

21 A. The Ares and Artemis thermostats do not
22 contain an IR-based proximity sensor.

23 Q. Do the Ares and Artemis thermostats
24 contain a WiFi transceiver?

25 A. Yes, the Ares and Artemis thermostats

1 contain a transceiver capable of modulating over
2 802.11b, g, n, a and ac.

3 Q. Where within Exhibit 16 is the 802.11
4 transceiver identified?

5 MR. DORSKY: Object to form.

6 A. If you'll just allow me a moment, I'll
7 locate those components in this schematic design.

8 (Witness reviews document.)

9 A. Thank you. I've had a moment to look
10 through the design. Could you restate your
11 question, please?

12 BY MR. HOLLANDER:

13 Q. Sure. Where within Exhibit 16 is the
14 802.11 transceiver identified?

15 MR. DORSKY: Object to form.

16 A. Within Exhibit 16 for Ares and Artemis,
17 the 802.11 transceiver for modulating over 802.11b,
18 g, n, a and ac can be found on page 12.

19 BY MR. HOLLANDER:

20 Q. Can you identify the part number of the
21 802.11 transceiver utilized by the Ares and Artemis
22 thermostats?

23 A. Yes. The part number for the 802.11
24 transceiver is MT7653BSN.

25 Q. Does the -- strike that.

1 Do the Ares and Artemis thermostats
2 contain a 900-megahertz transceiver?

3 A. The Ares and Artemis thermostats have the
4 capability to modulate signals in frequency-shift
5 keying modulation between the 900 megahertz and
6 927 megahertz.

7 MR. HOLLANDER: We can turn to our
8 next exhibit, which is Exhibit 17. This is a
9 document bearing the Bates stamp
10 ecobee-Ollnova-00025710. I'm putting it in the chat
11 window now.

12 (Deposition Exhibit 17 marked for
13 identification.)

14 BY MR. HOLLANDER:

15 Q. Please let me know when you have that
16 document available.

17 A. Okay. I have that document available.
18 Thank you.

19 Q. Do you recognize this document?

20 A. Yes.

21 Q. What is it?

22 A. This document is the electrical schematic
23 design for Rhodos.

24 Q. What does Rhodos refer to?

25 MR. DORSKY: Object to form.

1 A. Rhodos refers to the ecobee product, I
2 believe the marketing name is SmartSensor.

3 BY MR. HOLLANDER:

4 Q. Towards the bottom right of the first
5 page of the document there is a notation Rhodos
6 Beta 1. Do you see that?

7 A. Yes, I can see that.

8 Q. Are you aware of any versions of the
9 master design document for Rhodos that were
10 generated after the beta version?

11 MR. DORSKY: Object to form.

12 A. I'm not aware of any subsequent designs.

13 BY MR. HOLLANDER:

14 Q. Is this master design document an
15 accurate representation of the hardware design found
16 in the ecobee SmartSensors?

17 MR. DORSKY: Object to form.

18 A. This schematic looks to be an accurate
19 hardware design for the Rhodos product.

20 BY MR. HOLLANDER:

21 Q. Does the Rhodos SmartSensor device
22 contain the capability to sense multiple properties
23 such as temperature, humidity or occupancy?

24 MR. DORSKY: Object to form.

25 A. Can you be more specific as to what you

1 mean by multiple?

2 BY MR. HOLLANDER:

3 Q. What sensors are contained within the
4 Rhodos SmartSensor device?

5 MR. DORSKY: Object to form.

6 A. The microcontroller on the Rhodos device
7 contains numerous different types of sensors.

8 BY MR. HOLLANDER:

9 Q. Can you describe to me the different
10 sensors that are packaged within the Rhodos
11 SmartSensor device?

12 MR. DORSKY: Object to form.

13 A. Can you be more specific as to what you
14 mean by packaged?

15 BY MR. HOLLANDER:

16 Q. Sure. Within the Rhodos SmartSensor,
17 what types of sensors are included within the
18 device?

19 A. The Rhodos electrical design contains
20 many components, each of which is capable of many
21 different types of measurements, but I would have to
22 review the specific data sheet of each individual
23 component to provide an accurate answer.

24 Q. Is the Rhodos SmartSensor capable of
25 measuring temperature?

1 MR. DORSKY: Object to form.

2 A. The electrical design of Rhodos has the
3 capability to measure temperature.

4 BY MR. HOLLANDER:

5 Q. Is the Rhodos SmartSensor capable of
6 detecting proximity or occupancy?

7 MR. DORSKY: Object to form.

8 A. Can you be more specific?

9 BY MR. HOLLANDER:

10 Q. Does the Rhodos SmartSensor contain a
11 proximity or occupancy sensor?

12 MR. DORSKY: Object to form.

13 A. There are components in the Rhodos design
14 intended to detect occupancy.

15 BY MR. HOLLANDER:

16 Q. Does the Rhodos SmartSensor contain a
17 temperature sensor?

18 MR. DORSKY: Object to form.

19 A. The Rhodos electrical design has the
20 capability to measure temperature.

21 BY MR. HOLLANDER:

22 Q. Does the Rhodos SmartSensor contain a
23 humidity sensor?

24 MR. DORSKY: Object to form.

25 A. The Rhodos SmartSensor does not have the

1 ability to measure temperature.

2 BY MR. HOLLANDER:

3 Q. Does the Rhodos SmartSensor have an
4 ambient light sensor?

5 A. If you'll just allow me a moment, I'll
6 just review the design.

7 (Witness reviews document.)

8 A. Thank you. I've had a chance to review
9 the design. Can you restate your question?

10 BY MR. HOLLANDER:

11 Q. Does the Rhodos SmartSensor have an
12 ambient light sensor?

13 A. The Rhodos electrical design schematics
14 indicate the presence of a part labeled as light
15 sensor.

16 Q. To clarify, the Rhodos SmartSensor
17 contains a temperature sensor, an ambient light
18 sensor and an occupancy sensor all packaged within a
19 single device; isn't that true?

20 MR. DORSKY: Object to form.

21 A. Can you clarify what you mean by
22 packaged?

23 BY MR. HOLLANDER:

24 Q. Meaning they're all contained within the
25 same single device.

1 MR. DORSKY: Object to form.

2 A. Can you state that as a question, please?

3 BY MR. HOLLANDER:

4 Q. Sure. Isn't it true that the Rhodos
5 SmartSensor device contains a temperature sensor, an
6 occupancy sensor and an ambient light sensor all
7 packaged within a single device?

8 MR. DORSKY: Object to form.

9 A. Can you clarify what you mean by
10 occupancy sensor?

11 BY MR. HOLLANDER:

12 Q. Earlier you testified along the lines
13 that there are components in the Rhodos design
14 intended to detect occupancy. So I guess let's
15 start with what your understanding is with the
16 ability for the Rhodos to detect occupancy. What
17 did you mean by that?

18 MR. DORSKY: Object to form.

19 A. The Rhodos electrical design contains a
20 pyro infrared sensor which detects thermal emissions
21 within the room, which is what I would -- implies
22 occupancy.

23 BY MR. HOLLANDER:

24 Q. Okay. So isn't it true that the Rhodos
25 SmartSensor device contains a temperature sensor, a

1 infrared sensor used for determining occupancy, as
2 well as an ambient light sensor all packaged within
3 a single device?

4 MR. DORSKY: Object to form.

5 A. The Rhodos electrical design contains
6 many types of sensors, but we'd have to review the
7 data sheets for all of the individual components to
8 know exactly what they can sense.

9 BY MR. HOLLANDER:

10 Q. But to clarify, when you say many types
11 of sensors are included in the Rhodos electrical
12 design, you mean that they're all packaged within a
13 single device; isn't that true?

14 MR. DORSKY: Object to form.

15 A. No. I mean the electrical hardware has
16 many different components contained, each of which
17 has the ability to measure different types of
18 signals, and I would need to refer to the data sheet
19 for each individual component to be certain.

20 BY MR. HOLLANDER:

21 Q. But to clarify, the components you're
22 referring to are all contained within the Rhodos
23 SmartSensor device?

24 MR. DORSKY: Object to form.

25 A. The components that I am referring to are

1 the components in the schematics of Exhibit 17 and
2 I'm not familiar with the details of all of the
3 components without reviewing their individual data
4 sheets.

5 BY MR. HOLLANDER:

6 Q. Did ecobee ever sell a accessory sensor,
7 so that means external to a thermostat, that only
8 measured temperature and nothing else?

9 MR. DORSKY: Object to form, scope.

10 A. I don't know.

11 BY MR. HOLLANDER:

12 Q. Are you aware of any efforts by ecobee to
13 make any changes to the hardware of the accused
14 products to avoid infringement of the patents at
15 issue in this case?

16 MR. DORSKY: Object to form. I'm
17 going to object based on privilege.

18 Please don't reveal the substance of
19 any communications or advice you've received from
20 counsel, but otherwise you can answer.

21 A. I don't know of any such changes.

22 BY MR. HOLLANDER:

23 Q. So based on your understanding, you are
24 not aware of any changes that ecobee has made to the
25 hardware of any of its thermostats to avoid

1 infringement of any of the patents at issue in this
2 case?

3 MR. DORSKY: Object to form and
4 privilege.

5 Please don't reveal the substance of
6 any communications or advice you've received from
7 counsel, but you may otherwise answer if you can.

8 A. I'm not aware of any changes to ecobee
9 hardware of that nature.

10 BY MR. HOLLANDER:

11 Q. Are you aware of any efforts by ecobee to
12 determine the cost to make any changes to the
13 hardware in its thermostats to avoid infringement of
14 any of the patents at issue in this case?

15 MR. DORSKY: Object to form and
16 privilege.

17 Please don't reveal the substance of
18 any communications or advice you've received from
19 counsel or on behalf of counsel. You may otherwise
20 answer if you can.

21 A. I don't know.

22 BY MR. HOLLANDER:

23 Q. So we're going to turn back to one of our
24 earlier exhibits. That's Exhibit 2. That is the
25 document with ecobee's First Amended and Second

1 Supplemental Objections and Responses to Plaintiff's
2 First Set of Interrogatories, dated April 3, 2023.

3 Do you need me to resend you the exhibit or do you
4 still have access to Exhibit 2?

5 A. I still have access to Exhibit 2. Thank
6 you.

7 Q. Okay. If you can open that document and
8 turn to page 40 of the PDF, you'll see an
9 Interrogatory No. 5.

10 A. Okay. I have turned to page 40.

11 Q. Have you read Interrogatory No. 5 before?

12 A. No, I have not.

13 Q. So why don't you take a quick minute to
14 read it.

15 A. Sure.

16 (Witness reviews document.)

17 BY MR. HOLLANDER:

18 Q. So the interrogatory requests ecobee to
19 describe all alleged acceptable non-infringing
20 alternatives.

21 Do you see that in the interrogatory
22 request?

23 MR. DORSKY: Object to form.

24 A. I do see the text that you described, but
25 I -- I'm not a lawyer, so I can't really interpret

1 this.

2 BY MR. HOLLANDER:

3 Q. Okay. Well, if we turn to page 44 of
4 this document, save you some reading, ecobee
5 provides a substantive response here and it starts
6 with, ecobee further states, on page 44.

7 Do you see that?

8 A. I do see that, yes.

9 Q. So this response then continues through
10 page 46 and addresses the four patents at issue in
11 this case.

12 Are you aware of any non-infringing
13 alternatives other than what is described in
14 ecobee's interrogatory response?

15 MR. DORSKY: Object to form, scope.

16 A. I don't know.

17 BY MR. HOLLANDER:

18 Q. Did you speak with anyone other than a
19 lawyer about possible non-infringing alternatives to
20 any of the four patents in this case?

21 MR. DORSKY: Object to form and
22 scope.

23 Also caution the witness on privilege
24 not to reveal any communications or advice provided
25 from counsel, even if through other noncounsel, but

1 otherwise you may respond.

2 A. No.

3 BY MR. HOLLANDER:

4 Q. Without revealing any privileged
5 communications with lawyers, do you have any
6 understanding of who came up with the non-infringing
7 alternatives proposed in this interrogatory
8 response?

9 MR. DORSKY: Object to form.

10 Same caution on privilege.

11 A. No.

12 BY MR. HOLLANDER:

13 Q. Have you had -- excluding any privileged
14 communications with lawyers, do you personally have
15 any opinions on how these non-infringing
16 alternatives in this interrogatory response would
17 actually be implemented in ecobee's products?

18 MR. DORSKY: Object to form.

19 And same caution regarding privilege.

20 A. No.

21 BY MR. HOLLANDER:

22 Q. So have -- strike that.

23 So you have not conducted any analysis or
24 testing of the feasibility of any of these proposed
25 non-infringing alternatives, correct?

1 MR. DORSKY: Object to form, scope.

2 And same caution regarding privilege.

3 A. No.

4 BY MR. HOLLANDER:

5 Q. Without revealing any privileged
6 communications, have you personally conducted any
7 analysis of what impact or results ecobee's proposed
8 alternatives would be?

9 MR. DORSKY: Object to form, scope.
10 Again, same caution regarding
11 privilege.

12 A. No.

13 BY MR. HOLLANDER:

14 Q. Are you aware of any particular features
15 that ecobee would not be able to offer its customers
16 if its thermostats did not have the ability to
17 communicate temperature data wirelessly?

18 MR. DORSKY: Object to form and
19 scope.

20 A. I don't know.

21 BY MR. HOLLANDER:

22 Q. Are you familiar with the Confluence
23 platform?

24 MR. DORSKY: Object to form and
25 scope.

1 A. I don't know.

2 BY MR. HOLLANDER:

3 Q. Do members of the hardware team create or
4 obtain documents from the Confluence platform?

5 MR. DORSKY: Object to form and
6 scope.

7 A. I don't know.

8 BY MR. HOLLANDER:

9 Q. Other than the master design schematics
10 that we've reviewed at length today, what other
11 types of documents does the hardware team create or
12 utilize?

13 MR. DORSKY: Object to form and
14 scope.

15 A. These schematics are the primary tools
16 that the hardware team utilizes. That's all that I
17 can think of right now.

18 BY MR. HOLLANDER:

19 Q. Are there any documents that describe in
20 further detail what is depicted in the schematics?

21 MR. DORSKY: Object to form and
22 scope.

23 A. I don't know.

24 MR. HOLLANDER: Okay. I actually
25 have no further questions for you at this time.

1 Jason, do you want to take a break?

2 MR. DORSKY: No, I don't think we
3 have to take a break, but I do want to -- we talked
4 about a lot of documents I think were designated
5 confidential and attorneys' eyes only, so I'm going
6 to designate the transcript confidential, attorneys'
7 eyes only. Also the witness reserves the right to
8 review and sign. And with that, I have nothing
9 more.

10 MR. HOLLANDER: Great. Thank you,
11 Mr. Laurence. I've got to say, you've been
12 incredibly patient and professional all day. I
13 really do appreciate your time today and your
14 insights and -- you know, this was not the most fun
15 exercise, so, again, I appreciate your patience and
16 professionalism.

17 THE WITNESS: Thank you.

18 THE VIDEOGRAPHER: The time is
19 4:22 p.m. and we are going off the record.

20 (Deposition concluded at 4:22 p.m.)

21

22

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CORRECTIONS AND SIGNATURE		
PAGE/LINE	CORRECTION	REASON FOR CHANGE
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15	I, BRENT LAURENCE, have read the foregoing deposition and hereby affix my signature that same is true and correct except as noted herein.	
16		
17		
18	_____ BRENT LAURENCE	
19		
20	STATE OF _____)	
21	COUNTY OF _____)	
22		
23	Subscribed and sworn to before me by the said witness, BRENT LAURENCE, on this the _____ day of _____, 2023.	
24		
25	_____ NOTARY PUBLIC IN AND FOR THE STATE OF _____	
25	My Commission Expires: _____	

REPORTER'S CERTIFICATION

I, Micheal A. Johnson, Registered Diplomat
Reporter and Certified Realtime Reporter, certify
that on the 12th day of April, 2023, I reported the
Remote Videotaped Deposition of BRENT LAURENCE,
after the witness had first been duly cautioned and
sworn to testify under oath; said deposition was
subsequently transcribed by me and under my
supervision and contains a full, true and complete
transcription of the proceedings had at said time
and place; and that reading and signing was
requested.

I further certify that I am neither counsel
for nor related to any party in this cause and am
not financially interested in its outcome.

GIVEN UNDER MY HAND AND SEAL of office on
this 14th day of April, 2023.

MICHEAL A. JOHNSON, RDR, CRR
NCRA Registered Diplomat Reporter
NCRA Certified Realtime Reporter

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