

1
2 UNITED STATES PATENT AND TRADEMARK OFFICE
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4
5 SMAXTEC INC., and
6 SMAXTEC ANIMAL CARE GMBH,

7 Petitioners,

8 v.

9 ST REPRODUCTIVE TECHNOLOGIES, LLC,

10 Patent Owner.

11 Case IPR2024-01067
12 Patent Number 10,231,644

13 DEPOSITION OF
14 EDWIN KAN, PH.D.

15 Regus
16 125 East State Street
17 3rd Floor
18 Ithaca, New York 14850

19 07/22/2025
20 9:13 a.m. (EDT)

21
22
23
24 REPORTED BY: AMANDA GORRONO, CLR
25 CLR NO. 052005-01
JOB NO. J13172238



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07/22/2025

9:13 a.m. (EDT)

DEPOSITION OF EDWIN KAN, PhD, held at
Regus 125 East State Street, 3rd Floor,
Ithaca, New York 14850, before Amanda
Gorrone, Certified Live Note Reporter, and
Notary Public of the State of New York.



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A P P E A R A N C E S

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5		MR. MOFFETT	236
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1 E. Kan, PhD

2 EDWIN KAN, PhD, called as a witness,
3 having been first duly sworn by a Notary
4 Public of the State of New York, was
5 examined and testified as follows:

6 THE WITNESS: Yes. 09:13

7 THE COURT REPORTER: Thank you. 09:13

8 Please state your name and address for 09:13
9 the record. 09:13

10 THE WITNESS: My name is Edwin 09:13
11 Kan. I reside in 107 Briarwood Drive, 09:13
12 Unit 1, Ithaca, New York 14850. 09:13

13 THE COURT REPORTER: Okay. I'm 09:13
14 going to go off camera. I'll be here 09:13
15 if you need me. 09:13

16 You may proceed, Counsel. 09:14

17 MR. GLANDORF: Okay. Great. 09:14

18 And do you want to -- 09:14

19 (Discussion held off the 09:14
20 record.) 09:14

21 EXAMINATION 09:14

22 BY MR. GLANDORF: 09:14

23 Q. Dr. Kan, you're here for the 09:14
24 deposition today in the PTAB inter partes 09:14
25 review entitled Case IPR 2024-01067. 09:14



1 E. Kan, PhD
2 Do you understand that? 09:14
3 A. Yes, totally. 09:14
4 Q. And the parties involved are 09:14
5 smaXtec, Inc., smaXtec Animal Care GMBH 09:14
6 are Petitioner, and the Patent Owner is ST 09:14
7 Reproductive Technologies, LLC, Patent 09:14
8 Owner. 09:14
9 My name is David Glandorf. I am 09:14
10 an attorney with Gibson Dunn, and I'm here 09:14
11 representing Petitioners. And I'll let 09:14
12 Patent Owner's counsel identify himself. 09:15
13 MR. MOFFETT: Dan Moffett with 09:15
14 Akin here on behalf of the patent 09:15
15 owner ST Reproductive Technologies. 09:15
16 BY MR. GLANDORF: 09:15
17 Q. Good morning, Dr. Kan. 09:15
18 A. Good morning. 09:15
19 Q. Is it okay if I refer to you as 09:15
20 Dr. Kan? 09:15
21 A. Any way you want. 09:15
22 Q. Okay. 09:15
23 A. And we'll be fine today. 09:15
24 Q. Okay. Have you been deposed 09:15
25 before, Dr. Kan? 09:15



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1 E. Kan, PhD

2 A. As in meeting like this? 09:15

3 Q. In -- yes, in -- 09:15

4 A. No. 09:15

5 Q. You've never been deposed before 09:15
6 today? 09:15

7 A. No. 09:15

8 Q. Have you ever given testimony in 09:15
9 any kind of a trial? 09:15

10 A. No. 09:15

11 Q. Okay. You offered an expert 09:15
12 declaration in this IPR; is that correct? 09:15

13 A. Yes. 09:15

14 Q. Okay. Have you offered an 09:15
15 expert declaration in any other legal 09:15
16 proceedings? 09:15

17 A. Yes. 09:15

18 Q. Were those other legal 09:15
19 proceedings IPRs? 09:15

20 A. Yes, some of them, yeah. 09:15

21 Q. Some of them, okay. Okay. 09:15
22 We'll come back to that. 09:16

23 I want to take a moment just to 09:16

24 give you a little bit of instructions just 09:16

25 so we're on the same page with regard to 09:16



1 E. Kan, PhD
2 this deposition. 09:16
3 You'll see there's no 09:16
4 videographer here today, so everything 09:16
5 will be recorded by the court reporter. 09:16
6 Do you understand that? 09:16
7 A. Yes. 09:16
8 Q. And you're doing an excellent 09:16
9 job with this so far, but I would just ask 09:16
10 that we take our time and I'll ask my 09:16
11 questions, your attorney may object, and 09:16
12 then you'll answer. We'll try not to 09:16
13 speak over each other. 09:16
14 Is that okay? 09:16
15 A. That would be great. 09:16
16 Q. Okay. And, again, you're doing 09:16
17 an excellent job, but just note again for 09:16
18 the record, there is no videographer here 09:16
19 so you'll have to answer verbally. There 09:16
20 won't be any record of any kind of nods or 09:16
21 head shakes. 09:16
22 Do you understand that? 09:16
23 A. Understood. 09:16
24 Q. Okay. From time to time your 09:16
25 attorney may object, but I ask that unless 09:16



1 E. Kan, PhD
2 your attorney instructs you not to answer, 09:17
3 that you go ahead and answer my question 09:17
4 to the best of your ability. 09:17
5 Will you do that? 09:17
6 A. Yes. 09:17
7 Q. Is there any reason that you 09:17
8 can't give your full and accurate 09:17
9 testimony today? 09:17
10 A. Not to my knowledge. 09:17
11 Q. Okay. You're not sick today or 09:17
12 on any medications or anything like that? 09:17
13 A. I'm not on medication. Coughing 09:17
14 a little, but... 09:17
15 Q. Coughing a little, that's fair. 09:17
16 And you understand that we are 09:17
17 here today with regards to a challenge to 09:17
18 a patent, Number 10,231,644? 09:17
19 A. Yes. 09:17
20 Q. And is it okay with you if we 09:17
21 refer to that as the '644 patent? 09:17
22 A. Yes. 09:17
23 Q. And I have your declaration 09:17
24 here, which I'll share with you. 09:17
25 Well, let's go ahead and 09:18



1 E. Kan, PhD
2 introduce it right now. Let's do our 09:18
3 first exhibit, if we could. This is 09:18
4 actually going to be Tab B, but we'll call 09:18
5 this Exhibit 1 here, going forward. 09:18
6 MR. MOFFETT: Your call, do you 09:18
7 want to just use the exhibits that 09:18
8 PTAB already has? 09:18
9 MR. GLANDORF: Yes, let's 09:18
10 actually do that. That is a good 09:18
11 point. I was about to cross-reference 09:18
12 that with Amanda, but let's go ahead 09:18
13 and -- so we have exhibit numbers 09:18
14 already in this IPR so maybe, Amanda, 09:18
15 it makes sense just to use, as counsel 09:18
16 suggested here, those exhibit numbers. 09:18
17 Does that work for you? 09:18
18 THE COURT REPORTER: Sure. 09:18
19 Whatever you want. 09:18
20 MR. GLANDORF: Okay. So -- and 09:18
21 if you have the document, you'll see 09:18
22 it here in the lower right-hand 09:18
23 corner, but I'll make sure to announce 09:18
24 it each time. 09:18
25 So we're starting with Tab B 09:18

1 E. Kan, PhD
2 here. So this will be Exhibit 2006. 09:18
3 (Whereupon, Exhibit 2006, 09:18
4 Declaration of Edwin C. Kan, PH.D., 09:18
5 was marked for identification.) 09:18
6 BY MR. GLANDORF: 09:18
7 Q. Okay. So I'm going to hand -- 09:18
8 Dr. Kan, I'm going to hand you these 09:18
9 exhibits. And so as we go through the 09:18
10 deposition today, I'll be handing you 09:19
11 exhibits. You'll have a small -- small 09:19
12 stack with you, and you're free to refer 09:19
13 to them at any moment. 09:19
14 MR. MOFFETT: And do you have a 09:19
15 copy for me? 09:19
16 MR. GLANDORF: Oh, I do. Of 09:19
17 course. 09:19
18 MR. MOFFETT: Thank you. 09:19
19 BY MR. GLANDORF: 09:19
20 Q. Dr. Kan, do you recognize 09:19
21 Exhibit 2006? 09:19
22 A. Yes. 09:19
23 Q. This is a declaration you 09:19
24 submitted in this case, correct? 09:19
25 A. Yes. 09:19

1 E. Kan, PhD

2 Q. And let's just turn to the last 09:19

3 two pages if we could. 09:19

4 A. Okay. 09:20

5 Q. And on the last page, that's 09:20

6 your signature; is that right? 09:20

7 A. Yes. 09:20

8 Q. Okay. And then before that 09:20

9 signature, there is a conclusion 09:20

10 Paragraph 212. 09:20

11 Do you see that? 09:20

12 A. Yes. 09:20

13 Q. And in that statement you 09:20

14 declare that -- and I'm paraphrasing a 09:20

15 little, but you declare that your 09:20

16 statements made in this declaration are of 09:20

17 your own knowledge, are true, and that all 09:20

18 statements are made on information and 09:20

19 belief are believed to be true. 09:20

20 Do you see that? 09:20

21 A. Yes. 09:20

22 Q. And so, again, your signature 09:20

23 here on this declaration is your 09:20

24 indication that you believe these 09:20

25 statements in this declaration to be true; 09:20



1	E. Kan, PhD	
2	is that correct?	09:20
3	A. Yes.	09:20
4	Q. And in the course of the	09:20
5	deposition today, you understand that you	09:20
6	are also representing that your answers	09:20
7	here are true to the best of your	09:20
8	knowledge?	09:20
9	A. Yes.	09:20
10	Q. Let's talk a little bit about	09:20
11	your background to start with, if we	09:21
12	could.	09:21
13	A. Okay.	09:21
14	Q. Who is your current employer?	09:21
15	A. Cornell University.	09:21
16	Q. And what is your title?	09:21
17	A. Professor.	09:21
18	Q. Just full professor?	09:21
19	A. Full professor since 2009.	09:21
20	Q. Since when? I'm sorry.	09:21
21	A. Since 2009.	09:21
22	Q. What department are you in?	09:21
23	A. Electrical and computer	09:21
24	engineering.	09:21
25	Q. Do you have a research group?	09:21



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1 E. Kan, PhD

2 A. Yes. 09:21

3 Q. What areas does your research 09:21
4 group research? 09:21

5 A. Biosensors, mostly radio 09:21
6 sensors, how to use noninvasive radio 09:21
7 signals to get physiological signals out 09:21
8 of human or animal. 09:21

9 Q. You have doctoral students? 09:21

10 A. Yes. 09:22

11 Q. How many? 09:22

12 A. Presently four. 09:22

13 Q. Four? 09:22

14 A. Four. It's an evolving number. 09:22
15 People get in and this is the -- this is 09:22
16 the admission season, so -- but presently 09:22
17 four registered. 09:22

18 Q. And do you have postdoc 09:22
19 students? 09:22

20 A. No. 09:22

21 Q. Have you had postdocs in the 09:22
22 past? 09:22

23 A. Yes. 09:22

24 Q. Right now you don't have 09:22
25 postdocs? 09:22



1 E. Kan, PhD

2 A. Now I don't have postdoc. 09:22

3 Q. Do you have any other 09:22

4 administrators in your group, any other 09:22

5 personnel in your group that are specific? 09:22

6 A. No. 09:22

7 Q. Okay. Great. 09:22

8 Do you teach courses at Cornell? 09:22

9 A. Yes. 09:22

10 Q. What courses do you -- what 09:22

11 courses did you teach last year? Let's 09:22

12 start with that. 09:22

13 A. Last year I'm in my sabbatical, 09:22

14 so I didn't teach. 09:22

15 Q. Let's go back one more year. 09:22

16 What did you teach? 09:22

17 A. I teach two courses, one on the 09:22

18 radiofrequency systems, and the other 09:22

19 course I taught is VLSI design, very large 09:22

20 scale integrated systems. 09:23

21 Q. Okay. But both of those relate 09:23

22 to remote sensing of animals; is that 09:23

23 fair? 09:23

24 A. Related to, yes, yeah. 09:23

25 Q. Okay. 09:23

1 E. Kan, PhD

2 A. But VLSI design less related 09:23
3 than the RF systems. 09:23

4 Q. I'm going to ask you to explain 09:23
5 that a little bit more. How is that -- 09:23
6 I'm sorry. VASR? 09:23

7 A. VLSI, very large scale 09:23
8 integration, V-L, as in Larry. Yes. 09:23

9 Q. And how does VLSI relate to 09:23
10 remote sensing of animals? 09:23

11 A. VLSI systems are dealing with 09:23
12 integrated circuit design and the -- you 09:23
13 know, putting all the controlling 09:23
14 computing components to a silicon dye and 09:23
15 then the -- so it's basically the brain in 09:23
16 most of the system today, including this 09:23
17 computer and things (indicating). 09:24

18 So one of the things, there are 09:24
19 more mobile system around. Low power 09:24
20 design is a very critical aspect, so I -- 09:24
21 the course I go throughout the course, I 09:24
22 teach how in circuits level how power 09:24
23 consumption can be handled, which is one 09:24
24 of the aspects in this patent, '644. 09:24

25 Q. One of the aspects in the '644 09:24



1 E. Kan, PhD
2 patent is the management of power; is that 09:24
3 correct? 09:24
4 A. Yes, yes. 09:24
5 Q. What do you consider to be your 09:24
6 area of expertise? 09:24
7 MR. MOFFETT: Objection. Form. 09:24
8 A. Can you be a little more 09:24
9 specific? Sorry. 09:24
10 BY MR. GLANDORF: 09:24
11 Q. You're an expert witness in this 09:24
12 case. 09:24
13 A. Yes. 09:24
14 Q. With regards to this case, what 09:24
15 would you -- how would you describe your 09:24
16 area of expertise? 09:24
17 A. I consider my expertise as radio 09:25
18 systems, as I'm one of the course I teach, 09:25
19 and also probably system integration, how 09:25
20 for large system to be integrated 09:25
21 together. And then sensors, I do sensors 09:25
22 for my biomedical sensor for my research. 09:25
23 Q. What classes are you teaching 09:25
24 next year? 09:25
25 A. The coming fall should be, okay, 09:25



1 E. Kan, PhD
2 is Radio Frequency Systems. 09:25
3 Q. And so there's two different 09:25
4 classes you typically teach; is that fair? 09:25
5 A. For the last three years, yeah. 09:25
6 Q. And are either of those classes 09:25
7 undergrad classes? 09:25
8 A. These are the senior and master 09:25
9 level, so it's not a -- half of my class 09:25
10 usually is seniors; half class is master's 09:25
11 students. 09:26
12 Q. And is that true for both 09:26
13 classes? 09:26
14 A. VLSI Design probably have more 09:26
15 undergrad students than master's students. 09:26
16 Q. In the last five years, have you 09:26
17 consulted for any private companies? 09:26
18 A. Last five years? Consulting 09:26
19 as -- I -- I think yeah, yes, yeah -- 09:26
20 Q. Okay. Let's take a moment -- 09:26
21 A. -- as an expert witness. 09:26
22 Q. As an expert witness, I see. 09:26
23 A. Yes. 09:26
24 Q. Okay. Let's take a moment and 09:26
25 introduce one more exhibit here, which is 09:26



1 E. Kan, PhD
2 your CV. I don't need to give you a 09:26
3 memory test on your background here. 09:26
4 MR. GLANDORF: So, Amanda, this 09:26
5 is going to be -- this is located in 09:26
6 Tab J. I want to mark it as 2002. 09:27
7 (Whereupon, Exhibit 2002, 09:27
8 Curriculum Vitae Edwin C. Kan, was 09:27
9 marked for identification.) 09:27
10 BY MR. GLANDORF: 09:27
11 Q. Dr. Kan, as far as you know, is 09:27
12 Exhibit 2002 a copy of your CV as of 09:27
13 March 2024? 09:27
14 A. Yes. 09:27
15 Q. Okay. Have your research 09:27
16 interests changed since March 2024? 09:27
17 A. No. 09:27
18 Q. So let's go back to our 09:27
19 discussion about consulting. And, again, 09:27
20 this here is in case you need to refer to 09:28
21 it. 09:28
22 Aside from consulting -- aside 09:28
23 -- let me start again. 09:28
24 Aside from serving as an expert 09:28
25 witness, have you done any consulting for 09:28

1 E. Kan, PhD
2 private companies in the last five years? 09:28
3 A. No. 09:28
4 Q. You haven't in the last five 09:28
5 years assisted any companies in designing 09:28
6 a remote sensing system? 09:28
7 A. No. 09:28
8 Q. And then let's go back another 09:28
9 five years again. If we go back ten 09:28
10 years, in that time have you helped any 09:28
11 companies design any -- any private 09:28
12 companies design any systems? 09:28
13 A. Not to my memory. 09:28
14 Q. Okay. Just so I'm accurate 09:28
15 here, I think I referred to remote sensing 09:29
16 systems. What is the term of art that you 09:29
17 use to describe, you know, systems where 09:29
18 you're monitoring characteristics of 09:29
19 animals? 09:29
20 A. Say that again. I'm sorry. 09:29
21 Q. Yeah, I want to make sure I'm 09:29
22 using the right phrasing here. 09:29
23 A. Okay. 09:29
24 Q. Let's start this way. What is 09:29
25 the subject matter of the '644 patent? 09:29

1 E. Kan, PhD

2 A. Considering how to design a 09:29
3 bolus for monitoring the animals across 09:29
4 the animals' lifespan for their 09:29
5 physiological parameters. 09:29

6 Q. Okay. And so is there a name 09:29
7 you would use for that type of system, a 09:30
8 system where you're monitoring the 09:30
9 physiological parameters for a population 09:30
10 of animals? 09:30

11 A. I could use bolus sensors. 09:30

12 Q. Bolus sensors. Okay. 09:30

13 A. Within the '644 patent. 09:30

14 Q. Within the '644 patent. 09:30

15 But there are other sensors that 09:30
16 do not run on boluses, correct? 09:30

17 A. Yes. 09:30

18 Q. And so is there a more general 09:30
19 term for remote sensing of physiological 09:30
20 characteristics of animals? 09:30

21 A. Probably just sensors. 09:30

22 Q. Sensors, okay. 09:30

23 Have you yourself ever designed 09:30
24 a bolus sensor? 09:30

25 A. As in the '644, no. 09:30



1 E. Kan, PhD

2 Q. Have you developed any type of 09:30
3 remote sensor? 09:30

4 A. A lot of them, yeah. 09:30

5 Q. Okay. Have you developed remote 09:30
6 sensors for determining the physiological 09:31
7 characteristics of animals? 09:31

8 A. Yes. 09:31

9 Q. Okay. But just not in boluses; 09:31
10 is that right? 09:31

11 A. Yes. 09:31

12 Q. Okay. What types of sensors 09:31
13 have you developed? 09:31

14 A. Mostly wearables, this is 09:31
15 sensors for physiological parameters over 09:31
16 clothing that you can -- you can wear and 09:31
17 collect all the cardiopulmonary, muscle 09:31
18 actuation, whole nine yards. 09:31

19 Q. These are for humans; is that 09:31
20 correct? 09:31

21 A. Animals and humans. 09:31

22 Q. Okay. What type of animals are 09:31
23 wearing the clothing? 09:31

24 A. No, the animals for sure have no 09:31
25 clothing, but they have -- surface 09:31



1 E. Kan, PhD
2 coverings which disable most -- many of 09:31
3 the conventional sensors like ECG that 09:31
4 require a body electrode. And animal have 09:31
5 surface coverings, especially animals like 09:32
6 birds have feather, you cannot just shave 09:32
7 them. My sensors work for collecting 09:32
8 vital signs from birds. 09:32
9 Q. So I'd like to unpack a little 09:32
10 bit the types of animals that you 09:32
11 developed sensors for. I assume some of 09:32
12 them -- some of the sensors are for 09:32
13 humans; is that correct? 09:32
14 A. Yes. 09:32
15 Q. And then you mentioned also 09:32
16 birds? 09:32
17 A. There is a paper if you want me 09:32
18 to refer to. It's in Science Advances 09:32
19 2-0 -- 2019. So in that paper there's six 09:32
20 animals meant for demonstrating what kind 09:32
21 of animals are possible for my sensors. 09:32
22 Q. Okay. 09:32
23 A. This including reptile, birds, 09:32
24 amphibians -- I forgot. The list goes on. 09:32
25 It's... 09:32

1 E. Kan, PhD

2 Q. Do they -- have you developed 09:32
3 any sensors for livestock? 09:32

4 A. Yes, dairy cows. And chickens. 09:33

5 Q. And the remote sensors you 09:33
6 developed for dairy cows, were those also 09:33
7 a wearable? 09:33

8 A. Yes, on the harness. 09:33

9 Q. On the harness. Okay. 09:33

10 And for chickens, how are the 09:33
11 remote sensors? 09:33

12 A. Chickens is in the habitat. 09:33

13 Q. In the habitat, okay. 09:33

14 A. Different sensors have different 09:33
15 designs. 09:33

16 Q. And so over the last ten years, 09:33
17 has any of your research on remote sensors 09:33
18 led to a commercial product? 09:33

19 A. Not yet, but one of my PhD 09:33
20 student now having his own company in New 09:33
21 York City, try to commercialize the 09:33
22 sensor. I don't know how that count to -- 09:34
23 it's not -- there's no commercial product 09:34
24 yet, but there is a commercial company, 09:34
25 tried to commercialize the technology. 09:34



1 E. Kan, PhD

2 Q. And what type of sensors are 09:34
3 they currently trying to -- 09:34

4 A. The sensor I just described for 09:34
5 both for human and for animals. 09:34

6 Q. Okay. So is it limited to any 09:34
7 particular type of animal? 09:34

8 A. I cannot speak for the company. 09:34

9 Q. Okay. 09:34

10 A. Yeah. Yeah, but I know there 09:34
11 are both for people and animals. 09:34

12 Q. Okay. 09:34

13 A. And they are getting their IP 09:34
14 from Cornell because the intellectual 09:34
15 property of these biosensors belong to 09:34
16 Cornell. 09:34

17 Q. Let's look if we could at 09:34
18 Exhibit 2006. And, again, Exhibit 2006 is 09:34
19 your declaration submitted in this case, 09:35
20 correct? 09:35

21 A. Yes. 09:35

22 Q. You also submitted an earlier 09:35
23 declaration in this case as well; is that 09:35
24 right? 09:35

25 A. Yes. 09:35



1 E. Kan, PhD

2 Q. This declaration here is the -- 09:35
3 is the latter of the two? 09:35

4 A. Yes. 09:35

5 Q. Did you write this declaration 09:35
6 yourself? 09:35

7 A. Yes. 09:35

8 Q. Approximately how many hours did 09:35
9 you spend working on this declaration? 09:35

10 A. I don't have a record in front 09:35
11 of me, but probably 40, 50 hours. 09:35

12 Q. And how many hours, if any, did 09:35
13 you spend preparing for your deposition 09:35
14 today? 09:35

15 A. Can you define "preparation"? 09:35

16 Q. Yes. 09:35

17 Did you do any work to prepare 09:35
18 for sitting down and answering my 09:36
19 questions today? 09:36

20 A. I read my declaration, what I 09:36
21 wrote, probably two hour yesterday to 09:36
22 refresh my memory. 09:36

23 Q. And is that total about the time 09:36
24 you spent preparing for this deposition? 09:36

25 A. I would say so, yeah. 09:36



1 E. Kan, PhD

2 MR. GLANDORF: Let's go ahead 09:36
3 and introduce another exhibit. This 09:36
4 is from Tab A. It's going to be 09:36
5 Exhibit 1001. 09:36

6 (Whereupon, Exhibit 1001, US 09:36
7 Patent Number 10,231,644 B2, was 09:36
8 marked for identification.) 09:37

9 BY MR. GLANDORF: 09:37

10 Q. Are you familiar with 09:37
11 Exhibit 1001, Dr. Kan? 09:37

12 A. Yes. 09:37

13 Q. What is this exhibit? 09:37

14 A. It's the '644 patent that we 09:37
15 just talked about. 09:37

16 Q. And I believe you told me that 09:37
17 the subject matter of the '644 patent is a 09:37
18 bolus sensor; is that fair? 09:37

19 A. Yes. 09:37

20 Q. And you reviewed this patent in 09:37
21 detail, correct? 09:37

22 A. Yes, as a base for my document, 09:37
23 206 [sic]. 09:37

24 Q. As a base for your opinions in 09:37
25 this case? 09:37



1 E. Kan, PhD

2 A. Yes, totally. 09:38

3 Q. Do you know any of the inventors 09:38
4 on the '644 patent? 09:38

5 A. No, not personally. 09:38

6 Q. In your opinion what is the 09:38
7 invention that is claimed in the '644 09:38
8 patent? 09:38

9 MR. MOFFETT: Objection. Form. 09:38

10 A. As the claim is written, right, 09:38
11 so the 18, 19 claims. 09:38

12 BY MR. GLANDORF: 09:38

13 Q. Well, let's focus on claim 5. 09:38
14 So in your words, what is the invention 09:38
15 that's claimed in claim 5? 09:38

16 MR. MOFFETT: Objection to form. 09:38

17 A. The claim 5 is about how to do 09:38
18 the bolus sensors we talk about for the 09:38
19 physiological parameters, and then it 09:38
20 detailed to how the signal being processed 09:38
21 and coded, stored and communicated. 09:38

22 BY MR. GLANDORF: 09:38

23 Q. And what is your -- what is the 09:38
24 definition of the term "bolus" as used in 09:38
25 the '644 patent? 09:39



1 E. Kan, PhD

2 A. Something that's in the 09:39
3 reticulorumen of an animal, administered 09:39
4 through the mouth. 09:39

5 Q. And a bolus sensor is useful in 09:39
6 cattle; is that right? 09:39

7 A. Cattles, yeah. 09:39

8 Q. Are there other animals that you 09:39
9 know of that use bolus sensors? 09:39

10 A. In other animals, yeah, sure. 09:39
11 Depends how you call bolus. So there's 09:39
12 animals that have bolus sensors that going 09:39
13 through the digestive systems, right, 09:39
14 eating and spill out, and ruminant animals 09:39
15 is special because your bolus can stay 09:39
16 there. 09:39

17 Q. It can stay there for the 09:39
18 lifetime of the animal? 09:40

19 A. Yes. 09:40

20 Q. Let's go back to Exhibit 2006 if 09:40
21 we could. And I'm going to ask you to 09:40
22 turn to page -- I'm sorry. I'm going to 09:40
23 use paragraph numbers if that's okay with 09:40
24 you? 09:40

25 A. Yeah, sure. 09:40



1 E. Kan, PhD

2 Q. Let's look at Paragraph 19 if we 09:40
3 could. And so Paragraph 19 lays out the 09:40
4 person of skill in the art. 09:41

5 Do you see that? 09:41

6 A. Yes. 09:41

7 Q. And I'm going to read what 09:41
8 you've written here that the board has 09:41
9 determined is that a person of skill in 09:41
10 the art or POSA, P-O-S-A, as we often 09:41
11 abbreviate, so just let me know if I read 09:41
12 this correctly here. 09:41

13 So I'm looking at the third 09:41
14 sentence here, and you write that -- that 09:41
15 you understand that "the Board determined 09:41
16 that a POSA of the '644 Patent would have 09:41
17 had a bachelor's degree in electrical 09:41
18 engineering or related or equivalent 09:41
19 field, and three years of experience in 09:41
20 researching, developing, designing, and/or 09:41
21 evaluating sensor systems for humans or 09:41
22 other animals." 09:41

23 Did I read that correctly, 09:41
24 Doctor? 09:41

25 A. Yes. 09:41



1 E. Kan, PhD

2 Q. And is that the definition of a 09:41
3 person of skill in the art that you 09:41
4 applied in rendering your opinions in this 09:41
5 case? 09:41

6 A. Yes. 09:41

7 Q. And do you agree that that is 09:42
8 the -- let me try that again. 09:42

9 Do you agree that that is an 09:42
10 appropriate definition of a person of 09:42
11 skill in the art for the '644 patent? 09:42

12 A. Say that again, sorry. 09:42

13 Q. Do you agree with that 09:42
14 definition? 09:42

15 A. With the POSA definition? 09:42

16 Q. Yes. 09:42

17 A. Yes. 09:42

18 Q. If we look now at the face of 09:42
19 Exhibit 1001, the '644 patent, do you see 09:42
20 partway down on the left-hand column of 09:42
21 the front page is a filing date? 09:42

22 A. December 15, 2016. 09:42

23 Q. That's actually the prior 09:42
24 publication date. I think if you go -- 09:42

25 A. Oh, filed June 12, 2015. 09:43



1 E. Kan, PhD

2 Q. Yes. 09:43

3 As of June 12, 2015, were you 09:43
4 yourself a person of skill in the art? 09:43

5 A. Yes. 09:43

6 Q. Let's go if we could to your -- 09:43
7 and I apologize. I'm jumping around on 09:43
8 all the exhibits here, but let's go over 09:43
9 to your CV if we could, which is 09:43
10 Exhibit 2002. 09:43

11 A. Okay. Sure. 09:43

12 Q. And I'm not going to walk 09:43
13 through all of your professional 09:43
14 experience. I'll try to ask the question 09:43
15 this way, which is: At what point in your 09:43
16 professional experience did you begin 09:43
17 working on sensor systems for humans and 09:43
18 other animals? 09:43

19 A. At what point? 09:43

20 Q. Does that make sense? You have 09:43
21 listed here a number of entries under your 09:43
22 professional experience. 09:43

23 At what point here did you begin 09:43
24 working on sensors for humans or other 09:44
25 animals? 09:44



1 E. Kan, PhD

2 A. During my assistant professor, 09:44
3 starting '98, '99, I think. Yeah. 09:44

4 Q. Okay. And that was here at -- 09:44
5 here at Cornell? 09:44

6 A. Yes. 09:44

7 Q. Your PhD work at the University 09:44
8 of Illinois didn't involve sensors? 09:44

9 A. Sensors, no. 09:44

10 Q. Okay. At a high level, what was 09:44
11 your -- what was the topic of your PhD 09:44
12 study? 09:44

13 A. It is considering the technology 09:44
14 modeling of a CMOS systems. 09:44

15 Q. What is CMOS? 09:44

16 A. CMOS is like the basic construct 09:44
17 for integrated circuit today. I can 09:44
18 change that word to VLSI. 09:44

19 Q. Why would a person of skill in 09:45
20 the art want to monitor -- let me -- let 09:45
21 me reask this. 09:45

22 If we look at the '644 patent at 09:45
23 the ABSTRACT here, which is on the 09:45
24 right-hand column of the front page. 09:45

25 Do you see the ABSTRACT? 09:45



1 E. Kan, PhD

2 A. Yes. 09:45

3 Q. And the subject of that first 09:45
4 sentence is "An animal monitoring device." 09:45

5 Do you see that? 09:45

6 A. Yes. 09:45

7 Q. Why would a person of skill in 09:45
8 the art want to monitor an animal? 09:45

9 MR. MOFFETT: Objection. Form. 09:45

10 A. I don't think the question is 09:45
11 clear enough, okay. The company 09:45
12 apparently is -- want to know -- the value 09:45
13 of the device to know the health and 09:46
14 wellness of the animal for better 09:46
15 production, prevention of diseases and 09:46
16 things. 09:46

17 A POSA, I don't know why POSA 09:46
18 want to -- any POSA would want to develop 09:46
19 any such systems. 09:46

20 BY MR. GLANDORF: 09:46

21 Q. Okay. You were -- you were -- 09:46
22 in your answer you said you weren't sure 09:46
23 why a POSA would want to do it, but your 09:46
24 answer in terms of monitoring the health 09:46
25 of the animals, that was with regard to 09:46



1 E. Kan, PhD
2 the owners of the animal; is that fair? 09:46
3 A. Or the public health, right. 09:46
4 There are many zoonotic diseases where the 09:46
5 public is in the interest of the health of 09:46
6 the animals in addition to the animal 09:46
7 owners. 09:47
8 Q. And if I understood you 09:47
9 correctly, you're saying the animal owners 09:47
10 and the public are interested in the 09:47
11 physiological characteristics of the 09:47
12 various animals; is that fair? 09:47
13 MR. MOFFETT: Objection. Form. 09:47
14 A. Wellness, for animal cruelty, 09:47
15 and contagious disease for the public 09:47
16 health, yeah. 09:47
17 BY MR. GLANDORF: 09:47
18 Q. Okay. And so what are -- what 09:47
19 are some of the physiological 09:47
20 characteristics that an animal monitoring 09:47
21 device would measure? 09:47
22 A. There's many, many of the 09:47
23 possibilities. Basically is called the 09:47
24 vital signs. One of them can be vital 09:47
25 signs, saying the heart rate, respiration 09:47



1 E. Kan, PhD
2 rate, yeah, body temperature. Many, so 09:47
3 many things, I mean. 09:48
4 Q. And is it fair to say that when 09:48
5 you were monitoring those vital signs, for 09:48
6 example, that the animal owner would be 09:48
7 interested in whether those 09:48
8 characteristics were changing; is that 09:48
9 fair? 09:48
10 A. Yeah, fair. Yeah, how he 09:48
11 changed from -- but changes have two 09:48
12 definitions, though, right. One is the 09:48
13 time changes for the same animal or 09:48
14 changes from the common, right, the -- 09:48
15 from the healthy range, we usually talk 09:48
16 about. So that's a statistical number. 09:48
17 Q. I see. Let me just unpack that 09:48
18 a little bit here. So the first type of 09:48
19 change you're talking about is for a 09:48
20 particular animal, how do its vital signs 09:48
21 change over time; is that right? 09:48
22 A. Yes. 09:48
23 Q. Okay. And an animal monitoring 09:48
24 device would detect that by detecting a 09:49
25 change in the sensor over time; is that 09:49

1	E. Kan, PhD	
2	right?	09:49
3	A. Can you rephrase that again?	09:49
4	Sorry.	09:49
5	Q. Yes.	09:49
6	So in order to detect that a	09:49
7	vital sign changes over time for a	09:49
8	particular animal, the device would be	09:49
9	detecting a change in the sensor signal	09:49
10	over time; is that right? And I	09:49
11	apologize. I think I'm asking a very	09:49
12	basic question, maybe too basic.	09:49
13	A. Okay. The purpose of a sensor	09:49
14	is transducing an animal-related signal to	09:49
15	a -- you know, a signal's usually	09:49
16	electrical signals so that's the purpose,	09:49
17	so I believe that's what you're asking.	09:49
18	Q. And my question then is --	09:49
19	A. I'm not sure.	09:49
20	Q. -- in order to determine whether	09:49
21	there has been a change in a physical	09:49
22	characteristic, the monitoring system	09:50
23	would be looking for a change in the	09:50
24	sensor signal; is that fair?	09:50
25	A. Yeah, yes.	09:50

1 E. Kan, PhD

2 Q. Okay. And the second area you 09:50
3 mentioned was, I think, a difference 09:50
4 between a particular animal and what is 09:50
5 considered a healthy characteristic. Do 09:50
6 I -- is that a fair summary? 09:50

7 A. Yes, probably for animals it's 09:50
8 less common to people -- it's just like 09:50
9 our fever, right. Humans, what is my own 09:50
10 temperature change throughout the day or 09:50
11 whether I have a fever defined as the -- 09:50
12 you know, as the -- I have a fever. It's 09:50
13 higher than 37 degrees Celsius, but that's 09:50
14 a statistical number, right. So the 09:50
15 medical doctor regarded as that you have a 09:50
16 fever, not based on your own change, but 09:50
17 based on a comparison with a statistical 09:50
18 population number. 09:50

19 Q. Before we leave your background 09:51
20 here, you mentioned that you previously 09:51
21 offered written expert opinions in other 09:51
22 cases; is that correct? 09:51

23 A. Yes. 09:51

24 Q. How many over the last ten 09:51
25 years? 09:51



1 E. Kan, PhD

2 A. Lost count, probably on the 09:51
3 order of three. 09:51

4 Q. On the order of three? 09:51

5 A. Yeah. 09:51

6 Q. Okay. And were those all 09:51
7 involving patent matters? 09:51

8 A. Yes, yeah. 09:52

9 Q. And in each of those matters, 09:52
10 was the subject matter animal monitoring 09:52
11 devices? 09:52

12 A. No. 09:52

13 Q. Were animal monitoring devices 09:52
14 at issue in any of those patents? Did any 09:52
15 of the patents involve animal monitoring 09:52
16 devices? 09:52

17 A. That's the same question, right? 09:52

18 Q. I'm sorry. I thought I asked 09:52
19 you if all of them -- let me -- let me -- 09:52
20 let's go through them one by one. 09:52

21 How many of those cases involved 09:52
22 animal monitoring devices? 09:52

23 A. None. 09:53

24 Q. None. Okay. 09:53

25 What technologies did those 09:53



1	E. Kan, PhD	
2	cases involve?	09:53
3	A. What technology? Integrated	09:53
4	circuit. That's it.	09:53
5	Q. That's it?	09:53
6	A. Yeah.	09:53
7	Q. Okay. Okay. To your knowledge,	09:53
8	has there ever been a motion to have one	09:53
9	of your expert opinions excluded from a	09:53
10	case?	09:53
11	A. No.	09:53
12	Q. To your knowledge, has there	09:53
13	ever been a motion or other effort to	09:53
14	challenge your credentials to offer any of	09:53
15	those opinions?	09:53
16	A. No.	09:53
17	Q. Let's turn to claim 5 of the	09:54
18	'644 patent, if we could. This is	09:54
19	Exhibit 1001.	09:54
20	Do you have claim 5, Dr. Kan?	09:54
21	A. Yes, right in front of me.	09:54
22	Q. Okay. And I see in this there	09:54
23	is a preamble, and if we go to the first	09:54
24	paragraph after the preamble, it starts	09:54
25	with the word "generating."	09:54

1 E. Kan, PhD
2 Do you see that? 09:54
3 A. Yes. 09:54
4 Q. And it says, "generating a 09:54
5 sensor signal from one or more sensors 09:54
6 contained in a bolus." 09:54
7 And then it continues on, but 09:54
8 did I read that correctly? 09:54
9 A. Yes. 09:54
10 Q. And if you look at the total of 09:54
11 claim 5, it doesn't specify what type of 09:55
12 sensor signal is required; is that 09:55
13 correct? 09:55
14 A. As in the claim 5, no, yeah, 09:55
15 there's no -- didn't describe the sensors, 09:55
16 the type of sensors. 09:55
17 Q. It doesn't tell you, for 09:55
18 example, that you need to have a 09:55
19 temperature sensor; is that right? 09:55
20 A. Let me read through it. 09:55
21 Doesn't tell you about a 09:55
22 temperature sensor. It only talk about 09:55
23 physiological parameters, but temperature 09:55
24 is a physiological parameter. 09:55
25 Q. Temperature is a physiological 09:55



1 E. Kan, PhD
2 parameter, right. I agree with you there. 09:55
3 It doesn't -- but claim 5 09:55
4 doesn't require or doesn't specify any 09:55
5 type of physiological parameter, correct? 09:56
6 A. Yes. 09:56
7 Q. And I think you testified 09:56
8 earlier that there are a large number of 09:56
9 physiological parameters that can be 09:56
10 measured for an -- in an animal, correct? 09:56
11 A. Yes. 09:56
12 Q. Let's go on if we could to claim 09:56
13 6. 09:56
14 A. Okay. 09:56
15 Q. Claim 6, likewise, doesn't 09:56
16 specify the type of physiological 09:56
17 parameter that is being measured, correct? 09:56
18 A. That is accurate, yes. 09:56
19 Q. The same is true for claim 7 as 09:56
20 well? 09:56
21 A. Not mentioning specific 09:56
22 parameters, yes, within 5 to 7, claims 5 09:56
23 to 7. 09:57
24 Q. Through 5 to 7. Thank you. 09:57
25 Same question for claim 9, does 09:57

1 E. Kan, PhD

2 claim 9 explain the type of physiological 09:57

3 parameter that needs to be measured? 09:57

4 A. It's a long claim. Sorry. I'm 09:57

5 reading it. 09:57

6 Q. It's okay. 09:57

7 A. Claim 9 only talks about the 09:57

8 physiological parameters or physiological 09:57

9 data, not specific types of the 09:57

10 physiological parameters in claim 9. 09:57

11 Q. And does claim 10 have any 09:57

12 requirement for the type of physiological 09:57

13 parameter that's measured? 09:57

14 A. Nope, not in claim 10 -- 09:57

15 Q. Okay. 09:58

16 A. -- describing the antennas. 09:58

17 Q. If we look at your CV again, 09:59

18 this is Exhibit 2002. And I'm looking 09:59

19 under your "Research Interests," Number 1 09:59

20 here on the first page. 09:59

21 A. Yes. 09:59

22 Q. D 1, do you see that? 09:59

23 A. Yes. 09:59

24 Q. And, in fact, that -- the first 09:59

25 sentence of that paragraph lists a number 09:59



1	E. Kan, PhD	
2	of vital signs and internal tissue/muscle	09:59
3	motions; is that right?	09:59
4	A. Yes.	09:59
5	Q. These are examples of	09:59
6	physiological parameters that might be	09:59
7	measured by a remote sensor; is that fair?	09:59
8	A. Examples but not exclusive.	09:59
9	Q. The list is actually longer than	09:59
10	this. Is that what you're saying?	09:59
11	A. Yeah.	09:59
12	Q. How would one determine which	09:59
13	physiological parameters to measure for a	10:00
14	particular animal application?	10:00
15	MR. MOFFETT: Objection. Form.	10:00
16	A. Yeah, that is -- depends a lot,	10:00
17	right, so what the sensor's information --	10:00
18	what the physiological parameters will be	10:00
19	used for, how to evaluate either the	10:00
20	wellness or the pathology of the state,	10:00
21	there are too many possibilities to be	10:00
22	specific. You have to be asking me a	10:00
23	question that's more specific before I can	10:00
24	tell you, yeah.	10:00
25	Q. Let me ask it this way. What	10:00

1 E. Kan, PhD
2 are some of the factors that a person 10:00
3 would consider when deciding which 10:00
4 physiological parameters to cast for an 10:00
5 animal? 10:00
6 A. Say the question again. 10:00
7 Q. What are some of the factors a 10:00
8 person would consider when deciding which 10:00
9 type of vital signs and motions to detect? 10:01
10 MR. MOFFETT: Objection. Form. 10:01
11 A. This -- again, this is difficult 10:01
12 to answer because most animals have a 10:01
13 homeostasis state and, say, for a heart 10:01
14 disease, you don't have to measure from 10:01
15 the heart, because in order to adjust for 10:01
16 whatever that heart condition is, the body 10:01
17 have many, many feedback loops that you 10:01
18 can measure something in the feedback 10:01
19 loops to infer what the physiological 10:01
20 parameters should be. So -- so it's too 10:01
21 vague to answer it accurately. I'm sorry. 10:01
22 Okay. 10:01
23 Q. No. I understand. 10:01
24 A. Okay. 10:01
25 Q. And I understand it's a broad 10:01

1 E. Kan, PhD
2 question, so I'll try to break it down a 10:01
3 little bit so I can understand better. 10:01
4 Is it fair to say that -- okay. 10:01
5 Let me go back just to summarize one of 10:01
6 the things you said which was one of the 10:01
7 factors in deciding which physiological 10:01
8 parameters to detect is whether you were 10:02
9 looking at the wellness or a pathological 10:02
10 study of an animal; is that fair? 10:02
11 A. Yes, in general, yes. 10:02
12 Q. Okay. It would also depend on 10:02
13 the type of animal that you're monitoring, 10:02
14 correct? 10:02
15 MR. MOFFETT: Objection to form. 10:02
16 A. Type of animal, yeah, you can 10:02
17 say that. Different type of animal have 10:02
18 totally different homeostasis states, 10:02
19 so... 10:02
20 BY MR. GLANDORF: 10:02
21 Q. Another thing that a person 10:02
22 would consider when deciding which 10:02
23 physiological parameters to test for is 10:02
24 the form of the remote sensor; is that 10:02
25 fair? 10:02

1 E. Kan, PhD

2 A. Can you say that again? 10:02

3 Q. Yeah. The form of the remote 10:02
4 sensor? 10:02

5 A. Form of the remote sensor 10:02
6 meaning? 10:02

7 Q. Well, let's -- I want to make 10:02
8 sure my words are right here. 10:03

9 We -- you talked a little bit 10:03
10 about a bolus sensor? 10:03

11 A. Okay. 10:03

12 Q. You also talked about a wearable 10:03
13 sensor; is that correct? 10:03

14 A. Sure. 10:03

15 Q. I understand from your report 10:03
16 there is a mention in some of the 10:03
17 references about an ear tag sensor; is 10:03
18 that correct? 10:03

19 A. Yes. 10:03

20 Q. That's what I mean by form -- 10:03
21 and correct me if that's not the right 10:03
22 word. But one of the things a person 10:03
23 would consider when determining which 10:03
24 physiological parameters to test for is 10:03
25 the form of the sensor; is that fair? 10:03

1 E. Kan, PhD

2 A. A form of the sensor will 10:03
3 determine whether that physiological 10:03
4 parameter can be measured or not and also 10:03
5 determine the invasiveness to the animal. 10:03

6 MR. GLANDORF: I want to 10:04
7 introduce a new exhibit here, which is 10:04
8 Tab F, and it is Exhibit 1004. 10:04

9 (Whereupon, Exhibit 1004, 10:04
10 International Publication Number WO 10:04
11 2008/108816, was marked for 10:04
12 identification.) 10:04

13 BY MR. GLANDORF: 10:04

14 Q. Do you recognize Exhibit 1004, 10:04
15 Dr. Kan? 10:04

16 A. Yes, I read it thoroughly. 10:04

17 MR. GLANDORF: And I'll note for 10:05
18 the record here that this is an 10:05
19 International Patent Publication 10:05
20 that's marked with International 10:05
21 Publication Number WO 2008/108816. 10:05

22 BY MR. GLANDORF: 10:05

23 Q. Did I read that correctly? 10:05

24 A. A1, yeah. 10:05

25 Q. A1, correct. Thank you. 10:05



1	E. Kan, PhD	
2	And if you look on the left-hand	10:05
3	side, there is like a Line (75) that	10:05
4	indicates some of the inventors.	10:05
5	Do you see that?	10:05
6	A. Yes.	10:05
7	Q. And the first inventor is	10:05
8	someone with the last name Harvey.	10:05
9	Do you see that?	10:05
10	A. Yes.	10:05
11	Q. And so this Exhibit 1004 is what	10:05
12	you refer to in your opinion as "Harvey";	10:05
13	is that right?	10:05
14	A. Yes, in my declaration.	10:05
15	Q. In your declaration. Thank you.	10:05
16	And so are you okay if I refer	10:05
17	to this exhibit as "Harvey"?	10:05
18	A. That would be great.	10:05
19	Q. Okay. Do you know any of the	10:05
20	inventors on Harvey?	10:05
21	A. Nope.	10:05
22	Q. And Harvey was published on	10:06
23	September 12, 2008.	10:06
24	Do you see that? On the top	10:06
25	left of the document?	10:06

1	E. Kan, PhD	
2	A. Yes. You mean the September 12,	10:06
3	2008.	10:06
4	Q. September 12, 2008 is the	10:06
5	publication date, correct?	10:06
6	A. Yes.	10:06
7	Q. And you understand that Harvey	10:06
8	is prior art to the '644 patent?	10:06
9	A. Yes. Yeah.	10:06
10	Q. You're not --	10:06
11	A. 2008 versus 2018 -- '15.	10:06
12	Q. You're not disputing that Harvey	10:06
13	is prior art to the '644 patent, correct?	10:06
14	A. Say that again.	10:06
15	Q. You're not disputing that fact?	10:06
16	A. No.	10:06
17	Q. My paragraph numbers are a	10:06
18	little wonky in this. I'm going to	10:08
19	actually refer to a page number here if we	10:08
20	could. Can we go to page Number 41?	10:08
21	A. On 1004?	10:08
22	Q. Yes.	10:08
23	A. Say it again.	10:08
24	Q. Page 41 of Exhibit 1004.	10:08
25	A. Okay.	10:08

1 E. Kan, PhD

2 Q. I'm going to be looking at 10:08

3 Paragraphs 99 and 100 on Page 41. 10:08

4 A. Okay. 10:09

5 Q. If you want to take a moment and 10:09

6 read through those paragraphs and then 10:09

7 I'll -- 10:09

8 A. Okay. 10:09

9 I finished reading. 10:10

10 Q. Okay. So let's get a little 10:10

11 background here before we get into this. 10:10

12 There is a reference here to XPDR 5000. 10:10

13 Do you see that? 10:10

14 A. Yes. 10:10

15 Q. Do you understand that to be a 10:10

16 transponder, as Harvey uses the term? 10:10

17 A. Within Harvey's definition, yes. 10:10

18 It's a signal transponder. 10:10

19 Q. A signal transponder. Okay. 10:11

20 And, again, you may want to keep 10:11

21 a finger or a mark in that place, but 10:11

22 we'll come back to it here. 10:11

23 If we go to the front page of 10:11

24 Harvey and I look at the Abstract, the 10:11

25 very first words of the first lines of the 10:11

1 E. Kan, PhD
2 abstract, it talks about an RF intelligent 10:11
3 active tag. 10:11
4 Do you see that? 10:11
5 A. Yes. 10:11
6 Q. And what is an intelligent 10:11
7 active tag? 10:11
8 A. Active means it has its own 10:11
9 power source, in the electrical 10:11
10 engineering language. RF for short 10:11
11 meaning radiofrequency. Intelligence 10:11
12 means a system that can make sensing and 10:11
13 computing and decisions. 10:11
14 Q. And Harvey uses the abbreviation 10:11
15 IAT for intelligent active tag; is that 10:11
16 right? 10:11
17 Do you recall that? 10:11
18 A. Yes. I actually don't remember 10:11
19 that, that acronym, but... so we can call 10:11
20 it IAT. 10:12
21 Q. Well, again, let's make sure 10:12
22 we're on the same page here. 10:12
23 A. Okay. 10:12
24 Q. If you would turn to your 10:12
25 report, to Exhibit 2006. 10:12

1 E. Kan, PhD

2 A. Okay. 10:12

3 Q. I will refer you to Paragraph 10:12

4 62. 10:12

5 A. 62. Okay. 10:12

6 Q. That first sentence you indicate 10:12

7 that Harvey -- it uses the abbreviation 10:12

8 IAT for intelligent active tag. 10:12

9 Do you see that? 10:12

10 A. Okay. Okay. Sorry. Don't 10:12

11 remember. 10:12

12 Q. No problem. There is a lot of 10:12

13 information here. 10:12

14 A. Yeah. 10:12

15 Q. Okay. And so in Harvey's 10:12

16 disclosure, an intelligent active tag 10:13

17 includes a power source and a transponder; 10:13

18 is that right? 10:13

19 A. Yes. 10:13

20 Q. And so XPDR 5000 is a 10:13

21 transponder? 10:13

22 A. Yes. In Harvey's patent. 10:13

23 Q. And what is a transponder? 10:13

24 A. Transponders are processing 10:13

25 signals -- processing and communication of 10:13

1 E. Kan, PhD
2 the signals. 10:13
3 Q. And is that a term that's used 10:13
4 not just in Harvey but throughout? That's 10:13
5 a term that a person of skill in the art 10:13
6 would use, a transponder? 10:13
7 MR. MOFFETT: Objection. Form. 10:13
8 A. Yes, it's a text -- it can be a 10:13
9 textbook term, not only a textbook term. 10:14
10 BY MR. GLANDORF: 10:14
11 Q. Is there another term that -- 10:14
12 A. Transceivers. 10:14
13 Q. Transceivers, okay. 10:14
14 If you look -- and we can just 10:14
15 use your report if you'd like. If we can 10:14
16 just look at the next paragraph in your 10:14
17 report, Paragraph 63. 10:14
18 A. Okay. 10:14
19 Q. Do you see in Paragraph 63 10:14
20 you've reduced Figure 5? 10:14
21 A. Of Harvey? 10:14
22 Q. Figure 5 of Harvey, correct. 10:14
23 A. Yes. 10:14
24 Q. And Figure 5 of Harvey 10:14
25 corresponds to XPDR 5000, correct? 10:14

1 E. Kan, PhD

2 A. Yes. 10:14

3 Q. One of the roles of XPDR 5000 is 10:14
4 to accept inputs from sensors; is that 10:15
5 right? 10:15

6 MR. MOFFETT: Objection. Form. 10:15

7 A. In the parts 5300. 10:15

8 BY MR. GLANDORF: 10:15

9 Q. I'm sorry. Is that a yes? 10:15

10 So I just want to make sure the 10:15
11 record is clear. You're pointing to 5300. 10:15
12 That's where XPDR 5000 is accepting inputs 10:15
13 from sensors? 10:15

14 A. Interacting with the sensors, 10:15
15 yes. 10:15

16 Q. Interacting with the sensors. 10:15
17 What types of interactions is it 10:15
18 performing with sensors? 10:15

19 A. Too many possibilities. 10:15

20 Q. One of the interactions is that 10:15
21 it is accepting sensor readings; is that 10:15
22 fair? 10:15

23 A. Yes. 10:15

24 Q. Okay. And there is an 10:15
25 indication here in Figure 5, there is a 10:16

1 E. Kan, PhD
2 Sensor #1 and a Sensor #2 and it goes all 10:16
3 the way down to Sensor #N. 10:16
4 Do you see that? 10:16
5 A. Yes. 10:16
6 Q. And that's just an indication 10:16
7 that it can accept some undefined number 10:16
8 of sensors? 10:16
9 A. Yes. 10:16
10 Q. And if we are looking at -- 10:16
11 A. Also do notice that there, the 10:16
12 box, the transponder is only in the 10:16
13 innermost box. So not all sensors are 10:16
14 within the transponders as in the Harvey's 10:16
15 teaching. 10:16
16 Q. I see. So I don't think I 10:16
17 appreciated that. Let me make sure I'm 10:16
18 understanding. 10:16
19 A. You're specifically asking about 10:16
20 XPDR 5000, and that is the innermost box 10:16
21 that's drawn. 10:16
22 Q. That's drawn? 10:16
23 A. So that is clearly marked in 10:16
24 that inner box lower right corner. 10:17
25 Q. I see. It says, "TRANSPONDER 10:17

1 E. Kan, PhD

2 (XPDR)." That's what you're looking at in 10:17
3 the right-hand corner? 10:17

4 A. Yes. 10:17

5 Q. And so there are some sensors 10:17
6 inside the transponder and some sensors 10:17
7 outside the transponder? 10:17

8 A. In Figures 5 of Harvey's, yeah. 10:17

9 Q. It's not specifying what number 10:17
10 there are inside or outside, correct? 10:17

11 A. Yes. 10:17

12 Q. Okay. And it just says 10:17
13 "sensor." It doesn't give an indication 10:17
14 of what type of sensor; is that correct? 10:17

15 A. Not within the figure, but in 10:17
16 the Harvey's other description, he 10:17
17 actually give a list of sensors. But not 10:17
18 in the figure, no. Which actually I just 10:17
19 actually read Page 41 of Harvey, give the 10:17
20 list of sensors over there. You just 10:17
21 asked me to read that 20 minutes ago. 10:18

22 Q. I agree. 10:18

23 So you're looking -- let's go 10:18
24 back to that then. Let's go back to Page 10:18
25 41. If we're looking at Harvey Paragraph 10:18



1 E. Kan, PhD
2 99 on Page 41, this gives some examples of 10:18
3 different sensors that can be used with 10:18
4 XPDR 5000? 10:18
5 MR. MOFFETT: Objection. Form. 10:18
6 A. Yes. 10:18
7 BY MR. GLANDORF: 10:18
8 Q. It's not an exhaustive list, 10:18
9 though, correct? 10:18
10 A. It's not exhaustive list, to my 10:18
11 knowledge. 10:18
12 Q. In fact -- 10:18
13 A. I certainly cannot say whether 10:18
14 this is to Harvey that is true, but to me, 10:18
15 that is not exhaustive list. 10:18
16 Q. Well, I think to Harvey as well, 10:18
17 right, because we looked at the first few 10:18
18 words in that paragraph. It says 10:18
19 "non-limiting examples," correct? 10:18
20 A. Sure. 10:18
21 Q. Okay. So it would be up to the 10:18
22 designer to choose which types of sensors 10:18
23 to use with XPDR 5000, correct? 10:19
24 A. Say that again, sorry. 10:19
25 Q. It would be up to the designer 10:19

1 E. Kan, PhD
2 to choose which type of sensors to use 10:19
3 with XPDR 5000, correct? 10:19
4 A. Yes, yeah. 10:19
5 Q. And if we look here in Paragraph 10:19
6 100 -- 10:19
7 A. Paragraph 100 of what? 10:19
8 Q. -- of Harvey. 10:19
9 A. Okay. Got it. 10:19
10 Q. Still on Page 41 of Harvey, 10:19
11 Exhibit 1004. If we look at 10:19
12 Paragraph 100, Harvey is describing some 10:19
13 of the considerations that a designer 10:19
14 would use when deciding which sensors to 10:19
15 include for a particular application; is 10:19
16 that fair? 10:19
17 A. Yes. 10:19
18 Q. Okay. And so some of these 10:19
19 include, again without limitation, the 10:19
20 intended transponder environment; the 10:19
21 transponder application, or expected 10:19
22 transponder lifespan; the monitored 10:19
23 subject lifespan; power availability, 10:19
24 power renewability or energy harvesting 10:20
25 ability; sensor type, location or 10:20

1 E. Kan, PhD
2 sturdiness; data generation, data storage 10:20
3 or data offloading; telemetry burden; or 10:20
4 cost. 10:20
5 Those are some of the factors 10:20
6 that Harvey identifies that would be 10:20
7 considered when deciding what sensors to 10:20
8 include for an application? 10:20
9 A. Yes. 10:20
10 Q. And if I look further down to 10:20
11 the sentence below, it says that "In view 10:20
12 of the teachings herein, it may become 10:20
13 apparent that, in general, sensors used 10:20
14 with various embodiments of XPDR 5000 may 10:20
15 be selected pragmatically from a 10:20
16 full-range of suitable mechanical, 10:20
17 electrical, optical, chemical, or 10:20
18 biological sensors, which may be 10:20
19 implemented using, implanted, 10:20
20 minimally-invasive, microsensor or MEMS 10:21
21 technologies." 10:21
22 Did I read that right? 10:21
23 A. Yes. 10:21
24 Q. Do you agree with that 10:21
25 statement? 10:21

1 E. Kan, PhD

2 MR. MOFFETT: Objection. Form. 10:21

3 A. To? 10:21

4 BY MR. GLANDORF: 10:21

5 Q. I'll ask a different question. 10:21

6 Do you agree that a person of 10:21

7 skill in the art would be able to 10:21

8 pragmatically select from the range of 10:21

9 various sensors based on some of the 10:21

10 considerations identified here by Harvey? 10:21

11 MR. MOFFETT: Objection. Form. 10:21

12 A. Yeah. Harvey in Paragraph 10 10:21

13 describe a lot of things. And that will 10:21

14 give the POSA, they will know where to 10:21

15 start. Okay. So it's -- it's almost -- 10:21

16 it read to me like a beginning paragraph 10:21

17 of a sensor textbook. 10:21

18 BY MR. GLANDORF: 10:21

19 Q. Okay. Is it your opinion that a 10:21

20 POSA would not be able to determine what 10:21

21 type of sensors would be useful in a 10:21

22 particular application? 10:22

23 A. Not based on Paragraph 10, no. 10:22

24 Q. They wouldn't be able to do 10:22

25 it -- and I think it's 100, but they 10:22



1 E. Kan, PhD

2 wouldn't be able to do it based on 10:22

3 Paragraph 100? 10:22

4 A. Oh, yeah, paragraph -- yes, 10:22

5 because it's too general. 10:22

6 Q. Okay. Let's step away from 10:22

7 that. 10:22

8 When a person of skill is 10:22

9 designing a remote sensing application, 10:22

10 would it be within their knowledge and 10:22

11 expertise to be able to determine the type 10:22

12 of sensors that would be appropriate for 10:22

13 an application? 10:22

14 A. I don't understand the question. 10:22

15 I'm really sorry. 10:22

16 Q. Yeah, I'll ask it again. That's 10:22

17 fine. 10:22

18 A. Yeah. 10:22

19 Q. And part of what I'm getting to 10:22

20 just to let you know is we have this 10:22

21 definition of person of skill in the art. 10:22

22 As you told me, different applications 10:22

23 require different sensors. And the 10:22

24 question I'm trying to get to is whether 10:22

25 that's something that a person of skill in 10:22



1 E. Kan, PhD
2 the art is able to do, is to select the 10:23
3 right sensors for a particular application 10:23
4 or is that something that would be an 10:23
5 invention? 10:23
6 Let me ask the question again. 10:23
7 Is it within the skill of a person of 10:23
8 skill in the art, as defined in this case, 10:23
9 to determine the sensors that would be 10:23
10 appropriate for particular animal sensing 10:23
11 application? 10:23
12 MR. MOFFETT: Objection. Form. 10:23
13 A. Can be his wish. Doesn't mean 10:23
14 it can work. 10:23
15 BY MR. GLANDORF: 10:23
16 Q. Right. 10:23
17 A. So if you're asking whether he 10:23
18 knows what he wants to sense, if he 10:23
19 doesn't know that, he's not even a POSA, 10:23
20 right? But whether he can accomplish the 10:23
21 sensing function together with all the 10:23
22 following system configurations, no, yeah, 10:23
23 there's too little information here. 10:23
24 Q. Harvey in your opinion doesn't 10:23
25 teach a -- 10:23

1 E. Kan, PhD

2 A. No, within Paragraph 100. 10:23

3 Q. Yes. 10:23

4 A. Okay. Harvey is a document of 10:24

5 91 pages. 10:24

6 Q. I understand. It is very large. 10:24

7 MR. GLANDORF: Let's go ahead -- 10:24

8 I can use a break. Take a break. 10:24

9 Take a break every hour or so. 10:24

10 THE COURT REPORTER: We are off 10:24

11 the record. 10:24

12 (Recess taken.) 10:37

13 THE COURT REPORTER: Back on the 10:37

14 record. 10:37

15 BY MR. GLANDORF: 10:37

16 Q. Dr. Kan, just to follow up a 10:37

17 little bit on something that we talked 10:37

18 about earlier. You said that you have 10:37

19 designed a number of wearable sensors for 10:37

20 animals; is that correct? 10:37

21 A. Yes. 10:37

22 Q. You never designed a bolus 10:37

23 sensor though, correct? 10:37

24 A. True. I never designed a bolus 10:37

25 sensor. 10:37

1 E. Kan, PhD

2 Q. With regard to the wearable 10:37
3 sensors that you designed, do they have 10:37
4 transponders? 10:38

5 A. Yes. 10:38

6 Q. Always? 10:38

7 A. No, not always. 10:38

8 Q. If it didn't have a transponder, 10:38
9 how would it -- is there some other 10:38
10 instrument that you would use? 10:38

11 A. Yeah. You store the 10:38
12 physiological data locally through a 10:38
13 nonvolatile memory, and so you don't send 10:38
14 a signal out of the sensor unit. 10:38

15 Q. I understand. 10:38

16 A. But you only retrieve 10:38
17 afterwards. 10:38

18 Q. And during the break, did you 10:38
19 discuss the substance of your testimony 10:38
20 with your counsel at all? 10:38

21 A. No. We were talking about 10:38
22 Taiwan. 10:38

23 Q. Let's look back at Figure 5 of 10:38
24 Harvey. And, again, we can turn in Harvey 10:38
25 if that's useful, but it's also reproduced 10:38



1 E. Kan, PhD
2 in your report. 10:39
3 A. Okay. Either way. 10:39
4 Q. Okay. And which -- just for the 10:39
5 record which exhibit are you looking at? 10:39
6 A. 2006. 10:39
7 Q. Okay. And you're on -- which 10:39
8 page are you on? 10:39
9 A. It's Paragraph 63 of Page 33. 10:39
10 Q. Now, what is Element 5110 in 10:39
11 Figure 5? 10:39
12 A. 5110, okay. There are two 10:39
13 markings there, the smaller, 5110 -- oh, 10:39
14 that's 5100, okay. 5110 contains the 10:39
15 modules that directly interacting with the 10:39
16 microcontroller, which is 5110. 10:39
17 Q. 5110 is the microcontroller. 10:40
18 A. Yes. 10:40
19 Q. And it's -- I guess that's the 10:40
20 micro prefix and capital C? That's 10:40
21 microcontroller. Is that what I'm looking 10:40
22 at? 10:40
23 A. It's a typo. It's a U. It 10:40
24 should be a M μ . 10:40
25 Q. M μ ? 10:40

1 E. Kan, PhD

2 A. Yeah. 10:40

3 Q. It should be μ C. Okay. But 10:40
4 that is the microcontroller; is that 10:40
5 right? 10:40

6 A. Yes. 10:40

7 Q. Okay. And then the 5100 box, 10:40
8 what is that comprising? 10:40

9 A. It's the media units that are 10:40
10 interacting with the microcontroller. 10:40

11 Q. Okay. 10:40

12 A. There are eight of them. 10:40

13 Q. And is a microcontroller a 10:40
14 microprocessor? 10:40

15 A. Can be, okay. So that 10:40
16 definition actually is -- is rather smear 10:40
17 at the boundary. Some microcontroller are 10:40
18 microprocessor. Some microprocessor can 10:40
19 be microcontroller. The usual definition 10:41
20 difference between microcontroller and 10:41
21 microprocessor is microcontroller will 10:41
22 take in another system's input while 10:41
23 microprocessor is more for computing. 10:41
24 Computing and computing only. 10:41

25 Q. One of the inputs into the 5110 10:41

1 E. Kan, PhD

2 is data from the sensor module, correct? 10:41

3 A. Yes, as indicated in the figure 10:41
4 with a signal -- signal path on the sensor 10:41
5 module. 10:41

6 Q. There is data passing from the 10:41
7 sensor module into the microcontroller, 10:41
8 correct? 10:41

9 A. Yes. 10:41

10 Q. When we use the term "data," are 10:41
11 you referring to digital data? 10:42

12 A. Not necessarily. 10:42

13 Q. What other type of data could it 10:42
14 be? 10:42

15 A. It can be analog or digital or 10:42
16 anything that can draw information from. 10:42
17 It can be a mix, can be mixed 10:42
18 analog/digital. 10:42

19 Q. Is "analog data" a term that you 10:42
20 use in your work? 10:42

21 A. Yes. 10:42

22 Q. Let's look back at Harvey now, 10:42
23 if we could, and I'm going to go to 10:42
24 Paragraph -- I'm sorry, Page 38 of Harvey 10:42
25 which is Exhibit 1004. 10:43

1 E. Kan, PhD

2 A. Okay. 10:43

3 Q. Let's go to Line 25 if we could. 10:43

4 It starts off with the word "non-limiting 10:43

5 examples." 10:43

6 Do you see that? 10:43

7 A. Yes. 10:43

8 Q. And it's talking about 10:43

9 non-limiting examples of a quantitative 10:43

10 attribute. 10:43

11 Do you see that? 10:43

12 A. Yes. 10:43

13 Q. And what is listed in that 10:43

14 sentence is examples of sensor data; is 10:43

15 that fair? 10:43

16 A. Let me read it. 10:43

17 Q. Yeah, sure. 10:43

18 A. So in the Paragraph 25, the 10:44

19 sensor data can be from acceleration value 10:44

20 which is typically measured by something 10:44

21 called the same thing as the inertial 10:44

22 measurement unit, IMU. Corpus 10:44

23 temperature, okay, has been vague here, 10:44

24 whether it's internal or external 10:44

25 temperature, but it's a temperature. And 10:44



1 E. Kan, PhD
2 the pulse rate and inertial -- inertial 10:44
3 movement. I believe that's just movement, 10:44
4 okay. Yeah, so those are the examples 10:44
5 given in Paragraph 25. 10:44
6 Q. So let's talk about some of 10:44
7 these. How -- what type of sensor would 10:44
8 be used to determine a temperature? 10:44
9 A. Say it again. 10:45
10 Q. What type of sensor would be 10:45
11 used to determine a temperature? 10:45
12 A. A temperature sensor, yeah. 10:45
13 Q. How does that -- what is a 10:45
14 temperature sensor? Can you give me an 10:45
15 example of a temperature sensor? 10:45
16 A. There are many, many ways. Many 10:45
17 phenomenon depends on temperature and we 10:45
18 can use that to transduce the temperature 10:45
19 signal to electrical signals. I actually 10:45
20 in my declaration talk that specifically, 10:45
21 thermocouples and all of these 10:45
22 possibilities. 10:45
23 Q. Thermocouples and thermistors? 10:45
24 A. Thermistors. There are other 10:45
25 examples not limiting. 10:45

1 E. Kan, PhD

2 Q. Let's start with a thermocouple. 10:45
3 What is the signal that's coming out of a 10:45
4 thermocouple that allows one to determine 10:45
5 temperature? 10:45

6 A. The signal does not -- 10:45
7 thermocouples are two different kinds of 10:45
8 metals and based on their difference in 10:46
9 work functions, which is a function of the 10:46
10 temperature, that you can detect the 10:46
11 temperature where the thermocouples reside 10:46
12 in, but it does not give out signals 10:46
13 directly. 10:46

14 Q. It does not -- it does not 10:46
15 report a degree of centigrade, for 10:46
16 example? 10:46

17 A. No. 10:46

18 Q. What do you measure out of a 10:46
19 thermocouple? 10:46

20 A. You have to do an excitation 10:46
21 signal, to measure a current-voltage 10:46
22 characteristics of the thermocouple, and 10:46
23 then from that you transduce into a 10:46
24 temperature reading. 10:46

25 Q. It's a voltage; is that right? 10:46



1 E. Kan, PhD

2 A. It depends. It can be voltage 10:46
3 or current. But in circuit these are 10:46
4 interchangeable through -- through a -- 10:46
5 with anything with an impedance. 10:46

6 Q. A thermistor, what is the value 10:46
7 that comes out of a thermistor? 10:46

8 A. What is the value coming -- 10:47
9 eventual thing is still you want -- 10:47
10 thermistor meaning that the resistance of 10:47
11 a material changes with temperature, 10:47
12 right, so we measure again. We use a test 10:47
13 signal, can be called current or voltage, 10:47
14 measure vice versa of the voltage or 10:47
15 current not getting the resistance from 10:47
16 the measure resistance map into whatever 10:47
17 thermistor is reside in, the temperature 10:47
18 the thermistor is residing. 10:47

19 Q. You're measuring resistance in 10:47
20 the first level? 10:47

21 A. Measuring resistance, yes. 10:47

22 Q. Within the first level? 10:47

23 A. Which is divide by voltage over 10:47
24 current for the two port circuits. 10:47

25 Q. And how is acceleration 10:47



1 E. Kan, PhD

2 measured? 10:47

3 A. Again, there are different ways. 10:47

4 Okay. So one example, okay, is, like, you 10:47

5 have a proof mass, and based on the proof 10:47

6 mass, the motion, and you have, say, two 10:47

7 other electrodes around a conductive proof 10:47

8 mass, when the proof mass other 10:48

9 acceleration going to the left or right, 10:48

10 you can measure that acceleration, yeah. 10:48

11 Q. Okay. Is that how it's most 10:48

12 commonly done? 10:48

13 A. Most commonly, that's hard to -- 10:48

14 hard to say, okay. Inertia for sure is of 10:48

15 great importance in many things other than 10:48

16 biosensors. So I cannot be so specific 10:48

17 here. 10:48

18 Q. Is that how it's most commonly 10:48

19 done with regard to biosensors? 10:48

20 A. Again, I -- I cannot answer that 10:48

21 as something -- it really depends. There 10:48

22 are too many things related to the -- it 10:48

23 depends on the range of the acceleration 10:48

24 and things. All have different 10:48

25 sensitivity and cross-interferers and 10:48



1 E. Kan, PhD
2 things. So I won't be able to narrow down 10:48
3 to one specific sensor construction yet. 10:48
4 Q. There's not a most common. So 10:49
5 just so I understand, you're saying 10:49
6 there's not a -- there's not a most common 10:49
7 method of measuring acceleration value in 10:49
8 biosensors; is that fair? 10:49
9 A. Can you repeat that question? 10:49
10 Q. There's not -- there's not a 10:49
11 most common method of measuring 10:49
12 acceleration in biosensors. 10:49
13 Is that what your testimony is? 10:49
14 A. Most common. 10:49
15 MR. MOFFETT: Objection to the 10:49
16 form. 10:49
17 A. Yeah, so, for biosensors, I 10:49
18 don't know how common it is, so, no, not 10:49
19 to my knowledge. I didn't study, you 10:49
20 know, like, the market share of all the 10:49
21 sensors and biosensors for inertia 10:49
22 movement and then what is the percentage 10:49
23 of using the principle I just introduced. 10:49
24 It's a popular one. I can use that word. 10:49
25 BY MR. GLANDORF: 10:49

1 E. Kan, PhD

2 Q. Fair enough. 10:49

3 How would one measure the 10:49

4 cardiac pulse rate in a bio -- for a 10:49

5 biosensor? 10:50

6 A. Again, there are many 10:50

7 possibilities because these are pulse 10:50

8 rate, right. The -- so let's give an 10:50

9 example of a PPG, oximetry. You measure 10:50

10 the oxygen level in your blood, and 10:50

11 because of your pulse, it has a different 10:50

12 transient. And from that waveform, you 10:50

13 can derive a pulse rate. It's one 10:50

14 example. There are many other ways. 10:50

15 Q. You testified earlier that it's 10:50

16 your opinion that Sensor 1 may output 10:50

17 analog data to the microcontroller? 10:50

18 A. It can, yeah, possible. 10:50

19 Q. With regard to the cardiac pulse 10:50

20 rate, is there a way that the sensor could 10:51

21 deliver a signal to the microcontroller 10:51

22 that reports the cardiac pulse rate using 10:51

23 an analog signal? 10:51

24 A. Yes. 10:51

25 Q. And what would that signal be? 10:51

1 E. Kan, PhD

2 A. Usually it's the rate, right, 10:51
3 BPM, beats per minute, or the pulse 10:51
4 intervals measuring the intervals time 10:51
5 delayed between two successive pulses. 10:51

6 Q. So it's reporting the time 10:51
7 delay, but what is the analog signal? 10:51

8 A. The floating point number that 10:51
9 represent that delay. 10:51

10 Q. And that floating point number 10:51
11 is -- I'm -- I want to make sure I 10:51
12 understand this. The -- what is the 10:51
13 source of that floating point number? 10:51
14 What is the source of that number? The 10:51
15 sensor, right? The sensor reports the 10:52
16 number; is that correct? 10:52

17 A. Yes, source is the pulse, right, 10:52
18 two successive pulse and the time 10:52
19 interval between two successive pulse. 10:52
20 Pulse is usually determined by the 10:52
21 systolic peak. So it's an even clearer 10:52
22 definition. The time between two systolic 10:52
23 peak of the pulse. 10:52

24 Q. And so that can be reported as 10:52
25 an analog signal that could be passed to 10:52



1 E. Kan, PhD
2 the microcontroller; is that your 10:52
3 testimony? 10:52
4 A. Yes, can be. 10:52
5 Q. Can be. It could also be 10:52
6 reported digitally, correct? 10:52
7 A. Yes. 10:52
8 Q. Have you used a -- have you 10:52
9 developed -- I'll ask it again. 10:52
10 In your wearable animal 10:52
11 monitoring systems that you've designed, 10:53
12 do any of those report a cardiac pulse 10:53
13 rate? 10:53
14 A. Yes. 10:53
15 Q. They measure -- I should say 10:53
16 they measure a cardiac pulse rate; is that 10:53
17 correct? 10:53
18 A. Yes. 10:53
19 Q. And do those report the cardiac 10:53
20 pulse rate in an analog signal or a 10:53
21 digital signal? 10:53
22 A. Analog. 10:53
23 Q. And the analog signal is again 10:53
24 this floating gate number? 10:53
25 A. Floating point. 10:53

1 E. Kan, PhD

2 Q. Floating point number. Thank 10:53
3 you. 10:53

4 If we look at the next 10:53
5 sentence -- actually the last sentence of 10:53
6 that -- of the paragraph we were looking 10:53
7 at, the sentence that starts on Line 28. 10:53

8 A. Okay. 10:53

9 Q. If you want to go ahead and read 10:53
10 that. 10:53

11 A. I'm finished. 10:54

12 Q. And it's talking here about 10:54
13 examples of qualitative attributes. 10:54

14 Do you see that? 10:54

15 A. Yes. 10:54

16 Q. And so what are some of the -- 10:54
17 what does it mean to be a qualitative 10:54
18 attribute? 10:54

19 A. Qualitative usually means a 10:54
20 yes/no answer. Like what is explained 10:54
21 further, whether the animal monitored 10:54
22 subject has exceeding a predetermined 10:54
23 corpus temperature or not. That's become 10:54
24 the threshold in described in Line 31, 10:54
25 making that to be a qualitative attribute. 10:54



1 E. Kan, PhD

2 Q. So walk me through how that 10:54
3 works. Let's use temperature as an 10:54
4 example. So a temperature, in order to 10:54
5 report these qualitative attribute, if I 10:54
6 understand you correctly, you're saying 10:54
7 that it is comparing a measured 10:55
8 temperature to a threshold temperature; is 10:55
9 that right? 10:55

10 A. As taught in Harvey, yes. 10:55

11 Q. Is this something -- have you 10:55
12 seen this in examples of animal sensors 10:55
13 outside of Harvey? 10:55

14 A. Yes. 10:55

15 Q. And so in that case, the sensor 10:55
16 is measuring the temperature of the 10:55
17 subject, correct? 10:55

18 A. Yes. 10:55

19 Q. And where does the -- where does 10:55
20 the predetermined threshold temperature 10:55
21 come from? 10:55

22 A. The system designer have to 10:55
23 determine what the threshold is. 10:55

24 Q. And so in this case, the sensor 10:55
25 measures the temperature of the -- the 10:55



1 E. Kan, PhD
2 corpus temperature of the monitored 10:55
3 subject, correct? 10:55
4 A. Yes. 10:55
5 Q. And it can do that in a number 10:55
6 of different ways, right. You said there 10:55
7 are many techniques for measuring 10:55
8 temperature; is that right? 10:55
9 A. Yes. 10:55
10 Q. And then there is a comparison 10:55
11 between the measured corpus temperature 10:55
12 and the predetermined corpus temperature; 10:56
13 is that right? 10:56
14 A. Yes. 10:56
15 Q. And the sensor then reports the 10:56
16 result of that comparison; is that 10:56
17 correct? 10:56
18 A. Sensor reports in here, in this 10:56
19 context, whether the measured temperature 10:56
20 has exceeded the predetermined threshold. 10:56
21 Q. Is that a binary question? It's 10:56
22 either yes or no? 10:56
23 A. Yes, it's become a binary 10:56
24 qualitative answer. 10:56
25 Q. So the sensor initially performs 10:56

1 E. Kan, PhD
2 a quantitative measurement, but then it 10:56
3 ends up reporting a qualitative attribute; 10:56
4 is that fair? 10:56
5 A. In this paragraph, yes. 10:56
6 Q. In this paragraph. Okay. 10:56
7 A. It's not the only way to do it, 10:56
8 but in this paragraph, it's describing 10:56
9 that way. 10:56
10 Q. Okay. Let's go on -- let's go 10:56
11 back to paragraph -- Page 29 if you could. 10:57
12 A. Page 29 of Harvey? 10:57
13 Q. Yes. 10:57
14 A. Yep. 10:57
15 Q. Okay. And let's go -- I'm going 10:57
16 to start with where it's indicated as 10:57
17 Paragraph 78 there. 10:57
18 Do you see that? 10:57
19 A. Yes. 10:57
20 Q. And it's again -- this paragraph 10:57
21 is about XPDR 5000, correct? 10:57
22 A. Yes. 10:57
23 Q. And it's talking about some of 10:57
24 the modules that might be included in the 10:57
25 transponder control module 5100, correct? 10:57

1 E. Kan, PhD

2 A. Yes. 10:57

3 Q. Okay. And if I go down to Line 10:57

4 22, it says, "MEM 5160 may be 10:58

5 representative of a memory element, in 10:58

6 general, so that MEM 5160 may include 10:58

7 volatile memory, including RAM, 10:58

8 non-volatile memory, including EEPROM" -- 10:58

9 is that right? 10:58

10 A. EEPROM. 10:58

11 Q. "EEPROM or NVRAM, or both." 10:58

12 Is that right? 10:58

13 A. Sure. 10:58

14 Q. And so EEPROM, that's an acronym 10:58

15 I'm going to spell out for Amanda. It's 10:58

16 just the letters E-E-P-R-O-M; is that 10:58

17 right? 10:58

18 A. Yes. 10:58

19 Q. Okay. And let's go to your -- 10:58

20 and we can keep that paragraph if you'd 10:59

21 like, but I don't know if you can turn in 10:59

22 your report to Paragraph 115. 10:59

23 A. 115 of my declaration? 10:59

24 Q. Of your declaration. 10:59

25 A. 115. Okay. 10:59



1 E. Kan, PhD

2 Q. And if I look in that first 10:59
3 sentence there, I believe it's talking 10:59
4 about the sentence we just read in Harvey. 10:59

5 Does that seem right? 10:59

6 A. Yes. 10:59

7 Q. And it's your opinion that the 10:59
8 EEPROM can store analog data; is that 10:59
9 right? 10:59

10 A. Yes. 10:59

11 Q. And just so I'm understanding, 10:59
12 you're saying a person of skill in the art 10:59
13 reading Harvey and seeing the reference to 10:59
14 EEPROM would read that as including analog 11:00
15 data; is that correct? 11:00

16 A. If he's knowledgeable, sure, 11:00
17 yes. 11:00

18 Q. Is EEPROM commonly used in 11:00
19 animal -- sorry, let me ask that again. 11:00

20 Let's go further down there. 11:00

21 You say in here -- you give an example of 11:00
22 analog uses of EEPROM where you say "Many 11:00
23 of such examples exist in synaptic or 11:00
24 neuromorphic computing." 11:00

25 Do you see that? 11:01



1 E. Kan, PhD

2 A. Yes. 11:01

3 Q. Let's unpack that a little bit, 11:01
4 if we could. Are those two different 11:01
5 things, synaptic or neuromorphic 11:01
6 computing? 11:01

7 A. Refer to the same type of 11:01
8 computing design. 11:01

9 Q. And so what is synaptic or 11:01
10 neuromorphic computing? 11:01

11 A. It determines on how the 11:01
12 information being processed. It means 11:01
13 that you try to mimic how our nerve 11:01
14 systems process signal. That depends on 11:01
15 the weighted input to make a decision 11:01
16 whether exceeding a threshold and then to 11:01
17 output a qualitative answer of yes and no. 11:01
18 It's a major -- sorry. It's a major 11:01
19 branch in the computing design domain. 11:01

20 Q. And are these synaptic and 11:02
21 neuromorphic computing used in animal 11:02
22 monitoring systems? 11:02

23 A. That, I'm not sure. It 11:02
24 definitely can be. 11:02

25 Q. As of 2015, were you aware of 11:02



1 E. Kan, PhD
2 any uses of synaptic or neuromorphic 11:02
3 computing in animal monitoring systems? 11:02
4 A. I'm not sure. Neuromorphic 11:02
5 computing, that term is invented 1990. 11:02
6 Q. In 1990? 11:02
7 A. Yes. 11:02
8 Q. Let me ask my question again 11:02
9 because you may have jumped in before I 11:02
10 finished. 11:02
11 As of 2015, are you aware of any 11:02
12 examples of using synaptic or neuromorphic 11:02
13 computing in remote animal sensors? 11:02
14 A. I'm not sure. I didn't do the 11:02
15 survey at the time to know exclusively 11:03
16 whether it has been used. 11:03
17 Q. But sitting here today, you're 11:03
18 not aware of any? 11:03
19 A. Okay. Yeah. Fair to say. 11:03
20 Q. Let's go to Harvey on Page 30 if 11:03
21 we could? 11:03
22 A. Harvey on Page 3? 11:03
23 Q. 30. I'm sorry, 30. 11:03
24 A. 30. 11:03
25 Q. Yeah. 11:03

1 E. Kan, PhD

2 A. Okay. 11:03

3 Q. And I'm going to look here at 11:05
4 Paragraph 79 on Page 30, which is a long 11:05
5 one, but I will -- 11:05

6 A. Paragraph 79. 11:05

7 Q. 79, yes. Thank you. 11:05

8 A. Okay. 11:05

9 Q. And it's talking about -- if I 11:05
10 look at the third sentence down, it says, 11:05
11 "An example of cryptographic key function 11:05
12 may include generation of a public key 11:05
13 infrastructure (PKI) key pair 11:05
14 corresponding to XPDR 5000." 11:05

15 Do you see that? 11:05

16 A. Yes. 11:05

17 Q. And it says, "TCM 5100 also may 11:05
18 include secure nonvolatile memory (SECMEM) 11:05
19 5170, for example, to secure store send 11:05
20 information, such as a PKI key pair." 11:05

21 Do you see that? 11:05

22 A. Yes. 11:05

23 Q. TCM 5100, that's a reference to 11:05
24 the box marked as 5100 in our XPDR 5000, 11:05
25 correct? 11:06

1 E. Kan, PhD

2 A. Yes. 11:06

3 Q. This paragraph is about XPDR 11:06
4 5000, correct? 11:06

5 A. Yes. 11:06

6 Q. And it's talking about the 11:06
7 memory that's used within 5100, correct? 11:06

8 A. Yes. 11:06

9 Q. When it's talking about the 11:06
10 secure memory 5170, would you understand 11:06
11 that to be a digital memory? 11:06

12 A. It will be more digital. This 11:06
13 is a complex question to answer, but 11:06
14 the -- it will be a secure -- security 11:06
15 data is usually done, most commonly done, 11:06
16 that I can say, by the factorizations of 11:06
17 large integers. And by that definition 11:06
18 the most commonly way is digital. But it 11:06
19 still doesn't include possible ways of 11:07
20 analog, but it's even more so can be 11:07
21 implied digital. 11:07

22 Q. Let's look back at page -- I'm 11:07
23 jumping around in Harvey, but let's look 11:07
24 back at Page 10 of Harvey. 11:07

25 A. Page 10 of Harvey? 11:07

1 E. Kan, PhD

2 Q. 10, yeah. 11:07

3 A. Okay. 11:07

4 Q. And I'm going to start and go 11:07

5 through this first sentence of Paragraph 11:07

6 0036. 11:07

7 Do you have that there? 11:07

8 A. Yes. 11:07

9 Q. It's talking about "A selected 11:07

10 communication protocol may be a wireless 11:07

11 personal area network (WPAN)-based 11:07

12 communication protocol." 11:07

13 Do you see that? 11:08

14 A. Yes. 11:08

15 Q. And then after that, it says, "A 11:08

16 wireless local area network (WLAN)-based 11:08

17 communication protocol." 11:08

18 Do you see that? 11:08

19 A. Yes. 11:08

20 Q. So let's -- let's start with the 11:08

21 first one, the wireless personal area 11:08

22 network, WPAN-based communication 11:08

23 protocol. 11:08

24 A. Sure. 11:08

25 Q. In 2015 if a person of skill in 11:08

1 E. Kan, PhD
2 the art were considering a wireless 11:08
3 personal area network, would they consider 11:08
4 that to be a digital communication method? 11:08
5 MR. MOFFETT: Objection. Form. 11:08
6 A. Let me see. Yes. Okay. But 11:08
7 with a -- some reservation to that, okay, 11:08
8 so, I can go further detail to explain 11:08
9 that. Many of the wireless personal area 11:09
10 network and all the other things can 11:09
11 include analog data. That sample -- that 11:09
12 has already been sampled, okay, so it 11:09
13 appears as a form of the digital data, but 11:09
14 the nature of that data is analog. So -- 11:09
15 but in the protocol, everything will be 11:09
16 specified as digital for purpose of 11:09
17 security, priority check, packet -- packet 11:09
18 validity and things. 11:09
19 Q. And is the answer the same for a 11:09
20 wireless local area network communication 11:09
21 protocol? 11:09
22 A. Yeah, all of these network, yes. 11:09
23 Q. So all the network 11:09
24 communications in that sentence, the 11:09
25 answer is the same? 11:09

1 E. Kan, PhD

2 A. Uh-huh. 11:09

3 Q. Okay. If we look down to the 11:09
4 next sentence, it references a Bluetooth® 11:09
5 pack communication protocol. 11:09

6 Do you see that? 11:10

7 A. Yes. 11:10

8 Q. In 2015 if a person of skill in 11:10
9 the art was reading this reference to a 11:10
10 Bluetooth® type communication protocol, 11:10
11 would they understand that to be a digital 11:10
12 communication protocol? 11:10

13 A. Bluetooth® is a digital 11:10
14 communication protocol. 11:10

15 Q. Next there is a reference to a 11:10
16 ZigBee-type communication protocol. 11:10

17 Do you see that? 11:10

18 A. Yes. 11:10

19 Q. If 2015 a person of skill in the 11:10
20 art were reading this reference to a 11:10
21 ZigBee-type communication protocol, would 11:10
22 they understand that to be a digital 11:10
23 communication protocol? 11:10

24 A. ZigBee is a digital 11:10
25 communication protocol. 11:10



1 E. Kan, PhD

2 Q. Okay. And if we -- let's go 11:10
3 down to Paragraph 37 if we could. 11:10

4 A. Okay. 11:10

5 Q. And I'm going to look at -- if 11:10
6 you just can read that first sentence to 11:10
7 yourself there. This sentence is 11:10
8 referring to wireless transmission 11:10
9 protocols that are compliant with the IEEE 11:11
10 802.11 standard. 11:11

11 Do you see that? 11:11

12 A. Yes. 11:11

13 Q. In 2015 would a person of skill 11:11
14 in the art understand the IEEE 802.11 11:11
15 standard to be referring to a digital 11:11
16 wireless transmission? 11:11

17 A. Yes. IEEE 802.11 with whatever 11:11
18 alphabet attached to it, IEEE 802.11 are 11:11
19 digital communication protocols. 11:11

20 Q. Okay. Going back to Figure 5 11:11
21 here of Harvey -- do you have that in 11:11
22 front of you? 11:12

23 A. Harvey, you want me to read from 11:12
24 my declaration or from -- 11:12

25 Q. I think your declaration. It's 11:12



1 E. Kan, PhD
2 maybe most useful. 11:12
3 A. Okay. Remind me what the page 11:12
4 number? I'm going back and forth. Maybe 11:12
5 I lost it. Oh, I got it. Page 65. 11:12
6 Q. Sorry. Which page are you 11:12
7 looking at? 11:12
8 A. 65. 11:12
9 Q. 65. I see. Yes, that's it. 11:12
10 There are two page numbers on all these 11:12
11 pages, which is confusing, but, yeah, I 11:12
12 see Page 65 of 138. You're in Paragraph 11:12
13 110; is that right? 11:12
14 A. I'm in Paragraph 110 indeed. 11:12
15 Q. Now, again, your understanding 11:13
16 here is that XPDR 5000 -- let me ask that 11:13
17 again. 11:13
18 Your opinion is that XPDR 5000 11:13
19 may be storing analog data from the 11:13
20 sensors; is that correct? 11:13
21 A. Maybe, yes. 11:13
22 Q. And with regard to Figure 5, 11:13
23 where would the EEPROM -- where would the 11:13
24 EEPROM be used, for which elements, 11:13
25 according to Harvey? 11:13

1 E. Kan, PhD

2 A. Since it's not explicitly 11:13
3 specified, so it should be in the 11:14
4 microcontroller. 11:14

5 Q. And have you used EEPROM in your 11:14
6 devices? 11:14

7 A. Yes. 11:14

8 Q. And you've used it to store data 11:14
9 from sensors? 11:14

10 A. Yes. 11:14

11 Q. And have you used it to store 11:14
12 data in the digital form? 11:14

13 A. Yes. 11:14

14 Q. Have you used it to store data 11:14
15 in the analog form? 11:14

16 A. Yes. 11:14

17 Q. Do you use one more than the 11:14
18 other? 11:14

19 A. More digital than analog. 11:14

20 Q. What are the advantages to 11:14
21 storing the data in digital form? 11:14

22 MR. MOFFETT: Objection. Form. 11:14

23 A. Digital data can form something 11:14
24 called error correction code, meaning that 11:14
25 if anything during the processing or 11:14

1 E. Kan, PhD
2 communication, any error happens, I can 11:14
3 use a scheme called error correction, 11:14
4 called ECC to correct the errors. Analog 11:14
5 signals cannot be corrected. Once noise 11:15
6 is added, it cannot be distinguished from 11:15
7 the signal anymore. 11:15
8 It has been documented, like the 11:15
9 DVD, like DVD, digital things, which is a 11:15
10 digital form. Then you can reproduce 11:15
11 whatever digital content infinite times 11:15
12 without losing quality. In old days, the 11:15
13 album stored data in analog fashion. The 11:15
14 more copy you make, the quality degrades. 11:15
15 But the unique advantage of analog signal, 11:15
16 especially for sensors, sensors usually 11:15
17 output an analog signal as in our real 11:15
18 world, temperature, things are expressed 11:15
19 in floating point numbers, not as binary 11:15
20 numbers, right. So the most natural form 11:15
21 coming out of the sensor is in analog 11:15
22 form. In order for it to become digital, 11:15
23 you had to go through something called a 11:15
24 data converter, analog to digital 11:15
25 converter or data converter, which is a 11:16

1 E. Kan, PhD
2 main power consumption unit. So when you 11:16
3 do that conversion, right -- remember, 11:16
4 sensor signal, right, usually coming in as 11:16
5 an analog form. So when are you going to 11:16
6 do that binary or digital conversion 11:16
7 really depends on the power systems. 11:16
8 Okay. One of the main push 11:16
9 during the 1990, this is a guy called the 11:16
10 Carver Mead, telling the world digital may 11:16
11 not be -- even though we can afford it, 11:16
12 may not be the best option. He published 11:16
13 extensively on something called ANALOG 11:16
14 Computing, which is referred in my 11:16
15 declaration. It's a long answer, sorry. 11:16
16 I don't have a short answer for that. 11:16
17 Q. And a person of skill in the art 11:16
18 reading Harvey would understand these -- 11:16
19 the facts that you were just explaining, 11:17
20 correct? 11:17
21 MR. MOFFETT: Objection to form. 11:17
22 A. A POSA should understand that. 11:17
23 BY MR. GLANDORF: 11:17
24 Q. Let's go in Harvey to Paragraph 11:17
25 98 if we could. 11:17

1 E. Kan, PhD
2 A. Say that again. 11:17
3 Q. Paragraph 98 in Harvey which is 11:17
4 Exhibit 1004. 11:17
5 A. Which page? 11:17
6 Q. It's on Page 40. 11:17
7 A. Page 40. Okay. 11:17
8 Q. And so on Page 40, let's go down 11:17
9 to Line 30, the sentence in line -- at 11:17
10 line 30 that starts off with "SENSOR #1 11:17
11 5310..." 11:17
12 Do you see that? 11:18
13 A. Yes. 11:18
14 Q. Go ahead and read that sensor -- 11:18
15 sorry -- that to yourself. 11:18
16 A. Okay. I'm finished. 11:18
17 Q. Okay. And the reference here is 11:18
18 to Sensor #1 5310. 11:18
19 Do you see that? 11:18
20 A. Yes. 11:18
21 Q. And that's a reference to -- and 11:18
22 that's shown in Figure 5, correct? 11:18
23 A. Yes. 11:18
24 Q. And that's a reference to one of 11:18
25 the sensors shown for XPDR 5000, correct? 11:18

1 E. Kan, PhD

2 A. Yes. 11:18

3 Q. And it's talking about what 11:18
4 signal Sensor #1 may provide. 11:19

5 Do you see that? 11:19

6 A. Yes. 11:19

7 Q. And so "may provide," that's 11:19
8 talking about the signal that's coming out 11:19
9 of Sensor 1 and going into the Box 5100 in 11:19
10 Figure 5 -- 11:19

11 A. Yes. 11:19

12 Q. -- correct? 11:19

13 A. Yes. 11:19

14 Q. Okay. And it's saying that it 11:19
15 may provide a sensed thermal parametric 11:19
16 signal. 11:19

17 Do you see that? 11:19

18 A. Yes. 11:19

19 Q. What is a sensed thermal 11:19
20 parametric signal? 11:19

21 A. It's a temperature that's being 11:19
22 sensed. 11:19

23 Q. Okay. And then if we look at 11:19
24 the next part of the sentence, it says, it 11:19
25 "may produce a sensed thermal parametric 11:19

1 E. Kan, PhD
2 signal when a predetermined temperature 11:19
3 threshold is met or surpassed, as may 11:19
4 indicate hyper- or hypo-thermia of 11:19
5 monitored subject 5800." 11:20
6 Do you see that? 11:20
7 A. Yes. 11:20
8 Q. I think we talked about a little 11:20
9 bit about this before, but in that case, 11:20
10 the signal that's coming out of 5310 and 11:20
11 being passed to 5100 is a comparison; is 11:20
12 that correct? 11:20
13 A. Can be. 11:20
14 Q. It can be a -- that's what it's 11:20
15 saying. It's saying that signal can be a 11:20
16 comparison, correct? 11:20
17 A. A result of the comparison. 11:20
18 Q. What's that? 11:20
19 A. The result of the comparison 11:20
20 with the threshold. 11:20
21 Q. Thank you. 11:20
22 The result of the comparison 11:20
23 with the threshold can be what is being 11:20
24 provided from 5310 to 5100, correct? 11:20
25 A. Yes. 11:20

1 E. Kan, PhD

2 Q. And if it's -- so that result 11:20
3 could be, for example, hyperthermia of the 11:20
4 subject; is that correct? 11:20

5 A. Yes, hyper or hypo. 11:20

6 Q. Okay. And what is meant here by 11:20
7 "parametric"? 11:20

8 A. Meaning it's a parameter, right. 11:20
9 A parameter doesn't have a analog or 11:20
10 digital. It can be either. 11:21

11 Q. It can be either one? 11:21

12 A. Yep. 11:21

13 Q. But what this sentence is saying 11:21
14 is that it may provide a temperature or it 11:21
15 may provide the result of the comparison; 11:21
16 is that right? 11:21

17 A. Yes. 11:21

18 Q. Okay. Let's go on -- let's go 11:21
19 back to the patent, if we could, the '644 11:21
20 patent. 11:21

21 A. Okay. 11:22

22 MR. GLANDORF: Actually I'm just 11:22
23 trying to time things out right so I 11:22
24 don't interrupt. Why don't we take a 11:22
25 short break now and then maybe do a 11:22

1	E. Kan, PhD	
2	session before lunch.	11:22
3	Is that all right with you,	11:22
4	Amanda?	11:22
5	THE COURT REPORTER: Off the	11:22
6	record.	11:22
7	(Recess taken.)	11:22
8	THE COURT REPORTER: Back on the	11:38
9	record.	11:38
10	BY MR. GLANDORF:	11:38
11	Q. Okay. Dr. Kan, let's go to Page	11:38
12	11 of Harvey if we could.	11:38
13	A. Okay.	11:38
14	Q. And I am going to direct you to	11:38
15	line -- Line 20.	11:38
16	Do you see Line 20 there?	11:38
17	A. Yes.	11:38
18	Q. There is a reference there to	11:38
19	IAT 1110.	11:38
20	Do you see that?	11:38
21	A. Yes.	11:38
22	Q. And IAT, we've already	11:38
23	established earlier this morning, is an	11:39
24	intelligent active tag, correct?	11:39
25	A. Yes.	11:39

1 E. Kan, PhD

2 Q. And an intelligent active tag 11:39
3 includes a transponder correct? 11:39

4 A. Yes, yes. 11:39

5 Q. And the sentence here has a 11:39
6 reference to storing "subject dynamic 11:39
7 information as subject data." 11:39

8 Do you see that? 11:39

9 A. Yes. 11:39

10 Q. What is subject dynamic 11:39
11 information? 11:39

12 A. Like it's all explanation in 11:39
13 some example would be a vital sign. 11:39

14 Q. And so what makes it, I guess, 11:39
15 dynamic information as opposed to -- 11:39

16 A. Dynamic usually refer to a time 11:39
17 domain transient, something is changing, 11:39
18 right. So like the heartbeat, either you 11:39
19 measure flow of the stroke volume of the 11:39
20 heart or you go for the transient signal 11:39
21 for the heart stimulation. So you're 11:40
22 making a time domain waveform. That's 11:40
23 what we meant by dynamic. 11:40

24 Q. Okay. So, for example, here we 11:40
25 see in this -- it gives examples of 11:40



1 E. Kan, PhD
2 subject dynamic information in that 11:40
3 sentence, correct? 11:40
4 A. Yes. 11:40
5 Q. And the last part of the 11:40
6 sentence refers to "a change in one or 11:40
7 more of a sign, a parameter, a motion, or 11:40
8 a condition." 11:40
9 Do you see that? 11:40
10 A. Yes. 11:40
11 Q. So in that case, what's being 11:40
12 reported by the sensor is not just a 11:40
13 parameter, but a change in a parameter, 11:40
14 for example? 11:40
15 A. Yes. 11:40
16 Q. Okay. So that could include, 11:40
17 for example, a location. Would that be an 11:40
18 example? 11:40
19 MR. MOFFETT: Objection. Form. 11:40
20 A. Yes. 11:40
21 BY MR. GLANDORF: 11:40
22 Q. And so a sensor can report the 11:40
23 location of an animal or it can also 11:40
24 report the change in location of an 11:40
25 animal; is that -- is that fair? 11:40



1 E. Kan, PhD

2 A. Yes. 11:41

3 Q. Is that fair? 11:41

4 A. Yes. 11:41

5 Q. Sorry. I know you're 11:41

6 anticipating my question, but just for the 11:41

7 court reporter, we want to make sure we 11:41

8 space it out. 11:41

9 And so another example you said 11:41

10 might be -- a vital sign would be the 11:41

11 pulse. Is that an example of a vital 11:41

12 sign, correct? 11:41

13 A. Yes. 11:41

14 Q. But you could also have the 11:41

15 sensor report a change in the pulse; is 11:41

16 that correct? 11:41

17 A. Changing the pulse rate, 11:41

18 correct. 11:41

19 Q. Changing the pulse rate. Thank 11:41

20 you. Okay. Great. 11:41

21 Let's go to your report now at 11:41

22 Page 75 of 138 in Exhibit 2006. 11:41

23 A. I'm there. 11:41

24 Q. And you have a header here that 11:41

25 lists what you've defined as Element 5[F]. 11:41

1 E. Kan, PhD
2 Do you see that? 11:42
3 A. Yes. 11:42
4 Q. And this is an element of claim 11:42
5 5, correct? 11:42
6 A. Yes. 11:42
7 Q. Will you go ahead and read that 11:42
8 element into the record? 11:42
9 A. I'm sorry? 11:42
10 Q. Would you read it out loud into 11:42
11 the record? 11:42
12 A. "Activating said radio signal 11:42
13 generator at predetermined intervals to 11:42
14 generate a radio signal to carry said 11:42
15 encoded physiological data." 11:42
16 Q. Okay. And you refer to this, 11:42
17 for example, if I look at, like, a page -- 11:42
18 Paragraph 131, first sentence, you refer 11:42
19 to this as "the pre-determined intervals 11:42
20 requirement"; is that right? 11:42
21 A. Yes. Predetermined intervals in 11:42
22 131. 11:42
23 Q. Yes. So is it okay if I refer 11:42
24 to Element 5[F] as the predetermined 11:42
25 intervals requirement? 11:42



1 E. Kan, PhD

2 A. Yes. 11:42

3 Q. And in your opinion, Harvey does 11:42
4 not disclose the predetermined intervals 11:43
5 requirement; is that correct? 11:43

6 A. Harvey does not disclose -- in 11:43
7 the entire document, I believe so, yeah, 11:43
8 is not -- is now - Harvey lists many 11:43
9 options. 11:43

10 Q. And is it your opinion that none 11:43
11 of those options disclose the 11:43
12 predetermined intervals requirement? 11:43

13 A. As specific as a predetermined 11:43
14 interval. 11:43

15 Q. Okay. Let's turn to Page 26 of 11:43
16 Harvey. 11:43

17 A. Okay. 11:44

18 Q. And I'm going to refer to you a 11:44
19 sentence that starts on Line 8. At the 11:44
20 end of Line 8 it says, "A selected 11:44
21 periodic." 11:44

22 Do you see that? 11:44

23 A. Yes. 11:44

24 Q. And I'm going to read it into 11:44
25 the record. It says, "A selected periodic 11:44

1 E. Kan, PhD
2 collision avoidance protocol embodiment 11:44
3 may be exemplified by XPDR 5000 11:44
4 periodically transmitting an outbound IAT 11:44
5 message to the INT 5900, over a selected 11:44
6 periodic...transmission interval of about 11:44
7 2 seconds." 11:44
8 Do you see that? 11:44
9 A. Yes. 11:44
10 Q. And the interval that's 11:44
11 mentioned here is about two seconds; is 11:44
12 that right? 11:44
13 A. Yes. 11:44
14 Q. This sentence, though, is 11:44
15 referring to an example, correct? It uses 11:45
16 the word "exemplified"? 11:45
17 A. Yes. 11:45
18 Q. You agree that this is an 11:45
19 example that Harvey is providing? 11:45
20 MR. MOFFETT: Objection. Form. 11:45
21 A. It's an example, yeah, as in 11:45
22 that page, yes. 11:45
23 BY MR. GLANDORF: 11:45
24 Q. Okay. And in your opinion, does 11:45
25 this say -- does this disclosure here in 11:45

1 E. Kan, PhD

2 Harvey teach the predetermined interval 11:45

3 element, as claimed in the '644 patent? 11:45

4 A. Not clear enough. 11:45

5 Q. Why not? 11:45

6 A. A collision avoid is protocol, 11:45

7 meaning that there are multiple tags 11:45

8 around and the -- when the two tags 11:45

9 reporting together, it will -- it's called 11:45

10 something called a collision, right. So 11:45

11 the collision avoiding protocol here is 11:46

12 trying to say that different tags using 11:46

13 different periods to transmit the outbound 11:46

14 message so that different tags will not 11:46

15 causing a signal collision to the INT 11:46

16 5900, and that the -- so the purpose is -- 11:46

17 is to make sure that every tag, multiple 11:46

18 tags can be heard in kind of a sequential 11:46

19 manner, so it's describing that, okay. 11:46

20 While the predetermined intervals, okay, 11:46

21 for an operation of, say, more than seven 11:46

22 years as taught in '644, two seconds will 11:46

23 be a very frequent report of a -- of 11:46

24 that -- for that operation over 11:46

25 seven seconds. And the purpose is not for 11:46



1 E. Kan, PhD
2 collision avoidance. 11:46
3 Q. There's no mention of the 11:47
4 purpose, though, in Element 5[F], correct? 11:47
5 A. It's using that as example, 11:47
6 though. 11:47
7 Q. No. I'm sorry. I'm referring 11:47
8 to the claim language now in Element 5[F]. 11:47
9 A. A selected periodic collision 11:47
10 avoidance protocol embodiment. 11:47
11 Q. I'm sorry. I'm asking you to 11:47
12 look at the claim language here, in your 11:47
13 report here. 11:47
14 A. Oh, okay. Sorry. 11:47
15 Q. Yes. That claim language, 11:47
16 Element 5[F], it doesn't state a purpose 11:47
17 for -- for using predetermined intervals, 11:47
18 correct? 11:47
19 A. Not within 5[F], yeah. 11:47
20 Q. Yeah. Sure. 11:47
21 You would agree that a selected 11:47
22 periodic tag transmission interval of 11:47
23 about two seconds, it is a predetermined 11:47
24 interval, correct? 11:47
25 MR. MOFFETT: Objection. Form. 11:47

1 E. Kan, PhD

2 A. It's preselected. It's a 11:47
3 predetermined. There is a subtle 11:48
4 difference. 11:48

5 BY MR. GLANDORF: 11:48

6 Q. What is the difference? 11:48

7 A. Okay. Preselected suggests to 11:48
8 me it's something that the decision is 11:48
9 going to make for a purpose, for like 11:48
10 here, some of the purpose of the, I 11:48
11 think -- but is -- is something that's 11:48
12 intermittently decided along the 11:48
13 operation. Predetermined meaning that 11:48
14 it's set. It's no longer a selectable 11:48
15 parameter. 11:48

16 Q. So when you read Claim Element 11:48
17 5[F] and you see the words "predetermined 11:48
18 intervals," your understanding of 11:48
19 predetermined is something that is -- that 11:48
20 cannot be changed along the way? 11:48

21 A. That's not meant to be changed 11:49
22 along the way. 11:49

23 Q. Sorry. That's not meant to be 11:49
24 changed? 11:49

25 A. Meant, yes. Whether it can be 11:49



1 E. Kan, PhD

2 changed or not is -- I don't know, but 11:49

3 it's not meant to be changed. 11:49

4 Q. I want to understand that. When 11:49

5 you say "not meant to be changed," do you 11:49

6 mean the designer of the system intends 11:49

7 that the interval isn't -- doesn't change? 11:49

8 A. Yes. 11:49

9 Q. And is that understanding based 11:49

10 on the definition of the word 11:49

11 "predetermined"? 11:49

12 A. Yes. 11:49

13 Q. Does that understanding -- did 11:49

14 you reach that understanding through any 11:49

15 disclosure of the '644 patent? 11:49

16 A. In the context, right, so, yeah. 11:49

17 Why I read it in specific that way is the 11:49

18 context of the 644 of how the power is 11:49

19 much more precious than in many other 11:50

20 systems, right. Bolus sensors have a 11:50

21 unique power requirement. So that the -- 11:50

22 in the context of '644, power management 11:50

23 is in the center of the design to fit the 11:50

24 operation over seven years or more things 11:50

25 so the -- any decision where -- as taught 11:50

1 E. Kan, PhD
2 in other work will involve power 11:50
3 consumption. You say, okay, I'm going to 11:50
4 determine the levels every two seconds 11:50
5 when I'm going to transmit the data. That 11:50
6 decision is not power free. Any decision 11:50
7 is computing, and in computing is power. 11:50
8 The system has to wake up to make that 11:50
9 decision. 11:50
10 So when I read '644 as in a 11:50
11 bolus sensor, the predetermined intervals 11:50
12 try to skip that decision. 11:51
13 Q. So your understanding of the 11:51
14 purpose of the '644 patent leads you to 11:51
15 conclude that predetermined means 11:51
16 something that avoids the step of 11:51
17 selecting or determining the interval 11:51
18 later in time; is that right? 11:51
19 A. That's my reading, what is '644, 11:51
20 yes. 11:51
21 Q. Okay. And if we go back to this 11:51
22 disclosure here in Harvey on Page 26, it 11:51
23 uses the word "selected." And, in fact, 11:51
24 if we use the -- if we look at the 11:51
25 sentence before, it says "preselected." 11:51

1 E. Kan, PhD
2 Do you see that? 11:51
3 A. Yes. 11:51
4 Q. Preselected tag transmission 11:51
5 interval? 11:51
6 A. Uh-huh. 11:51
7 Q. Is it your understanding that 11:51
8 preselected means that that interval might 11:51
9 be changed during the operation of the 11:51
10 XPDR 5000? 11:51
11 A. Yes. Not only reading that 11:51
12 paragraph but later in Harvey's 11:51
13 descriptions, that period is subject to a 11:52
14 decision to change. Not only -- this 11:52
15 paragraph didn't talk about it, but I 11:52
16 forgot where you talk about it, but that 11:52
17 period is -- preselected period is going 11:52
18 to be changed depending on something else. 11:52
19 Q. And if that can be changed based 11:52
20 on something else, then it no longer meets 11:52
21 the predetermined interval requirement in 11:52
22 your opinion? 11:52
23 A. Uh-huh. 11:52
24 Q. That's a "yes"? Sorry. 11:52
25 A. Yes. 11:52

1 E. Kan, PhD

2 Q. Now, there is a reference 11:52

3 here -- sorry. One second. 11:52

4 Let's go to the next page. 11:53

5 Let's go to Page 27. 11:53

6 A. Okay. 11:53

7 Q. And I'm going to look at the 11:53

8 beginning of Paragraph 73. 11:53

9 Do you see that? 11:53

10 A. Yes. 11:53

11 Q. And the first sentence there 11:53

12 says, "In certain embodiments, a selected 11:53

13 tag transmission interval may be assigned 11:53

14 to XPDR 5000, for example, during 11:53

15 manufacture, by a vendor, or by INT 5900." 11:53

16 Do you see that? 11:53

17 A. Yes. 11:53

18 Q. And INT 5900, that's the 11:53

19 receiver; is that correct? 11:54

20 A. It's the reader, yes. 11:54

21 Q. The reader? 11:54

22 A. Yeah. 11:54

23 Q. Reader. But this says that the 11:54

24 selected tag transmission interval may be 11:54

25 assigned, for example, during manufacture. 11:54



1 E. Kan, PhD
2 Do you see that? 11:54
3 A. Yes. 11:54
4 Q. That's one option. 11:54
5 A. One option, yes. 11:54
6 Q. And if the selected tag 11:54
7 transmission interval is assigned during 11:54
8 manufacture, wouldn't that be 11:54
9 predetermined? 11:54
10 MR. MOFFETT: Objection. Form. 11:54
11 A. During manufacture, it will 11:54
12 become a -- if it's a -- if it's no longer 11:54
13 to be changed. It's specified and no 11:54
14 longer to be changed. It will be a 11:54
15 predetermined interval. 11:54
16 Q. Let's go now back a couple of 11:54
17 pages to Harvey at 25. 11:55
18 A. Okay. 11:55
19 Q. I just want to follow up here on 11:55
20 that. The sentence we were looking at 11:55
21 that starts at the end of line -- let me 11:55
22 find my place -- I'm sorry. It's Page 26 11:56
23 let's go to Page 26. 11:56
24 A. 26? 11:56
25 Q. Yes. And we were looking at the 11:56

1	E. Kan, PhD	
2	sentence starting at the end of Line 8, "A	11:56
3	selected periodic collision protocol."	11:56
4	Do you recall discussing that	11:56
5	sentence?	11:56
6	A. Paragraph, line?	11:56
7	Q. It's the last line of	11:56
8	Paragraph 69, I guess.	11:56
9	A. Okay. Sure.	11:56
10	Q. It's a selected periodic	11:56
11	collision protocol.	11:56
12	Do you see that?	11:56
13	We were discussing that	11:56
14	sentence.	11:56
15	Do you recall?	11:56
16	A. Yeah.	11:56
17	Q. If I understood your testimony	11:56
18	right, you're saying this does not meet	11:56
19	the predetermined intervals claim element	11:56
20	because the transmission interval is not	11:56
21	predetermined; is that correct?	11:56
22	MR. MOFFETT: Objection. Form.	11:56
23	A. Yes, yeah.	11:56
24	BY MR. GLANDORF:	11:56
25	Q. Is there any other reason why	11:56



1 E. Kan, PhD
2 this sentence in Harvey does not meet the 11:56
3 predetermined interval? 11:56
4 A. Yes, if you look from the 11:57
5 context, okay, so I do, when I read it, I 11:57
6 think the Harvey has -- has two -- two 11:57
7 definition that he understand here. As 11:57
8 you read in the Line 19, a predetermined 11:57
9 offset rate which is plus minus 1 11:57
10 second -- .1 second, that is something 11:57
11 that's not going to be changed. 11:57
12 Okay. So he used the word 11:57
13 "predetermined offset" as a number that's 11:57
14 make a decision, that's not going to 11:57
15 change in any of the following things, any 11:57
16 of the following thing, but when he's talk 11:57
17 about a selected periodic or periodic 11:57
18 signal to be generated in his find there's 11:57
19 something that can be changed by the 11:57
20 systems. But the tolerance, the offset 11:57
21 range, which, or the tolerance is a 11:57
22 predetermined number that's not going to 11:57
23 change anywhere. That's how I read it. 11:58
24 Q. I understand. And that's 11:58
25 supporting your opinion that Harvey's 11:58

1 E. Kan, PhD
2 selected periodic transmission is not an 11:58
3 interval -- is not a predetermined 11:58
4 interval? 11:58
5 A. Yeah, so the '644 teach that the 11:58
6 bolus sensor in order for the -- a long 11:58
7 operational life use the predetermined 11:58
8 intervals, not a selected intervals. 11:58
9 Q. Okay. And so you've identified 11:58
10 your opinion as the difference between 11:58
11 selected versus predetermined, and so let 11:58
12 me just ask my question again. 11:58
13 Looking at that last sentence 11:58
14 there in Paragraph 69, is there any other 11:58
15 reason aside from the difference between 11:58
16 selected and predetermined that supports 11:58
17 your opinion that that sentence does not 11:58
18 meet the predetermined interval 11:58
19 requirement? 11:59
20 A. Sorry. You have to ask the 11:59
21 question again. 11:59
22 Q. Sure, sure, sure. 11:59
23 A. I didn't catch that. 11:59
24 Q. So again looking at that -- 11:59
25 A. Last sentence of 69. 11:59

1 E. Kan, PhD

2 Q. -- last sentence of 69, is there 11:59
3 any reason for your opinion -- let me 11:59
4 start that again. I want to get the right 11:59
5 question. 11:59

6 A. First that sentence is an 11:59
7 example, as you mentioned. 11:59

8 Q. It is an example. I understand. 11:59

9 A. Yeah. 11:59

10 MR. MOFFETT: Can you let him 11:59
11 just ask his question. 11:59

12 THE WITNESS: Sure. 11:59

13 BY MR. GLANDORF: 11:59

14 Q. You testified just now to your 11:59
15 opinion that the last sentence of 11:59
16 Paragraph 69 of Harvey does not meet the 11:59
17 predetermined interval claim because of 11:59
18 your opinion that a selected interval is 11:59
19 different than a predetermined interval; 11:59
20 is that correct? 11:59

21 A. Yes. 11:59

22 Q. Is there any other reason that 11:59
23 forms the basis for your opinion that that 12:00
24 sentence in Paragraph 69 does not meet the 12:00
25 claim Element 5[F], the predetermined 12:00



1 E. Kan, PhD

2 interval? 12:00

3 MR. MOFFETT: Objection. Form. 12:00

4 A. Your question is there any -- I 12:00

5 have any other reasons than what I have 12:00

6 stated? 12:00

7 BY MR. GLANDORF: 12:00

8 Q. Correct. 12:00

9 A. Strange question. I have any 12:00

10 other reason? Okay. As I mentioned, this 12:00

11 is an example. It meant not be exclusive, 12:00

12 right. So -- so I derive that the 12:00

13 selected periodic collision avoidance 12:00

14 protocol, the protocol as seen here is 12:00

15 something that's about two seconds and is 12:00

16 something that is to be determined -- to 12:00

17 be selected later. From words, okay, 12:00

18 maybe about two seconds, meaning that it's 12:00

19 not sure whether it should be two seconds, 12:01

20 okay; around two seconds, which I 12:01

21 mentioned for a seven-year operation, two 12:01

22 second is way too short for the power 12:01

23 management. 12:01

24 But -- and use the word "but," 12:01

25 right, meaning that Harvey is not sure 12:01



1 E. Kan, PhD
2 about it, right. So when you go for the 12:01
3 predetermined range is that thing has no 12:01
4 ambiguity. It's plus, minus 0.1 seconds. 12:01
5 And that's determined, not going to be 12:01
6 changed or selected later. That's how I 12:01
7 read it. 12:01
8 Q. The reference in that 12:02
9 sentence -- let me ask again. 12:02
10 There is a reference in that 12:02
11 sentence to an outbound IAT message. 12:02
12 Do you see that? 12:02
13 A. Yes. 12:02
14 Q. And if we go back to Page 25 12:02
15 now. 12:02
16 A. Page 25? 12:02
17 Q. Yes, so just that page. And I'm 12:02
18 looking at Line 5. 12:02
19 Do you see that? 12:02
20 A. Yes. 12:02
21 Q. And this says that "An outbound 12:02
22 IAT message may be, but is not required to 12:02
23 be, a TID or an SID corresponding to 12:02
24 monitored subject 5800." 12:02
25 Do you see that? 12:02

1 E. Kan, PhD

2 A. Yes. 12:02

3 Q. And TID and SID, those refer to 12:02
4 identification numbers; is that correct? 12:03

5 A. Yes, tech ID, yes. 12:03

6 Q. And those are generally -- a 12:03
7 POSA would understand that those are 12:03
8 generally digital; is that correct? 12:03

9 A. Yes. 12:03

10 Q. A POSA would read a TID or SID 12:03
11 to be referring to a digital 12:03
12 identification number for that animal, 12:03
13 correct? 12:03

14 MR. MOFFETT: Objection. Form. 12:03

15 A. Yes, I would say yes. 12:03

16 BY MR. GLANDORF: 12:03

17 Q. Okay. And then it talks -- 12:03
18 later if we look at the last sentence, 12:03
19 it's talking about again, an outbound IT 12:03
20 message. 12:03

21 Do you see that? 12:03

22 A. Yes. 12:03

23 Q. And here it says an outbound IAT 12:03
24 message may include "subject dynamic 12:03
25 information pertaining to monitored 12:03



1	E. Kan, PhD	
2	subject 5800."	12:03
3	Do you see that?	12:03
4	A. Yes, last part of the sentence.	12:03
5	Q. So this paragraph is saying that	12:03
6	an IAT message may -- it's not required to	12:03
7	but may include subject identification	12:04
8	numbers and it may include subject dynamic	12:04
9	information pertaining to monitored	12:04
10	subject 5800, correct?	12:04
11	A. Yes.	12:04
12	Q. Now let's go back to the	12:04
13	collision avoidance protocol, if we could.	12:04
14	A. Okay. In Harvey, right?	12:04
15	Q. In Harvey, yes.	12:04
16	A. Okay.	12:04
17	Q. What again is the purpose of the	12:04
18	collision avoidance protocol?	12:04
19	A. So that when -- to avoid the	12:04
20	signals from two tags to collide at the	12:04
21	reader. So they -- you know, it's almost	12:04
22	like roll calling in military, right.	12:04
23	When two person reporting the number at	12:04
24	the same time, you cannot hear. So you	12:05
25	have to make it some sequence of orders	12:05

1 E. Kan, PhD
2 for the tag to report when there are 12:05
3 multiple tags to report to the reader. 12:05
4 So those are the collision 12:05
5 avoidance protocols. The multiple tags 12:05
6 reported their tag ID, TID, in sequence, 12:05
7 not during the same time -- it's called 12:05
8 time division -- so that they are not 12:05
9 interfering each other when they report to 12:05
10 the reader. That's collision avoidance. 12:05
11 Q. So the purpose, if I understand, 12:05
12 is to allow for a clear radio signal to 12:05
13 carry data to the reader; is that -- is 12:05
14 that right? 12:05
15 A. Yes, yes. It's not the only 12:05
16 way. 12:05
17 Q. It's not the only way to do it, 12:05
18 but that is -- that is the purpose of the 12:05
19 collision avoidance protocol being 12:05
20 described here by Harvey? 12:05
21 A. Yes. 12:05
22 MR. MOFFETT: Objection to form. 12:05
23 You may answer. 12:06
24 THE WITNESS: Right. 12:06
25 BY MR. GLANDORF: 12:06



1 E. Kan, PhD

2 Q. Let's look at now Page 28 -- 12:06

3 A. Okay. 12:06

4 Q. -- of Harvey. 12:06

5 A. Okay. 12:06

6 Q. And if you want to just read 12:06

7 that, the first couple of sentences to 12:06

8 yourself. 12:06

9 A. Which paragraph? 12:06

10 Q. This is Paragraph 75. 12:06

11 A. Paragraph 75. Okay. 12:06

12 Q. So there is a reference here to 12:07

13 one or more predetermined operational 12:07

14 mode. 12:07

15 Do you see that? 12:07

16 A. Yes. 12:07

17 Q. With the idea that there is a 12:07

18 predetermined operation for XPDR 5000; is 12:07

19 that right? 12:07

20 A. Yes. 12:07

21 Q. And so what are some of the 12:07

22 operations that might be predetermined to 12:07

23 operate according to this paragraph? 12:07

24 MR. MOFFETT: Objection. Form. 12:07

25 A. I think it's explained later, 12:07

1 E. Kan, PhD

2 right, in the Line 8. It's either a 12:07

3 single operational mode or multiple 12:07

4 operational mode. What is operational 12:08

5 mode, and Harvey continues to explain. 12:08

6 BY MR. GLANDORF: 12:08

7 Q. Okay. So let's look now down to 12:08

8 Line 12. The sentence starts at the very 12:08

9 end, it says "In the..." 12:08

10 Do you see that? 12:08

11 A. Yes. 12:08

12 Q. "In the context of plural 12:08

13 operations, a predetermined transponder 12:08

14 operation may be a combination of at least 12:08

15 two of a predetermined communication 12:08

16 operation, a predetermined sensing 12:08

17 operation, or a predetermined power 12:08

18 management operation that is executed in a 12:08

19 preferred [sic] transponder operation 12:08

20 sequence." 12:08

21 And so in this case, it is 12:08

22 predetermined -- well, let me just offer 12:08

23 an example. 12:08

24 Would one example of a plural 12:08

25 operation be a predetermined communication 12:08



1 E. Kan, PhD
2 from the transponder to the reader? 12:08
3 A. Yes. And your question, please? 12:09
4 Q. Yes, sorry. 12:09
5 A. I don't know if you have 12:09
6 finished your question. 12:09
7 Q. I was finished, yes. 12:09
8 And so, for example, it could be 12:09
9 predetermined that the transponder 12:09
10 combines multiple communications, correct? 12:09
11 A. Yes. 12:09
12 Q. And that's what it says when it 12:09
13 says "may be a combination of at least two 12:09
14 of a predetermined communication 12:09
15 operation." 12:09
16 Do you see that? 12:09
17 A. Yes. 12:09
18 Q. And let's go down. 12:09
19 A. I need some water -- 12:09
20 Q. Okay. Take your time. 12:09
21 THE COURT REPORTER: Off the 12:09
22 record. 12:10
23 (Whereupon a lunch recess was
24 taken at 12:10 p.m.)
25

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E. Kan, PhD

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1 E. Kan, PhD

2 A F T E R N O O N S E S S I O N

3 (Time noted: 1:05 p.m.)

4

5 * * * 01:37

6 01:37

7 THE COURT REPORTER: Back on the 01:05

8 record. 01:05

9 BY MR. GLANDORF: 01:05

10 Q. Good afternoon, Dr. Kan. Did 01:05

11 you discuss the substance of your 01:05

12 testimony with counsel during the break? 01:05

13 A. No, discuss about Ithaca. 01:05

14 Q. Okay. Let's go back to -- we 01:05

15 were looking at Harvey before -- I think, 01:06

16 before the break. 01:06

17 A. Okay. 01:06

18 Q. Let's go to Page 28 of Harvey. 01:06

19 A. 28. Okay. 01:06

20 Q. And if you recall, we were 01:06

21 discussing Harvey with respect to the 01:06

22 predetermined intervals element of claim 5 01:06

23 of the '644 patent. 01:06

24 Do you recall that? 01:06

25 A. Yes. 01:06



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1 E. Kan, PhD

2 Q. Okay. Let's look now at what's 01:06
3 marked as Paragraph 76 here on Harvey on 01:06
4 Page 28. 01:06

5 Do you see that? 01:06

6 A. Yes. 01:06

7 Q. And looking at the first two 01:06
8 sentences there, if you have a moment to 01:06
9 read those to yourself. 01:06

10 A. Yes. 01:06

11 Q. So in these sentences, it's -- 01:07
12 Harvey is discussing a predetermined 01:07
13 periodic operational mode for XPDR 5000; 01:07
14 is that right? 01:07

15 A. Yes. 01:07

16 Q. And he uses the word 01:07
17 "predetermined," rather than "selected" or 01:07
18 "preselected," correct. 01:07

19 A. In that sentence, yes. 01:07

20 Q. And in this sentence he's saying 01:07
21 that in this predetermined periodic 01:07
22 operational mode, XPDR 5000 may repeat a 01:07
23 predetermined transponder operation or a 01:07
24 predetermined sequence of predetermined 01:07
25 transponder operations with a respective 01:07



1 E. Kan, PhD
2 transponder operation periodicity. 01:07
3 Do you see that? 01:07
4 A. Yes. 01:07
5 Q. And he has a definition here for 01:07
6 periodicity, which means -- which 01:07
7 periodicity, according to Harvey -- 01:08
8 MR. MOFFETT: Objection. 01:08
9 BY MR. GLANDORF: 01:08
10 Q. -- generally describes an 01:08
11 interval between or may be select -- 01:08
12 sorry. I misread that. 01:08
13 Harvey says, "Periodicity 01:08
14 generally describes an interval between, 01:08
15 or alternatively, a frequency of, a 01:08
16 transponder operation occurrence." 01:08
17 Do you see that? 01:08
18 A. Yes. 01:08
19 Q. So it's talking here about -- 01:08
20 Harvey is talking here about the intervals 01:08
21 between transponder operations, correct? 01:08
22 MR. MOFFETT: Objection to form. 01:08
23 A. Yes. 01:08
24 BY MR. GLANDORF: 01:08
25 Q. And some of the transponder 01:08

1 E. Kan, PhD
2 operations that we've been discussing here 01:08
3 in Harvey may be -- it may be sending a 01:08
4 communication to the reader or it may be 01:08
5 sensing that communication from the 01:08
6 reader; is that correct? 01:08
7 MR. MOFFETT: Objection. Form. 01:08
8 A. Repeat that. Sorry. 01:08
9 BY MR. GLANDORF: 01:08
10 Q. Yes, when -- it uses the phrase 01:08
11 "transponder operation." 01:08
12 Do you see that? 01:08
13 A. Yes. 01:08
14 Q. And some of these examples of 01:08
15 transponder operations include, for 01:09
16 example, where the transponder 01:09
17 communicates with the reader or where the 01:09
18 reader communicates with the transponder. 01:09
19 A. Yes. 01:09
20 Q. Do you agree? 01:09
21 A. Yes. 01:09
22 Q. Okay. And so here this is a 01:09
23 predetermined mode that includes both a 01:09
24 predetermined operation and a periodicity. 01:09
25 Do you agree? 01:09

1 E. Kan, PhD

2 A. A periodicity, yes. 01:09

3 Q. Okay. You can set Harvey to the 01:09
4 side there. Actually going to introduce a 01:09
5 new exhibit. 01:09

6 A. May I point out something? 01:09

7 Q. Sure. 01:09

8 A. Okay. Here the predetermined, 01:09
9 right, used for mode, which is referred to 01:09
10 me as protocol. 01:09

11 Q. Okay. 01:09

12 A. How the sequence of operations 01:09
13 of the communication is going to be 01:09
14 conducted. In many of these such systems 01:09
15 when there are multiple text, it belongs 01:10
16 to something called the Aloha protocol, 01:10
17 and that is a protocol that's 01:10
18 predetermined. Okay. That's what I read 01:10
19 here, a predetermined periodic operational 01:10
20 mode, predetermined sequence, or 01:10
21 predetermined transponder operations and 01:10
22 things. If you read following that, a 01:10
23 transponder operation periodicity may be 01:10
24 selectable. 01:10

25 So they are saying that the mode 01:10

1 E. Kan, PhD
2 or the protocol of communication is 01:10
3 predetermined. Most of the wireless 01:10
4 network have that. Okay. This is 01:10
5 Bluetooth® network as a predetermined 01:10
6 operational mode. We say, okay, everybody 01:10
7 communicate in Bluetooth®. 01:10
8 This is a WiFi network. 01:10
9 Everybody communicate in a WiFi protocol. 01:10
10 That's predetermined. The -- both 01:10
11 transponders, which having the data 01:10
12 exchange, need to follow that protocol 01:10
13 exactly. The operation sequence, I sent 01:10
14 you a ping signal. You acknowledge. Then 01:10
15 I continue to do something. That sequence 01:10
16 is predetermined. Okay. That's what I 01:11
17 read here. 01:11
18 Q. Okay. And -- okay. So let's 01:11
19 talk about that some more. 01:11
20 And when you say "the sequence," 01:11
21 do you mean the sequence of transponder 01:11
22 operations, correct? 01:11
23 A. Yes. 01:11
24 Q. Which again may be sending 01:11
25 signals back and forth between the 01:11

1 E. Kan, PhD
2 transponder and the reader? 01:11
3 MR. MOFFETT: Objection. Form. 01:11
4 BY MR. GLANDORF: 01:11
5 Q. That would include -- that would 01:11
6 be a type of transponder operation, 01:11
7 correct? 01:11
8 A. Can be part of the transponder 01:11
9 operation, yes. 01:11
10 Q. Okay. This sentence also refers 01:11
11 to a transponder operation periodicity. 01:11
12 Do you see that? 01:11
13 A. Yes. 01:11
14 Q. And that is part of what is 01:11
15 being defined in that first sentence as 01:11
16 the predetermined periodic operational 01:11
17 mode, correct? 01:11
18 A. But the transponder operational 01:11
19 periodicity followed by the description 01:11
20 may be selectable or a selectable 01:11
21 transponder operation periodicity can be 01:11
22 set in response to the selectable 01:11
23 transponder operational periodicity 01:11
24 signal. That's why when -- how I read it 01:11
25 is that periodicity is selectable under 01:12

1 E. Kan, PhD
2 the predetermined protocol of operations. 01:12
3 Q. You're looking at the third 01:12
4 sentence there where it says, "a 01:12
5 transponder operation periodicity may be 01:12
6 selectable." Is that what you're looking 01:12
7 at? You're looking at that sentence, 01:12
8 correct? 01:12
9 A. Line 27, sorry, sorry, sorry. 01:12
10 Line 25. 01:12
11 Q. Yes, I see. But the first 01:12
12 sentence doesn't refer to a selectable 01:12
13 periodicity, correct? 01:12
14 A. It's saying the predetermined 01:12
15 periodic operational mode, yes. 01:12
16 Q. And there it has a respective 01:12
17 transponder operation periodicity, 01:12
18 correct? 01:12
19 A. Say that again. 01:12
20 Q. There's -- it says, 01:12
21 "with a respective transponder operational 01:12
22 periodicity." That's what the first 01:12
23 sentence says, correct? 01:12
24 A. With a respective transponder 01:12
25 operation periodicity, yes. 01:12



1 E. Kan, PhD

2 Q. But the way you're reading this 01:12
3 is you're reading that third sentence to 01:12
4 require the first sentence to be a 01:13
5 selectable rather than a predetermined 01:13
6 periodicity? 01:13

7 A. The Harvey teaching the 01:13
8 transponder operational periodicity 01:13
9 selectable, yes. 01:13

10 Q. That's what Harvey is saying in 01:13
11 the third sentence? 01:13

12 A. Yes. 01:13

13 Q. But there's no reference to 01:13
14 selectability in the first sentence, 01:13
15 correct? 01:13

16 MR. MOFFETT: Objection. Form. 01:13

17 A. Sure, if you want to isolate 01:13
18 only the first sentence, that's true. 01:13

19 BY MR. GLANDORF: 01:13

20 Q. But just so we're clear here, 01:13
21 you're reading this third sentence about 01:13
22 selectability. You're reading that into 01:13
23 the third sentence, correct? 01:13

24 MR. MOFFETT: Objection. Form. 01:13

25 A. That's called a context, right? 01:13



1 E. Kan, PhD

2 BY MR. GLANDORF: 01:13

3 Q. Is that what you're doing here? 01:13

4 A. Yes. 01:13

5 Q. And so in your reading of the 01:13

6 first sentence of Paragraph 76, the 01:13

7 periodicity is not predetermined. Is that 01:13

8 how I understand you? 01:13

9 A. Yes. 01:13

10 Q. Okay. 01:14

11 MR. GLANDORF: We're going to do 01:14

12 a new exhibit here. It is -- this is 01:14

13 Tab G. I don't think we've started 01:14

14 this one yet. Tab G is Exhibit 1005, 01:14

15 1005. 01:14

16 (Whereupon, Exhibit 1005, U.S. 01:14

17 PATENT APPLICATION PUBLICATION 01:14

18 US2009/0187392 A1, was marked for 01:14

19 identification.) 01:15

20 BY MR. GLANDORF: 01:15

21 Q. Do you recognize Exhibit 1005, 01:15

22 Dr. Kan? 01:15

23 A. Yes. 01:15

24 Q. And this is the Risky 01:15

25 reference; is that right? 01:15



1	E. Kan, PhD	
2	A. Yes.	01:15
3	Q. R-I-S-K-E-Y?	01:15
4	A. Yes.	01:15
5	Q. Do you know any of the inventors	01:15
6	on the Risky reference?	01:15
7	A. No.	01:15
8	Q. Okay. And the Risky reference	01:15
9	was -- it's a United States Patent	01:15
10	Application Publication.	01:15
11	Do you see that?	01:15
12	A. Yes.	01:15
13	Q. And the publication date, which	01:15
14	is up at the top right, is July 23, 2009,	01:15
15	correct?	01:15
16	A. Yes.	01:15
17	Q. And you don't dispute that	01:15
18	Risky is prior art to the '644 patent,	01:15
19	correct?	01:15
20	A. No, I don't dispute that.	01:15
21	Q. And the subject matter of Risky	01:16
22	is ingestible boluses that have one or	01:16
23	more sensors to monitor animal	01:16
24	characteristics; is that fair?	01:16
25	MR. MOFFETT: Objection. Form.	01:16

1 E. Kan, PhD
2 A. In the ABSTRACT, first sentence, 01:16
3 yes. 01:16
4 BY MR. GLANDORF: 01:16
5 Q. Do you agree that that's an 01:16
6 accurate statement of the subject matter 01:16
7 of Risky? 01:16
8 MR. MOFFETT: Objection. Form. 01:16
9 A. Other matters, I don't 01:16
10 understand. Sorry. 01:16
11 BY MR. GLANDORF: 01:16
12 Q. Do you agree that that -- you're 01:16
13 looking at the first two sentences of the 01:16
14 ABSTRACT; is that right? 01:16
15 A. Yes. 01:16
16 Q. And do you agree that that -- 01:16
17 those sentences describe the subject 01:16
18 matter of Risky accurately? 01:16
19 A. Yes, overall, right. 01:16
20 Q. Okay. 01:16
21 A. "Accurately" would many times 01:16
22 imply they have the details. For two 01:16
23 sentence don't have detail. You see my 01:16
24 hesitation there. 01:16
25 But it describes the use case 01:16



1 E. Kan, PhD
2 and the purpose of that bolus. 01:16
3 Q. Sure. Fair enough. 01:17
4 And let's turn to page to Figure 01:17
5 1 if you could. 01:17
6 A. Sure. 01:17
7 Q. What's being shown here in 01:17
8 Figure 1 of Risky? 01:17
9 A. A cow with a stomach and 01:17
10 indicating something -- something 410 and 01:17
11 412 inside the stomach. The signals being 01:17
12 interacting with a base station like 01:17
13 antenna, that's 440. And explain what 01:17
14 that 440 may do in the block diagram 01:17
15 that's on the right. 01:17
16 Q. And then -- I see. You're 01:17
17 looking at the figure on the front of the 01:17
18 patent; is that right? 01:17
19 A. Sorry. Figure 1, wrong figure. 01:17
20 Okay. 01:18
21 Q. Fair enough. But your 01:18
22 description you just gave was for the 01:18
23 figure on the front? 01:18
24 A. The figure on the front, yes. 01:18
25 Q. Okay. What's being shown on 01:18

1 E. Kan, PhD
2 Figure 1? 01:18
3 A. Mainly the same thing, but 01:18
4 the -- let me see. Anything different 01:18
5 from the front figure is the 10 and 20 01:18
6 describing the different positions of the 01:18
7 bolus, right. Sorry, I probably have to 01:18
8 read the captions on that. Sorry. 01:18
9 Figure 1, they explain the 01:18
10 figure. It takes a little bit of time -- 01:18
11 100 -- ingested bolus 10, 20. 10, 20. 01:18
12 Okay, yeah. 01:19
13 So both 10 and 20 are bolus 01:19
14 sensors at the different parts of the cow, 01:19
15 different internal organs -- position of 01:19
16 the internal organs of the cow. And there 01:19
17 are the sensors. I believe the 60 and 62 01:19
18 also refer to the bolus sensor -- let me 01:19
19 be sure of that. What is 60 and 62? 01:19
20 Yeah, 60 and 62 are bolus -- the 01:19
21 transponder of the bolus. That's 01:19
22 exemplified out of the -- to be 01:19
23 illustrating that this is the transponder 01:20
24 inside the cow's stomach. And then they 01:20
25 will interact with the base station. And 01:20

1 E. Kan, PhD

2 the base station is now connected to a 01:20

3 computer. 01:20

4 Q. That computer is Number 42? 01:20

5 A. Yes. 01:20

6 Q. Okay. Let's go now to Figure 2, 01:20

7 if we could. 01:20

8 A. Okay. 01:20

9 Q. And I don't need you to walk me 01:20

10 through all of the elements, but what is 01:20

11 being shown here in Figure 2? 01:20

12 A. The transponder with the 01:20

13 receiving -- receiving and transmitting 01:20

14 antenna, interacting with the processor. 01:20

15 Q. And this also includes a power 01:20

16 source, correct? 01:20

17 A. Sure, yes, 260. 01:20

18 Q. And here there's some mentions 01:21

19 of some sensors. 01:21

20 Do you see that in Figure 2? 01:21

21 A. Yes, on the left 221 to 222, 01:21

22 accelerometer, temperature and other 01:21

23 sensors, a sensor (n). 01:21

24 Q. The first one you said was 01:21

25 accelerometer? 01:21

1 E. Kan, PhD
2 A. Yes, accelerometer measuring the 01:21
3 acceleration. 01:21
4 Q. And then a temperature sensor, 01:21
5 correct? 01:21
6 A. Yes. 01:21
7 Q. And then there's a few dots and 01:21
8 it says "Sensor (n)." 01:21
9 Do you see that? 01:21
10 A. Yes. 01:21
11 Q. And does that indicate to you 01:21
12 that there -- that Risky is envisioning 01:21
13 there could be a number of other kinds of 01:21
14 sensors that could be included? 01:21
15 A. Yes. 01:21
16 Q. Let's go if we could, if you 01:21
17 would just keep Figure 2 in front of you, 01:21
18 and then also opening your -- open your 01:21
19 report Exhibit 2006. 01:21
20 A. To page? 01:22
21 Q. And then we'll go to Page 26. 01:22
22 A. 26. Okay. 01:22
23 Q. And I would like to walk through 01:22
24 the claim elements of claim 5. 01:22
25 Do you see that you've put those 01:22



1 E. Kan, PhD

2 over on Page 26? 01:22

3 A. Yes. 01:22

4 Q. Okay. And I want to walk 01:22

5 through -- and again this might take a 01:22

6 little time, but take the time you need. 01:22

7 With regards to the Risky 01:22

8 reference and which of these claim 01:22

9 elements are disclosed in the Risky 01:22

10 reference. So let's start -- 01:22

11 A. I didn't hear your question. 01:22

12 Q. That's fine. I was just setting 01:22

13 it up. Let me just say it again, though. 01:22

14 A. Okay. 01:22

15 Q. I want to go through these claim 01:22

16 elements that you have listed here on 01:22

17 Page 26 of your report -- 01:22

18 A. Okay. 01:22

19 Q. -- and for you to tell me which 01:22

20 of these claim elements you are disputing 01:22

21 are disclosed in the Risky reference. 01:23

22 And I'll go through them one by one here. 01:23

23 Let me ask the first question, 01:23

24 and then if you need more clarification 01:23

25 you let me know. Okay? 01:23



1 E. Kan, PhD

2 A. Okay. 01:23

3 Q. So what you've marked as 5[Pre], 01:23

4 do you see that? I believe that's an 01:23

5 abbreviation for the word preamble; is 01:23

6 that right? 01:23

7 A. Yes. 01:23

8 Q. And it's "A method of monitoring 01:23

9 physiological parameters of a ruminant 01:23

10 animal, comprising." 01:23

11 That's what you've marked as 01:23

12 5[Pre], correct? 01:23

13 A. Yes. 01:23

14 Q. Do you agree that the Risky 01:23

15 reference discloses a method of monitoring 01:23

16 physiological parameters of a ruminant 01:23

17 animal? 01:23

18 MR. MOFFETT: Objection. Form. 01:23

19 A. Well, a cow which is one 01:23

20 ruminant animal, sure, yes. 01:24

21 BY MR. GLANDORF: 01:24

22 Q. Okay. You agree. Okay. 01:24

23 A. I don't remember whether they 01:24

24 are using the word "ruminant animal" that 01:24

25 contains cows and sheep and others. I may 01:24



1 E. Kan, PhD
2 have to read further whether this is 01:24
3 ruminant animal. They are all ruminant 01:24
4 animals, right, for Risky. 01:24
5 Q. Well, the language here says "a 01:24
6 ruminant animal" -- 01:24
7 A. Yeah. 01:24
8 Q. And Risky discloses a cow, 01:24
9 correct? 01:24
10 A. That's the things I want to be 01:24
11 certain about. Because when you dissect a 01:24
12 claim like that, I don't know whether a 01:24
13 rigorous answer is exactly in the Risky. 01:24
14 I don't remember. It's called animal and 01:25
15 a cow. Whether it's ruminant animals, I 01:25
16 haven't been able to find it. 01:25
17 Q. Okay. Let me direct you to 01:25
18 Paragraph 16. 01:25
19 A. Paragraph 16. Okay. Got it. 01:25
20 Healthy condition of the animals 01:25
21 ingestibles (reading to self) -- ingested, 01:25
22 esophagus. Okay. Yes, ruminant animals 01:25
23 actually mentions two things. It's 01:25
24 esophagus and the -- configured to be 01:25
25 ingested via the esophagus. Okay, yeah. 01:25

1 E. Kan, PhD

2 Q. And just to summarize, you don't 01:25
3 dispute that Risky discloses the 5[Pre] 01:25
4 element of the '644 patent? 01:25

5 MR. MOFFETT: Objection. Form. 01:25

6 A. It's describing similar. It 01:25
7 is -- Risky describe the physiological 01:26
8 sensors for ruminant animals, yes. 01:26

9 BY MR. GLANDORF: 01:26

10 Q. Okay. Do you recall in your 01:26
11 report whether or not you dispute whether 01:26
12 or not Risky discloses that patent 01:26
13 element? 01:26

14 A. I don't remember I dispute that. 01:26

15 Q. Okay. I don't believe you do. 01:26

16 A. Okay. Sure. 01:26

17 Q. I'm not trying to trick you. If 01:26
18 we're wrong, your counsel will redirect 01:26
19 you. 01:26

20 A. Okay. Sure. 01:26

21 Q. Let's look at Element 5[A] if we 01:26
22 could. 01:26

23 It says, "generating a sensor 01:26
24 signal from one or more sensors contained 01:26
25 in a bolus orally administered to said 01:26



1 E. Kan, PhD
2 ruminant animal." 01:26
3 Do you see that? 01:26
4 A. Yes. 01:26
5 Q. Do you dispute that Risky 01:26
6 discloses Element 5[A] in this '644 01:26
7 patent? 01:26
8 MR. MOFFETT: Object to the form 01:26
9 of the question. 01:26
10 A. Risky has a similar 01:26
11 description, yes, orally administered 01:26
12 through the esophagus. To me there looks 01:27
13 equivalent. 01:27
14 BY MR. GLANDORF: 01:27
15 Q. Okay. 5[B] reads, "Said sensor 01:27
16 signal varies based on a corresponding 01:27
17 change in one or more physiological 01:27
18 parameters of said ruminant animal." 01:27
19 Do you see that? 01:27
20 A. Yes. 01:27
21 Q. Do you dispute that Risky 01:27
22 discloses Element 5[B] of the '644 patent? 01:27
23 MR. MOFFETT: Object to the 01:27
24 question. Object to the entire line 01:27
25 of questioning. The witness already 01:27



1	E. Kan, PhD	
2	explained why.	01:27
3	A. So sorry.	01:27
4	MR. MOFFETT: You can answer if	01:27
5	you can.	01:27
6	THE WITNESS: Okay. Okay.	01:27
7	A. Corresponding change in one or	01:27
8	more physiological sensor signals is a	01:27
9	generic statement of 5[B], yeah. Yes. So	01:27
10	Riskey is trying to do the same thing.	01:27
11	Q. Okay.	01:27
12	A. In 5[B].	01:27
13	Q. And 5[C] says, "Encoding said	01:28
14	sensor signal from said one or more	01:28
15	sensors as encoded physiological data	01:28
16	corresponding to said one or more	01:28
17	physiological parameters of said ruminant	01:28
18	animal."	01:28
19	Did I read that right?	01:28
20	A. Yeah, you read it right.	01:28
21	Q. And, again, I'm not trying to	01:28
22	trick you here. I believe that you are	01:28
23	disputing that that element is disclosed	01:28
24	by Riskey; is that correct?	01:28
25	A. In which, where in my	01:28

1 E. Kan, PhD
2 declaration do I dispute that? 01:28
3 Q. Sure. Let me -- I'll fix it. 01:28
4 This would be on Page 91. 01:28
5 A. 91. Okay. So I'm disputing in 01:28
6 Page 91, saying that the encoded SaaS 01:29
7 sensor signal can be in both digital and 01:29
8 analog forms, which is not mentioned in 01:29
9 Risky. 01:29
10 Q. Okay. 01:29
11 A. Yeah. 01:29
12 Q. So you're disputing that 01:29
13 element. We will talk more about that, I 01:29
14 promise. 01:29
15 A. Okay. Sure. 01:29
16 Q. 5[D] says, "storing said encoded 01:29
17 physiological data in a non-transitory 01:29
18 computer readable media." 01:29
19 Are you disputing that Risky 01:29
20 discloses Element 5[D]? 01:29
21 MR. MOFFETT: Objection. Form. 01:29
22 A. In that figure, they do have a 01:29
23 memory, doesn't say what type of memory 01:29
24 that is, but the -- it's storing to a 01:29
25 memory, a readable memory, non-transitory 01:29



1	E. Kan, PhD	
2	computer readable media.	01:29
3	BY MR. GLANDORF:	01:30
4	Q. Okay. 5[E] says, "enabling a	01:30
5	radio signal generator located within said	01:30
6	bolus."	01:30
7	Do you see that?	01:30
8	A. Yes.	01:30
9	Q. You would agree with me that	01:30
10	Riskey discloses enabling a radio signal	01:30
11	generator located within said bolus?	01:30
12	MR. MOFFETT: Object to the form	01:30
13	of the question.	01:30
14	A. Yes, Riskey has a radio signal	01:30
15	generator in the bolus.	01:30
16	BY MR. GLANDORF:	01:30
17	Q. Okay. 5[F] says, "activating	01:30
18	said radio signal generator at	01:30
19	pre-determined intervals to generate a	01:30
20	radio signal to carry said encoded	01:30
21	physiological data."	01:30
22	Do you see that?	01:30
23	A. Yes.	01:30
24	Q. And, again, not trying not to	01:30
25	trick you here, my understanding is that	01:30

1 E. Kan, PhD
2 you do dispute that Risky discloses that 01:30
3 element? 01:30
4 A. Yes, yeah. 01:30
5 Q. And then 5[G] which says, 01:30
6 "generating said radio signal having a 01:31
7 frequency of between 700 MHz to about 1 01:31
8 GHz." 01:31
9 Do you see that? 01:31
10 A. Yes. 01:31
11 Q. Do you dispute that Risky 01:31
12 discloses that element? 01:31
13 MR. MOFFETT: Object to the form 01:31
14 of the question. 01:31
15 A. I don't remember whether Risky 01:31
16 gave the range of carrier frequency. But 01:31
17 I'm sure I can -- I don't remember. I 01:31
18 dispute that. 01:31
19 BY MR. GLANDORF: 01:32
20 Q. And let's take a look at Risky 01:32
21 at Paragraph 21 if we could. 01:32
22 A. Say it again, Risky where? 01:32
23 Q. Paragraph 21, 0021. 01:32
24 A. Paragraph 21. Okay. 01:32
25 Q. Go ahead and read that paragraph 01:32

1 E. Kan, PhD

2 to yourself. 01:32

3 A. Okay. Okay. So you if you 01:32

4 interpret around 900 megahertz 01:32

5 700 megahertz to 1 gigahertz, yeah, Risky 01:32

6 has mentioned about around 900 megahertz. 01:33

7 Q. All right. Let's look down at 01:33

8 claim 6 if we could. Do you see that's 01:33

9 right after the table? 01:33

10 A. Yes. 01:33

11 Q. Go ahead and read claim 6 to 01:33

12 yourself. 01:33

13 A. Okay. 01:33

14 Q. Do you agree that Risky 01:33

15 discloses claim 6? 01:33

16 MR. MOFFETT: Objection. Form. 01:33

17 A. In different ways, yeah. I 01:33

18 don't know if Risky claims but in 21 -- 01:33

19 21 paragraph, it's saying that it's around 01:33

20 900 megahertz. The difference I read here 01:33

21 is most of the transponders have to work 01:33

22 on a bandwidth, not only -- in addition to 01:34

23 the center carrier frequency where the 01:34

24 claim 6 has said a bandwidth, right, from 01:34

25 700 to 800, 750 to 850, right. So that is 01:34



1 E. Kan, PhD
2 a more detailed description than the 01:34
3 Paragraph 21 said in Risky. 01:34
4 Q. Okay. Let's turn if we can to 01:35
5 Page 4 of Risky. It's a little 01:35
6 confusing. You're there? Let's turn -- 01:35
7 it's Page 12 of 23 if you're looking at 01:35
8 the bottom. 01:35
9 A. Got it. 01:35
10 Q. Page 4 at the top. 01:35
11 Do you see that? 01:35
12 A. Yes. Paragraph? 01:35
13 Q. Yeah. At the beginning here, 01:35
14 the first line? 01:35
15 A. "As used herein..." 01:35
16 Q. Yes. And it says, "...polling a 01:35
17 sensor refers to obtaining measurement 01:35
18 data from one or more sensor 220." 01:35
19 Do you see that? 01:35
20 A. Yes. 01:35
21 Q. Okay. You have another 01:35
22 reproduction of Figure 2. I have here -- 01:36
23 I guess -- I'm sorry. I'm going to ask 01:36
24 you to turn between that page and Figure 01:36
25 2. 01:36

1	E. Kan, PhD	
2	Can you do that?	01:36
3	A. Okay.	01:36
4	Q. And it refers to 220 as -- in	01:36
5	that paragraph it refers to "one or more	01:36
6	sensor 220"?	01:36
7	A. Yes.	01:36
8	Q. And you see that in Figure 2,	01:36
9	that 220 is -- is the indication for the	01:36
10	sensors?	01:36
11	A. Yes.	01:36
12	Q. And so that's the location	01:36
13	indicating that that is where the sensors	01:36
14	are returning data from a sensor; is that	01:36
15	right?	01:37
16	A. Yes.	01:37
17	Q. Okay.	01:37
18	A. Within Risky's context, yes.	01:37
19	Q. Within Risky's context,	01:37
20	correct.	01:37
21	And so, for example, it gives	01:37
22	the example of a temperature sensor 222.	01:37
23	Do you see that?	01:37
24	A. Yes.	01:37
25	Q. And if I'm looking at the --	01:37

1 E. Kan, PhD
2 back on Page 12, it says, "For example, 01:37
3 temperature sensor 222 may respond to 01:37
4 polling by reading and returning the 01:37
5 current animal temperature." 01:37
6 Do you see that? 01:37
7 A. Yes. 01:37
8 Q. We talked earlier about there 01:37
9 are a number of different ways to measure 01:37
10 temperature, correct? 01:37
11 A. Yes. 01:37
12 Q. Two of the ways are a 01:37
13 thermocouple and a thermistor? 01:37
14 A. Yes. 01:37
15 Q. Okay. When it says returning 01:37
16 the current animal temperature, do you see 01:37
17 that -- that phrase on Page 12, "returning 01:37
18 the current animal temperature"? 01:38
19 A. Yes, "by reading and returning 01:38
20 the current animal temperature." 01:38
21 Q. And what units would a POSA 01:38
22 expect the temperature to be in? 01:38
23 A. Degrees C, Celsius. 01:38
24 Q. And so the sensor here is 01:38
25 returning a temperature in degrees 01:38

1 E. Kan, PhD
2 Celsius. Is that -- is that what a POSA 01:38
3 would expect? 01:38
4 A. Sure, or Farenheit to be 01:38
5 comfortable. 01:38
6 Q. Or Farenheit. The sensor 01:38
7 itself, of course, doesn't initially 01:38
8 report degrees. It's -- centigrade or 01:38
9 Farenheit, right? It's going to be some 01:38
10 other type of electrical value, such as 01:38
11 capacitance or current; is that right? 01:38
12 A. I don't understand the question. 01:38
13 Q. Well, the temperature sensor 01:38
14 itself doesn't report a degree centigrade, 01:38
15 correct? 01:38
16 A. We interpret the sensor output 01:39
17 as to degrees in Celsius. So -- but the 01:39
18 original test is usually done by pinging a 01:39
19 voltage to measure the current or vice 01:39
20 versa. 01:39
21 Q. And then there's a conversion to 01:39
22 convert from current or voltage to degrees 01:39
23 C, correct? 01:39
24 A. Yes. 01:39
25 Q. Okay. And there's another 01:39

1 E. Kan, PhD
2 reference here to -- let's go down -- 01:39
3 there's no line numbers here 01:39
4 unfortunately. If we go down -- I guess 01:39
5 it's Paragraph 44, though. 01:39
6 A. Okay. 01:39
7 Q. Do you see that? 01:39
8 A. Yes. 01:39
9 Q. And it talks about "the sensor 01:39
10 may alternatively comprise a memory 01:39
11 storage location to store sensor samples." 01:39
12 Do you see that? 01:39
13 A. Yes. 01:39
14 Q. So if we go to the figure, 01:39
15 that's saying that the sensors themselves 01:39
16 at 220 may store some of the sensor data, 01:39
17 correct? 01:40
18 MR. MOFFETT: Objection. Form. 01:40
19 BY MR. GLANDORF: 01:40
20 Q. Is that what -- 01:40
21 A. I'm reading. "Sensor" -- that's 01:40
22 what he said, yeah, "220 may alternatively 01:40
23 comprise of memory storage location to 01:40
24 store the sensor samples" which is not 01:40
25 illustrated in Figure 2. 01:40



1 E. Kan, PhD

2 Q. That's right. 01:40

3 A. Okay. 01:40

4 Q. In fact, let's go up a few lines
5 into Paragraph 43. 01:40

6 Do you see the word "as such"? 01:40
7 It's probably five lines up. 01:40

8 A. Yes, as such. 01:40

9 Q. "As such, sensors 220 may store
10 multiple sensor samplings on memory unit
11 250 between polling intervals of processor
12 240." 01:40

13 Do you see that? 01:40

14 A. Yes. 01:40

15 Q. Okay. So -- 01:40

16 A. That's depicted in figure -- in
17 Figure 2. 01:40

18 Q. So is it fair to say that Risky
19 is disclosing that there's at least two
20 locations where you can store sensor data
21 in Figure 2? 01:41

22 MR. MOFFETT: Objection. Form. 01:41

23 A. Not in Figure 2. In the
24 description. 01:41

25 BY MR. GLANDORF: 01:41

1 E. Kan, PhD

2 Q. In the description, that's 01:41

3 right. I'm sorry. 01:41

4 A. Figure 2 only have memory on the 01:41

5 memory unit 250. 01:41

6 Q. Right. So one location 01:41

7 according to the description that sends 01:41

8 the data that can be stored on the memory 01:41

9 unit 250; is that correct? 01:41

10 A. Yes. 01:41

11 Q. And then another place it can be 01:41

12 stored isn't really shown here, but it 01:41

13 would be part of this sensor 220; is that 01:41

14 accurate? 01:41

15 A. Yeah, sensor 220, yes. 01:41

16 Q. Okay. And then let's look down 01:41

17 a little further on 44. It says, "In 01:41

18 another embodiment, sensor 220 may have a 01:41

19 sensor reading duration to allow sensor 01:41

20 220 to measure animal characteristics over 01:42

21 time (e.g., an accelerometer sensor 221)." 01:42

22 Do you see that? 01:42

23 A. Let me -- "In another embodiment 01:42

24 sensor 220, may have a sensor reading 01:42

25 duration to allow sensor 220 to measure 01:42



1 E. Kan, PhD
2 animal characteristics over time." Yes, 01:42
3 yeah. 01:42
4 Q. In your -- in the wearable 01:42
5 animal sensors that you've designed, do 01:42
6 they include any sensors that measure 01:42
7 animal characteristics over time? 01:42
8 A. Yes. 01:42
9 Q. And so how is that -- let's talk 01:42
10 about, I guess, an accelerometer sensor if 01:42
11 we could. 01:42
12 A. Okay. 01:42
13 Q. What type of data needs to be 01:42
14 stored to allow the sensor to measure 01:42
15 animal acceleration? 01:42
16 A. Can you repeat the question 01:42
17 again? Sorry. 01:42
18 Q. What type of data needs to be 01:42
19 stored to measure animal acceleration? 01:42
20 A. Okay. In general -- in 01:43
21 general -- 01:43
22 MR. MOFFETT: Objection. Form. 01:43
23 THE WITNESS: Okay. Sorry. 01:43
24 A. In my wearable sensor, not in 01:43
25 the sensor that talk in the '644? 01:43

1 E. Kan, PhD

2 BY MR. GLANDORF: 01:43

3 Q. Let's start with your sensor. 01:43

4 Go ahead. 01:43

5 A. Okay. My wearable sensors, the 01:43

6 accelerometer recorded something we call 01:43

7 90 OF or 60 OF -- figure of freedom -- 01:43

8 that contains the three degree of freedom 01:43

9 in translational acceleration and three 01:43

10 rotational acceleration, which is refer as 01:43

11 a gyroscope. And then you have another 01:43

12 thing you often want to know is the 01:43

13 earth's magnitude related to the sensors 01:43

14 measured by the accelerometer IMU. That's 01:43

15 in my wearable sensor. 01:43

16 Q. In that wearable sensor, each of 01:43

17 those pieces of data need to be stored to 01:44

18 have an understanding of the acceleration? 01:44

19 A. It's the acceleration that's 01:44

20 being stored. 01:44

21 Q. The acceleration that's being 01:44

22 stored, but it seemed like you listed a 01:44

23 number of different -- 01:44

24 A. There are nine different 01:44

25 acceleration. 01:44



1 E. Kan, PhD

2 Q. Nine different pieces of data; 01:44
3 is that fair? 01:44

4 A. Yeah, a 90 OF, degree of 01:44
5 freedom. 01:44

6 Q. And would a POSA expect the 01:44
7 accelerometer mentioned here in Risky to 01:44
8 also have multiple degrees of freedom? 01:44

9 MR. MOFFETT: Objection. 01:44

10 A. Any acceleration is a factor. 01:44
11 So any trained POSA will read acceleration 01:44
12 X multiple time domain data because it's a 01:44
13 vector, not like a temperature is a SCALA, 01:44
14 correct. 01:44

15 BY MR. GLANDORF: 01:44

16 Q. It's a vector? 01:44

17 A. Yes. 01:44

18 Q. In the wearable sensors that 01:44
19 you've designed, is that acceleration 01:44
20 vector data stored digitally? 01:44

21 A. In my wearable sensors? Yes. 01:45

22 Q. And would you expect a person of 01:45
23 skill in the art to understand 01:45
24 acceleration data to be stored digitally? 01:45

25 A. No. 01:45



1 E. Kan, PhD

2 MR. MOFFETT: Objection to form. 01:45

3 A. Depends, right. Depends what 01:45

4 the sensor is for. As I mentioned this 01:45

5 morning, digital have the advantage of 01:45

6 error correction code. Analog has the 01:45

7 advantage of being -- of saving power. So 01:45

8 it really depends on the system design 01:45

9 whether that data will be stored digitally 01:45

10 or analog, going through the data 01:45

11 converter. We stored it after the data 01:45

12 converter or before the data converter. 01:45

13 All signals out of the IMU is analog. 01:45

14 When you stored it, whether you go through 01:45

15 the data converter or not. 01:45

16 BY MR. GLANDORF: 01:45

17 Q. You may store it before you go 01:45

18 through the data converter. Is that what 01:45

19 you're saying? 01:46

20 A. Yes. 01:46

21 Q. What would be the advantage of 01:46

22 doing that? 01:46

23 A. Low power because data converter 01:46

24 takes power. 01:46

25 Q. How does it save power to do the 01:46

1 E. Kan, PhD
2 data conversion after storing as opposed 01:46
3 to before? 01:46
4 A. I don't understand the question. 01:46
5 The data converter is a unit, right, which 01:46
6 have sample code which has all the 01:46
7 different ways that you determine which 01:46
8 level corresponding to go to the most 01:46
9 significant bits, second significant bits 01:46
10 and all this. And all these operation, 01:46
11 depending on the bit tabs, the number of 01:46
12 bits you are going to convert into digital 01:46
13 signals takes power. Takes actually large 01:46
14 power. Important system design decision 01:46
15 to make. 01:46
16 Q. Let's look down again. We don't 01:46
17 have line numbers here, but I'm about six 01:46
18 lines from the end of Paragraph 44, and in 01:46
19 the middle of the line, it says, "In this 01:47
20 embodiment, processor 240..." 01:47
21 Do you see that? 01:47
22 A. In this embodiment. 01:47
23 Q. Processor 240. 01:47
24 A. Okay. Yes. 01:47
25 Q. Do you see that one? 01:47

1 E. Kan, PhD

2 A. 240, sorry, 240, a few times. 01:47

3 Exactly which line? 01:47

4 Q. "In this embodiment, processor 01:47

5 240 may be configured to pre-process the 01:47

6 measurement data before transmission." 01:47

7 A. 220 processor, sensor may be 01:47

8 stored (reading to self) comprises 01:47

9 process. I didn't find that sentence you 01:47

10 quote. I'm sorry. 01:47

11 Q. Okay. The first few words of it 01:47

12 are -- it's after the number 220, and the 01:47

13 first words of the sentence are "In this 01:48

14 embodiment, processor 240..." 01:48

15 A. Oh, found, 44. 01:48

16 Q. Sorry. In 44, sorry. 01:48

17 A. I was looking at 43. 01:48

18 Q. Okay. 01:48

19 A. Sorry. Exactly where it is, 01:48

20 sorry. Okay. "In this embodiment, 01:48

21 processor 240 may be configured to 01:48

22 pre-process the measurements of the data 01:48

23 before transmission." Yeah, sorry, yeah. 01:48

24 Q. And then it gives examples of 01:48

25 types of preprocessing in the next 01:48



1 E. Kan, PhD
2 sentence, correct? 01:48
3 A. "Such preprocessing may comprise 01:48
4 calculating measurement characteristics," 01:48
5 yes. 01:48
6 Q. Such as the mean, the standard 01:48
7 deviation, et cetera, compressing the data 01:48
8 and the like. 01:48
9 Do you see that? 01:48
10 A. Yes. 01:48
11 Q. And so the data we're referring 01:48
12 to here is measurement data, correct? 01:48
13 A. Yes. 01:48
14 Q. That's the data that we're 01:48
15 processing. In fact, if we look over at 01:48
16 the top column that we've been reading 01:49
17 from, it says, "As used herein, polling a 01:49
18 sensor refers to obtaining measurement 01:49
19 data from one or more sensor 220." 01:49
20 Correct? 01:49
21 A. Yes. 01:49
22 Q. And so we're talking about 01:49
23 preprocessing that measurement data, 01:49
24 correct? 01:49
25 MR. MOFFETT: Objection. Form. 01:49

1 E. Kan, PhD

2 A. Yes. 01:49

3 BY MR. GLANDORF: 01:49

4 Q. And if we look at -- what does 01:49
5 it mean for data to be compressed? 01:49

6 A. Compressed means that the -- the 01:49
7 size of the information has been reduced 01:49
8 from a large footprint to a smaller 01:49
9 footprint. 01:49

10 Q. Okay. And, in fact, it says in 01:49
11 the next sentence, the very last sentence 01:49
12 of Paragraph 44, "As such, the 01:49
13 preprocessing may reduce the amount of 01:49
14 data transmitted to the base station (not 01:49
15 shown) and thereby reduce power and RF 01:50
16 transition requirements." 01:50

17 Do you see that? 01:50

18 A. Yes. 01:50

19 Q. And so I'm just trying to 01:50
20 understand that. So when you compress the 01:50
21 data, you end up with reducing the amount 01:50
22 of data; is that correct? 01:50

23 A. Yes. 01:50

24 Q. How does that work? How does 01:50
25 one compress the data to reduce the amount 01:50



1 E. Kan, PhD
2 of data? 01:50
3 A. There are simple ways, saying 01:50
4 that originally it's a digital data. It's 01:50
5 an 8 bit. I compress it to 4 bits by 01:50
6 reducing the resolution, or it's 01:50
7 originally it's floating analog data. 01:50
8 It's a double precision floating point, 01:50
9 becomes a single point precision data. 01:50
10 That's also the reducing the size, right. 01:50
11 So compression can also find 01:50
12 using the context, not just the data, 01:50
13 okay, but use the sequence of the data, 01:50
14 right, to find repeatability in data. You 01:50
15 compress them like you compress video 01:51
16 data. 01:51
17 So there are many, many ways of 01:51
18 compressing the data. But the purpose is 01:51
19 to reduce the amount of information. 01:51
20 Q. And a person of skill in the art 01:51
21 considering a compression of data would 01:51
22 read this to be referring to the 01:51
23 compression of digital data, correct? 01:51
24 A. No. Although it's the usual 01:51
25 manner, a percentage thing, but if you say 01:51

1 E. Kan, PhD
2 "always," no. Yeah, analog data can be 01:51
3 compressed. 01:51
4 Q. I see. The usual way but not 01:51
5 always. Okay. 01:51
6 If we go now to -- if we go over 01:51
7 to Paragraph 47, let's go to 47. And I 01:51
8 want to talk about the predetermined 01:52
9 interval element of claim 5. 01:52
10 A. Okay. 01:52
11 Q. And, again, I think you have --I 01:52
12 think you have your report open to Element 01:52
13 5[F]. 01:52
14 A. Yes. 01:52
15 Q. And here it says in Paragraph 01:52
16 47, it says, "Machine readable 01:52
17 instructions 252 may specify a polling 01:52
18 frequency for each sensor 220 or may 01:52
19 specify a common polling interval" -- I 01:52
20 misread that. Let me start again. 01:52
21 Paragraph 47 of the Risky 01:52
22 reference. It says, "Machine readable 01:52
23 instructions 252 may specify a polling 01:52
24 frequency for each sensor 220 or may 01:52
25 specify a common polling internal, all or 01:53

1 E. Kan, PhD
2 a sub-set of sensors 220." 01:53
3 And then it says, "As used 01:53
4 herein, a polling frequency may specify 01:53
5 how often processor 240 holds one or more 01:53
6 of the sensors 220." 01:53
7 Do you see that? 01:53
8 A. Yes. 01:53
9 Q. So this paragraph is indicating 01:53
10 that the Risky system may include machine 01:53
11 readable instructions that specify a 01:53
12 polling frequency for the various sensors. 01:53
13 Do you agree? 01:53
14 A. Yes. 01:53
15 Q. Do you agree then that this 01:53
16 paragraph discloses predetermined 01:53
17 intervals for generating a radio signal to 01:53
18 carry physiological data? 01:53
19 MR. MOFFETT: Objection. Form. 01:53
20 A. No, it does not teach that. 01:54
21 BY MR. GLANDORF: 01:54
22 Q. Why not? 01:54
23 A. This would be slightly longer, 01:54
24 okay. So explanation. Okay. 01:54
25 Starting from the top of this 01:54

1 E. Kan, PhD
2 page, and when I read the Risky, is 01:54
3 teaching a way, saying that the central 01:54
4 unit, right, is polling the sensor, right, 01:54
5 to report to the measurement data, right? 01:54
6 So this is -- in communication protocol 01:54
7 this is referred to something called 01:54
8 reader talk first. Okay. RTF, important. 01:54
9 Okay. 01:54
10 And there are -- another way is 01:54
11 that tag talk first, TTF, these are 01:54
12 totally different protocols. Okay. So 01:54
13 the tag talk first means that the tag 01:54
14 saying something is wrong and they 01:54
15 initiate a ping signal to the reader 01:54
16 saying, "Please read my signal. Something 01:54
17 I measure has changed." This is called 01:55
18 TTF. Okay. And here described is RTF, 01:55
19 reader talk first. Okay. Polling, and 01:55
20 then data exchange and things, okay. 01:55
21 A predetermined interval, 01:55
22 however, is TTO, tag talk only. I'm going 01:55
23 to report my measurements on the 01:55
24 predetermined interval. And that's it. 01:55
25 TTO, okay. And it's a protocol 01:55

1 E. Kan, PhD
2 to -- to -- mostly for saving the power on 01:55
3 the tag. Okay. Because it doesn't have 01:55
4 to have a decision circuit on the tag, 01:55
5 whether I should talk. It doesn't have to 01:55
6 constantly listen to the reader, saying is 01:55
7 the reader giving me a message, asking me 01:55
8 to report. Okay, so the -- so the 01:55
9 predetermined interval taught in '644 5[F] 01:55
10 belongs to the category of tag talk only, 01:55
11 which is different than what is teaching 01:56
12 here of polling which is reader talk 01:56
13 first. 01:56
14 So I don't read them as the same 01:56
15 at all, which one is it. 01:56
16 Q. What is your basis for 01:56
17 understanding Element 5[F] of the '644 01:56
18 patent to be limited to TTO? 01:56
19 A. It says here, right, "activating 01:56
20 said radio signal generator at 01:56
21 predetermined intervals, not listening to 01:56
22 the polling of the reader," right. So 01:56
23 this -- that sentence to me suggests is 01:56
24 TTO. 01:56
25 Q. In the RTF mode -- 01:56

1 E. Kan, PhD

2 A. Okay. 01:56

3 Q. -- isn't the reader activating 01:56

4 the radio signal generator at 01:56

5 predetermined intervals to generate a -- 01:57

6 A. Reader or tag? 01:57

7 Q. Well, the reader is telling the 01:57

8 tag to generate a signal. 01:57

9 A. Yeah. 01:57

10 Q. Is that right? 01:57

11 A. Yes, but that's reader, right? 01:57

12 Q. Yes. 01:57

13 A. Reader is not -- is under much 01:57

14 less power constraint. It's a different 01:57

15 power scheme. 01:57

16 Q. Right. But in that power 01:57

17 scheme -- so in that power scheme is the 01:57

18 reader telling the tag to activate a 01:57

19 report? 01:57

20 A. Yes. 01:57

21 Q. The data? 01:57

22 A. Yes. But that assumes the tag 01:57

23 is listening. It has to have its receiver 01:57

24 always up. That is part assumption. So 01:57

25 that's how I read polling the sensor to 01:57

1 E. Kan, PhD
2 obtain measurement data different from the 01:57
3 signal generator at predetermined 01:57
4 intervals, yeah. 01:57
5 Q. Okay. 01:58
6 A. Let me add in a little bit more 01:58
7 of this. Okay. It is very important, any 01:58
8 communication hardware, that the 01:58
9 transmitter and reader have an agreement. 01:58
10 Okay. If the transmitter and reader just 01:58
11 send out information, the reader is not 01:58
12 ready to listen. That transmission fails, 01:58
13 right. So is it generally referred to as 01:58
14 a handshake, right. 01:58
15 How does the reader know the tag 01:58
16 is ready to receive data is that after 01:58
17 transmitting the data to the tag, right, 01:58
18 the tag received it. Usually there's a 01:58
19 code called the Manchester code, says, 01:58
20 okay, this is a correct data and 01:58
21 acknowledge I have received your polling 01:58
22 instruction. 01:58
23 The only way that the reader can 01:59
24 know whether the tag has received my 01:59
25 previous polling instruction, so this is 01:59

1 E. Kan, PhD
2 referred to as a handshake, and that is 01:59
3 referring as in Risky here, which is not 01:59
4 what I read in 5[F], which is the tag is 01:59
5 reporting the measurement data in the 01:59
6 predetermined interval regardless of the 01:59
7 reader condition. 01:59
8 Okay. So this is -- that's why 01:59
9 I single it out called tag talk only for 01:59
10 short. The reader can talk, but the 01:59
11 initiations of the communication is always 01:59
12 tag is talking in a fixed tag. That's 01:59
13 called tag talk only. Doesn't mean that 01:59
14 reader can never talk. It's just that 01:59
15 when you initiate this communication 01:59
16 sequence, it's a tag talk only, which is 01:59
17 in my opinion is the most power saving 01:59
18 mode in this reader talk first or tag talk 02:00
19 first choices. 02:00
20 Tag talk only is an important 02:00
21 technique in the way to save power, right, 02:00
22 because when I described the RTF and the 02:00
23 TTF, all require decision to be made. I 02:00
24 received it. I acknowledge, or check 02:00
25 whether -- did I receive a coding, whether 02:00



1	E. Kan, PhD	
2	that coding is noise or it's a signal,	02:00
3	right.	02:00
4	All of these tracking is power	02:00
5	consumption. So the tag, if the ultimate	02:00
6	goal is to save the most power, then the	02:00
7	5[F] in the patent teach me that these,	02:00
8	the predetermined intervals from the tag	02:00
9	to talk to the reader.	02:00
10	Q. Let's go to a different section	02:00
11	here. Let's go to Paragraph 55.	02:01
12	A. Paragraph 55. Okay.	02:01
13	Q. 55 is talking about on-line	02:01
14	mode.	02:01
15	Do you see that?	02:01
16	A. Yes.	02:01
17	Q. And it says, "In 'on-line' mode,	02:01
18	bolus 210 may transmit animal	02:01
19	characteristics messages at the 'online'	02:01
20	transmission frequency specified by the	02:01
21	machine readable instructions 252."	02:01
22	Do you see that?	02:01
23	A. Yes.	02:01
24	Q. And it says, "As discussed	02:01
25	above, such messages may be transmitted at	02:01

1 E. Kan, PhD
2 a processor 240 -- as processor 240 polls 02:01
3 sensors 220 or may be transmitted at a 02:01
4 periodic transmission interval." 02:01
5 Do you see that? 02:01
6 A. Yes. 02:01
7 Q. So that's actually -- that's 02:01
8 talking about what you were just 02:01
9 discussing, right? This may -- the bolus 02:01
10 may be transmitting characteristics in 02:01
11 response to -- 02:01
12 A. The polling. 02:01
13 Q. -- in response to the polling or 02:01
14 maybe just transmitted at a periodic 02:02
15 transmission interval? 02:02
16 MR. MOFFETT: Objection. 02:02
17 BY MR. GLANDORF: 02:02
18 Q. Is that right? 02:02
19 A. Yes. 02:02
20 Q. And so that second part, "may be 02:02
21 transmitted at a periodic transmission 02:02
22 interval," that is the TTO that you were 02:02
23 discussing, correct? 02:02
24 A. Not necessarily. It's missing 02:02
25 the word "predetermined." 02:02



1 E. Kan, PhD

2 Q. It's missing the word? 02:02

3 A. It can be selected, right, and 02:02
4 that periodicity constantly changed. So 02:02
5 it's not exactly the same. 02:02

6 Q. Right. But it's specified by 02:02
7 the machine readable instructions, 02:02
8 correct? 02:02

9 MR. MOFFETT: Objection. Form. 02:02

10 A. Sorry, for that, that's before 02:02
11 the "or," right? 02:02

12 BY MR. GLANDORF: 02:02

13 Q. Yes, but do you read this 02:02
14 sentence to say that the machine readable 02:02
15 instructions would specify the 02:02
16 transmission frequency? 02:02

17 A. You can, right. You can 02:02
18 specify. That means it's selectable. 02:02

19 Q. Okay. And if we look here -- 02:03
20 let's look now at Paragraph 59, if we can. 02:03

21 A. Okay. 02:03

22 Q. And referring again to Figure 1, 02:03
23 do you see that? 02:03

24 A. Yes. 02:03

25 Q. Feel free to have Figure 1 02:03



1 E. Kan, PhD
2 there, and it says, "Referring again to 02:03
3 FIG. 1, one or more bolus 10, 20, may be 02:03
4 in wireless communication with a base 02:03
5 station 40." 02:03
6 And then it says, "As such bolus 02:03
7 10, 20 may periodically transmit animal 02:03
8 characteristic messages to the base 02:03
9 station 40." 02:03
10 Do you see that? 02:03
11 A. Yes. 02:03
12 Q. And in that case, what would 02:03
13 define the periodicity of the signal? 02:03
14 A. Not described here. Also the 02:04
15 sentence begins very strangely. I don't 02:04
16 understand from the first sentence 02:04
17 maybe -- maybe in wireless communication. 02:04
18 It has to be wireless communication from 02:04
19 the bolus to the reader. 02:04
20 But anyway that's probably 02:04
21 irrelevant here, so the first sentence 02:04
22 already kind of misguided me, what they 02:04
23 are talking about, because wire 02:04
24 communication and wireless communications 02:04
25 have totally different design aspects. 02:04



1 E. Kan, PhD
2 And the first sentence seem to suggest 02:04
3 there is a wired way, which I don't 02:04
4 understand at all, okay, and then talk 02:04
5 about may periodically transmit it. But 02:04
6 what is -- who determined the period? Is 02:04
7 the period predetermined or it's 02:04
8 selectable? Unclear in that 0059. 02:04
9 Q. Let's set that to the side here. 02:05
10 I'm actually going to go back to Harvey 02:05
11 again, believe it or not. 02:05
12 A. Okay. 02:05
13 MR. GLANDORF: Let's go ahead 02:05
14 and do our break since we're 02:06
15 transitioning. Take five minutes? 02:06
16 THE WITNESS: Sure. 02:06
17 THE COURT REPORTER: Off the 02:06
18 record. 02:06
19 (Recess taken.) 02:06
20 THE COURT REPORTER: Back on the 02:20
21 record. 02:20
22 MR. GLANDORF: Let's introduce a 02:20
23 new exhibit here at this time which is 02:21
24 Tab H. This is what is marked in the 02:21
25 IPR as Exhibit 1006. 02:21

1 E. Kan, PhD
2 (Whereupon, Exhibit 1006, United 02:21
3 States Patent Application Publication 02:21
4 Number US 2013/0197323 A1, was marked 02:21
5 for identification.) 02:21
6 MR. MOFFETT: Thank you. 02:21
7 BY MR. GLANDORF: 02:22
8 Q. Are you familiar with 02:22
9 Exhibit 1006, Dr. Kan? 02:22
10 A. Yes. 02:22
11 Q. This is what we referred to, I 02:22
12 believe, in the petition and in your 02:22
13 papers as the Rettedal reference? 02:22
14 A. Yes. 02:22
15 Q. I don't know if I'm saying that 02:22
16 correctly. 02:22
17 This is the same inventor, it 02:22
18 appears, as the '644 patent itself, 02:22
19 correct? 02:22
20 A. Yes. 02:22
21 Q. It looks as though the Rettedal 02:22
22 reference, Exhibit 1006, has a publication 02:22
23 of August 1st, 2013. 02:22
24 Do you see that? 02:22
25 A. Yes. 02:22

1 E. Kan, PhD

2 Q. You agree that this Rettedal 02:22
3 reference is prior art to the '644 patent? 02:22

4 A. Yes. 02:22

5 Q. Thank you. 02:22

6 Let's turn if we could -- I'm 02:22
7 going to turn in your report where you 02:23
8 discuss this reference. Let's look at 02:23
9 Page 188. 02:23

10 A. Page what? 02:23

11 Q. I'm sorry. Paragraph 188 in 02:23
12 your -- in your report, 2006. 02:23

13 A. Ah, there's no Page 188. 02:23

14 Q. Yes. 02:23

15 A. Okay. 02:23

16 Q. And I want to refer you to the 02:23
17 last sentence of that paragraph. 02:23

18 A. Okay. 02:23

19 Q. And it says, "A POSA would 02:23
20 understand that the claimed 'matching 02:23
21 elements' adjust the antenna's center 02:23
22 frequency property to match the radio 02:23
23 signal generator's output frequency." 02:23

24 A. Okay. 02:23

25 Q. Is that your understanding of 02:23



1 E. Kan, PhD
2 what the claimed matching elements 02:23
3 require? 02:23
4 A. It's not exact what I'm reading 02:23
5 here. You say the last sentence of 188? 02:23
6 Q. You have to go to the next page, 02:24
7 the last sentence of the paragraph. Yep. 02:24
8 A. Specifically? 02:24
9 Q. No. There's another sentence 02:24
10 after that, the last sentence of the 02:24
11 paragraph. 02:24
12 A. Okay. "A POSA would understand 02:24
13 that the claimed 'matching elements' 02:24
14 adjust the antenna's center frequency 02:24
15 property to match" -- yes, I agree to 02:24
16 that. Yes. 02:24
17 Q. Okay. That was your statement, 02:24
18 and you agree with it? 02:24
19 A. Yes. 02:24
20 Q. And we are discussing claim 7 02:24
21 here, correct? 02:24
22 A. Yes. 02:24
23 Q. If you have in front of you the 02:24
24 '644 patent -- 02:24
25 A. Yes. 02:24



1 E. Kan, PhD

2 Q. -- which is Exhibit 1001. 02:24

3 A. Yes. 02:24

4 Q. And let's turn to the claims 02:24
5 here in the back. 02:24

6 And do you find claim 7 there? 02:24

7 A. Yes. 02:24

8 Q. I'm going to read claim 7 into 02:24
9 the record here. It says, "The method of 02:25
10 claim 6, wherein said bolus further 02:25
11 comprises matching elements which adjust 02:25
12 said frequency of said radio signal to 02:25
13 compensate for a change in said frequency 02:25
14 of said radio signal due to passing 02:25
15 through a mass of said ruminant animal." 02:25

16 Did I read that correctly? 02:25

17 A. Yes. 02:25

18 Q. And I don't know if it's a typo. 02:25
19 There's a little bit of a singular/plural 02:25
20 typo perhaps there where it says 02:25
21 "'matching elements' which adjusts." 02:25

22 Does that appear to be a typo to 02:25
23 you? 02:25

24 A. Yeah. You mean grammatically? 02:25

25 Q. Just grammatically it should say 02:25



1	E. Kan, PhD	
2	matching elements which adjust.	02:25
3	Do you agree?	02:25
4	A. Matching elements which adjust	02:25
5	without the S after adjust, yeah, sure.	02:25
6	Q. Okay. And the word that appears	02:25
7	quite a bit in this claim is the word	02:25
8	"said."	02:25
9	Do you see that?	02:25
10	A. Yes.	02:25
11	Q. And do you understand that in	02:25
12	patent claims when you see the word	02:26
13	"said," it refers back to an earlier use	02:26
14	of the word that says follows "said"?	02:26
15	A. Yes.	02:26
16	Q. So let's walk back through here.	02:26
17	So it says -- first time that said	02:26
18	appears, it says "which adjusts said	02:26
19	frequency."	02:26
20	Do you see that?	02:26
21	A. Yes.	02:26
22	Q. And so if we go back to the	02:26
23	previous claim, which is claim 6, there is	02:26
24	a mention there of "said frequency."	02:26
25	Do you see that?	02:26

1 E. Kan, PhD

2 A. Yes. 02:26

3 Q. And so again, we would 02:26

4 understand the word "frequency" to refer 02:26

5 to the same thing in claim 7 and claim 6? 02:26

6 A. Yes. 02:26

7 Q. And 6 also says "said 02:26

8 frequency." So we need to look back to 02:26

9 claim 5, if we could, to find the first 02:26

10 time the word "frequency" is used. And I 02:26

11 guess take a moment to read through claim 02:26

12 5, but I believe the first time we see the 02:26

13 word "frequency" is in the last sentence, 02:26

14 the last element. 02:27

15 A. Okay. Yes. 02:27

16 Q. Okay. And so the frequency that 02:27

17 claim 5 is referring to is the radio 02:27

18 signal that's generated. 02:27

19 Do you agree? 02:27

20 A. Yes. 02:27

21 Q. And so, again, if we go down to 02:27

22 claim 7, it's talking about which adjust 02:27

23 said frequency. It's talking about the 02:27

24 frequency of the radio signal, correct? 02:27

25 A. Yes. 02:27



1 E. Kan, PhD

2 Q. Okay. Great. 02:27

3 And if we look also in claim 7, 02:27

4 there is a reference to "said radio 02:27

5 signal." 02:27

6 Do you see that? 02:27

7 A. Yes. 02:27

8 Q. And, again, if we go all the way 02:27

9 back up to claim 5, the first time we see 02:27

10 the term "radio signal" is in the 02:27

11 second-to-last one where you have a radio 02:27

12 signal generator activating to generate 02:28

13 activate a radio signal. 02:28

14 Do you see that? 02:28

15 A. Yes. 02:28

16 Q. So just to make sure I 02:28

17 understand here, in this claim 7, it's 02:28

18 talking about the frequency of a radio 02:28

19 signal and it's talking about the radio 02:28

20 signal that's generated to carry the 02:28

21 encoded physiological data, correct? 02:28

22 A. Yes. 02:28

23 Q. Okay. And so when claim 7 is 02:28

24 talking about its matching elements, 02:28

25 matching elements have to adjust the 02:28

1 E. Kan, PhD
2 frequency of that radio signal, correct? 02:28
3 A. Not exactly. Sorry. 02:28
4 Q. Let me ask it again: In claim 02:28
5 7, there's a reference to matching 02:28
6 elements -- 02:28
7 A. Yes. 02:28
8 Q. -- and those matching elements 02:28
9 have to adjust the frequency of the radio 02:28
10 signal that's generated in claim 5 to 02:28
11 carry the encoded physiological data, 02:29
12 correct? 02:29
13 A. Still not exact. That's not how 02:29
14 I read it. 02:29
15 Q. Where is the disagreement? 02:29
16 Why -- 02:29
17 A. The disagreement is just as a 02:29
18 radio practitioner, the local oscillator 02:29
19 of the transmitter generate a frequency 02:29
20 and that frequency is not going to change. 02:29
21 So we cannot use another element to change 02:29
22 that frequency. Okay. 02:29
23 But the frequency has to match 02:29
24 what the resonant frequency of the antenna 02:29
25 is. When it's not matched, we use the 02:29

1 E. Kan, PhD
2 matching element to make it match to the 02:29
3 local oscillator frequency which is the 02:30
4 frequency that would go out to the air or 02:30
5 go through the animal. And the antenna 02:30
6 frequency need to be the antenna resonant 02:30
7 frequency or the frequency that an antenna 02:30
8 emit the most efficiently need to match, 02:30
9 so. 02:30
10 Q. They need to match? 02:30
11 A. Yes. 02:30
12 Q. And the way that claim 7, the 02:30
13 claimed that they match is to adjust the 02:30
14 frequency of the radio signal that's being 02:30
15 generated within the bolus? 02:30
16 MR. MOFFETT: Objection. Form. 02:30
17 BY MR. GLANDORF: 02:30
18 Q. Correct? 02:30
19 A. Adjusted -- the local oscillator 02:30
20 will make the adjustment, yeah. 02:30
21 Q. Okay. That's what it said? 02:30
22 A. Yeah, right. 02:30
23 Q. If I look back, though, at 02:30
24 your -- the sentence we read from the last 02:30
25 sentence of Paragraph 188 of your report. 02:30



1 E. Kan, PhD

2 A. Okay. 02:30

3 Q. If I understand this correctly, 02:31

4 what you're saying here is that the 02:31

5 claimed matching elements must adjust the 02:31

6 antenna center frequency, not to adjust 02:31

7 the radio signal generator's output 02:31

8 frequency? 02:31

9 A. That is a what I said, yes. 02:31

10 Q. That's what you said? 02:31

11 A. Yeah. 02:31

12 Q. I thought we just read through 02:31

13 claim 7, though, and claim 7 says what's 02:31

14 being adjusted is the generated radio 02:31

15 signal? 02:31

16 A. Eventually they are equal, 02:31

17 right? So that means you're saying that 02:31

18 in 7, it's which one being adjusted by the 02:31

19 matching element? 02:31

20 Q. It seems to me that there is a 02:31

21 disconnect between the claim language here 02:31

22 in 7 and what you're saying here in 02:31

23 Paragraph 188. 02:31

24 A. 188 is my understanding of how 7 02:31

25 is written. That's -- yeah, a radio 02:31



1 E. Kan, PhD
2 signal once generated going through -- 02:32
3 going through media will not change its 02:32
4 center frequency, okay, which is signal 02:32
5 system 101. When I read this, right, I 02:32
6 will -- a POSA read this, including me, 02:32
7 will read this as the radiofrequency needs 02:32
8 to be adjusted, right, so that the local 02:32
9 oscillator frequency and the frequency, 02:32
10 the antenna resonant frequency most 02:32
11 efficient is the same. 02:32
12 Q. I understand that we need them 02:32
13 to be the same. 02:32
14 A. Okay. 02:32
15 Q. And if I'm not understanding, I 02:32
16 would be happy for you to correct it. 02:33
17 It seems if they don't match, we 02:33
18 can change one or the other so they 02:33
19 do match -- 02:33
20 A. Yes. 02:33
21 Q. -- correct? 02:33
22 We can change what radio signal 02:33
23 is being generated, or we can change 02:33
24 the -- we can adjust the antenna center 02:33
25 frequency? 02:33

1 E. Kan, PhD

2 A. Yes. 02:33

3 Q. Those are two different options. 02:33

4 MR. MOFFETT: Objection to form. 02:33

5 A. I'm so sorry. Two different 02:33

6 options, two different views. 02:33

7 BY MR. GLANDORF: 02:33

8 Q. Two different views? 02:33

9 A. Views, right. I mean, antenna 02:33

10 is a passive element. So antenna has a 02:33

11 characteristic of resonant frequency. 02:33

12 Antenna doesn't generate frequencies, 02:33

13 right. So only the local oscillator or 02:33

14 the oscillator generate a frequency which 02:33

15 is the active element. Then you see where 02:33

16 there is -- why I said there's two views 02:33

17 instead of two options. Okay. 02:33

18 Q. Okay. The antenna is not 02:33

19 generating a radio signal, correct? Is 02:34

20 that what you said? 02:34

21 A. Antenna cannot generate new 02:34

22 frequencies. 02:34

23 Q. Cannot generate new frequencies. 02:34

24 A. New radio frequencies, sure. 02:34

25 Q. Okay. 02:34

1 E. Kan, PhD

2 A. It tries to emit the radio 02:34
3 signal to the air. That's antenna. 02:34

4 Q. You're saying here in this last 02:34
5 page here that -- or last sentence of 02:34
6 Paragraph 88 [sic] that the claim requires 02:34
7 adjusting the antenna center frequency 02:34
8 property. 02:34

9 Is that what you have written 02:34
10 here? 02:34

11 A. Yes. 02:34

12 Q. What does it mean to adjust the 02:34
13 antenna center frequency property? 02:34

14 A. What do I mean? Originally 02:34
15 it's -- originally it has an impedance at 02:34
16 this frequency which now the -- it doesn't 02:34
17 because that frequency change because it's 02:35
18 inside the animal, or the antenna 02:35
19 detuning, so I use the -- so the -- now 02:35
20 the signal coming from the radio generator 02:35
21 will see a mismatch impedance from the 02:35
22 antenna, right, so I -- but then this will 02:35
23 cause reflection, very inefficient 02:35
24 emission to the air, so I need to adjust 02:35
25 the impedance or in the same word, the 02:35

1 E. Kan, PhD
2 resonant frequency of the antenna to match 02:35
3 with the -- what is generated by the radio 02:35
4 signal generator. 02:35
5 Q. I understand that. 02:35
6 A. Okay. 02:35
7 Q. That makes sense. 02:35
8 A. Yeah, okay. 02:35
9 Q. That's not what's claimed here 02:35
10 in claim 7 though, correct? 02:35
11 MR. MOFFETT: Objection. 02:35
12 BY MR. GLANDORF: 02:35
13 Q. Claim 7 doesn't -- 02:35
14 MR. MOFFETT: Objection. 02:35
15 BY MR. GLANDORF: 02:35
16 Q. -- refer to the antenna in any 02:35
17 way. Doesn't refer to the antenna's 02:35
18 center frequency. It doesn't refer to the 02:35
19 antenna's impedance, correct? 02:36
20 A. It has the impedance there 02:36
21 because matching elements is mentioned. 02:36
22 Matching means impedance matching. 02:36
23 Q. So you're matching -- and, 02:36
24 again, the goal, as I understand it, is to 02:36
25 match the frequency that's -- that's -- 02:36

1 E. Kan, PhD
2 that passes through the animal with the 02:36
3 center frequency of the antenna. 02:36
4 Is that what you're matching? 02:36
5 A. Yes. 02:36
6 Q. Okay. And, again, as I 02:36
7 understand it, as we walked through the 02:36
8 claim, claim 7 requires adjusting the 02:36
9 frequency of the generated radio signal to 02:36
10 match center frequency of the antenna. 02:36
11 MR. MOFFETT: Objection. Form 02:36
12 of that question. 02:36
13 BY MR. GLANDORF: 02:36
14 Q. Is that correct? 02:36
15 A. There comprises matching 02:36
16 elements which adjusts said frequency. I 02:36
17 said already signal to compensate for 02:37
18 change in said frequency, for change in 02:37
19 said frequency of the said frequency due 02:37
20 to passing through a mass of the said -- 02:37
21 it says the -- the -- yeah, as a POSA 02:37
22 reading this, it's -- it's the signal, 02:37
23 right. Now, the matching element's 02:37
24 purpose is to adjust the -- to adjust that 02:37
25 the local oscillator and the antenna have 02:37

1 E. Kan, PhD
2 matching impedance. But you are strictly 02:37
3 asking me what is 7 means here, which 02:37
4 adjusts said frequency of said radio 02:38
5 signal compensate for changing said 02:38
6 frequency or said radiofrequency. I think 02:38
7 I argue it here because it's an ambiguous 02:38
8 sentence to me when I read it first, and I 02:38
9 argue it. It must mean this way, 02:38
10 according to what I wrote out in 188. 02:38
11 Yeah. So -- 02:38
12 Q. Let's look at -- 02:38
13 A. -- I have no further things I 02:38
14 know how to say that because that's how I 02:38
15 read it. 02:38
16 Q. Okay. I'm still not 02:38
17 understanding. I'm going to ask a few 02:38
18 more questions to make sure we have a 02:38
19 clear record. Let me direct you to 02:38
20 Paragraph 191 of your report. 02:38
21 A. Okay. 02:38
22 Q. It's a short paragraph, if you 02:38
23 want to read that. 02:38
24 A. Sure. Yes. I read it. 02:38
25 Q. Okay. Let me ask you some 02:39

1 E. Kan, PhD

2 questions then. 02:39

3 There is no mention in claim 7 02:39

4 of adjusting -- I'm sorry. I'm going to 02:39

5 start this again. There's no reference in 02:39

6 claim 7 to shifting the center frequency 02:39

7 of the antenna, correct? 02:39

8 MR. MOFFETT: Objection. Form. 02:39

9 A. It says the matching elements 02:39

10 which you consider as the connection to 02:39

11 the antenna. 02:39

12 Q. Okay. 02:39

13 A. Okay. 02:39

14 Q. Let's look, though, at claim 7, 02:39

15 what claim 7 says the matching elements 02:39

16 do, "matching elements adjust said 02:39

17 frequency of said radio signal." And we 02:39

18 walked through that. "Said frequency" 02:39

19 refers to the -- again, if you look back 02:39

20 up here -- the frequency of the generated 02:39

21 radio signal in claim 5. 02:40

22 Do you see that? 02:40

23 A. Yes. 02:40

24 MR. MOFFETT: Objection to the 02:40

25 question -- to the testimony in the 02:40

1	E. Kan, PhD	
2	question.	02:40
3	BY MR. GLANDORF:	02:40
4	Q. Do you -- I'm sorry. Do you	02:40
5	agree with that?	02:40
6	A. Of the --	02:40
7	Q. Let me ask it again. Let me ask	02:40
8	it again.	02:40
9	Do you agree that claim 7	02:40
10	requires the matching elements to adjust	02:40
11	the frequency of the radio signal	02:40
12	generated in the last step of figure -- of	02:40
13	claim 5?	02:40
14	MR. MOFFETT: Objection. Form.	02:40
15	A. I think I explained it once	02:40
16	already. What I read. Okay. If you go	02:40
17	for term by term, so which frequency is	02:40
18	this? Which radio signal is this? Okay.	02:40
19	Repeat again what you asked me	02:41
20	to agree to.	02:41
21	BY MR. GLANDORF:	02:41
22	Q. Okay. Do you agree that the	02:41
23	matching elements of claim 7 --	02:41
24	A. Okay.	02:41
25	Q. -- adjust the frequency of the	02:41

1 E. Kan, PhD
2 generated radio signal from claim 5? 02:41
3 A. You add a word "generated." 02:41
4 Okay. 02:41
5 Q. That's right. Because I'm 02:41
6 looking at where that term -- where 02:41
7 frequency comes in. It comes in from that 02:41
8 last step of claim 5. That's what we 02:41
9 discussed? 02:41
10 MR. MOFFETT: Objection. Form. 02:41
11 You're testifying and you're 02:41
12 mischaracterizing his testimony. 02:41
13 MR. GLANDORF: We've been over 02:41
14 this. 02:41
15 MR. MOFFETT: Proceed. 02:41
16 MR. GLANDORF: I don't think 02:41
17 there is a question. 02:41
18 MR. MOFFETT: I apologize. 02:41
19 MR. GLANDORF: Yeah, there's 02:41
20 not. Let me ask it again. I'm just 02:41
21 giving him time to read it again. 02:41
22 A. Okay. I'm finished reading it. 02:42
23 BY MR. GLANDORF: 02:42
24 Q. I'm going to go through it again 02:42
25 because there is a misunderstanding here 02:42



1 E. Kan, PhD
2 and we need to get to the bottom of it. 02:42
3 Okay? 02:42
4 A. Okay. 02:42
5 Q. And maybe we just disagree, and 02:42
6 that's fine. I just don't understand. So 02:42
7 let's look at claim 7. Claim 7 refers to 02:42
8 matching elements, which adjust said 02:42
9 frequency of said radio signal, correct? 02:42
10 A. Yes. 02:42
11 Q. Okay. Which adjusts -- okay. 02:42
12 So let's find out what is "said radio 02:42
13 signal" a reference to? 02:42
14 A. In claim 5, right, as you 02:42
15 pointed out. 02:42
16 Q. In claim 5, right, and that is 02:42
17 the first time radio signal appears, it 02:42
18 says, "activating said radio signal 02:42
19 generator at pre-determined intervals to 02:42
20 generate a radio signal to carry said 02:42
21 encoded physiological data." 02:42
22 That is where the term "radio 02:43
23 signal" in claim 7 comes from. 02:43
24 Do you agree? 02:43
25 MR. MOFFETT: Objection. Form. 02:43

1 E. Kan, PhD

2 A. I agree. 02:43

3 BY MR. GLANDORF: 02:43

4 Q. Okay. It's adjusting said 02:43

5 frequency of said radio signal, and if we 02:43

6 look back, where does the -- where does 02:43

7 the said frequency come from that's being 02:43

8 referred to here in claim 7? 02:43

9 A. From claim 5. 02:43

10 Q. From claim 5. And in particular 02:43

11 from the last element of claim 5 where it 02:43

12 says "generating said radio signal having 02:43

13 a frequency," is that where "said 02:43

14 frequency" in claim 7 comes from? 02:43

15 MR. MOFFETT: Objection. Form. 02:43

16 A. Yes, yeah, I have gone through 02:43

17 this again. The -- a radio designer, 02:43

18 right, once we generated -- I think it's 02:44

19 just different view instead of different 02:44

20 operation mode because one of them is 02:44

21 impossible, so no POSA will read it that 02:44

22 way. Okay. 02:44

23 Matching element and antenna are 02:44

24 passive elements. They don't generate new 02:44

25 frequencies, okay, in that they don't 02:44



1 E. Kan, PhD
2 generate new signal frequencies. Okay. 02:44
3 So it's a -- it's so when I read 7, I'm 02:44
4 not, oh, he misunderstood the physics. I 02:44
5 won't read that, right, because I think he 02:44
6 understand the physics. 02:44
7 So it's because one of the way 02:44
8 passive element cannot generate new signal 02:44
9 frequency, it's a -- it's a given 02:44
10 knowledge to me. So how I read it is how 02:44
11 I write it down. Right. So because one 02:45
12 of the -- the mold that you described is 02:45
13 not possible physically. 02:45
14 So when I read claim 7, it must 02:45
15 mean, right, that the matching element 02:45
16 adjusting the detune antenna, right, now 02:45
17 the antenna will become efficient to emit 02:45
18 the generated radio signal. That's how I 02:45
19 read it. Okay. Because the description 02:45
20 you gave, okay, similarly tried to ask me 02:45
21 to interpret claim 7 that way, to me in 02:45
22 that isolated description is not 02:45
23 physically possible because no passive 02:45
24 element can change the signal frequency. 02:45
25 BY MR. GLANDORF: 02:46

1 E. Kan, PhD

2 Q. Thank you. I think we're 02:46
3 starting to understand each other. 02:46

4 Let's look back at 191, what you 02:46
5 say here -- 02:46

6 A. Okay. 02:46

7 Q. -- and you read that sentence, 02:46
8 correct? 02:46

9 A. Yes. 02:46

10 Q. And when you just -- it says 02:46
11 what you just told me, that "a POSA would 02:46
12 understood that the claims involve 02:46
13 impedance matching to shift a center 02:46
14 frequency of the antenna." 02:46

15 That's what you just said, 02:46
16 correct? 02:46

17 A. Yes. 02:46

18 Q. Whereas what you say is that it 02:46
19 does not mean to "cause the radio signal 02:46
20 generator to generate a signal at a 02:46
21 different frequency." 02:46

22 That is not what it means in 02:46
23 your opinion, correct? 02:46

24 A. Yes, what I wrote, yes. 02:46

25 Q. In your opinion -- just to 02:46



1 E. Kan, PhD
2 clarify for the record -- in your opinion, 02:46
3 claim 7 does not require adjusting the 02:46
4 radio signal generator to generate a 02:46
5 signal at a different frequency. Is that 02:47
6 too many of a double negative? Let me do 02:47
7 it again. 02:47
8 In your opinion, claim 7 does 02:47
9 not require the radio signal generator to 02:47
10 generate a signal at a different frequency 02:47
11 to match the antenna? 02:47
12 A. No, that's not what I said. It 02:47
13 can't. 02:47
14 Q. Okay. 02:47
15 A. It's just that the different 02:47
16 frequency's not generated at the matching 02:47
17 element in the antenna. The generator for 02:47
18 sure can choose to use a different 02:47
19 frequency. 02:47
20 Q. I see, but that -- you 02:47
21 wouldn't -- is it your testimony that you 02:47
22 wouldn't use a matching element to change 02:47
23 the frequency that is coming out of the 02:47
24 radio signal generator? 02:47
25 A. Not changing the frequency of 02:47

1 E. Kan, PhD
2 the -- of the -- not changing the signal 02:47
3 frequency out of the signal generator, 02:47
4 yes. 02:47
5 Q. Your testimony is that it's not 02:48
6 possible for matching elements to shift 02:48
7 the radio signal frequency or -- 02:48
8 A. Or generating a new frequency, 02:48
9 yeah. 02:48
10 Q. That's not possible? 02:48
11 A. Yeah, yes. 02:48
12 Q. Let me back up. You can agree 02:49
13 with me or not. 02:49
14 In your opinion, it is not 02:49
15 possible for matching elements to adjust 02:49
16 the frequency of the radio signal that was 02:49
17 generated within the bolus; is that -- 02:49
18 A. Generated by the local 02:49
19 oscillator, yeah, sure. I think the 02:49
20 mismatch here is the said said, right. So 02:49
21 how I read the said said, as you lead me 02:49
22 to, the said must be referring to the 02:49
23 claim 5 said, right, that makes me the 02:49
24 different interpretation. 02:49
25 Let me offer an explanation. If 02:49



1 E. Kan, PhD
2 I tell you I have tears flowing down on my 02:49
3 face, I didn't tell you the tears are from 02:49
4 the face, which is not possible. Those 02:49
5 are sweat, not tears, right. A POSA 02:49
6 reading this will be assuming that this is 02:49
7 tears from your eyes, right. 02:50
8 So even though this is not so 02:50
9 isolated, described it in claim 7, but 02:50
10 this is the physical principle of a 02:50
11 transmitter signal chain so I will read it 02:50
12 that way. 02:50
13 Q. When you are reading into the 02:50
14 claim the requirement that there is a 02:50
15 shift in the center frequency of the 02:50
16 antenna, correct, you're reading that 02:50
17 there's no reference -- let me ask a new 02:50
18 question. 02:50
19 Again, there is no reference in 02:50
20 claim 7 to adjusting or shifting the 02:50
21 center frequency of the antenna, correct? 02:50
22 MR. MOFFETT: Objection. Form. 02:50
23 A. Claim 7 doesn't describe the -- 02:50
24 it's a short sentence. It doesn't 02:50
25 describe that, yeah. 02:50



1 E. Kan, PhD

2 So with my background knowledge, 02:50
3 this is how I read claim 7. Maybe you're 02:50
4 saying I'm inferring from a background or 02:51
5 my previous knowledge, then I think that, 02:51
6 yeah, as all reading of my is always try 02:51
7 to be consistent with my previous 02:51
8 knowledge. 02:51

9 BY MR. GLANDORF: 02:51

10 Q. The plain reading of claim 7 02:51
11 then, in your opinion, is impossible. 02:51

12 Do you agree? 02:51

13 MR. MOFFETT: Objection. Form. 02:51

14 A. The plain reading, right, so 02:51
15 that's the said things, right, so if you 02:51
16 replace all the "said" as you have 02:51
17 indicated, there is a way that I would say 02:51
18 that that is impossible. 02:51

19 But that's not how I learn from 02:51
20 the teaching of what's claim 7, though. 02:51
21 And claim 7 is dealing with a very 02:51
22 important aspects of how bolus sensor can 02:51
23 work. Because like in Harvey is an ear 02:51
24 tag, your one sent of the signal travel 02:52
25 through air. Air does not have the 02:52



1 E. Kan, PhD
2 tubing, right. 02:52
3 So you don't have -- your 02:52
4 matching element design is very different 02:52
5 from the matching elements of a bolus 02:52
6 sensor, right. 02:52
7 So here teaching 7, teaching me, 02:52
8 remind me that during the design process 02:52
9 of a bolus sensor, your antenna going to 02:52
10 be detuned. The original frequency that 02:52
11 you think will work in other tags may not 02:52
12 work now. Something need to -- your 02:52
13 matching element -- your matching element 02:52
14 need to adjust to make further adjustment 02:52
15 to make it work. 02:52
16 So it teaches me that the bolus 02:52
17 sensor have additional design 02:52
18 difficulties. Okay. That's what claim 7 02:52
19 teaches me. And I'm not trying to learn 02:52
20 physics from any patent writing, right. 02:53
21 BY MR. GLANDORF: 02:53
22 Q. I understand. 02:53
23 A. Yeah. 02:53
24 Q. But if claim 7 is arguing that 02:53
25 you match the frequencies by adjusting the 02:53



1 E. Kan, PhD
2 generated frequency from the bolus, it's 02:53
3 your testimony that that is not possible 02:53
4 using matching elements? 02:53
5 A. No, no, no. You used different 02:53
6 words. Sorry. 02:53
7 Q. Okay. 02:53
8 A. The frequency cannot be changed 02:53
9 in passive elements like the matching 02:53
10 elements and antenna. When you use the 02:53
11 word this, I cannot access sensor to 02:53
12 change the frequency, the sensor can 02:53
13 change, right, because oscillator is part 02:53
14 of the sensor so your statement is not 02:53
15 accurate. 02:53
16 Q. I understand. I understand. I 02:53
17 understand where I went wrong. 02:53
18 If claim 7 requires the matching 02:53
19 elements to adjust the frequency that's 02:53
20 coming out of the bolus -- 02:53
21 A. The signal frequency. 02:53
22 Q. -- the signal frequency -- 02:53
23 A. Okay. 02:53
24 Q. -- it's your opinion that that 02:54
25 is not possible? 02:54

1 E. Kan, PhD

2 A. I would not read it that way 02:54

3 because it's not possible, yeah, sure. 02:54

4 Q. Okay. One moment. 02:54

5 You used the word "passive," is 02:54

6 that right, with regard to the matching 02:54

7 elements? 02:54

8 A. Yes. 02:54

9 Q. Is it your understanding that 02:54

10 matching elements refers to a passive 02:54

11 element? 02:54

12 A. It doesn't have to be, not 02:54

13 necessarily, okay, but commonly matching 02:54

14 elements are LC inductor capacitator tanks 02:54

15 that's passive. 02:54

16 Q. And so this discussion we were 02:54

17 just having is based on your understanding 02:54

18 that that phrase "matching elements" 02:54

19 refers to a passive element; is that 02:54

20 right? 02:54

21 A. From the reading of the entire 02:54

22 '644, is that that sentence doesn't 02:54

23 require that. 02:54

24 Q. Are there matching elements that 02:54

25 are not passive? 02:55

1 E. Kan, PhD

2 A. Yep, it can be. 02:55

3 Q. Okay. If there is a matching 02:55
4 element that is not passive, is it 02:55
5 possible to use the matching elements to 02:55
6 adjust frequency? 02:55

7 A. Is it possible? Yes. Is it 02:55
8 commonly done? No. 02:55

9 Q. I see. Let's turn if we can to 02:55
10 the '644 patent. Earlier -- let's go to 02:55
11 Column 6 if we can. 02:55

12 A. Column 6. Okay. 02:55

13 Q. Let's go to Line 27 where it 02:56
14 starts because -- do you see that? 02:56

15 A. Yes. 02:56

16 Q. It says, "Because the radio 02:56
17 signal generator (21) included in 02:56
18 embodiments of the bolus (1) operate 02:56
19 within the mass of a ruminant animal (3) 02:56
20 it has been discovered that the center 02:56
21 frequency (the arithmetic mean of the 02:56
22 lower cutoff frequency and the upper 02:56
23 cutoff frequency) is shifted lower and may 02:56
24 not have the maximum gain." 02:56

25 Do you see that? 02:56

1 E. Kan, PhD

2 A. Yes. 02:56

3 Q. And that's what we were just 02:56
4 talking about, right? 02:56

5 A. Yes. 02:56

6 Q. Because of the mass of the 02:56
7 animal, there may be a shift in the 02:56
8 frequency. 02:56

9 Is that a fair summary? 02:56

10 A. In that frequency the lower 02:56
11 cutoff frequency and the upper cutoff 02:56
12 frequency is talking about the antenna 02:56
13 frequency. 02:56

14 Q. It's talking about the antenna 02:56
15 frequency. 02:56

16 A. Yes. 02:56

17 Q. Okay. But it's -- and you think 02:56
18 that because of the mass of the animal, 02:57
19 the center frequency of the antenna is 02:57
20 shifted lower? 02:57

21 Is that what it said? 02:57

22 A. Yes. 02:57

23 Q. Okay. Let's look at Rettedal 02:57
24 now. This is Exhibit 1006. 02:58

25 A. Sorry. Before we leave that. 02:58



1	E. Kan, PhD	
2	MR. MOFFETT: There's no	02:58
3	question.	02:58
4	THE WITNESS: Okay. Sure.	02:58
5	A. But I hope you refer to what I	02:58
6	wrote in 190 where -- explaining where the	02:58
7	things, constantly negotiating, whatever,	02:58
8	okay, but what I wrote in 190 is exact and	02:58
9	quoted what you just read from Column 6.	02:58
10	Q. Okay.	02:58
11	A. So if you're still unclear, read	02:58
12	my 190 claim.	02:58
13	Q. Okay.	02:58
14	A. My declaration.	02:58
15	Q. Let's go to Rettedal and	02:58
16	Paragraph 64.	02:59
17	A. Rettedal 64.	02:59
18	Q. Paragraph 64.	02:59
19	A. Paragraph 64, Rettedal, 64,	02:59
20	okay.	02:59
21	Q. Go ahead and read that whole	02:59
22	paragraph to yourself, and I'll have some	02:59
23	questions for you.	02:59
24	A. For [0064] in Page 7, right?	02:59
25	Q. Correct. Okay. Paragraph 64 is	02:59

1 E. Kan, PhD
2 discussing a network frequency match 03:00
3 element (118), correct? 03:00
4 A. Yes. 118. Appreciate that. 03:00
5 Matching network. 118. 03:01
6 Q. Okay. So it's discussing a 03:01
7 network frequency match element (118), 03:01
8 correct? 03:01
9 A. Yes. 03:01
10 Q. And the network frequency match 03:01
11 element (118) operates to detune the 03:01
12 frequency signal that's coming out of the 03:01
13 radio signal generator; is that right? 03:01
14 A. Uh-huh. 03:01
15 Q. And by detuning, it means -- 03:01
16 what does it mean to detune? 03:01
17 I'll ask you. 03:01
18 A. Change the frequency or change 03:01
19 it lower. Detune means changing the tune. 03:01
20 Tune means frequency. 03:01
21 Q. So according to Rettedal at 03:01
22 Paragraph 64, it is possible to use a 03:02
23 network frequency match element to change 03:02
24 the frequency of the signal coming out of 03:02
25 the radio signal generator, correct? 03:02

1 E. Kan, PhD

2 A. I don't agree. That's what he 03:02
3 said, but I don't agree. 03:02

4 Q. You don't agree that's possible? 03:02

5 A. I don't agree that's the case 03:02
6 here, yes, especially with the resistors 03:02
7 and capacitors. 03:02

8 Q. Just so I understand. You agree 03:02
9 with me that is what Rettedal is saying 03:02
10 here in Paragraph 64, but you don't agree 03:02
11 that's possible to do with capacitors and 03:02
12 resistors? 03:02

13 A. I agree that's what Rettedal 03:02
14 said, right. The -- your next question is 03:02
15 I don't -- 03:02

16 Q. You don't agree that it's 03:02
17 possible -- you disagree that it's 03:02
18 possible to do this? 03:02

19 A. It's -- if matching element is 03:02
20 only resistors and capacitors, like the 03:03
21 previous sentence, no, it's not possible 03:03
22 to do that. But not all matching elements 03:03
23 are made by resistors and capacitors. So 03:03
24 that's why I have a reservation here. 03:03

25 Q. And it says here, looking at the 03:03



1 E. Kan, PhD
2 second sentence, it says, "The network 03:03
3 frequency match element can include 03:03
4 capacitors and resistors in 03:03
5 combination..." 03:03
6 And your testimony is capacitors 03:03
7 and resistors alone would not make it 03:03
8 possible to detune the way that Rettedal 03:03
9 describes it; is that right? 03:03
10 A. Yes. 03:03
11 Q. What else would you need? 03:03
12 A. I need the active source. If 03:03
13 there's no active source, then it -- then 03:03
14 I will read this one saying that now the 03:03
15 signal frequency will be changed to 418. 03:03
16 So, yeah. 03:04
17 Q. And the reason you would want to 03:04
18 change the signal frequency is to match 03:04
19 the antenna, correct? 03:04
20 A. Yes. 03:04
21 Q. And so it seems like Paragraph 03:04
22 64 here has the same problem as claim 7 03:04
23 which is that, in your opinion, it is not 03:04
24 possible to detune the radio signal with a 03:04
25 passive match element; is that right? 03:04

1 E. Kan, PhD

2 A. The later part of the statement 03:04
3 is true. A passive matching element 03:04
4 cannot change the signal frequency. 03:04

5 That's impossible. Like I said, I don't 03:04
6 try to learn physics from patent. Patent 03:04
7 teach me how to design a system to a POSA. 03:04

8 Q. You're looking at both Paragraph 03:04
9 64 and claim 7. Teach detuning the signal 03:04
10 from the signal generator using match 03:05
11 elements? 03:05

12 MR. MOFFETT: Objection. Form. 03:05

13 A. A little bit vague, okay, but -- 03:05
14 so rephrase that question. 03:05

15 BY MR. GLANDORF: 03:05

16 Q. Yeah. Sure. 03:05

17 A. So my answer is -- and I hope 03:05
18 the question is asking me how -- what the 03:05
19 patent teaches, right. 03:05

20 Q. That's right. I'm asking you 03:05
21 what the patent teaches. 03:05

22 A. Okay. 03:05

23 Q. Let me just do these two 03:05
24 questions here. Paragraph 64 of 03:05
25 Exhibit 1006 teaches the use of match 03:05

1 E. Kan, PhD
2 elements to detune the frequency of the 03:05
3 generated radio signal to match the 03:05
4 antenna frequency; is that right? 03:05
5 A. Not exactly. Sorry. Back and 03:05
6 forth on this, as I mentioned, my full 03:05
7 opinion is in my 190 declaration. I don't 03:06
8 know how to shorten sentences to better 03:06
9 express that thing. Okay. It may be poor 03:06
10 writing. It may be something, but what it 03:06
11 teaches from the '644 is clear to me. 03:06
12 There is a detuning happening 03:06
13 because it's in side the animal, which is 03:06
14 different from operating in the air. That 03:06
15 way the system will adjust to that. 03:06
16 That's the teaching I learned from '644. 03:06
17 Q. And the '644, claim 7, teaches 03:06
18 to adjust -- use matching elements to 03:06
19 adjust the frequency of the generated 03:06
20 radio signal? 03:06
21 MR. MOFFETT: Objection. 03:06
22 BY MR. GLANDORF: 03:06
23 Q. That's what claim 7 says, 03:06
24 correct? 03:06
25 MR. MOFFETT: Objection. Form. 03:06



1 E. Kan, PhD

2 A. I think I have explained that 03:06
3 point multiple times and you are asking 03:06
4 the questions again seemingly trying to 03:06
5 get a different answer, which I don't 03:06
6 understand. 03:06

7 BY MR. GLANDORF: 03:06

8 Q. What I'm trying to do is 03:06
9 understand if you have a different reading 03:06
10 of Paragraph 0046 here from Rettedal than 03:07
11 you do from claim 7 of the '644 patent. 03:07
12 Isn't it true -- let me ask it this way. 03:07
13 Do you agree that both Paragraph 64 of 03:07
14 Rettedal and claim 7 of the '644 patent 03:07
15 claim that matched elements can be used to 03:07
16 change the frequency -- 03:07

17 A. The signal frequency. 03:07

18 Q. The signal frequency. Do you 03:07
19 agree? 03:07

20 MR. MOFFETT: Objection. Form. 03:07

21 A. No, I don't think so. It is 03:07
22 changing the -- the antenna resonant 03:07
23 frequency as I wrote in 190. 03:07

24 BY MR. GLANDORF: 03:07

25 Q. That's what claim 7 is teaching 03:07



1	E. Kan, PhD	
2	according to your opinion?	03:07
3	A. That's how I read from claim 7,	03:07
4	yes.	03:07
5	Q. Is that also how you read claim	03:07
6	[sic] 64? Do you read claim 64 to be	03:07
7	changing the antenna frequency?	03:07
8	A. Yeah, that is how I will read	03:07
9	it.	03:08
10	Q. Okay. Okay. That was my	03:08
11	question. Thank you.	03:08
12	MR. GLANDORF: Let's go to one	03:08
13	other exhibit here. It is Tab I.	03:08
14	It's Exhibit 1007 of the IPR.	03:08
15	(Whereupon, Exhibit 1007,	03:08
16	Japanese Patent Number JP,	03:08
17	2007-215061, A, was marked for	03:08
18	identification.)	03:08
19	A. Okay. All right.	03:08
20	BY MR. GLANDORF:	03:10
21	Q. Are you familiar with	03:10
22	Exhibit 1007?	03:10
23	A. Yes.	03:10
24	Q. And I will refer you to your	03:10
25	report. That's good. I got it.	03:10

1	E. Kan, PhD	
2	THE COURT REPORTER: Off the	03:10
3	record.	03:10
4	(Recess taken.)	03:21
5	THE COURT REPORTER: Back on the	03:21
6	record.	03:21
7	BY MR. GLANDORF:	03:21
8	Q. Okay. Dr. Kan, you have the	03:21
9	Kunda reference in front of you?	03:22
10	A. Yes.	03:22
11	Q. That is Exhibit 1007, correct?	03:22
12	A. Yes.	03:22
13	Q. And this application is	03:22
14	originally in Japanese.	03:22
15	Do you understand that?	03:22
16	A. Yes.	03:22
17	Q. And then you'll see the exhibit	03:22
18	that I handed you also has a translation	03:22
19	of the writing with it?	03:22
20	A. Yes, I only have the	03:22
21	translation.	03:22
22	Q. Oh, correct, yes.	03:22
23	This exhibit has only the -- I	03:22
24	guess the first page in Japanese, but	03:22
25	otherwise it is the translation?	03:22

1 E. Kan, PhD
2 A. Yes. 03:22
3 Q. Okay. Thank you. 03:22
4 There are paragraph numbers. 03:22
5 It's a little bit strange because 03:22
6 paragraph numbers are before the 03:22
7 paragraphs. 03:22
8 Do you see that? 03:22
9 A. Yes. 03:22
10 Q. Okay. But it's -- I will try to 03:22
11 refer to the paragraphs. 03:22
12 And you understand that the 03:22
13 Petitioners argued that Harvey in 03:22
14 combination with Kunda rendered obvious 03:23
15 claims 9 and 10 of the '644 patent? 03:23
16 A. Yes. 03:23
17 Q. If you wouldn't mind going ahead 03:23
18 and reading claim 9 for the record. 03:23
19 A. Of '644? 03:23
20 Q. Yes. 03:23
21 Oh, I'm sorry. If you wouldn't 03:23
22 mind reading claim 10 into the record. 03:23
23 A. Okay. 03:23
24 Q. Did you see claim 10? 03:24
25 A. Yes. 03:24



1 E. Kan, PhD

2 Q. I'll go ahead and read it. 03:24

3 Claim 10 says, "The method of claim 9, 03:24

4 wherein said pair of electrically 03:24

5 conductive loops each compromise a loop of 03:24

6 conductive sheet material having an inner 03:24

7 annular edge and an outer annular edge 03:24

8 which join opposed loop faces." 03:24

9 Do you see that? 03:24

10 A. Yes. 03:24

11 Q. And then the reference there to 03:24

12 "said pair of electrically conducted 03:24

13 loops," that is a reference back to claim 03:24

14 9 in the last element where it 03:24

15 discloses -- 03:24

16 A. Yes. 03:25

17 Q. -- an antenna having a pair of 03:25

18 electrically conductive loops. 03:25

19 Do you see that? 03:25

20 A. Yes. 03:25

21 Q. Okay. And you understand that 03:25

22 the petition argues that Kunda's 03:25

23 disclosure of a double loop antenna 03:25

24 renders these claims obvious in 03:25

25 combination with Harvey, correct? 03:25



1 E. Kan, PhD

2 A. The petitioner says so, yes. 03:25

3 Q. You do not dispute that Kunda 03:25
4 discloses a double loop antenna, correct? 03:25

5 A. Yes, yeah. Kunda is about a 03:25
6 double loop antenna. Actually the double, 03:25
7 it's questionable because it's -- the loop 03:25
8 antenna can be triple loop, quadruple 03:25
9 loop. Yes. 03:25

10 Q. One of the disclosures of Kunda 03:25
11 is a double loop? 03:26

12 A. Yes, totally. 03:26

13 Q. If we turn back to your report 03:26
14 and look at page -- Paragraph 206. 03:26

15 A. Yes. 03:26

16 Q. Go ahead and read Paragraph 206, 03:26
17 and then I'll attempt to summarize it. 03:26

18 A. I finished. 03:27

19 Q. Okay. One of the points you 03:27
20 make in this paragraph is that in Harvey's 03:27
21 device, the antennas are embedded in a 03:27
22 printed circuit board; is that right? 03:27

23 A. Yes. 03:27

24 Q. And then you explain -- you go 03:27
25 on to describe Kunda as explaining that if 03:27



1	E. Kan, PhD	
2	the antenna is placed close to a printed	03:27
3	circuit board or housing in order to	03:27
4	reduce the size of the communication	03:28
5	device, that will diminish the	03:28
6	characteristics of the antenna.	03:28
7	Do you see that?	03:28
8	A. Yes.	03:28
9	Q. And you cite to Kunda at	03:28
10	Paragraph 5.	03:28
11	Do you see that?	03:28
12	A. Yes.	03:28
13	Q. Okay. Let's go to Paragraph 5	03:28
14	of Kunda if we could.	03:28
15	A. I'm there.	03:28
16	Q. And you see here with -- again,	03:28
17	it's Paragraph 0005 is on top of the	03:28
18	paragraph. It's the paragraph -- there is	03:28
19	a header "OBJECTIVE TO BE ACHIEVED BY THE	03:28
20	INVENTION," and then a sentence that	03:28
21	starts with the word "now."	03:28
22	Do you see that?	03:28
23	A. Yes.	03:28
24	Q. That's Paragraph 5. And what	03:28
25	you're quoting there is the -- the last	03:28

1 E. Kan, PhD
2 sentence there which says "In contrast, if 03:28
3 the antenna is placed close to a printed 03:28
4 circuit board or housing in order to 03:29
5 reduce the size of the communication 03:29
6 device, that will diminish the 03:29
7 characteristics of the antenna." 03:29
8 That's what you're quoting from; 03:29
9 is that correct? 03:29
10 A. Yes. 03:29
11 Q. Let's go to Paragraph 6 now if 03:29
12 you can. In Paragraph 6, the first 03:29
13 sentence says, "The present invention was 03:29
14 achieved to resolve the above-mentioned 03:29
15 problems in the prior art and, therefore, 03:29
16 is intended to provide a small antenna 03:29
17 with satisfactory characteristics." 03:29
18 Did I read that right? 03:29
19 A. Yes. 03:29
20 Q. So Paragraph 5 is describing 03:29
21 problems in the prior art, correct? 03:29
22 MR. MOFFETT: Objection. Form. 03:29
23 A. Problem in general, yeah. 03:29
24 Sorry. 03:29
25 BY MR. GLANDORF: 03:29



1 E. Kan, PhD

2 Q. And according to Kunda, the 03:29
3 invention that they go on to describe is 03:29
4 intended to resolve those problems, 03:30
5 correct? 03:30

6 A. According to 0006. 03:30

7 Q. What is the benefit of using a 03:30
8 double loop antenna? 03:30

9 A. Say it again. 03:30

10 Q. What is the benefit of using a 03:30
11 double loop antenna in a bolus? 03:30

12 MR. MOFFETT: Objection. Form. 03:30

13 A. As taught in '644? 03:30

14 BY MR. GLANDORF: 03:30

15 Q. As taught in '644. 03:30

16 A. Okay. It teaches to using a 03:30
17 double loop antenna in '644 so that the 03:30
18 system can work efficiently inside an 03:30
19 animal body. 03:30

20 Q. And how did the double loop 03:30
21 antenna work to operate more efficiently 03:30
22 in an animal body? 03:30

23 A. It's less subject to the animal 03:31
24 body detuning to the antennas. 03:31

25 Q. And is there -- one moment. 03:31



1 E. Kan, PhD

2 Is it correct that the double 03:31
3 loop antenna described in the '644 does 03:31
4 not rely on a magnetic core? 03:31

5 A. My memory, does not rely on the 03:31
6 magnetic core, yeah. 03:31

7 Q. And are you aware of any 03:32
8 problems that can arise if you were using 03:32
9 an antenna that relied on a magnetic core 03:32
10 in a bolus? 03:32

11 A. Is any problem? 03:32

12 Q. Any problem. 03:32

13 A. Okay. This is not according to 03:32
14 the '644 teaching. Just in general if you 03:32
15 have a -- I believe what you indicated is 03:32
16 you have a ferromagnetic material inside 03:32
17 the double loop antenna, right, as a 03:32
18 filling, that is problem for that. 03:32

19 Q. That's my question. 03:32

20 A. Okay. Actually indeed many of 03:32
21 the implanted of the antenna, especially 03:32
22 the NFC antenna, near field communication 03:32
23 antennas, have a ferromagnetic core. The 03:32
24 problem with that is usually you will -- 03:33
25 because the inductance is much larger, 03:33

1 E. Kan, PhD
2 okay, than you are usually, either you 03:33
3 will have a frequency that's too low or 03:33
4 you are limited by something called the 03:33
5 ferromagnetic resonance frequency, if you 03:33
6 use the ferromagnetic materials as the 03:33
7 core. It boosted the magnetic flux caused 03:33
8 by the current in the loop. 03:33
9 I'm not sure why this is 03:33
10 relevant to '644. 03:33
11 Q. Okay. Let's talk about '644. 03:33
12 A. Okay. Sure, sure. 03:33
13 Q. And I will direct you to '644, I 03:33
14 am in Column 6. It's on Page 12. 03:33
15 A. Column 6. 03:33
16 Q. And I think you want to start on 03:33
17 Line 51 where it says "An advantage of 03:33
18 this configuration..." 03:34
19 A. Okay. 03:34
20 Q. I'll let you read that to 03:34
21 yourself. 03:34
22 A. I finished reading. 03:34
23 Q. Okay. What, if anything -- 03:34
24 what, if any, advantage does the '644 03:34
25 patent teach about the use of a -- sorry, 03:34

1 E. Kan, PhD
2 let me start that again. 03:34
3 What benefits does the '644 03:35
4 describe with regard to its -- the 03:35
5 configuration of its antenna in Column 6? 03:35
6 A. Is cited lower incidence loss of 03:35
7 radio signals and less modulation of the 03:35
8 radio signals so the system can work in 03:35
9 greater consistency. 03:35
10 Q. And is that because it does 03:36
11 not -- it is not required to have a 03:36
12 magnetic core? 03:36
13 A. It's one of the reasons. More 03:36
14 reason than that. But the geometry of the 03:36
15 loop and things all matters. But yes, 03:36
16 yeah, one of the reasons is that it does 03:36
17 not require a magnetic -- ferromagnetic 03:36
18 core. 03:36
19 MR. GLANDORF: At this point, 03:37
20 I'm actually coming close to the end 03:37
21 here. I guess I recommend let's 03:37
22 take -- I know we just took a break 03:37
23 not too long ago, but let's take a 03:37
24 five-minute break. Let me just 03:37
25 confirm, see if I have any kind of 03:37



1 E. Kan, PhD
2 cleanup questions. And then at that 03:37
3 point, it's up to you if we take 03:37
4 another break. 03:37
5 MR. MOFFETT: Sure. Fair 03:37
6 enough. 03:37
7 MR. GLANDORF: We're nearing the 03:37
8 end, Dr. Kan. 03:37
9 THE COURT REPORTER: Off the 03:37
10 record. 03:37
11 (Recess taken.) 03:37
12 THE COURT REPORTER: Back on the 03:44
13 record. 03:44
14 MR. GLANDORF: Okay. Just a 03:44
15 couple of questions. 03:44
16 THE WITNESS: Sure. 03:44
17 BY MR. GLANDORF: 03:44
18 Q. Now, a bolus sensor is one type 03:44
19 of animal sensor, correct? 03:44
20 A. Yes. 03:44
21 Q. An ear tag is a different type 03:44
22 of animal sensor; is that correct? 03:44
23 A. Different types. Okay. Sure. 03:44
24 Yeah. 03:44
25 Q. Was there a different word you 03:44



1	E. Kan, PhD	
2	would use, a different form of animal?	03:44
3	A. A different type of sensors,	03:44
4	yes.	03:44
5	Q. Okay. And an ear tag may be	03:44
6	used to measure different physiological	03:44
7	parameters than a bolus would be used to	03:44
8	measure; is that fair?	03:44
9	A. Yes.	03:44
10	Q. And is it fair to say, though, a	03:44
11	person of skill in the art would know	03:44
12	which type of sensors would be appropriate	03:44
13	for an ear tag and which would be	03:44
14	appropriate for a bolus?	03:44
15	MR. MOFFETT: Objection. Form.	03:45
16	A. Okay. I think that a POSA will	03:45
17	know the limitation of the -- of the	03:45
18	sensors, whether it is on the ear tag or	03:45
19	in the bolus sensor.	03:45
20	BY MR. GLANDORF:	03:45
21	Q. Okay. Now, if you could turn to	03:45
22	your report here on Page 76 of your	03:45
23	report.	03:45
24	A. 76?	03:45
25	Q. Yes.	03:45

1 E. Kan, PhD

2 A. Okay. 03:45

3 Q. And, in fact, if you turn back 03:45

4 to Page 75, you will see in this section 03:45

5 you're discussing -- I'm sorry. And, 03:45

6 again, there's two different page numbers 03:45

7 here. I want to make sure we're on the 03:46

8 same one. I'm looking at Page 75 of 1 -- 03:46

9 A. Page 75. Okay. Sorry. 03:46

10 Q. Page 75. 03:46

11 A. Sure. Okay. 03:46

12 Q. And what you're discussing in 03:46

13 this section is element 5[F]. 03:46

14 Do you see that? 03:46

15 A. Element 5, yes. 03:46

16 Q. That's what we were referring to 03:46

17 as the predetermined interval element. 03:46

18 Do you recall that? 03:46

19 A. Yes. 03:46

20 Q. Let's turn now to the next page, 03:46

21 Page 76 here. And looking at the 03:46

22 second-to-last sentence of Paragraph 129, 03:46

23 it starts, "As explained further below..." 03:46

24 Do you see that? 03:46

25 A. Yes. 03:46



1 E. Kan, PhD

2 Q. You write here, "As explained 03:46
3 further below, Harvey describes numerous 03:46
4 transmission operations and embodiments, 03:46
5 but it never teaches or suggests to a POSA 03:46
6 that one of its embodiments include a 03:46
7 radio signal that is both generated at 03:46
8 'pre-determined intervals' and also 03:46
9 carries 'encoded physiological data,' as 03:46
10 required by claim 5." 03:47

11 A. Yes. 03:47

12 Q. Did I read that correctly? 03:47

13 A. Yes. 03:47

14 Q. Is it your opinion that element 03:47
15 5[F] requires a radio signal that is both 03:47
16 generated at predetermined intervals and 03:47
17 also carries encoded physiological data? 03:47

18 A. That's how I read it. 03:47

19 Q. And that is the reading that you 03:47
20 applied when you offered your opinion in 03:47
21 this case? 03:47

22 A. Yes. 03:47

23 MR. GLANDORF: I have no further 03:47
24 questions at this time. 03:47

25 MR. MOFFETT: I will have some 03:47



1	E. Kan, PhD	
2	questions, but we'll take a break.	03:47
3	Can we go off the record, please?	03:47
4	THE COURT REPORTER: Off the	03:47
5	record.	03:48
6	(Recess taken.)	03:48
7	THE COURT REPORTER: Back on the	04:17
8	record.	04:17
9	EXAMINATION	04:17
10	BY MR. MOFFETT:	04:17
11	Q. Dr. Kan, do you recall	04:17
12	discussions about the interpretation of	04:17
13	claim 7? Middle -- bottom one, the '644	04:17
14	patent, claim 7.	04:18
15	A. Yes.	04:18
16	Q. And so claim 7 just, again,	04:18
17	orientation refers to the matching	04:18
18	elements?	04:18
19	A. Yes.	04:18
20	Q. And do you recall being	04:18
21	questioned by Mr. Glandorf --	04:18
22	MR. MOFFETT: Is that right?	04:18
23	MR. GLANDORF: Yep.	04:18
24	BY MR. MOFFETT:	04:18
25	Q. -- Mr. Glandorf regarding your	04:18

1 E. Kan, PhD
2 interpretation of claim 7. 04:18
3 Do you recall that discussion? 04:18
4 A. Yep. 04:18
5 Q. You testified regarding your 04:18
6 interpretation of the claim based on your 04:18
7 -- your knowledge and perspective as an 04:18
8 engineer, correct? 04:18
9 A. Yes. 04:18
10 Q. Is there anything in the patent 04:18
11 specification that would support your 04:18
12 interpretation of claim 7? 04:19
13 A. Yes. It's saying that the 04:19
14 signals passing through the mass of the 04:19
15 ruminant animal will cause a shift in 04:19
16 frequencies. 04:19
17 Q. And feel free to refer back to 04:19
18 your declaration -- 04:19
19 A. It might be I -- as one 04:19
20 discussions, the -- which is, if memory 04:19
21 served me correctly, 180 -- no -- 190. 04:19
22 I'm sorry. Yes. Starting from 188 to 04:19
23 190, 190 particularly addressed how I 04:19
24 interpret the claim 7. 04:19
25 Q. Right. Well, let me actually 04:20

1 E. Kan, PhD
2 direct you to Paragraph 189 or to the 04:20
3 sentence in Paragraph 199 of Exhibit 2006? 04:20
4 A. It is where I interpret how a 04:20
5 POSA would read the claim 7 in '644 and 04:20
6 what he teach, how the -- using the 04:20
7 matching elements to counter the signal 04:20
8 transmitting through the body of the 04:20
9 ruminant animal. 04:20
10 Q. Okay. And specifically what are 04:20
11 you referring to in Paragraph 189 to 04:20
12 support or interpret the claim? 04:20
13 A. Specifically the role of the 04:20
14 matching elements, right, is to compensate 04:20
15 that to me. 04:20
16 Q. When you say "the role," where 04:20
17 do you -- high level question maybe you're 04:20
18 thinking -- but what are you actually 04:20
19 looking at -- to -- in Paragraph 189 to 04:21
20 help support your interpretation? 04:21
21 A. That the matching element helped 04:21
22 to match the impedance and the operating 04:21
23 frequency of the signal generator and the 04:21
24 antennas. 04:21
25 Q. And you're getting that from the 04:21

1 E. Kan, PhD
2 patent specification? 04:21
3 A. Claim 7, yes. 04:21
4 Q. You're saying claim 7. 04:21
5 A. And in the context of the '644 04:21
6 as described in the descriptions, right, 04:21
7 detail, what kind of matching element they 04:21
8 are talking about. 04:21
9 Q. So does the '644 describe the 04:21
10 matching element in the manner that's 04:21
11 consistent with your interpretation in 04:21
12 claim 7? 04:21
13 A. Yes. 04:21
14 Q. That's what you're referring to 04:21
15 in Paragraph 189 and 190? 04:21
16 A. Yes, and 190 talk a little bit 04:21
17 more than the claim 7 but... 04:22
18 Q. And in 189 is more than claim 7, 04:22
19 too, right? 04:22
20 A. Yes, yes, yes. 04:22
21 Q. If I can ask you to pull out the 04:22
22 Rettedal Exhibit 1006? 04:22
23 A. Rettedal. 1006. 04:22
24 Q. And ask you to refer directly 04:22
25 to -- specifically to Paragraph 64. 04:22



1 E. Kan, PhD

2 A. Paragraph 64. Yes. 04:22

3 Q. Paragraph 64 begins, "A fourth 04:22
4 processor element functions to control a 04:22
5 network frequency match element," correct? 04:22

6 A. Yes. 04:22

7 Q. Okay. And you recall discussing 04:22
8 this paragraph when being examined by 04:22
9 Mr. Glandorf, right? 04:23

10 A. Yes. 04:23

11 Q. Are there differences in how the 04:23
12 matching element of claim -- matching 04:23
13 element in Exhibit 1006 described as 04:23
14 compared with how the matching element in 04:23
15 the '644 is described? 04:23

16 A. Yes. The first is explicitly 04:23
17 mentioned the capacitors and resistors, 04:23
18 not the resonant circuit in -- and that's 04:23
19 in the -- capacitors and resistors is in 04:23
20 the Rettedal, but in the '644, including a 04:23
21 description in addition to the claim 7, go 04:23
22 through how a matching network can contain 04:23
23 a resonant circuit which is inductors and 04:23
24 capacitors. That's one difference. The 04:23
25 second is the description on the Rettedal 04:23



1 E. Kan, PhD
2 is -- it seems to suggest that the -- let 04:23
3 me see. 04:24
4 Okay. As in the limiting 04:24
5 example, the network frequency matching 04:24
6 element can detune a '644, so at 04:24
7 433 megahertz, first radio signals to 04:24
8 generate a signal between blah, blah, 04:24
9 blah, to me, that is -- it's -- it's not a 04:24
10 possible way that I can know how this 04:24
11 matching element can be decided. 04:24
12 Q. Okay. And unlike the '644, is 04:24
13 there any description of a possible way 04:24
14 that a matching element could be designed 04:24
15 to your recollection, in the Rettedal 04:24
16 reference? 04:24
17 A. I cannot say is it possible. 04:24
18 Okay. Yeah, that circuit probably can 04:25
19 exist, but just that you will be very 04:25
20 inefficient. 04:25
21 Q. Let me ask this: Is the 04:25
22 description of the network frequency 04:25
23 matched element in Rettedal different than 04:25
24 the claimed matching elements in claim 7 04:25
25 of the '644, in your opinion? 04:25

1	E. Kan, PhD	
2	A. Are they different?	04:25
3	Q. Yes.	04:25
4	A. The network frequency match	04:25
5	elements or the network frequency?	04:25
6	Q. The description of the match	04:25
7	element in Rettedal --	04:25
8	A. Okay.	04:25
9	Q. -- is it different than how you	04:25
10	interpret the matching elements in claim	04:25
11	7?	04:25
12	A. Yes.	04:25
13	Q. Okay. And --	04:25
14	A. That's in the Paragraph 190,	04:25
15	yeah.	04:25
16	Q. Okay. Do you recall briefly	04:25
17	discussing with Mr. Glandorf Bluetooth®	04:26
18	and ZigBee profiles?	04:26
19	A. Yes.	04:26
20	Q. And I believe you testified	04:26
21	those are digital communication protocols;	04:26
22	is that --	04:26
23	A. Yes, digital communication	04:26
24	protocol is an accurate way to describe	04:26
25	the Bluetooth® and ZigBee.	04:26

1 E. Kan, PhD

2 Q. Does the fact that -- does that 04:26
3 fact that a signal may be transmitted with 04:26
4 Bluetooth® or ZigBee necessarily inform 04:26
5 you that the -- that that the data was 04:26
6 encoded and stored? 04:27

7 A. If the Bluetooth® and ZigBee are 04:27
8 dealing with the data transmitted in the 04:27
9 air, instead of requiring any forms of 04:27
10 storage and encoding. 04:27

11 Q. Okay. So let me ask to -- try 04:27
12 to be a little clearer. 04:27

13 To the extent a signal is 04:27
14 transmitted using Bluetooth® or ZigBee, 04:27
15 does that necessarily mean that the data 04:27
16 was -- that was transmitted was encoded 04:27
17 when it was -- 04:27

18 MR. MOFFETT: Strike that. 04:27

19 BY MR. MOFFETT: 04:27

20 Q. Does the fact that data may have 04:27
21 been transmitted using Bluetooth® or 04:27
22 ZigBee -- ZigBee necessarily mean that 04:28
23 that the data was stored as encoded data? 04:28

24 MR. GLANDORF: Object to the 04:28
25 form. 04:28



1 E. Kan, PhD
2 A. I think I answered that. No, 04:28
3 Bluetooth® doesn't govern there. 04:28
4 MR. MOFFETT: Okay. No further 04:28
5 questions, Dr. Kan. 04:28
6 THE WITNESS: Okay. 04:28
7 MR. GLANDORF: Nothing further 04:28
8 from me. 04:28
9 THE COURT REPORTER: Do you both 04:28
10 want a rough draft? 04:28
11 MR. MOFFETT: Rough draft. 04:28
12 MR. GLANDORF: Rough draft. 04:28
13 MR. MOFFETT: And we'll read and 04:28
14 sign. 04:28
15 (Whereupon, a request for Read 04:28
16 and sign was made.) 04:28
17 THE COURT REPORTER: And then 04:28
18 you both want a two day? 04:28
19 MR. MOFFETT: Two day. 04:29
20 MR. GLANDORF: Two day. 04:29
21 THE COURT REPORTER: Off the 04:29
22 record. 04:29
23 (Time noted: 4:29 p.m.)
24
25

ACKNOWLEDGEMENT OF DEPONENT

I, EDWIN KAN, PhD, do hereby
acknowledge that I have read and
examined the foregoing testimony, and
the same is a true, correct and
complete transcription of the
testimony given by me, and any
corrections appear on the attached
Errata sheet signed by me.

(DATE)

(SIGNATURE)

CERTIFICATE OF SHORTHAND REPORTER

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I, Amanda Gorrono, the officer
before whom the foregoing deposition
was taken, do hereby certify that the
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direction; and that I am neither
counsel for, related to, nor employed
by any of the parties to this case and
have no interest, financial or
otherwise, in its outcome.

IN WITNESS WHEREOF, I have
hereunto set my hand this 22nd day of
July, 2025.

Amanda Gorrono

AMANDA GORRONO, CLR
CLR NO: 052005 - 01
Notary Public in and for
The State of New York
County of Suffolk
My Commission No. 01G06041701
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EDWIN KAN, PhD

