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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICRON TECHNOLOGY INC.,

Petitioner

v.

SONRAI MEMORY LIMITED,

Patent Owner

Case IPR2023-00904

Patent No. 6,920,527

ORAL DEPOSITION OF
MICHAEL C. BROGIOLI, Ph.D.
Austin, Texas
May 31, 2024 – 9:02 a.m.

Reported by:

Micheal A. Johnson, RDR, CRR

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ORAL DEPOSITION OF MICHAEL C. BROGIOLI,
Ph.D., produced at the instance of the Petitioner,
in the above-styled and numbered cause on the
31st day of May, 2024, at 9:02 a.m., before Micheal
A. Johnson, RDR, CRR, Notary Public in and for the
State of Texas, reported by realtime stenographic
means, at the offices of Fish & Richardson, P.C.,
111 Congress Avenue, Suite 2000, Austin, Texas,
pursuant to 37 C.F.R. § 42.53.

1 A P P E A R A N C E S

2 ON BEHALF OF THE PETITIONER
3 MICRON TECHNOLOGY INC. :

4 Timothy W. Riffe
5 FISH & RICHARDSON PC
6 1000 Maine Avenue SW, Suite 1000
7 Washington, D.C. 20024
8 (202) 626-6429
9 riffe@fr.com

10 ON BEHALF OF THE PATENT OWNER
11 SONRAI MEMORY LIMITED:

12 Robert A. Auchter
13 AUCHTER PLLC
14 1629 K Street, NW, Suite 300
15 Washington, D.C. 20006
16 (703) 585-5721
17 robert@auchterlaw.com

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May 31, 2024

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1	DEPOSITION EXHIBITS		
2	MICHAEL C. BROGIOLI, Ph.D.		
3	May 31, 2024		
4	NUMBER	DESCRIPTION	MARKED
5	Exhibit 1	IPR Exhibit MTI-1006	53
6	Exhibit 2	IPR Exhibit MTI-1004, U. S. Patent Application Publication 2003/0028733	123
7	Exhibit 3	IPR Exhibit MTI-1005, U. S. Patent 7,069,370	164

* * * * *

13	PREVIOUSLY MARKED EXHIBITS		
14	NUMBER	DESCRIPTION	PAGE
15	MTI-1001		29
16	MTI-2012		15
17	MTI-2013		15

* * * * *

1 PROCEEDINGS

2 MICHAEL C. BROGIOLI, Ph.D.,

3 called as a witness, having been duly sworn by a

4 Notary Public, was examined and testified as

09:02 5 follows:

6 EXAMINATION

7 BY MR. RIFFE:

8 Q. Morning, sir.

9 A. Morning.

09:02 10 Q. Could you please state your name for the
11 record.

12 A. Michael Charles Brogioli.

13 Q. Please provide a business address for the
14 record.

09:02 15 A. It is now 501 Congress Avenue, Suite 150,
16 Austin, Texas 78701.

17 Q. Would you please provide a home address
18 for the record?

19 A. 3420 Mount Barker Drive, Austin, Texas
09:02 20 78731.

21 Q. And if we were to need to get in touch
22 with you via phone, is there a phone number that

1 you'd like to note for the record?

2 A. The easiest would be 713-732-0217.

3 Q. Do you have an e-mail address for the
4 record?

09:02 5 A. Yes. It is michael, m-i-c-h-a-e-l,
6 @polymathicconsulting.com.

7 Q. What is Polymathic Consulting?

8 A. It's a consulting firm that I do my
9 consulting work under at various times.

09:03 10 Q. Are you the only member of Polymathic
11 Consulting?

12 A. I would say as a member, yes. We have
13 other contract employees.

14 Q. What's the general -- what general roles
09:03 15 do you perform as part of your consulting role at
16 Polymathic Consulting?

17 A. Sure. Under Polymathic it is work like
18 this, so I would call it expert work. I've held
19 interim CTO positions, advisory board roles, some
09:03 20 leadership speaking engagements, things like that.

21 Q. Are you a member of any other
22 organizations at this time other than Polymathic

1 Consulting?

2 A. Yes, generally.

3 Q. What are those other organizations?

4 A. So are you asking, like, professional

09:03 5 organizations or --

6 Q. Professional.

7 A. Professional. So there are things like

8 the IEEE I'm a member of, the ACM, Association For

9 Computing Machinery. I have an adjunct faculty role

09:04 10 at Rice University. There's probably other advisory

11 board positions, things like that.

12 Q. Are you a member or principal of any

13 other businesses -- organization?

14 A. Yes. Go ahead.

09:04 15 Q. What are those?

16 A. There's -- from memory, there's a company

17 called AgCompute that I'm a founder and inventor on

18 the technology of. There is another company called

19 Network Native that's doing Internet of Things type

09:04 20 technology that I'm -- I honestly forget my exact

21 title there, but I'm one of the co-inventors on the

22 technology. There are probably other entities out

1 there that I'm not recalling from memory.

2 Q. And just for the record, is that

3 AgCompute or Egg?

4 A. A-g.

09:05 5 Q. A-g?

6 A. Yes.

7 Q. Okay. Is A-g, AgCompute, is it a memory

8 manufacturer or what type of business does it

9 involve?

09:05 10 A. It is not a memory manufacturer. It's

11 solutions for real-world telemetry and things like

12 that.

13 Q. And what type of business is Network

14 Native involved in?

09:05 15 A. It is technology focused on distributed

16 application development, so everything from the

17 cloud to bare metal 8-bit microcontrollers type of

18 things.

19 Q. In your work experience, have you been

09:05 20 involved in the development of memory devices?

21 A. Aspects of them, yes.

22 Q. What type of aspects?

1 A. Things such as modeling simulation of
2 SRAM, DRAM, caches, reconfigurable memory,
3 interfaces, how those types of memory work in larger
4 systems and things of that nature, at a high level.

09:06 5 Q. You've been involved in the development
6 of semiconductor memories?

7 A. In the development of semiconductor
8 technology and technologies used in memory, I would
9 say yes.

09:06 10 Q. And were those the same activities that
11 you just enumerated earlier when I asked you about
12 the development of memory devices?

13 A. I would say generally in terms of the
14 development of technology used in memory devices or
09:06 15 the use of memory devices in systems probably going
16 back to the late 1990s, I would say.

17 Q. Are you currently on the board of any
18 companies?

19 A. I don't believe so. At this time, no.

09:07 20 Q. Most of your compensation have been --
21 results from your work in your consulting role?

22 MR. AUCHTER: Objection, form.

1 A. It's a mix of various consulting roles
2 and other technical engagements, I would say.

3 BY MR. RIFFE:

09:07 4 Q. Does the majority of your compensation
5 come from your role as an expert witness for
6 litigation purposes?

7 A. I don't think the majority, no.

09:07 8 Q. Do you know what percentage of your
9 compensation comes from your work as an expert
10 witness for litigation purposes?

11 A. At this time, no. I think in the past
12 the number has been maybe in the range of 40 percent
13 or something like that some years back.

09:07 14 Q. How many current litigation and/or
15 post-grant procedures are you involved in as an
16 expert witness?

09:08 17 A. I'm not sure in terms of either the
18 parties I'm working for or if they have multiple --
19 like if there were multiple IPRs like we're talking
20 about today. I think it's maybe five or something
21 on that order.

22 Q. Have you been deposed before?

1 A. I have, yes.

2 Q. Approximately how many times?

3 A. In the range of maybe 50 or so.

4 Q. When's the last time you were deposed?

09:08 5 A. A week and a half ago or so. Two weeks.

6 Q. Do you remember what case that was for?

7 A. It was SEVEN Networks and I think

8 Motorola Mobility.

9 Q. Have you testified at trial before?

09:08 10 A. Yes.

11 Q. When is the last time you testified at

12 trial?

13 A. I think it was April of 2023.

14 Q. Do you remember which case that was for?

09:08 15 A. I believe it was Netlist and Samsung in

16 Marshall, Texas.

17 Q. Were you representing Netlist in that

18 case?

19 A. Yes.

09:09 20 Q. Did you testify at the recent

21 Micron-Netlist trial?

22 A. No.

1 Q. Do you know why not?

2 A. As I recall, I wasn't working on those --
3 at least to my limited understanding, I wasn't
4 involved with the patents at issue there.

09:09 5 Q. Okay.

6 A. At least in the trial.

7 Q. So just going through a couple ground
8 rules, I know you've been deposed a bunch of times,
9 but just for the record, make sure you provide
09:09 10 verbal answers to my questions. Is that understood?

11 A. Yes.

12 Q. You understand you've given an oath to
13 tell the truth, and it will be as if you're
14 testifying in court or before the board?

09:09 15 A. Yes.

16 Q. You're permitted to speak to your counsel
17 during breaks, but not about the substance of your
18 testimony. Do you understand that?

19 A. Yes.

09:09 20 Q. Your attorney may make limited
21 objections, as he's done so this morning, but do you
22 understand unless he instructs you not to -- not to

1 answer and you choose not to answer, you're
2 obligated to answer to the extent you're able?

3 A. Yes, I do.

09:10 4 Q. And if you don't understand a question I
5 ask, will you please let me know?

6 A. Yes.

7 Q. And if you don't ask me to clarify, is it
8 fair for the board to assume that you understood my
9 question?

09:10 10 A. Yes.

11 Q. Any reason you can't provide your best,
12 most accurate testimony today?

13 A. No.

09:10 14 Q. Do you have any medical conditions that
15 may impact your ability to testify?

16 A. No.

17 Q. Anything else that may impact your
18 ability to testify?

19 A. No.

09:10 20 Q. If anything changes, will you let me
21 know?

22 A. Yes, I will.

1 Q. Have you been qualified as an expert
2 witness before?

3 A. Yes, I have.

4 Q. Approximately how many times?

09:10 5 A. I don't know. I would say they should
6 all be listed on my CV.

7 Q. And your CV is Exhibit 2013 to your
8 expert report submitted in this case?

9 A. I don't know that I have the number in
09:11 10 front of me.

11 Q. Just for the record, I know you have some
12 papers in front of you for today. What are those?

13 A. One is a copy of my declaration and one
14 is just a copy of the exhibits.

09:11 15 Q. And your declaration you're referring to
16 is the declaration -- your declaration of -- marked
17 as Exhibit 12 in the proceeding?

18 A. That's right. It's -- mine is 2012,
19 that's right.

09:11 20 Q. I'm sorry, 2012. Thank you for the
21 clarification.

22 All right. And you said the other copy

1 of the paper you have in front of you is the
2 exhibits?

3 A. That's right.

4 Q. Were those the exhibits to your
09:11 5 declaration or the exhibits to the patent owner
6 response?

7 A. These may be for the patent owner
8 response. I don't recall.

9 MR. AUCHTER: Just to clarify, if I
09:12 10 might. It's actually the exhibits to the petition.

11 MR. RIFFE: Oh, okay. Exhibits to
12 the petition. All right.

13 BY MR. RIFFE:

14 Q. Does the copy of your declaration you
09:12 15 have in front of you have any markings or notations
16 on it?

17 A. No, it doesn't.

18 Q. And looking at Exhibit 2012, which is
19 your declaration in this proceeding, on the front
09:12 20 page of the declaration it references IPR2021-01561.

21 Do you see that?

22 A. Yes, I do.

1 Q. And then patent number 6,724,241. Do you
2 see that?

3 A. Yes.

4 Q. Is that IPR number the correct IPR number
09:12 5 for this proceeding, to your knowledge?

6 A. No, it's not. The day that this
7 declaration was filed another one was filed and I
8 think the cover pages were either swapped or
9 erroneously copied.

09:12 10 Q. Okay. You just didn't notice that before
11 you signed it; is that correct?

12 A. That sounds right, but maybe the wrong
13 cover page was attached when this was finally sent
14 out.

09:13 15 Q. We'll come back to your declaration in a
16 moment.

17 A. Okay.

18 Q. So in any prior cases where you were
19 retained as an expert, has a judge ever stricken
09:13 20 parts of your expert report or excluded any of your
21 opinions that were contained in your expert report,
22 to your knowledge?

1 A. Not to my knowledge, no.

2 Q. Have you testified at trial before?

3 A. Yes, I have.

4 Q. Approximately how many times?

09:13 5 A. I think it's maybe six or seven times.

6 Q. And could you briefly describe those
7 cases for which you've testified at trial?

8 A. Sure. One was at the International Trade
9 Commission on, roughly, technology in cell phones or
09:14 10 mobile devices. One was at the International Trade
11 Commission on generally as I recall memory
12 technology, DRAM, SRAM, memory for computer systems
13 generally.

14 Another one was at the International
09:14 15 Trade Commission and there may have been a district
16 case regarding, again, technology in that instance
17 used in mobile phones, chips, things of that nature.

18 Another matter was in Texas related to I
19 think it was generally software. Another was at the
09:14 20 International Trade Commission in chips used in
21 communication, if I generally recall. Another was
22 in Texas regarding semiconductors and power

1 management generally in chips. And another was in
2 Texas regarding computer memory devices and things
3 of that nature.

09:15 4 Q. Thank you. Are all of those matters, to
5 your knowledge, reflected in your CV attached to
6 Exhibit 2012 as Exhibit 2013?

7 A. Yes, they should be.

09:15 8 Q. Have any of your prior depositions that
9 you've provided dealt with solid state drives, or
10 SSDs as they're referred to?

11 A. Various aspects of them I would say
12 generally, yes.

13 Q. What were some of those aspects?

09:16 14 A. Generally from memory -- from my memory,
15 things related to storage, how nonvolatile memory,
16 for example, might be used in various computer
17 systems, how volatile memory might be used. Some
18 aspects probably of power, things of that nature.

09:16 19 Q. Have any of your prior trial testimonies
20 dealt with SSDs?

21 A. I don't recall if at trial the things
22 that I was discussing were specifically focused on

1 solid state drives or not or other types of memory.

2 Q. Today we'll refer to the patent owner in
3 some instances as Sonrai. As you may know, the
4 patent was assigned over to Nera Innovations. But
09:17 5 if we refer to the patent owner as Sonrai, is that
6 acceptable to you today?

7 A. Sure.

8 Q. Before this matter, had you ever done any
9 work for Sonrai?

09:17 10 A. Yes, I had.

11 Q. And what was that work related to?

12 A. So all of this will be on my CV. As I
13 recall, there was at least another IPR declaration,
14 and as I recall, a deposition for a patent that, my
09:17 15 understanding, Sonrai owned. That might have been
16 two years ago or so.

17 Q. Do you remember who the other party was
18 in that case?

19 A. I don't -- think I at one point there
09:17 20 were a number of parties and I don't recall who all
21 of them were.

22 Q. Was one of the parties Kioxia, to your

1 recollection?

2 A. That sounds like that may have been the
3 case.

4 Q. Was another party Kingston?

09:18 5 A. That may have been the case.

6 Q. Do you recall which patent was at issue
7 in that case?

8 A. From memory, no. It should be on my CV.

9 Q. And other than that matter, is that the
09:18 10 only time you had worked with Sonrai in the past?

11 A. From memory, I think so. It's possible
12 there might have been another overlapping matter in
13 that time frame.

14 Q. Would that overlapping matter be
09:18 15 reflected in your CV?

16 A. Yes.

17 Q. So sitting here today, is your CV that
18 you submitted with your declaration which the CV is
19 marked as Exhibit 2013, is that as -- up to date, to
09:18 20 your knowledge?

21 A. The -- there may be some minor updates to
22 it since then.

1 Q. To reflect what?

2 A. I think there may be one or two
3 additional consulting engagements since then and
4 maybe a patent that issued that I'm an inventor on.

09:19 5 Q. Approximately how many patents have you
6 been an inventor on -- named -- strike that.

7 Approximately how many patents are you a
8 named inventor on?

9 A. Right now maybe a half dozen or a little
09:19 10 more.

11 Q. And are those patents -- who -- well, who
12 are those patents assigned to?

13 A. I believe they're assigned to either the
14 company Network Native or the company AgCompute. I
09:19 15 think that should be the total list.

16 Q. And going back to Network Native, what --
17 are you a principal of that organization or an
18 owner?

19 A. I own equity in the company. I forget
09:20 20 what my exact title is. And I also forget the
21 structure, if it's an S Corp. or those kinds of
22 things.

1 Q. And same question for AgComputer, do you
2 own equity in AgCompute?

3 A. I do, yes.

4 Q. And do you know what your title or role
09:20 5 is for AgCompute?

6 A. It probably depends who you ask. I would
7 say cofounder is probably a general title.

8 Q. Do you have pending applications as well?

9 A. My understanding is yes.

09:21 10 Q. So besides the matter -- this matter and
11 the litigation and your prior work that you've done
12 for Sonrai/Nera, is there any work that you have
13 done or are currently doing for Sonrai?

14 A. I think we've covered it. I mean, there
09:21 15 is -- there's a district litigation involving these
16 same patents that I'm working on, but other than
17 that, I think we've covered it.

18 Q. Do you currently have or have you had any
19 past associations with Micron Technology?

09:21 20 A. Myself, no. Other than them being part
21 of a litigation that I may have been involved in,
22 no.

1 Q. Why did you say, Myself, no?

2 A. In that I've not been an employee there
3 or something of that matter.

09:21 4 Q. Have you done any consulting for Micron
5 Technology in the past?

6 A. I don't believe so, no.

7 Q. Has AgCompute or Network Native had any
8 working relationships with Micron Technology, to
9 your knowledge?

09:22 10 A. Not that I'm aware of, no.

11 Q. What did Sonrai ask you to do in this
12 matter?

13 A. I was asked to review the '527 patent and
14 certain claims and to offer certain opinions in
09:22 15 regards to Micron's expert's declaration.

16 Q. Do you know Micron's expert Dr. Liu?

17 A. No, I don't.

18 Q. Did anyone help you with your work in
19 this matter?

09:22 20 A. Only in the sense that we had things like
21 conference calls along the way, that kind of thing.

22 Q. And who were those conference calls with?

1 A. Robert, who's here today and I think John
2 Petrсорic was on some of those calls perhaps.

3 Q. Is Mr. Petrсорic another counsel for
4 Sonrai?

09:23 5 A. Yes.

6 Q. Did any of your -- strike that.

7 Do you have any associates that you work
8 with who assisted you in any way with respect to
9 this matter?

09:23 10 A. No.

11 Q. Did anyone help you form your opinions in
12 this matter?

13 A. No.

14 Q. You came to your opinions on your own?

09:23 15 A. That's correct, yes.

16 Q. In preparation for your deposition today,
17 did you have an opportunity to meet with Sonrai's
18 counsel to prepare for your testimony?

19 A. Yes, I did.

09:23 20 Q. And who did you meet with?

21 A. I met with Robert. I think we spoke
22 earlier in the week via phone and then met

1 yesterday.

2 Q. How long did you meet to prepare for your
3 deposition?

4 A. We had a phone call at one point that was
09:24 5 maybe a half hour or an hour and then met yesterday
6 afternoon for maybe two hours.

7 Q. Was anyone else in attendance with -- for
8 the deposition preparation yesterday, either in
9 person or by phone or video?

09:24 10 A. No.

11 Q. Was Mr. Petrsoric involved in your
12 preparation session at all?

13 A. Not in the preparation. I think Robert
14 took a phone with him on something unrelated, but
09:24 15 not in the prep, no.

16 Q. So approximately two and a half hours
17 preparing for your deposition today; is that
18 correct?

19 A. No. I would say the two and a half hours
09:24 20 was with counsel, and then I was doing my own
21 preparation this week.

22 Q. What other preparation did you do on your

1 own this week?

2 A. Generally reviewing the patent, my
3 declaration, various of the references I discuss in
4 the declaration, probably Dr. Liu's declaration,
09:25 5 things of that nature.

6 Q. And approximately how long did you
7 prepare on your own for your deposition?

8 A. I'd have to look at my invoices. It was
9 partial days throughout the week, maybe a bit over
09:25 10 the weekend. I'd have to go back to the invoices
11 for you on that.

12 Q. Approximately six hours?

13 MR. AUCHTER: Objection, form.

14 A. Again, I'd have to go back. Probably a
09:25 15 bit more than that, maybe ten or something on that,
16 maybe a little more.

17 BY MR. RIFFE:

18 Q. You mentioned some documents you reviewed
19 in preparation for your deposition. Can you
09:25 20 enumerate those for me?

21 A. Going from memory, it would have been at
22 least my declaration, some of the references that

1 Dr. Liu talks about that I discuss in my
2 declaration, the patent. Those are the primary
3 things I'm recalling.

09:26 4 Q. Outside of counsel for Sonrai, did you
5 have any other discussions with anyone in
6 preparation for your deposition?

7 A. No.

09:26 8 Q. Have you had any discussions with any
9 employees of Sonrai or Nera as part of your work in
10 this case?

11 A. No.

12 Q. When did you start your work for Sonrai
13 in this matter?

09:26 14 A. I would need to look back at probably the
15 invoices. I don't recall exactly when I was engaged
16 for the IPRs versus the district matter. Maybe last
17 year or early this year, something of that nature.

09:27 18 Q. Did you play any role in preparing the
19 complaint that was filed in the district court
20 litigation?

21 A. Not that I recall, no.

22 Q. And do you recall whether you were

1 retained first for the IPR matters or the
2 litigation?

3 A. I don't recall.

4 Q. And do you recall how many --

09:27 5 approximately how many hours you've spent working as
6 an expert on this IPR in total?

7 A. I don't. It should be broken out in my
8 invoices.

9 Q. Do you know if your invoices have been
09:27 10 produced either in the litigation or in this matter?

11 A. I don't know.

12 Q. You currently don't have a copy of the
13 patent at issue, the '527 patent; is that correct --

14 A. That's correct.

09:28 15 Q. -- in front of you?

16 This is MTI-1001. It's part of the case.
17 I don't think we separately need to mark this as a
18 deposition exhibit since it's already part of the
19 record.

09:28 20 Do you recognize what's been handed to
21 you and is marked as MTI-1001?

22 A. Yes. This is a copy of the '527 patent

1 that my declaration addresses, at least in part.

2 Q. And just to note, again, as we noted, on
3 the front page of your declaration it references the
4 '241 patent, but your declaration, Exhibit 2012 in
09:28 5 this IPR proceeding is actually to the '527 patent;
6 is that correct?

7 A. That's correct.

8 Q. Is this the patent that you analyzed and
9 formed opinions on in this matter?

09:29 10 A. Yes, that's right.

11 Q. Did you read this patent prior to being
12 retained by Sonrai?

13 A. That sounds like it would have been the
14 case. I don't recall specifics, but if I'm
09:29 15 contacted to work on a patent or a matter, I
16 typically review the materials beforehand to see if
17 it's a fit, so to speak.

18 Q. Do you recall when you first reviewed the
19 '527 patent to determine if it was a fit?

09:29 20 A. I don't recall specifically. It would
21 have been prior to or aligned with that first date
22 on that first invoice or shortly before then.

1 Q. And when do you recall that being? Did
2 you say late 2023?

3 A. That's what I was remembering. Maybe
4 late last year or very early this year.

09:29 5 Q. Okay. Do you believe that you understand
6 the claims at the end of the '527 patent marked as
7 Exhibit MTI-1001?

8 A. Yes.

09:30 9 Q. Is there anything you don't understand
10 about the claims at the end of the '527 patent?

11 A. Not to the extent I'm discussing them in
12 my declaration, no.

09:30 13 Q. So with respect to the issues of validity
14 or invalidity of the claims of the '527 patent, do
15 you believe you understand the claims?

16 A. Yes.

17 Q. Before you were engaged by Sonrai, did
18 you know any of the named inventors of the '527
19 patent, the first one being John Cloutier?

09:30 20 A. I don't think I knew any of them.

21 Q. And that's the same for Richard Counts
22 and Henry Wurzburg?

1 A. That's correct, yes.

2 Q. Do you -- have you had any affiliation
3 with Standard Microsystems Corporation, which was
4 the first named assignee of the '527 patent?

09:31 5 A. Not to my recollection, no.

6 Q. Had never done any work or consulting
7 work for them in the past?

8 A. Not that I recall, no.

9 Q. Had you heard of Standard Microsystems
09:31 10 Corporation before you reviewed the '527 patent?

11 A. Going from memory, I don't recall one way
12 or the other.

13 Q. Do you own any stock in either Sonrai or
14 Nera Innovations?

09:31 15 A. No.

16 Q. And does your compensation in this matter
17 change as a result of any of the outcomes of the
18 matter?

19 A. No, it's unrelated to the outcome.

09:31 20 Q. You'll be paid your hourly rate for the
21 work that you're providing; is that correct?

22 A. That's right.

1 Q. And how much is your hourly rate?

2 A. I believe it's \$700 per hour.

3 Q. Does that change depending upon what

4 activity you're performing in the matter; in other

09:32 5 words, providing deposition testimony versus working

6 on your expert declaration?

7 A. I don't think so. There may be matters

8 where that's been the case for certain things, but

9 generally, no, it doesn't.

09:32 10 Q. Do you charge for travel time as part of

11 your work in this case?

12 A. I don't remember. Normally I do, but

13 I -- there may have been a -- someone may have asked

14 me to change that, but I think I do.

09:32 15 Q. Referencing your declaration that you

16 signed, and just for the record, this is for IPR --

17 this matter is IPR2023-00904, correct, to your

18 knowledge?

19 A. That sounds right, yes.

09:33 20 Q. Not the IPR2021-01561 that's on the front

21 page of your declaration, correct?

22 A. That sounds right.

1 Q. If you'll turn to page 35 of your
2 declaration.

3 A. Okay.

4 Q. Is that your signature at the bottom of
09:33 5 page 35?

6 A. Yes.

7 Q. And just for the record, there's a
8 notation on the declaration itself in the bottom
9 right-hand corner, Sonrai Memory Limited
09:33 10 Exhibit 2012 page 38.

11 Do you see that?

12 A. Yes.

13 Q. To the extent the page numbers are
14 different, for the record, I'll be using the -- what
09:33 15 I'll call Bates-numbered page, which is that bottom
16 right-hand corner. So I misspoke when I said
17 page 35 of the declaration. It's actually
18 Bates-numbered page 38.

19 Does that make sense?

09:34 20 A. Sure.

21 Q. We'll try to make that clear as we
22 proceed today.

1 You signed the declaration on March 11th
2 of 2024; is that correct?

3 A. That's right.

4 Q. And did you place that electronic
09:34 5 signature on the document or did someone else?

6 A. I did. It's a scan of my handwritten
7 signature, but I put it in there, yes.

8 Q. How much time did you spend preparing
9 this declaration?

09:34 10 A. Again, I'd have to go back to my invoices
11 because this declaration was being prepared in
12 parallel to another patent that was -- there was
13 also a declaration on this same day.

14 Q. And that was for the '241 patent IPR, to
09:34 15 your knowledge?

16 A. That's right.

17 Q. Can you tell me how you prepared the
18 declaration?

19 A. I would say there was analysis leading up
09:35 20 to my putting together a first version and then my
21 typical process is to put together a first draft
22 with technical sections and things for me to insert

1 and fill in would have been the general process.

2 Q. And did you draft the entirety of the
3 declaration?

4 A. It's all my opinions and words.

09:35 5 Typically someone will help with footnotes and
6 figures and all those kinds of good things and
7 citations, but it's all my opinions and words.

8 Q. So did you do the entirety of the
9 drafting of the declaration on your own?

09:35 10 A. Certainly the first draft and the final
11 draft. There may have been minor edits and things
12 along the way that others may have corrected or
13 cross-references, things like that.

14 Q. And who were the others that helped in
09:35 15 preparing your declaration?

16 A. I would say I may have gotten a version
17 back where John fixed a reference to a table or a
18 table of contents or things like that.

19 Q. That's Mr. Petrsoric?

09:36 20 A. Sorry, I meant to say Robert. That's
21 right. Minor things of that nature.

22 Q. Just for the record, it's Mr. Auchter

1 that was assisting, not Mr. Petrsoric; is that
2 correct?

09:36 3 A. To my recollection, if I was getting
4 typos fixed or references inserted, things like
5 that.

6 Q. So other than typos or references
7 inserted, the entirety of the declaration you
8 drafted, correct?

09:36 9 A. That sounds right. There may have been
10 some explanation of the legal concepts that are
11 referenced in there as well, but, yes, that's right.

12 Q. If you'd turn to paragraph 5, which is on
13 page 4 of the Bates-numbered version of the
14 declaration, you say: In preparing this declaration
09:37 15 I have reviewed and considered the '527 patent, the
16 '527 patent's prosecution history, the petition,
17 Dr. Liu's declaration submitted in this proceeding
18 and each document cited in my declaration.

19 Do you see that?

09:37 20 A. Yes, I do.

21 Q. Did you review or consider anything else
22 in forming your opinions that's not listed in

1 paragraph 5?

2 A. That looks to be correct. That
3 paragraph 5 should summarize each of the documents I
4 discuss in my declaration.

09:37 5 Q. Have any of your opinions as you've
6 stated them in your declaration changed as you sit
7 here today?

8 A. Not that I'm aware of, no.

9 Q. Is your declaration that's marked as
09:37 10 Exhibit 2012 accurate, meaning it doesn't have any
11 mistakes as far as you know other than the page --
12 first page that we've already noted?

13 A. There are perhaps a typo here or there
14 that I may have seen in prep and I think there's
09:38 15 maybe a reference in the table of contents that
16 wasn't linked, but not in terms of opinions or
17 technical content.

18 Q. That reference in the table of contents
19 that wasn't linked, that's on Bates-numbered page 3
09:38 20 of the declaration where it says: Error! Bookmark
21 not defined, for claims 13 and 20.

22 Do you see that?

1 A. Yes, I do and that's correct.

2 Q. That's the error you're referring to?

3 A. That's right.

4 Q. There's also -- if you'll turn to

09:38 5 paragraph 16 of the declaration, there's some
6 highlighting around Exhibit 2002. Do you know what
7 that highlighting represents?

8 A. I noticed that when I was preparing as
9 well and I wasn't sure if that was something I
09:38 10 clicked on erroneously reviewing the electronic
11 version. I wouldn't -- there isn't any intended
12 meaning to that. For some reason it seems to be
13 highlighted or partially highlighted.

14 Q. Is that reference to Exhibit 2012
09:39 15 correct, to your knowledge, with respect to your CV?

16 A. It looks like this three-character
17 highlight in paragraph 16 is referring to an
18 exhibit. And I think the exhibit is supposed to be
19 a copy of my CV.

09:39 20 Q. I'll provide you with a copy of your CV,
21 which is Exhibit 2013 as Bates labeled in this
22 matter. And, Dr. Brogioli, is this a correct copy

1 of this CV that you submitted as part of your
2 declaration in this matter?

3 A. That looks -- that looks to be the case,
4 yes. This is a CV that would have been generated on
09:40 5 March 8th of this year.

6 Q. And on the front page of the CV, you can
7 see at the bottom of the page it says: Generated
8 March 8th, 2024; is that correct?

9 A. That's right.

09:40 10 Q. Now, the exhibit number listed at the
11 bottom right corner of this exhibit, your CV, is
12 Exhibit 2013; is that correct?

13 A. Yes.

14 Q. So if we go back to your declaration in
09:40 15 paragraph 16, is it correct that that should have
16 read: My current curriculum vitae provided in
17 Exhibit 2013 contains more information on my
18 background and experience as well as the cases in
19 which I have served as an expert witness for the
09:40 20 past four years?

21 A. That sounds right, and that might have
22 been why that yellow highlight was left in there,

1 that I was supposed to correct that.

2 Q. Okay. Thank you. Looking at your CV,
3 Polymathic Consulting is listed under your
4 professional experience, correct?

09:41 5 A. That's correct.

6 Q. And you -- did you -- you founded and
7 started Polymathic Consulting; is that correct?

8 A. That's correct.

9 Q. How many employees does Polymathic
09:41 10 Consulting have in addition to yourself?

11 A. Right now there are administrative folks
12 and then people have been brought on depending on
13 various projects. I don't think there's anyone
14 formally working there right now. It's gone up and
09:41 15 down from maybe four to five to just myself.

16 Q. So you bring on people on a contract
17 basis, is that fair to say, for the particular
18 project?

19 A. Generally, yes.

09:41 20 Q. Do you have a support staff with respect
21 to the expert witness work that you do via
22 Polymathic Consulting?

1 A. There have been engagements where there
2 has been a consulting -- a technical consulting
3 supporting role. Not on this matter, though.

09:42 4 Q. Outside of the errors that we've noted in
5 your declaration, are you aware of any other errors
6 you'd like to -- or corrections you'd like to note
7 for the record?

8 A. Not that I'm aware of, no.

09:42 9 Q. And do you have any plans to correct or
10 supplement your declaration, which is marked as
11 Exhibit 2012?

12 A. Sitting here right now, no, I don't.

09:43 13 Q. If we -- if you'll refer to paragraph 30
14 of your declaration, which again is Exhibit 2012.
15 Is it -- here you state -- you're discussing the
16 level of a POSITA, correct?

17 A. That's correct.

09:43 18 Q. And is it your understanding that the
19 claims are construed from the perspective of this
20 hypothetical person of ordinary skill in the art at
21 the time of the claimed invention?

22 A. That sounds right, yes.

1 Q. And in your expert declaration, what date
2 did you use as the date of the claimed invention of
3 the '527 patent?

09:43 4 A. It should be discussed in here. As I
5 recall, it would have been the filing date of the
6 patent, which I'm going to the front page of the
7 '527, looks to be February 11 of 2003.

8 Q. Do you know where you made that statement
9 in your declaration regarding the date of invention
09:44 10 that you used for your POSITA level?

11 A. From memory, I don't recall where it
12 would have been mentioned.

13 Q. Would it surprise you that it's not
14 mentioned anywhere in your declaration that I can
09:44 15 find?

16 A. I don't know that it would surprise me,
17 but that would have been the date I was using.

18 Q. So even though you didn't -- you didn't
19 supply that date in your declaration, sitting here
09:44 20 today that's the date you're using as the date on
21 the face of the '527 patent, correct?

22 A. That's my recollection, yes.

1 Q. Now, in paragraph 30 you make note that a
2 POSITA would have had at least a bachelor's of
3 science and you go on to say with at least two years
4 of relevant experience in a field related to data
09:44 5 storage and electronic memory devices, correct?

6 A. That's right.

7 Q. Did you have any particular data storage
8 or electronic memory devices in mind when you wrote
9 this statement?

09:45 10 A. I don't recall what the specifics might
11 have been in my mind in writing that. Generally
12 referring to electronic data storage, different
13 types of memory technology, things of that nature.

14 Q. Would data storage, electronic memory
09:45 15 devices include USB memory devices?

16 A. There may have been types of USB memory
17 devices that fell within that or maybe didn't fall
18 within that.

19 Q. Would it include MMC, or multimedia card
09:45 20 memory devices?

21 A. I think generally to the extent those are
22 talked about in my declaration, they would encompass

1 that.

2 Q. When you said -- when you answered the
3 first question about USB, you said there may have
4 been types of USB memory devices that fell within
09:45 5 that or maybe didn't fall within that. Is there a
6 reason why certain devices would fall within the
7 scope of data storage and electronic memory devices
8 and not fall within that scope?

9 A. I was getting to the point of I haven't
09:46 10 looked at every exhaustive USB-type thing that was
11 out there at that time. There might be things that
12 fell inside the scope.

13 Q. Would SD card memory devices be part of
14 what you referred to as data storage electronic
09:46 15 memory devices?

16 A. Aspects of them may or may not be
17 relevant, sure.

18 Q. Would memory stick devices fall under the
19 data storage electronic memory devices?

09:46 20 A. I would say aspects of them to the extent
21 this person of skill in the art was familiar with
22 them.

1 Q. What aspects would you be -- would you be
2 concerned -- strike that.

3 What aspects would you be referring to
4 there with respect to memory stick devices falling
09:47 5 under data storage electronic memory devices?

6 A. I would say generally the aspects that I
7 talk about in the declaration. At the time what was
8 being done or prior to the filing date in terms of
9 data stored in them or how data wasn't stored or
09:47 10 what was being done in those types of products, that
11 kind of thing.

12 Q. Would the same be true for DRAM or SDRAM
13 memory devices?

14 A. I would say aspects of them at that time
09:47 15 frame, yes.

16 Q. And to round this out, flash memory
17 devices would fall within that data storage and
18 electronic memory devices that you reference in
19 paragraph 30?

09:47 20 A. Aspects of them, yes.

21 Q. So would you agree that a POSITA would be
22 familiar with each of these memory devices that we

1 just talked about and the connectors and interfaces
2 associated with them?

3 A. I would say certain aspects of them
4 similar to how I discuss them in the declaration.

09:48 5 Q. And that would include the connectors and
6 interfaces associated with those various memory
7 devices?

8 A. To the extent that they were, you know,
9 things like published standards or technical papers,
09:48 10 that's right.

11 Q. And would you agree that for each of the
12 memory devices we've discussed just now, a POSITA
13 would know how to design the memory device in order
14 to transfer data between the memory device and a
09:48 15 host computer system, for example?

16 MR. AUCHTER: Objection to form.

17 A. I would say it -- you would have to be
18 more specific. A POSITA would be familiar with the
19 concept of a host sending data to something that's
09:48 20 not the host. In terms of what the connectors are
21 or the memory technology or the situation, they may
22 or may not be familiar with it or even capable of

1 doing it.

2 BY MR. RIFFE:

3 Q. And why is that?

4 A. We'd have to get more specific.

09:48 5 Q. So it would depend upon the particular
6 memory application whether or not in your opinion a
7 POSITA would know how to design the device in order
8 to transfer data between the host and the memory
9 device; is that correct?

09:49 10 A. I would say we'd need a much more
11 specific example as to at this time frame whether a
12 person of skill knows how to -- or if it's even
13 possible to design the specific application you're
14 asking about.

09:49 15 Q. And would you consider yourself a person
16 of ordinary skill in the art at the February 11th,
17 2003, time frame?

18 A. Yes.

09:49 19 Q. And what basis do you have to consider
20 yourself a person of skill in the art at the
21 February 11th, 2003, time frame?

22 A. I would say generally my experience in

09:50 1 industry and academia, my undergrad degree, I had
2 been teaching digital electronics at the senior
3 college level in the '90s. I had spent time at
4 various computing companies in testing and design,
5 things of that nature.

09:50 6 Q. So in paragraph 30 of your declaration
7 you reference Dr. Liu's statement of a person of
8 ordinary skill in the art. Do you agree with his
9 statement as to a person of ordinary skill in the
10 art with respect to the '527 patent?

09:51 11 A. I don't recall necessarily disagreeing
12 with him. I think I just added some additional
13 information about more education, things of that
14 that may also qualify as this person of skill in the
15 art.

09:51 16 Q. And in particular you went on to say: A
17 person with more education such as a doctorate in
18 electrical engineering, computer engineering,
19 computer science or a related discipline would also
20 qualify as a hypothetical POSITA in lieu of fewer
21 years of work experience; is that correct?

22 A. That's correct, yes.

1 Q. And so with respect to both your and
2 Dr. Liu's statement regarding the level of a POSITA,
3 you both mentioned at least two years of relevant
4 experience in the field related to data storage and
09:51 5 electronic memory devices, you just went on to say
6 that if that person had a higher education level,
7 then that two years' experience may be able to be
8 lowered. Is that a fair statement?

9 A. That sounds right, yes. I know we're in
09:51 10 the middle of things. At some point I could use the
11 restroom if it's a good point for you.

12 Q. Sure. Let me see real quick. I think
13 we're at a good space to take a break.

14 MR. RIFFE: Go off the record.

09:52 15 (Recess taken from 9:52 a.m. to
16 10:05 a.m.)

17 BY MR. RIFFE:

18 Q. Welcome back, Dr. Brogioli. During the
19 break, did you discuss the substance of your
10:05 20 testimony with your counsel?

21 A. No.

22 Q. Referring now to paragraph 24 of your

1 declaration, which is Exhibit 2012.

2 A. Okay.

3 MR. AUCHTER: Excuse me, I'm sorry, I
4 apologize to interrupt. Do you have an extra copy?

10:06 5 MR. RIFFE: Sure do. Sorry about
6 that.

7 MR. AUCHTER: Thank you very much.

8 BY MR. RIFFE:

9 Q. So paragraph 24 of your declaration.
10:06 10 Here you're talking about your level -- your
11 understanding of obviousness; is that correct?

12 A. That's correct.

13 Q. And is this the standard you applied in
14 forming your opinions that are set forth in your
10:06 15 declaration, which is Exhibit 2012?

16 A. That's correct. This paragraph and the
17 others in this section.

18 Q. And in paragraph 24 you say that -- as
19 partial of that paragraph: At the time of the
10:06 20 invention a person of ordinary skill in the art
21 would have selected and combined those prior art
22 elements in the normal course of research and

1 development to yield the claimed invention.

2 What did you mean by in the normal course
3 of research and development?

10:07 4 A. I would say sort of just as it says in
5 the course of their role, be it industry, academia
6 or a mix, for a person of skill at that time, you
7 know, for -- in contrast with, for example, you
8 know, taking the claims and going and looking back
9 to try and reconstruct something or something like
10:07 10 that.

11 Q. Are there contexts besides research and
12 development that a POSITA could have selected prior
13 art elements to arrive at the claimed invention?

10:07 14 A. There may be I guess in a legal sense.
15 All I'm referring to in this paragraph is their
16 normal course of action in their role in the
17 industry or their role as a technical person I
18 should say.

10:08 19 Q. So research and development as opposed to
20 manufacturing, you're not drawing a distinction
21 between those two or -- I'm just trying to
22 understand what the context or the scope of research

1 and development is that you mentioned here in
2 paragraph 24.

3 A. So I think you were asking about
4 manufacturing. I don't know that I've drawn a
10:08 5 delineation there, I guess, in terms of what their
6 role might be under a manufacturing umbrella. I
7 would say I'm just referring to their -- again,
8 their normal role in either technical research or
9 developing products and solutions.

10:09 10 MR. RIFFE: Let's mark as Exhibit 1
11 to the deposition, it's the -- it's a document that
12 has been marked for the IPR proceeding as MTI-1006.

13 (Deposition Exhibit 1 marked for
14 identification.)

10:09 15 BY MR. RIFFE:

16 Q. Dr. Brogioli, do you recognize what's
17 been marked as Exhibit 1, which is MTI-1006?

18 A. Yes. This looks like what I have in my
19 declaration referred to as Tomio or the Tomio
10:09 20 reference.

21 Q. And this is the Tomio reference that you
22 analyzed as part of your declaration, correct?

1 A. That's correct, yes.

2 Q. If you'll turn to page 25 of Tomio, here
3 we can see Figure 11 of the Tomio reference,
4 correct?

10:10 5 A. That's right.

6 Q. And Figure 11 depicts a memory module
7 that's marked as No. 51, correct?

8 A. Going to find where Tomio describes this
9 figure. So I'm in paragraph 38 of Tomio, and Tomio
10:10 10 refers to 51 as a module, that's right.

11 Q. And in paragraph 38 of that first
12 sentence it says: In the modified example shown in
13 Figure 11, the module 51 is composed of a plurality
14 of semiconductor memories 8 and a control circuit
10:11 15 52.

16 Did I read that correctly?

17 A. You did, yes.

18 Q. And the memory module 51 depicted in
19 Figure 11, that's small enough to fit in the palm of
10:11 20 a person's hand, correct?

21 MR. AUCHTER: Objection, form.

22 A. I don't see at least in paragraph 38 that

1 Tomio is talking about the physical dimensions of
2 his memory module.

3 BY MR. RIFFE:

10:11 4 Q. Based on your experience looking at
5 Figure 11 and the description of the memory module
6 shown in Figure 11, is it your opinion that that
7 memory module would be small enough to fit into the
8 palm of a person's hand?

10:11 9 A. I would answer that at the time of Tomio,
10 which I think is 1999 or so, memory modules were, I
11 don't know, maybe the length of my palm, a little
12 less, something like that. Five inches long maybe.

10:12 13 Q. And given that is around five inches long
14 or so, you agree that Tomio -- you could carry
15 Tomio's memory module in your hand, correct?

16 A. If it were referring to that kind of a
17 memory module, that's fair to say, yes.

10:12 18 Q. Do you have any reason to believe it's
19 not referring to that type of memory module given
20 the depiction of the module in Figure 11 and its
21 associated description?

22 A. As I recall, this embodiment of Tomio, he

1 is referring to those PCB-type memory modules of the
2 late '90s you'd plug into a computer. So you could
3 hold it in your hand kind of thing, yeah, would seem
4 reasonable.

10:13 5 Q. And the way you could plug it into the
6 computer at least is through the use of the
7 contacts -- the terminals 53 shown in Figure 11; is
8 that correct?

9 A. That those terminals 53 are the way, when
10:13 10 these devices are installed in a computer that the
11 PCB and the module -- or the module 51 is connected
12 to the larger computer as a whole.

13 Q. And are these modules that like Tomio's
14 shown in Figure 11, are those mounted onto a
10:13 15 motherboard within the computer itself, generally?

16 A. They are at the time generally fixed into
17 these mounts on the larger board in the computer as
18 part of the overall system.

19 Q. And given that you agreed that Tomio's
10:14 20 memory module could be carried in your hand, that --
21 you would agree that Tomio's memory module is
22 portable, correct?

1 MR. AUCHTER: Objection, form.

2 A. Not in the context of the patent or that
3 I talk about in my declaration.

4 BY MR. RIFFE:

10:14 5 Q. So in your view a memory device is not
6 portable just because it can be carried by hand,
7 correct?

8 A. I don't recall saying that was my
9 definition of portable, just because something would
10:14 10 fit in my hand.

11 Q. Does your definition of portable mean
12 that you can carry it by hand?

13 A. I would say you could possibly carry it
14 by hand. I don't know that I'd put a definition on
10:14 15 it in terms of what someone could or couldn't carry.

16 Q. So if a person could carry Tomio's module
17 51 as you testified to earlier in their hand, would
18 that -- would you consider that module to be
19 portable?

10:15 20 MR. AUCHTER: Objection to form.

21 A. Not necessarily in the context that I
22 talk about in my declaration.

1 BY MR. RIFFE:

2 Q. Okay. So in general you're saying that
3 just because a module can be carried in a person's
4 hand, that doesn't necessarily mean that that module
10:15 5 is portable; is that correct?

6 A. Yeah. I don't recall offering an opinion
7 one way or the other on that. There's aspects of
8 Tomio that I discuss in my declaration as to why
9 this is not -- as I recall, not a portable device.
10:15 10 I don't discuss whether or not it fits in someone's
11 hand or not.

12 Q. So just to be clear, in your opinion a
13 memory device is not portable just because it can be
14 carried by hand by a person, correct?

10:16 15 A. I don't recall discussing whether or not
16 something is portable because or because it cannot
17 fit in someone's hand one way or the other.

18 Q. You don't recall that where?

19 A. In my declaration.

10:16 20 Q. In your declaration. So sitting here
21 today, though, would you consider Tomio, given that
22 you agreed that a person could carry it in someone's

1 hand, would you consider that to be a portable
2 memory device?

3 A. I don't recall that being part of my
4 discussion of Tomio one way or the other.

10:16 5 Q. But sitting here -- so you're not able to
6 answer my question?

7 MR. AUCHTER: Objection, form.

8 A. I would say I haven't offered opinions as
9 to the portableness or nonportableness of Tomio
10:16 10 regarding whether it fits in a person's hand or not.

11 BY MR. RIFFE:

12 Q. So in general, if a memory device can fit
13 in a person's hand, would you consider that memory
14 device portable?

10:17 15 MR. AUCHTER: Objection to form.

16 A. We would need more context in terms of
17 how this memory device you're asking about operates
18 and what definition of portable you're using.

19 BY MR. RIFFE:

10:17 20 Q. And in general, if a memory device can be
21 carried by a person, would you consider that memory
22 device portable?

1 MR. AUCHTER: Objection to form.

2 A. That's a -- you'd need to ask a more
3 specific question. I don't recall that being part
4 of my discussion of portable in my declaration.

10:17 5 BY MR. RIFFE:

6 Q. So I'm just trying to get a clear read on
7 what you mean by portable in your declaration. If a
8 memory module such as Tomio's can be carried by a
9 person in their hand, is that memory module portable
10:18 10 or not portable according to your understanding of
11 the phrase "portable"?

12 MR. AUCHTER: Same objection to form.

13 A. You'd have to ask a more specific
14 question. I haven't defined a, quote, memory module
10:18 15 as being portable or not portable just because it
16 fits in someone's hand or does not.

17 BY MR. RIFFE:

18 Q. You haven't defined that as part of your
19 declaration in this IPR proceeding, correct?

10:18 20 A. I don't recall -- I think we're in
21 agreement. I don't recall discussing that in my
22 declaration, no.

1 Q. And sitting here today, you have no
2 opinion on whether or not a memory module is
3 portable or not portable because it fits in
4 someone's hand; is that correct?

10:18 5 A. I don't recall defining a, quote, memory
6 module and whether or not it's portable based on it
7 fitting in someone's hand or not.

8 Q. And sitting here today, you have no
9 opinion on whether or not a memory module is
10:19 10 portable or not portable because someone can carry
11 it in their hand; is that correct?

12 MR. AUCHTER: Objection to form.

13 A. I would say I haven't offered an opinion
14 on a specific memory module being portable or not
10:19 15 whether or not someone can carry it in their hand.

16 BY MR. RIFFE:

17 Q. And then being specific with respect to
18 the memory module 51 of Tomio Figure 11, do you have
19 an opinion sitting here today whether or not that
10:19 20 memory module is portable because someone can carry
21 it in their hand as you testified to earlier?

22 A. I would say I've discussed the memory

1 modules or the memory components of Tomio in my
2 declaration. I don't recall discussing an
3 embodiment of Tomio fitting in someone's hand as
4 being part of the criteria I discuss in the
10:20 5 declaration.

6 Q. So outside of your declaration, sitting
7 here today, you've agreed that looking at Figure 11
8 in the memory module of Tomio and in the relevant
9 time frame that someone would be able to carry that
10:20 10 module in their hand, correct?

11 A. I would say that looking at Figure 11 of
12 Tomio and Tomio's module 51, it may be the case that
13 that's a physical device that someone could put in
14 their hand.

10:20 15 Q. And under that understanding, do you have
16 an opinion as to whether Tomio's module 51 would be
17 portable or not because the physical device would
18 allow someone to put it in their hand?

19 MR. AUCHTER: Objection to form.

10:21 20 A. In my declaration I discuss why Tomio is
21 not portable in various aspects. I don't recall
22 saying anything about it fitting in someone's hand

1 or that changing my opinion of Tomio.

2 BY MR. RIFFE:

3 Q. Does the fact that someone could carry
4 Tomio's module 51 in their hand change your opinion
10:21 5 as to whether or not Tomio's module is portable or
6 not?

7 MR. AUCHTER: Objection to form.

8 A. In the context of this -- of my
9 declaration, that doesn't change my opinions.

10:21 10 BY MR. RIFFE:

11 Q. So not focusing on your declaration, does
12 the fact that someone could carry Tomio's module 51
13 in their hand change your opinion as to whether
14 Tomio's module is portable or not?

10:21 15 MR. AUCHTER: Objection to form.

16 A. It doesn't change any of my opinions in
17 this proceeding. You would have to ask -- it sounds
18 like you're asking about the term "portable" in the
19 abstract. There's specific uses of it in the
10:22 20 patent. My opinions don't change.

21 BY MR. RIFFE:

22 Q. Okay. So do you have an opinion as to

1 whether or not the fact that someone could carry
2 Tomio's module 51 in their hand would make that
3 module portable or not sitting here right now?

10:22 4 A. It sounds like something I have not
5 addressed in my declaration. I don't recall the
6 context of the term "portable" in the patent being
7 contingent on something fitting in a human's hand or
8 not.

10:22 9 Q. Do you recall offering an opinion in the
10 copending litigation as to whether or not any of the
11 accused devices were portable because they could be
12 carried by a person in their hand?

13 MR. AUCHTER: Objection, form,
14 relevance.

10:23 15 A. I don't recall one way or the other.

16 BY MR. RIFFE:

17 Q. So you don't recall your expert report
18 that you submitted recently in the copending
19 litigation and whether or not you relied upon
10:23 20 whether a memory could be portable or not depending
21 upon whether a person could carry it in their hand?

22 MR. AUCHTER: Objection, form.

1 A. I'd have to go back and look for you. I
2 don't remember discussing the physical dimensions of
3 a person's hand, an accused product in relation to
4 that.

10:23 5 BY MR. RIFFE:

6 Q. So why, in your opinion, is Tomio's
7 memory module not portable?

8 A. So I'm roughly going back to
9 Bates-labeled page 18 of the declaration. And if
10:24 10 there's a specific paragraph or section here you
11 want to refer me to, you can discuss that. But one
12 aspect of Tomio is the -- the type of interface it
13 uses, which even in Figure 11 or the other figures
14 we see is this highly parallel interface that's
10:25 15 not -- it's designed for a fixed unit inside of --
16 inside of a computer, for example. There are a
17 number of averse -- or detrimental things that
18 happen if it's removed, for example.

19 Q. In paragraph 33 you make a note that: A
10:25 20 POSITA would not consider a memory module like the
21 one disclosed in Tomio to be a portable memory
22 device in the context of the specifications of the

1 claims of the '527 patent. The memory module in
2 Tomio is not designed to be plugged and unplugged.

3 Do you see that?

4 A. Yes, I do.

10:25 5 Q. So why does it matter if Tomio's memory
6 module is not designed to be plugged and unplugged?
7 How does that make it not portable?

8 A. Well, for example, in Tomio if I remove
9 Tomio's device -- well, it's simply not designed for
10:26 10 that. So things like data loss would happen or
11 damage or corruption, things of that nature.

12 Q. So in your view, a memory device is not
13 portable if it's not designed to be plugged and
14 unplugged, correct?

10:26 15 A. In this context that I'm talking about
16 Tomio, that's right.

17 Q. Is there a context of a device that's not
18 designed to be unplugged or plugged that could be
19 portable?

10:26 20 MR. AUCHTER: Objection, form.

21 A. I don't -- I don't think I have addressed
22 that one way or the other in my declaration.

1 BY MR. RIFFE:

2 Q. So would you agree with me that if a
3 memory module is not designed to be plugged or
4 unplugged, it could still have the same data
10:27 5 contamination or corruption issues that you
6 mentioned with respect to the connections in Tomio?

7 A. Can I hear you one more time?

8 Q. Sure. So you would agree with me that if
9 a memory module is not designed to be plugged or
10:27 10 unplugged, it could still have the same data
11 contamination or corruption issues that you
12 mentioned with respect to the connections in Tomio?

13 MR. AUCHTER: Objection to form.

14 A. I would say if a device is designed like
10:27 15 Tomio, for example, with an interface like Tomio
16 that's not designed to be unplugged and plugged,
17 then you can end up with things like data
18 corruption, data loss and so forth.

19 BY MR. RIFFE:

10:27 20 Q. And under that circumstance, that type of
21 device would not be portable under your
22 understanding of the phrase "portable," correct?

1 MR. AUCHTER: Objection to form.

2 A. I guess I would say in the context of the
3 patent and the opinions in my declaration, if a
4 device is to be plugged or unplugged as I'm talking
10:28 5 about in 33 and data is lost or corrupted and things
6 of that nature, that's not falling in line with the
7 description of portable that I'm talking about.

8 BY MR. RIFFE:

9 Q. So in general if a device is not designed
10:28 10 to be plugged and unplugged, that could result in
11 data corruption and the like, then under your
12 understanding of the phrase "a memory device" would
13 not be portable, correct?

14 MR. AUCHTER: Objection to form.

10:29 15 A. I'm not sure I fully understand your
16 question. If a device is designed to be installed
17 in a computer and not plugged in or unplugged, then
18 it will operate as normal and data won't be lost.

19 BY MR. RIFFE:

10:29 20 Q. And under that condition if a device is
21 designed to be installed in a computer and not
22 plugged or unplugged, would that be a portable

1 device?

2 MR. AUCHTER: Objection to form.

3 A. I would say to answer more specifically,
4 if it's a device like Tomio that's not designed to
10:29 5 be plugged and unplugged and is to be used
6 operationally normally in a computer, then that's
7 not a portable device.

8 BY MR. RIFFE:

9 Q. And you agree that the inventions claimed
10:30 10 in the '527 patent are intended to be plugged and
11 unplugged, correct?

12 A. I would say the patent talks about the
13 word -- uses the word "portable" or at least
14 "portable RAM drives," and that's one aspect of the
10:30 15 patent. It also talks about things like being
16 unplugged.

17 Q. So would you agree, then, that the
18 inventions claimed in the '527 patent are intended
19 to be plugged and unplugged, correct?

10:30 20 MR. AUCHTER: Objection to form.

21 A. Yeah, I guess maybe there's a specific --
22 I don't recall the language in each of the specific

1 claims. But the specification talks about the idea
2 of these embodiments being plugged in or unplugged
3 and things like that.

4 BY MR. RIFFE:

10:30 5 Q. And so the claim talks about a portable
6 memory apparatus. And you've used the feature of
7 the memory apparatus being able to be plugged and
8 unplugged as part of your determination as to
9 whether the memory device is portable or not,
10:31 10 correct?

11 A. That the plugging and unplugging as
12 described in the claims in the specification is part
13 of the portability of the invention.

14 Q. And so you then agree that the inventions
10:31 15 claimed in the '527 patent are intended to be
16 plugged and unplugged, correct, those are the type
17 of apparatuses that the claims are directed to?

18 MR. AUCHTER: Objection to form.

19 A. I would say that that's something that
10:31 20 the specification talks about, yes.

21 BY MR. RIFFE:

22 Q. But you would not agree that the claims

1 are intended to be directed to a portable memory
2 device that's to be plugged and unplugged, correct?

3 MR. AUCHTER: Objection to form to
4 form.

10:32 5 A. Let me take one second to revisit the
6 claim.

7 BY MR. RIFFE:

8 Q. Sure.

9 (Witness reviews document.)

10:32 10 A. Okay. Let me hear your question again.

11 BY MR. RIFFE:

12 Q. Sure. Do you agree that the claims are
13 intended to be directed to a portable memory
14 apparatus that is to be plugged and unplugged,
10:32 15 correct?

16 MR. AUCHTER: Objection to form.

17 A. I guess I would say that certain of the
18 claims use the language of plugged or plugged into
19 said computer system like claim 1. Other claims
10:32 20 like claim 3 talked about memory apparatus is
21 unplugged from said computer system. And these
22 claims -- 3, for example, also use the phrase

1 "portable."

2 BY MR. RIFFE:

10:33 3 Q. Okay. And given that discussion, would
4 you then agree that the claims of the '527 patent
5 are directed to portable memory devices that are
6 intended to be plugged and unplugged?

7 MR. AUCHTER: Objection to form.

10:33 8 A. I guess I'm getting a little hung up on
9 the word "intended." But the claims talk about --
10 in the specification, these memory devices which are
11 portable and there's various aspects to what that
12 entails in the patent. And the claims talk about,
13 for example, plugged into or I think the other
14 language of unplugged from being part of what's
10:33 15 described.

16 BY MR. RIFFE:

10:34 17 Q. So I'm just trying to square that with
18 your opinion in paragraph 33, for example, of your
19 declaration, which is Exhibit 2012 in this matter,
20 where you say: The memory module in Tomio is not
21 designed to be plugged and unplugged and therefore
22 Tomio's device is not a portable memory device.

1 So my question is, under your
2 understanding of portable memory apparatus, does
3 that require the device to be -- to have the
4 capability of being plugged and unplugged?

10:34 5 A. Well, the claims talk about the
6 capability of being plugged or unplugged. In the
7 case of Tomio there is various aspects of Tomio that
8 don't support that. For example, if I remove Tomio
9 from the system, data is lost, things are corrupted,
10:34 10 there could be damage, things like that.

11 Q. And how do you know that? Is that
12 somewhere discussed in Tomio, that there would be
13 damage to the data if it's removed from the
14 motherboard inside the computer, for example?

10:35 15 MR. AUCHTER: Objection to form.

16 A. I go back to -- I discuss Tomio in a
17 number of places in my declaration. As I recall,
18 Tomio uses these highly parallel interfaces for its
19 modules that aren't -- that aren't designed for
10:35 20 that. They're to be sort of fixed, installed inside
21 the computers that Tomio's discussing.

22

1 BY MR. RIFFE:

2 Q. So in paragraph 71, for example, let me
3 know when you get there, in your declaration.

4 A. Okay.

10:35 5 Q. You say: A POSITA would not understand
6 that Tomio's teachings are directed to a portable
7 memory apparatus. You say: Tomio is instead
8 directed to an internal memory that could shorten
9 the start-up time for a personal computer.

10:36 10 Do you see that?

11 A. Yes.

12 Q. So is it your view, then, that an
13 internal memory device is different than a portable
14 memory device?

10:36 15 MR. AUCHTER: Objection to form.

16 A. In this context of Tomio where this is
17 Tomio's device is an internal part of the computer
18 that's used for the shortening of this start-up time
19 or boot process, that's not something that's
10:36 20 portable in the context of the patent.

21 BY MR. RIFFE:

22 Q. Why is the device being an internal part

1 of the computer something that makes it not portable
2 in the context of the patent?

3 MR. AUCHTER: Objection to form.

4 A. Well, it's not the -- for example, the
10:37 5 plugging or unplugging that the claims talk about in
6 the patent, Tomio is this internal memory component
7 of this computer that's required for RAM data and
8 things that are required just to boot the system.
9 And as I talk about in the middle of this paragraph,
10:37 10 for example, Tomio essentially discloses a boot
11 loader that is on the motherboard of this personal
12 computer.

13 BY MR. RIFFE:

14 Q. So you would agree, then, that a memory
10:37 15 device that connects to the motherboard is not
16 portable --

17 MR. AUCHTER: Objection, form.

18 BY MR. RIFFE:

19 Q. -- correct?

10:37 20 A. I haven't offered an opinion as to
21 portability and whether or not something's
22 connecting to a motherboard physically. In the

1 context of Tomio and how Tomio operates, I would say
2 in terms of its signaling and functionality in Tomio
3 as a whole is not something that's portable.

10:38 4 Q. Are there memory devices that connect to
5 a motherboard internally to the computer that under
6 your opinion would be portable?

7 MR. AUCHTER: Objection to form.

8 A. I don't think Dr. Liu presented any
9 references that talk about that or that I discuss in
10:38 10 my declaration.

11 BY MR. RIFFE:

12 Q. Okay. Just hypothetically, are you aware
13 of any memory devices that connect to a motherboard
14 internally to the computer that under your opinion
10:38 15 would be portable?

16 MR. AUCHTER: Objection to form,
17 relevance.

18 A. I don't -- beyond the references, I think
19 the four references of Dr. Liu's that I talk about
10:38 20 in my declaration here, I don't recall performing a,
21 like a market or product survey for that.

22

1 BY MR. RIFFE:

2 Q. Are you aware of any memory modules that
3 connect to motherboards internally to the computer
4 that are portable in accordance with your
10:39 5 understanding of that phrase?

6 A. I would say I -- in terms of the phrase
7 "portable" in the context of the claims of the '527,
8 I haven't gone and looked at memory modules -- or I
9 would say memory devices that meet or don't meet
10:39 10 that limitation, at least in terms of what Dr. Liu
11 is presenting.

12 Q. Okay. Well, outside of what Dr. Liu
13 presented, I've just asked, are you aware of any
14 memory modules that connect to motherboards
10:39 15 internally to the computer that would be portable in
16 accordance with your understanding of that phrase?

17 MR. AUCHTER: Objection, form,
18 relevance.

19 A. I would say we'd have to be more specific
10:39 20 in terms of what you mean by connecting to a
21 motherboard either physically, electrically at the
22 signaling level, protocols, things of that nature.

1 It sounds like something I'm not discussing in terms
2 of my opinions regarding Dr. Liu's declaration.

3 BY MR. RIFFE:

10:40 4 Q. What in your opinion would permit a
5 memory module that connects to a motherboard inside
6 a computer to be portable or to qualify as portable?

7 MR. AUCHTER: Objection to form.

8 A. I guess if you had a hypothetical memory
9 module that meets the language -- the claims that
10:40 10 discuss being portable, that would be something that
11 would be portable in the context of the '527 patent.

12 BY MR. RIFFE:

13 Q. And would that -- one of those
14 characteristics be the ability to be plugged and
10:40 15 unplugged, for example, from the motherboard and not
16 have these data corruption issues that you've
17 identified?

18 MR. AUCHTER: Objection to form.

19 A. I would say to the extent this device can
10:40 20 meet the language of portable or plugging or
21 unplugging as described in the claims, then it would
22 meet the limitations of the claims.

1 BY MR. RIFFE:

2 Q. And just so I'm clear, what is your
3 understanding of the phrase "portable"? What does
4 that mean to you in the context of the '527 patent?

10:41 5 A. I would say it's just as described in the
6 specification in the claims and the various aspects
7 I talk about in my declaration. I think I also
8 address early on, I don't think Dr. Liu described
9 portability any differently or offered a claim
10:41 10 construction on that term as I recall.

11 Q. Okay. So in providing guidance to the
12 board, what's your opinion as to the phrase
13 "portable"?

14 MR. AUCHTER: Objection to form.

10:41 15 A. I guess I would go back to the patent. I
16 mean, even claim 1 talks about this portable memory
17 apparatus and the different limitations talk about
18 things such as the memory controller chip copying
19 data from nonvolatile to volatile memory, the
10:42 20 various ways to access through said connectors and
21 so forth. And there's other description throughout
22 the specification, for example, in column 3 talking

1 about a portable RAM drive and restraining mechanism
2 and things of that nature.

3 BY MR. RIFFE:

10:42 4 Q. But again, what does that -- what does
5 that have to do with the word "portable"? What does
6 portable mean in the context of this patent?

7 MR. AUCHTER: Objection to form.

10:42 8 A. I would suggest as it's described in the
9 claims in the specification and examples of how
10 these devices can be plugged in or unplugged in a
11 system and how the signaling works and how data
12 moves within the device in contrast to limitations
13 or shortcomings of some of the various references
14 Dr. Liu points out where, for example, if things
10:43 15 become corrupted or they can't be removed in certain
16 ways and so forth.

17 BY MR. RIFFE:

10:43 18 Q. So at least one characteristic of the
19 phrase "portable" I think we can agree to is that
20 the device can be plugged or unplugged, correct?

21 A. As it's described in the claims, sure.

22 Q. And another characteristic of the phrase

1 "portable" I think we can agree to is that the
2 device can be carried in one's hand, correct?

3 MR. AUCHTER: Objection to form.

4 A. I didn't -- as we discussed earlier this
10:43 5 morning, I didn't address or offer an opinion as to
6 portability being contingent on whether or not
7 something fits in a person's hand.

8 BY MR. RIFFE:

9 Q. And that's true in this IPR proceeding,
10:43 10 correct?

11 A. That's correct, yes.

12 Q. Now, in the litigation you've provided an
13 opinion as to whether or not a device is portable as
14 to whether or not it can be carried in someone's
10:44 15 hand, correct?

16 MR. AUCHTER: Objection to form,
17 relevance.

18 A. I think we were discussing that earlier.
19 I don't remember -- I do remember my report's
10:44 20 lengthy. I don't remember one way or the other if I
21 had statements about a person's physical hand size.

22

1 BY MR. RIFFE:

2 Q. Not about a person's physical hand size
3 but whether or not the device can be carried in a
4 person's hand. Do you recall that?

10:44 5 A. I recall us discussing that. I don't
6 recall if that's in my reports and charts or not.

7 Q. Other than the ability to carry the
8 device in someone's hand or whether the device is
9 capable of being plugged or unplugged without data
10:44 10 corruption, are there any other characteristics of
11 the memory module in your opinion that would make
12 that memory module portable or not portable?

13 MR. AUCHTER: Objection, form,
14 foundation.

10:45 15 A. I guess I would answer that in two parts.
16 That I haven't in my declaration here -- I've
17 responded to opinions of Dr. Liu's. I don't recall
18 him discussing the universe of what he felt was
19 portable or not portable or me defining that either.
10:45 20 And I would say portability is just as it's
21 described in the claims of the patent and the
22 specification.

1 BY MR. RIFFE:

2 Q. And looking at claim 1, for example, of
3 the '527 patent, how is portable described in
4 claim 1, in your opinion?

10:45 5 A. I would say in the context of claim 1
6 it's talking about a portable memory apparatus and
7 then various aspects of the memory apparatus -- or
8 various aspects of the portable memory apparatus.
9 So I would refer to each of these limitations things
10:46 10 like an apparatus to -- sorry, I'm at column 3, line
11 30. Memory apparatus to a computer system where
12 said connector is plugged into said computer system,
13 things like what the memory controller chip does
14 between the volatile and nonvolatile memories.
10:46 15 There's other aspects of this portable device like
16 claim 2 talking about internal power sources and
17 claim 3 talking about aspects of the portable memory
18 apparatus when it's unplugged.

19 Q. So whether a device has -- whether a
10:46 20 memory has an internal power source, does that
21 determine whether it's a portable or nonportable
22 memory device, in your opinion?

1 MR. AUCHTER: Objection to form.

2 A. It looks like -- so the internal power
3 source as discussed in the patent, it looks like
4 that's something that's discussed in the context of
10:47 5 claim 3. I would say the independent claim 1 that 3
6 depends on 2 which depends on 1, also talks about
7 what comprises this portable memory apparatus. And
8 I don't see that claim 1 mentions the internal power
9 source.

10:47 10 BY MR. RIFFE:

11 Q. I was just asking that because you
12 mentioned the internal power source of claim 2 as
13 part of your answer to my previous question. So I
14 just wanted to know how an internal power source
10:47 15 differentiates between a memory that is portable or
16 not.

17 A. So I would say that the different claims
18 of the patent discuss these portable memory
19 apparatuses. Some of them describe an internal
10:48 20 power source and some don't.

21 Q. You mentioned the memory controller chip
22 copying data from nonvolatile memory to volatile

1 memory. You would agree with me that memory
2 controller chips are present in portable and
3 nonportable devices that permit copying data from
4 nonvolatile to volatile memory, correct?

10:48 5 A. I would say that in general there are a
6 lot of flavors of memory controller chips that do
7 various things for either volatile memories or
8 nonvolatile memories.

10:48 9 Q. And those memory controller chip flavors
10 are present in portable versus nonportable memory
11 devices, correct?

12 A. I would say there are memory controllers
13 or memory controller devices intended for portable
14 and nonportable memory solutions.

10:49 15 Q. And given that, a memory -- the presence
16 of a memory controller chip, you would agree, does
17 not render a particular memory module portable or
18 not, correct?

10:49 19 A. I don't recall saying that a -- the
20 presence or lack of a memory controller chip of some
21 kind necessarily makes something portable or not
22 portable.

1 Q. And so I'm just trying to reconcile your
2 prior answer to my question about, you know, what
3 characteristics makes a memory apparatus portable
4 and you went to the claims and you recited a memory
10:49 5 controller and an internal power source, but I
6 believe you would agree with me that neither of
7 those characteristics are attributable to whether
8 the memory module is portable or not, correct?

9 MR. AUCHTER: Objection to form.

10:49 10 A. I guess I would answer that the portable
11 aspect is just as it's described in the claims. A
12 memory controller is one thing that's described in
13 part of some of the claimed limitations that make up
14 the claims. So I don't -- I haven't offered the
10:50 15 opinion that the memory control -- the presence of a
16 memory controller chip mandates portability or not
17 in and of itself.

18 BY MR. RIFFE:

19 Q. So I'm just trying to understand, what
10:50 20 does mandate whether a memory is portable or not, in
21 your opinion?

22 MR. AUCHTER: Objection to form.

1 A. I would say just as I've described in my
2 declaration, what is portability as described in the
3 patent or other solutions that are not portable for
4 various reasons or other of these prior art
10:50 5 solutions and I would say portability is just as
6 it's described in these various claims.

7 BY MR. RIFFE:

8 Q. With all due respect, I don't think
9 you've described for me what is portable as defined
10:51 10 by these claims or described by these claims. I
11 mean, what are the metes and bounds of this claim as
12 to whether or not a device is portable or not?

13 MR. AUCHTER: Objection to form.

14 A. I would say an example would be just as
10:51 15 we talked about claim 1. So an example of portable
16 in a portable memory apparatus is just like claim 1
17 says, something with a housing, with the memory
18 controller in the housing. It's got a volatile
19 memory, the memory controller which does certain
10:51 20 things, a nonvolatile memory and how the device
21 operates under various conditions as described in
22 the claims.

1 BY MR. RIFFE:

2 Q. Okay. And so you would agree with me
3 that if a memory module meets each of those claim
4 elements, whether or not that memory module could be
10:51 5 plugged or unplugged under your opinion would be a
6 portable memory apparatus, correct?

7 MR. AUCHTER: Objection to form.

8 A. I guess I would say if there's a memory
9 device that, for example, meets the limitations of
10:52 10 claim 1, then that would be a portable memory
11 apparatus as described by claim 1.

12 BY MR. RIFFE:

13 Q. Is that true whether or not the device
14 can be plugged or unplugged?

10:52 15 MR. AUCHTER: Objection to form.

16 A. I guess to the extent it's supporting
17 the, quote, plugged into language of claim 1, yes.
18 And then there's other dependent claims that talk
19 about the unplugging aspect.

10:52 20 BY MR. RIFFE:

21 Q. And is it -- going back to the original
22 comment you made, if there's a memory device that

1 meets the limitations of claim 1, then that would be
2 a portable memory apparatus. Is that true whether
3 or not the device can be carried in a person's hand
4 or not?

10:53 5 MR. AUCHTER: Objection to form.

6 A. I don't see that claim 1 talks about --
7 or has a limitation describing whether or not the
8 portable memory apparatus of this claim must fit in
9 someone's hand or not.

10:53 10 BY MR. RIFFE:

11 Q. So is it your opinion, then, whether or
12 not a device can fit in someone's hand or be carried
13 by someone is not a characteristic of a portable
14 memory device?

10:53 15 A. I guess I don't see that language in the
16 claim and I don't recall discussing in my
17 declaration here the form factor of fitting in
18 someone's hand in the context of portability in my
19 declaration.

10:53 20 Q. And in your view, is a memory device that
21 is -- strike that.

22 In your view, a memory device is not

1 portable if it's not designed to be plugged or
2 unplugged, though, correct?

3 MR. AUCHTER: Objection to form.

10:54 4 A. I guess to the extent a memory device
5 doesn't meet the plugged or unplugged limitations of
6 the claims, then it wouldn't be the portable memory
7 device of that claim.

8 BY MR. RIFFE:

10:54 9 Q. And in your view, a memory device is not
10 portable just because it can be carried in a
11 person's hand, correct?

12 A. Yeah, I don't recall -- I don't recall
13 discussing that in my declaration and I don't recall
14 the patent saying something is portable or not just
10:54 15 because it fits in someone's hand.

16 Q. And just to round this out, in your
17 opinion an internal memory device such as those that
18 are connected to a motherboard inside a computer,
19 that's different than a portable memory device,
10:55 20 correct?

21 MR. AUCHTER: Objection to form.

22 A. I was saying that in the context of Tomio

1 that is not a portable memory device based on how
2 Tomio is used in interfacing or designed into the
3 system of Tomio.

4 BY MR. RIFFE:

10:55 5 Q. So let's refer back to Tomio, which is
6 Exhibit 1006, MTI-1006. And reference paragraph 37.

7 MR. AUCHTER: Of Tomio or the
8 declaration?

9 MR. RIFFE: Of Tomio. Sorry. Thank
10:55 10 you.

11 A. Okay.

12 BY MR. RIFFE:

13 Q. And at the end of paragraph 37 we can
14 say -- we can see that Tomio says: In addition, a
10:56 15 module formed using a semiconductor memory 8 of the
16 present invention may be used instead of a
17 conventional floppy disk or CD-ROM.

18 Do you see that?

19 A. Yes.

10:56 20 Q. You would agree that a floppy disk is
21 portable, correct?

22 A. I would say in the general sense a floppy

1 disk or floppy disks were designed as something that
2 I can insert into a computer, do things, remove it,
3 carry it down the hall, et cetera.

10:56 4 Q. And if you reference in the '527 patent,
5 which is Exhibit MTI-1001, column 1, lines 15 to 16,
6 it states: Portable storage mediums, such as floppy
7 disks and compact discs (CDs), may allow data to be
8 read and written to a moveable disk surface.

9 Do you see that?

10:57 10 A. Yes.

11 Q. You would agree, then, looking back at
12 paragraph 37 of Tomio, which is Exhibit MTI-1006,
13 you would agree that CD-ROMs are also portable,
14 correct?

10:57 15 MR. AUCHTER: Objection to form.

16 A. It looks like the patent talks about CDs
17 and floppy disks as portable storage mediums in
18 terms of the background of the invention and
19 specifically in the description of related art. And
10:57 20 then it looks like paragraph 37 of Tomio mentions
21 CD-ROMs or CDs and floppy disks as well.

22

1 BY MR. RIFFE:

2 Q. Okay. Turning now our attention to
3 paragraph 34 of your declaration.

4 A. Okay.

10:58 5 Q. And this is in reference to the Tsunoda
6 reference.

7 Do you see that in paragraph 34?

8 A. Yes.

9 Q. Here you say that: Tsunoda's first
10:58 10 embodiment does not disclose a portable memory
11 apparatus that would function correctly if
12 unexpectedly disconnected or coupled from a host.

13 Do you see that?

14 A. Disconnected or uncoupled from a host,
10:58 15 yes.

16 Q. Then you go on to say: A POSITA would
17 understand the features of this embodiment such as
18 Tsunoda's processing from a start of power supply to
19 a stop of power supply would have to be
10:58 20 reimplemented for a portable memory apparatus,
21 correct?

22 A. Yes.

1 Q. So it's your opinion here that Tsunoda's
2 memory device is not portable because it would not
3 function correctly if it was unexpectedly
4 disconnected or uncoupled from the host, correct?

10:59 5 A. That, yes, one aspect of Tsunoda's first
6 embodiment is that if that disconnect or uncoupling
7 happens unexpectedly, Tsunoda doesn't operate
8 correctly.

9 Q. So you would agree that a memory device
10:59 10 is not portable, then, if it does not function
11 correctly if it's unexpectedly disconnected or
12 uncoupled from a host, correct?

13 MR. AUCHTER: Objection, form.

14 A. In the way that this embodiment of
10:59 15 Tsunoda operates, that's correct.

16 BY MR. RIFFE:

17 Q. Would you agree, then, that a memory
18 device is not portable if it doesn't have a
19 mechanism by which to secure the data if that memory
11:00 20 device is unexpectedly disconnected or uncoupled
21 from a host?

22 MR. AUCHTER: Objection to form.

1 A. That one aspect of the portability is
2 that if the device is not functioning correctly if
3 disconnected and uncoupled from the host --
4 unexpectedly disconnected and uncoupled.

11:00 5 BY MR. RIFFE:

6 Q. So let me just make sure the record's
7 clear. So an aspect of portability is if the device
8 does not function correctly if disconnected or
9 uncoupled from the host unexpectedly, correct?

11:00 10 MR. AUCHTER: Objection, form,
11 foundation.

12 A. I would say -- going back to your
13 question about Tsunoda in paragraph 34, that
14 Tsunoda's not talking about a portable memory device
11:01 15 that would function correctly in that scenario.

16 BY MR. RIFFE:

17 Q. And I'm asking you is if a device does
18 not have a mechanism by which to secure the data or
19 provide security of the data when it's unexpectedly
11:01 20 unplugged from the host, that makes that device
21 nonportable, correct?

22 MR. AUCHTER: Objection, form.

1 A. I'm not sure I'm understanding the whole
2 question.

3 BY MR. RIFFE:

11:01 4 Q. So how would -- how would Tsunoda, in
5 your opinion, comprise a portable memory if it is
6 unexpectedly unplugged from the host? Would it need
7 to have a mechanism to secure the data under that
8 condition in order for you to be able to say that
9 the Tsunoda memory is portable?

11:01 10 A. I haven't -- I don't recall Dr. Liu
11 offering a solution to what would make Tsunoda --
12 sort of an alternative design to Tsunoda that he
13 felt would make it portable in terms of what's
14 described in the claims. I mean, I -- Dr. Liu feels
11:02 15 that it is portable. I haven't gone through sort of
16 an engineering change analysis or something like
17 that if that's what you're asking.

18 Q. I'm just trying to get at if a device has
19 the capability of permitting the data to function
11:02 20 correctly if that device is unexpectedly
21 disconnected or uncoupled from the host, would that
22 device be portable under your understanding of the

1 word?

2 MR. AUCHTER: Objection to form.

3 A. I would say in your hypothetical if

4 there's a device that meets the unplugged

11:03 5 functionality of claim 3 of the patent as we talked
6 about earlier, that would be portable in the context
7 of claim 3.

8 BY MR. RIFFE:

9 Q. And if a device doesn't have the ability

11:03 10 to secure the data when it's unexpectedly
11 disconnected or uncoupled from the host, would that
12 device not be portable under your understanding of
13 the term?

14 MR. AUCHTER: Objection to form.

11:03 15 A. I would say in the context of Tsunoda
16 because it can't be unexpectedly disconnected or
17 uncoupled because of adverse things that happen,
18 it's not portable.

19 BY MR. RIFFE:

11:03 20 Q. And so you have no opinion sitting here
21 today whether a device -- outside of Tsunoda, if a
22 device doesn't have the ability to secure the data

1 when it's unexpectedly disconnected or uncoupled
2 from the host whether or not that device is portable
3 under your understanding of the term?

11:04 4 A. I guess I would answer that if a
5 device -- so it sounds like we're asking about
6 something I'm not addressing in my declaration or a
7 reference that Dr. Liu presented. If this widget
8 meets the limitations of the claims in terms of
9 being either plugged in or unplugged, then it would
11:04 10 be portable per the description of the claims. If
11 there's some other device you're asking me that has
12 some functionality I haven't looked at and whether
13 or not that meets the claims, that sounds outside
14 the scope of what I've talked about in my
11:04 15 declaration.

16 Q. Let me be clear. Do you have an opinion
17 as to whether or not a memory device is portable or
18 not if it doesn't function correctly if it's
19 unexpectedly disconnected or uncoupled from the
11:04 20 host?

21 MR. AUCHTER: Objection to form.

22 A. I would say if there's a memory device

1 that's unplugged from the system and doesn't behave
2 in a way that's in accordance with how the claims
3 describe it being portable, then that's something
4 outside the scope of the claims.

11:05 5 BY MR. RIFFE:

6 Q. And therefore that would not be a
7 portable memory device, correct?

8 MR. AUCHTER: Objection to form.

9 A. In the sense that it's not -- if
11:05 10 something's not portable in the context of how the
11 claims describe portable, it wouldn't be portable in
12 the eyes of the claims.

13 MR. AUCHTER: When you get to a
14 stopping point.

11:05 15 MR. RIFFE: Yeah. We can probably
16 take a break at this point.

17 (Recess taken from 11:05 a.m. to
18 11:20 a.m.)

19 BY MR. RIFFE:

11:20 20 Q. Welcome back, Dr. Brogioli. During the
21 break, did you discuss the substance of your
22 testimony with counsel?

1 A. No.

2 Q. Dr. Brogioli, I'll next turn our
3 attention to paragraph 38 of your declaration, which
4 is Exhibit 2012.

11:21 5 A. Okay.

6 Q. And here you say: Tsunoda's Figure 13
7 embodiment is not compatible with a portable memory
8 device because it teaches using an SDRAM interface
9 to connect to the host and a POSITA would understand
11:21 10 that an SDRAM interface is not a portable memory
11 apparatus interface.

12 Do you see that?

13 A. Yes.

14 Q. What are the characteristics of an SDRAM
11:21 15 interface that does not allow it to be a portable
16 memory apparatus interface?

17 A. So I discuss SDRAM interfaces at various
18 places in my declaration, but in general it's an
19 interface that's highly parallel, can use things
11:22 20 like multicycle transactions and it's not designed
21 to be plugged or unplugged from the system just sort
22 of as you want. It's something that is very

1 strictly and rigidly designed to interface with a
2 memory controller and so forth and DRAM chips and
3 other components on a memory module.

11:22 4 Q. So is -- the driving characteristic is
5 that that highly parallel interface can't be plugged
6 or unplugged when you want, because that's the
7 driving characteristic for why it's not portable in
8 your opinion?

9 MR. AUCHTER: Objection, form.

11:22 10 A. I don't think I've put a driving
11 characteristic on it, but there -- it's not designed
12 for something where a person can just plug or unplug
13 devices into, like, an SDRAM-type memory channel,
14 for example.

11:23 15 BY MR. RIFFE:

16 Q. So it doesn't -- is that true for all
17 SDRAM interfaces in general?

18 MR. AUCHTER: Objection, form.

11:23 19 A. I haven't looked at -- when you say all
20 SDRAM interfaces, it probably depends who you're
21 asking as to what that entails. But if we're
22 talking about, for example, a DDR2 SDRAM device, you

1 can't just plug and unplug them as you want while
2 the machine is operating.

3 BY MR. RIFFE:

11:23 4 Q. Are there any SDRAM devices that you can
5 plug and unplug as you want while the machine is
6 operating, to your knowledge?

7 A. Not that I've talked about in my
8 declaration.

11:23 9 Q. Are you aware of any sitting here today
10 of any SDRAM devices that you can plug and unplug as
11 you want while the machine is running?

12 MR. AUCHTER: Objection, form.

11:24 13 A. I would say an SDRAM -- if you're asking
14 about an SDRAM device like an SDRAM chip or a JEDEC
15 SDRAM chip, I don't recall analyzing that, or I
16 haven't looked at that aspect of it in a long time
17 one way or the other.

11:24 18 If we're talking about something like an
19 SDRAM memory module like a DIMM that I could go to
20 the store and buy for a desktop computer, generally
21 the types of those I'm talking about in my
22 declaration you can't plug and unplug as you want in

1 an operating system.

2 BY MR. RIFFE:

3 Q. And you would agree that a key
4 characteristic of being able to plug or unplug the
11:24 5 device from the computer system or the host, if you
6 will, is that it has to have a mechanism to prevent
7 corruption of the data --

8 MR. AUCHTER: Objection to form.

9 BY MR. RIFFE:

11:24 10 Q. -- in order for it to be portable?

11 MR. AUCHTER: Apologies.

12 MR. RIFFE: That's all right.

13 MR. AUCHTER: Objection to form.

14 A. I would say that's one aspect of some of
11:25 15 the references that Dr. Liu presents that -- one
16 thing that would occur is corruption or loss of
17 data.

18 BY MR. RIFFE:

19 Q. Outside of being able to accommodate
11:25 20 corruption or loss of data when a device is plugged
21 or unplugged, what other characteristic would make
22 that memory portable or unportable in accordance

1 with your experience?

2 MR. AUCHTER: Objection to form.

3 A. I don't think I've listed a breakdown of

4 all aspects of some hypothetical device that may

11:25 5 make it or not make it portable. I would think

6 another aspect would be physical or electrical

7 damage to the device. But I -- you know, I've

8 talked about certain aspects of this in my

9 declaration. I haven't done an exhaustive analysis

11:26 10 of all memory devices.

11 BY MR. RIFFE:

12 Q. Are the connectors used in the SDRAM

13 interface indicative of whether or not a particular

14 SDRAM interface is portable or not?

11:26 15 MR. AUCHTER: Objection to form.

16 A. Well, when you say connectors, what are

17 you referring to?

18 BY MR. RIFFE:

19 Q. The interface connectors in an SDRAM

11:26 20 interface.

21 A. I guess I would say to the extent it's

22 something like -- I think I refer to the 168 signal

1 interface in my declaration and how that operates is
2 one example of something not being -- or one aspect
3 of something not being portable.

11:27 4 Q. Do you recall where you referred to that
5 168 signal interface?

6 A. I'm trying to find that. It may have
7 been referring to paragraph 50 where I say hundreds
8 of signals at the bottom of the page is generally
9 referring -- no. If paragraph 53 of my
11:27 10 declaration -- I'll wait for you to get there. The
11 second sentence: Tomio teaches using a 168-pin dual
12 inline module.

13 Q. And that would be for -- that would be an
14 SDRAM interface, that 168-pin?

11:28 15 A. I believe that's what Tomio's referring
16 to as a flavor of SDRAM. Or DRAM I think Tomio
17 says.

18 Q. Yeah. I think if we refer back to Tomio,
19 which is Exhibit MTI-1006. That's the -- that's the
11:28 20 Mitsubishi electric 256-megabyte 168-pin unbuffered
21 dual inline module you're referring to?

22 A. That looks like one example in Tomio,

1 yes.

2 Q. Is there a certain number of pins or a
3 threshold of number of pins that would delineate
4 between portable versus nonportable for an SDRAM
11:29 5 interface, for example?

6 A. I haven't -- I haven't drawn that
7 delineation.

8 Q. So sitting here today, is it your opinion
9 that all SDRAM interfaces reflect nonportability?

11:29 10 MR. AUCHTER: Objection to form.

11 A. I haven't analyzed all what you're
12 asking, quote, SDRAM interfaces. What I'm referring
13 to here is the -- what -- I'm going back to
14 paragraph 37 of Tomio where it's talking about what
11:30 15 at the time was called an unbuffered DIMM, or DIMM,
16 dual inline memory or dual inline memory module. So
17 that's a 168-pin interface to these devices that are
18 not a portable device like the patent's talking
19 about.

11:30 20 BY MR. RIFFE:

21 Q. And that's because those 168 pins are
22 designed to attach to receiving connectors on the

1 motherboard in certain instances, correct?

2 MR. AUCHTER: Objection to form.

3 A. Well, that there's a physical form factor
4 of this highly parallel interface and then there's
11:30 5 the signaling and electrical characteristics as to
6 how these memory modules comprised of memory devices
7 sit in a memory channel to talk to a memory
8 controller at extremely high rates of speed in a
9 very choreographed manner.

11:31 10 BY MR. RIFFE:

11 Q. So you not only have the physical
12 interconnects, but you also have the signaling
13 interconnects. And under your analysis, the
14 nonportability is attributed to the fact that you
11:31 15 could have -- you could have issues arise both from
16 a physical standpoint as well as a signaling
17 standpoint under certain circumstances when the
18 device is unplugged from the host, correct?

19 MR. AUCHTER: Objection to form.

11:31 20 A. That I would say this type of interface
21 isn't designed for, in one aspect, the device to be
22 unexpectedly removed. There would be data lost and

1 things like that.

2 BY MR. RIFFE:

3 Q. So again going back, provisioning for
4 data loss, provisioning for signaling loss, these
11:32 5 sort of catastrophic occurrences I think that you
6 referred to in your declaration as well are all part
7 of characteristics of these memory devices that lead
8 to your conclusions that they're not portable
9 devices. Is that a fair statement?

11:32 10 MR. AUCHTER: Objection to form.

11 A. That in certain contexts in my
12 declaration I talk about data corruption or data
13 loss as an aspect of the nonportability.

14 BY MR. RIFFE:

11:32 15 Q. And that goes back to the fundamental
16 aspect of these devices not being able to be plugged
17 and unplugged, correct?

18 MR. AUCHTER: Objection to form.

19 A. That those are problems that can -- as I
11:32 20 just say here, problems that would be encountered
21 plugging and unplugging a device like that of Tomio
22 with those interfaces we were just talking about.

1 BY MR. RIFFE:

2 Q. Are you aware of a circumstance in which
3 an SDRAM interface would be a portable memory
4 apparatus interface as you've used that term?

11:33 5 MR. AUCHTER: Objection to form.

6 A. I don't recall Dr. Liu providing a
7 reference that had the SDRAM interface of Tomio, for
8 example, that was something that met the portability
9 of the claims.

11:33 10 BY MR. RIFFE:

11 Q. And that's true even though at the end of
12 paragraph 37, for example, that Tomio references the
13 module formed using the semiconductor memories of
14 the present invention may be used instead of
11:33 15 conventional floppy disks or CD-ROMs?

16 MR. AUCHTER: Objection to form.

17 A. What exactly is the question?

18 BY MR. RIFFE:

11:34 19 Q. Are you saying that that wouldn't be
20 within the skill of a person of ordinary skill in
21 the art to be able to make that -- the memory
22 modules such as those shown in Tomio to be able to

1 be used instead of the conventional floppy disks or
2 CD-ROMs which we established earlier are portable
3 memory devices?

4 MR. AUCHTER: Objection to form.

11:34 5 A. I'm just reviewing paragraph 37.

6 (Witness reviews document.)

7 A. I guess I haven't -- maybe I should hear
8 your question again. Go ahead.

9 BY MR. RIFFE:

11:35 10 Q. Are you saying that that wouldn't be
11 within the skill level of a person of ordinary skill
12 in the art to make a memory module such as those
13 shown in Tomio to be able to be used instead of
14 conventional floppy disks or CD-ROMs which we
11:35 15 established earlier are portable memory devices?

16 MR. AUCHTER: Objection to form.

17 A. I guess I haven't analyzed whether there
18 are embodiments or descriptions in Tomio beyond a
19 person of ordinary skill in the art one way or the
11:35 20 other. I see that paragraph 37 talks about -- Tomio
21 talks about unbuffered dual inline memory or -- or
22 dual inline modules and then has mention of things

1 like conventional floppy disks or CD-ROMs.

2 BY MR. RIFFE:

3 Q. But it's your opinion -- you don't have
4 an opinion as to whether or not the memory modules
11:36 5 disclosed and shown in Tomio could be used and
6 formed by a POSITA to be able to be used instead of
7 these conventional floppy disks or CD-ROMs which we
8 have established are portable memory devices,
9 correct?

11:36 10 MR. AUCHTER: Objection to form.

11 A. Yeah, I don't think I've done that
12 analysis. I see that Tomio mentions a module formed
13 using semiconductor memory 8 of the present
14 invention may be used instead of a conventional
11:36 15 floppy disk or CD-ROM in this context.

16 BY MR. RIFFE:

17 Q. And in that context, it would be as a
18 portable memory device, correct?

19 MR. AUCHTER: Objection to form.

11:36 20 A. I think Tomio's just saying that the
21 floppy disk or CD-ROM can be used in the context of
22 Tomio's paragraph 37 I guess in relation to what

1 it's describing here.

2 BY MR. RIFFE:

3 Q. Well, I think what Tomio is saying is
4 actually opposite. It's saying the modules formed
11:37 5 using the semiconductor memory aid of the present
6 invention, and then including module 50, module 51
7 and Figure 11 can be used instead of conventional
8 floppy disks or CD-ROMs which, as we agreed, are
9 portable memories, correct?

11:37 10 MR. AUCHTER: Objection to form.

11 A. I think I read it backwards, but right.
12 Tomio is saying that the module can be formed using
13 the semiconductor memory of this present invention
14 instead of the conventional floppy or CD-ROM in the
11:37 15 context of this paragraph 37.

16 BY MR. RIFFE:

17 Q. So going back to your paragraph 38, in
18 reference to Tsunoda and its embodiment, you say
19 that: A POSITA would not -- would understand that
11:37 20 an SDRAM interface is not a portable memory
21 apparatus.

22 What memory apparatuses are you aware of

1 that are portable memory apparatus interfaces?

2 MR. AUCHTER: Objection to form.

3 BY MR. RIFFE:

11:38 4 Q. Is there a subset of interfaces that are
5 used specifically for portable memory?

6 A. I don't recall discussing a breakdown of,
7 quote, memory interfaces available at the time of
8 the patent filing date, and then overlaying that on
9 what would or would not be portable memory devices
11:38 10 in the context of the claims and then overlaying on
11 that what memory interfaces are used across that
12 matrix or something like that. I haven't done that
13 analysis here.

14 Q. Are USB interfaces generally used in
11:38 15 memory devices considered portable interfaces?

16 MR. AUCHTER: Objection to form.

17 A. I would say in terms of the way in the
18 early 2000s USB devices were sometimes marketed as
19 portable from a product advertising statement. I
11:39 20 haven't analyzed a specific -- beyond the references
21 I discuss in Dr. Liu's, I haven't looked at specific
22 devices and whether or not they mapped on the claims

1 or not in this declaration.

2 BY MR. RIFFE:

3 Q. Were MMC interfaces at the time in the
4 early 2000s marketed as portable from product
11:39 5 advertising statement as well?

6 MR. AUCHTER: Objection to form.

7 A. I don't -- I would say a general
8 recollection is there were certain things with an
9 MMC interface that probably had portable on the box
11:39 10 at that time. I haven't gone into an analysis of
11 those products in my declaration beyond the
12 references I discussed.

13 BY MR. RIFFE:

14 Q. And we talked about this earlier, but I
11:39 15 just want to see if I have a clear record here. So
16 what is your understanding of the term "portable
17 memory apparatus" as that term is phrased in the
18 '527 patent?

19 MR. AUCHTER: Objection to form.

11:40 20 A. I would say -- again, I would go right
21 back to the claims we are talking about where an
22 example of a portable memory apparatus in the patent

1 would be just as described in claim 1 having the
2 various attributes that are described in the claim
3 limitations for claim 1.

4 BY MR. RIFFE:

11:40 5 Q. And then again sitting here today, are
6 you able to articulate an opinion or an
7 understanding of the phrase "portable" which is used
8 as part of the claimed portable memory apparatus?

9 MR. AUCHTER: Objection to form.

11:40 10 A. Similar answer. I would say portable in
11 the context of the patent would be just as described
12 in the claims and used in the specification.

13 BY MR. RIFFE:

14 Q. That still doesn't answer my question,
11:41 15 though. Are you able to articulate an opinion or an
16 understanding of the phrase "portable"?

17 MR. AUCHTER: Objection to form.

18 A. I would give a similar answer. An
19 example would be a memory apparatus or device that's
11:41 20 meeting the various limitations of claim 1 in terms
21 of how the components that comprise it, how a memory
22 controller is used, various aspects of the

1 connectors, how data is copied just as described in
2 the claims.

3 BY MR. RIFFE:

11:41 4 Q. And then so if a -- if a device or a
5 memory apparatus has each of the limitations of
6 claim 1, for example, but that memory apparatus is
7 designed to be used internally within a computer and
8 attached to a motherboard, would that memory
9 apparatus meet your understanding of the term
11:42 10 "portable"?

11 MR. AUCHTER: Objection to form,
12 relevance.

13 A. I would say if a memory apparatus meets
14 the description of -- or the limitations of claim 1,
11:42 15 for example, then it would be a portable memory
16 apparatus as described in the claims in the patent.

17 BY MR. RIFFE:

18 Q. Even though that memory apparatus has no
19 provision for being plugged or unplugged from the
11:42 20 motherboard and therefore could result in data loss
21 or signaling issues as we've discussed today?

22 MR. AUCHTER: Objection to form.

1 A. I don't recall describing a motherboard
2 connection as you're using it sort of in the
3 abstract as contingent on, for example, the
4 description of portable in claim 1.

11:43 5 BY MR. RIFFE:

6 Q. So if you go to paragraph 71 in your
7 declaration, and at the end of the paragraph you
8 say: Accordingly, Tomio is directed to a
9 nonportable memory that is on the motherboard when a
11:43 10 computer is turned on. A POSITA would not have
11 understood Tomio's disclosure of an internal memory
12 module as teaching a portable memory apparatus.

13 So here you're -- it seems to me that
14 you're suggesting that because Tomio is connected to
11:43 15 the motherboard and it's a disclosure of an internal
16 memory module, that it is not a portable memory
17 apparatus. Is that not what you said here in
18 paragraph 71?

19 MR. AUCHTER: Objection to form.

11:43 20 A. Let me -- I was fishing for where you
21 started reading from. Let me take a second to read
22 it.

1 BY MR. RIFFE:

2 Q. Oh, sure.

3 (Witness reviews document.)

4 A. So what I'm saying here is that Tomio is
11:44 5 talking about a nonportable memory for various
6 aspects in terms of interfaces and so forth. And in
7 this case that nonportable memory is on the
8 motherboard here and it's being used as a -- in the
9 context of Tomio, this booting process. In the case
11:44 10 of Tomio this one happens to be something that's on
11 a motherboard.

12 BY MR. RIFFE:

13 Q. And going back to my original question,
14 then, if a device meets all the limitations of
11:44 15 claim 1 but that device is designed to be used on
16 the motherboard inside of a computer, i.e., an
17 internal memory module like Tomio, would it be your
18 conclusion that that device is portable?

19 MR. AUCHTER: Objection to form.

11:44 20 A. I guess I would say if a device -- if a
21 device is meeting what's described in the
22 portability of, for instance, independent claim 1,

1 that that would be an example of a portable device
2 as described by the patent.

3 BY MR. RIFFE:

11:45 4 Q. So just to be clear, a device -- a
5 particular memory device meets all the limitations
6 of claim 1 and it is designed to be used internal to
7 a computer, it's not designed to be plugged and
8 unplugged as we've discussed those two terms today,
9 you would still consider that to be a portable
11:45 10 memory apparatus as -- in view of claim 1, correct?

11 MR. AUCHTER: Objection, form.

12 A. I'm not sure I'm fully digesting
13 everything that's in your question. But I guess I
14 would answer again that claim 1, for example,
11:45 15 describes a portable memory apparatus of the patent.
16 And so a device meeting what's described in claim 1
17 or the dependent claims talking about a portable
18 memory apparatus would be a portable memory
19 apparatus as described by the patent.

11:46 20 BY MR. RIFFE:

21 Q. Even though that device is used inside of
22 a computer attached to a motherboard and it's not

1 made to be unplugged or plugged, correct?

2 MR. AUCHTER: Objection to form.

3 BY MR. RIFFE:

11:46 4 Q. That would not weigh into your decision
5 whether it would be covered by claim 1?

6 A. I guess if there's a specific example
7 you'd want to look at, I could look at that. But I
8 don't see that specific language in the claims -- in
9 claim 1, for example, one way or the other.

11:46 10 Q. But yet you've used the characteristic of
11 whether a memory module can be plugged or unplugged
12 as part of your opinion as to whether or not certain
13 of the prior art references used in the petition and
14 in Dr. Liu's declaration are portable or not based
11:46 15 on whether they can be plugged or unplugged,
16 correct?

17 MR. AUCHTER: Objection to form.

18 A. The plugging and unplugging is mentioned
19 in, for example, claim 1 and claim 3 and aspects of
11:47 20 that are part of what I discuss with regard to
21 Dr. Liu's prior art references as to whether or not
22 those meet the portability of the claims.

1 BY MR. RIFFE:

2 Q. So in general you're saying that the
3 plugging and unplugging is with respect to,
4 specifically to the claims, it's not with respect to
11:47 5 the characteristic of the memory module and whether
6 or not that memory module is portable, correct?

7 MR. AUCHTER: Objection to form.

8 A. I discuss the plugging and unplugging as
9 described in the claims in relation to the various
11:47 10 prior art references that Dr. Liu presented and
11 whether or not those references meet the limitations
12 of the claims describing a portable memory
13 apparatus. There's a lot of things and technical
14 aspects discussed throughout my declaration
11:48 15 that -- maybe you can ask a more specific question.
16 I'm having trouble following more than that.

17 BY MR. RIFFE:

18 Q. I guess it comes down to in your opinion
19 is whether a memory module can be plugged or
11:48 20 unplugged from a computer determinative of whether
21 or not that memory module is portable or not?

22 MR. AUCHTER: Objection to form.

1 A. I would say that would be an aspect of my
2 analysis as plugged and unplugged are used in the
3 claims -- or specific claim limitations describing
4 the portable memory apparatus of the patent.

11:48 5 BY MR. RIFFE:

6 Q. And a similar question, in your opinion,
7 is whether a memory module can be carried in a
8 person's hand determinative of whether or not the
9 memory module is portable or not?

11:49 10 MR. AUCHTER: Objection to form.

11 A. I don't recall discussing that in my
12 declaration here as a gating factor in and of itself
13 of portability of a memory module. I don't recall
14 discussing that in my declaration.

11:49 15 BY MR. RIFFE:

16 Q. Outside of the plugging and unplugging or
17 carrying in one's hand, are you aware of any other
18 characteristics of a memory module that would be
19 determinative of whether or not the memory module
11:49 20 was portable or not, sitting here today?

21 MR. AUCHTER: Objection to form.

22 A. I guess I would just refer back to the

1 claims as to how they describe the portable memory
2 apparatus.

3 BY MR. RIFFE:

11:50 4 Q. I think we've established that they
5 haven't, but we'll agree to disagree on that.

6 MR. AUCHTER: Objection to form.

7 MR. RIFFE: Let's mark the Tsunoda
8 reference. Mark it as Exhibit 2. It's MTI-1004 is
9 the exhibit number to this proceeding.

11:50 10 (Deposition Exhibit 2 marked for
11 identification.)

12 BY MR. RIFFE:

13 Q. So, Dr. Brogioli, you've been handed
14 what's marked as MTI-1004. Is this the Tsunoda
11:51 15 reference that you analyzed as part of your
16 declaration?

17 A. Yes, it is.

18 Q. Now, if you'd turn your attention to
19 Figure 1 of Tsunoda. You agree that Tsunoda's
11:51 20 memory device can be carried in the palm of a
21 person's hand, correct?

22 MR. AUCHTER: Objection to form.

1 A. I don't recall where in Tsunoda it talks
2 about the physical dimensions of its --

3 BY MR. RIFFE:

4 Q. Maybe if I direct you to paragraph 38 of
11:51 5 Tsunoda. Paragraph 38 of Tsunoda reads: A memory
6 apparatus 4,000 shown in figure 24 can be mounted on
7 an information terminal such as a portable telephone
8 set, personal digital assistants, PDA, a music
9 player, digital camera, digital video camera,
11:52 10 set-top box, personal computer or car navigation
11 system.

12 Does that help refresh your recollection
13 as to whether memory module Figure 1 can be carried
14 in a person's hand?

11:52 15 A. So it looks like paragraph 38 is talking
16 about different consumer electronics devices that
17 4000 of Tomio goes into. So it seems reasonable
18 that it perhaps is something you can fit in your
19 hand.

11:52 20 Q. And to further -- I just wanted to point
21 your attention to paragraph 95 of Tsunoda as well.
22 And just to be clear, when you mentioned Tomio, you

1 meant Tsunoda, I presume?

2 A. Yes, thank you.

3 Q. That's all right. Paragraph 95 of

4 Tsunoda reads: Next and more specific embodiment of

11:53 5 the memory apparatus 4000 according to the present

6 invention will be described, and then it goes on to

7 discuss the embodiment of Figure 1; is that correct?

8 A. That's correct.

9 Q. And so based on those two paragraphs you

11:53 10 would still say it seems reasonable that Tsunoda

11 memory apparatus shown in Figure 1 of Tsunoda which

12 is a specific implementation of the memory apparatus

13 4000 discussed at paragraph 38 would be something

14 that would fit in the person's hand and they could

11:53 15 carry, correct?

16 MR. AUCHTER: Objection to form.

17 A. I think that could be the case. For

18 instance, if it's -- if Tsunoda is referring to a

19 handheld digital camera and something that goes

11:53 20 inside of it, that could be a reasonable physical

21 dimension.

22

1 BY MR. RIFFE:

2 Q. Is it your opinion that just because a
3 person could carry the memory device of Tsunoda in
4 Figure 1 in their hand, that doesn't make it
11:54 5 necessarily portable, though, correct?

6 A. That -- I don't recall in my declaration
7 talking about that physical form factor in terms of
8 my analysis of the lack of portability of Tsunoda.
9 There are other aspects of it that I discuss with
11:54 10 regard to portability in reference to the claims.

11 Q. Is Tsunoda's memory device the kind of
12 memory device typically installed internally within
13 the casing or the housing of a computer system such
14 as the phones, PDAs, digital cameras that we
11:54 15 discussed earlier in paragraph 38?

16 MR. AUCHTER: Objection to form.

17 A. That I guess I would say Tsunoda seems to
18 describe its apparatus 4000 as something that might
19 physically go inside, for instance, a digital
11:55 20 camera. So it would be within the -- you know, the
21 physical box of the camera.

22

1 BY MR. RIFFE:

2 Q. And you would have to open the case of
3 that physical box of the camera or the computer
4 system to plug and unplug Tsunoda's type of memory
11:55 5 device, correct?

6 MR. AUCHTER: Objection to form.

7 A. I don't know how Tsunoda describes that
8 as to how this apparatus 4000 physically -- sort of
9 what form factor is necessarily used there.

11:56 10 BY MR. RIFFE:

11 Q. So if we reference Figure 1 as an example
12 of Tsunoda, we can see that it has a memory
13 apparatus that has a single SDRAM interface that's
14 marked 112; is that right?

11:56 15 A. That's right.

16 Q. And does that help you understand whether
17 or not that that would be a memory device that would
18 be inside of the casing or housing of the computer
19 system, be it a laptop or a digital camera?

11:56 20 A. That it would seem to me the host of
21 Figure 1 would be within -- presumably within that
22 box of a laptop and then this thing would interface

1 over the SDRAM interface 112 to connect to it.

2 Q. So you'd have to open the case of that
3 system, the computer, the digital camera, to plug
4 and unplug Tsunoda's type of memory device, correct?

11:56 5 MR. AUCHTER: Objection to form.

6 A. I don't know that Tsunoda says that one
7 way or the other. Maybe you can refer to me where
8 it does. I'm just seeing that if this device of
9 Tsunoda, if there's a host controller in the laptop
11:57 10 like a memory controller and an SDRAM bus or
11 channel, that this device would connect to that.

12 BY MR. RIFFE:

13 Q. And in general based on your years of
14 experience, that type of memory apparatus would be
11:57 15 connected to a motherboard, for example, inside the
16 computer system?

17 MR. AUCHTER: Objection to form.

18 A. For the -- in the example of a laptop
19 where there's a memory controller, then there would
11:57 20 be, for example, you know, dual inline memory
21 modules of DRAM that would connect to certain
22 connectors on the motherboard that interface to the

1 channel to the host controller.

2 BY MR. RIFFE:

3 Q. And in that type of situation, that
4 memory module would typically stay in the computer
11:57 5 system long term, right?

6 MR. AUCHTER: Objection to form.

7 A. In that scenario, the host and the host
8 controller, if the memory is present when you hit
9 the on button, it assumes the memory is going to
11:58 10 stay there and not be pulled out or inserted while
11 it's running.

12 BY MR. RIFFE:

13 Q. So you'd agree with me that in the
14 scenario where you have to open the case, or the
11:58 15 housing, if you will, of the computer system or
16 whatever is housing the memory module to plug or
17 unplug the memory device, that memory device is not
18 portable, correct?

19 MR. AUCHTER: Objection to form.

11:58 20 A. I don't -- I haven't offered an opinion
21 as to whether -- to answer another way, claim 1 of
22 the patent doesn't mention anything about opening a

1 housing as being part of the claim limitations
2 describing that portable memory apparatus.

3 BY MR. RIFFE:

11:58 4 Q. So in that situation, like in Tsunoda
5 where the memory module is connected to a
6 motherboard, it's not configured or designed to be
7 plugged or unplugged, is it your opinion that in
8 order to access that type of memory module inside of
9 the housing whether or not that memory module is
11:59 10 portable or not?

11 MR. AUCHTER: Objection to form.

12 A. I haven't offered an opinion as to
13 whether a device is necessarily portable or not
14 portable because I have to take the lid off of the
11:59 15 box or something like that.

16 BY MR. RIFFE:

17 Q. Sitting here today, do you have an
18 understanding of whether or not a device that is
19 housed within a housing and is connected to a
11:59 20 motherboard, for example, like the Tsunoda reference
21 memories, whether those memories are portable or not
22 because of their location within the computer

1 system, then the requirement to remove the housing
2 to access them, do those characteristics lead to a
3 conclusion as to whether or not the memory is
4 portable or not?

11:59 5 MR. AUCHTER: Objection to form.

6 A. I would say the memory's portable just
7 like the claims -- if it meets the way that the
8 portable memory apparatus is described in the
9 claims. The memory of Tsunoda is not portable for
12:00 10 various reasons that I discuss in my declaration. I
11 haven't -- you're asking about a hypothetical of
12 whether or not I have to take the top off of a box
13 or something. I haven't -- I haven't performed an
14 analysis of whatever the hypothetical device is that
12:00 15 you're talking about, and I don't see that mentioned
16 in the claim, independent claim 1.

17 BY MR. RIFFE:

18 Q. So with the SDRAM interface of Tsunoda as
19 an example, having multiple pins, if you will, would
12:00 20 those -- and then mounted to a motherboard inside
21 the computer, would that scenario using the Tsunoda
22 example, would that be a portable or nonportable

1 memory apparatus?

2 MR. AUCHTER: Objection to form.

3 A. I would need a more specific example. To
4 the extent it's using an interface like Tsunoda is
12:01 5 describing such as this SDRAM interface of the host,
6 that's not something portable as described by the
7 patent.

8 BY MR. RIFFE:

9 Q. And that's because it's not being -- it
12:01 10 doesn't have the capability of being plugged and
11 unplugged without causing harm or damage to either
12 the hardware or the signaling as we've discussed
13 today; is that correct?

14 MR. AUCHTER: Objection to form.

12:01 15 A. At least in part as it applies to
16 Tsunoda.

17 BY MR. RIFFE:

18 Q. Now, if we go to paragraph 39 of your
19 declaration.

12:01 20 A. Okay.

21 Q. And then here we're talking about
22 Tsunoda's third embodiment, which is Figure 14. You

1 say: Tsunoda's third embodiment utilizes a
2 multimedia card MMC without an SDRAM interface, but
3 it does not disclose or suggest copying data from
4 the a flash memory to the SDRAM when the multimedia
12:02 5 card is coupled to the host system. Tsunoda's
6 description of copying data from the nonvolatile
7 memory to the volatile memory is part of a power-up
8 sequence that only applies when there is an SDRAM
9 compatible interface.

12:02 10 Do you see that?

11 A. Yes.

12 Q. Now, here you acknowledge that Tsunoda
13 describes copying data from the nonvolatile memory
14 flash to the volatile memory SDRAM as part of the
12:02 15 power-up sequence, correct?

16 A. In certain of Tsunoda's embodiments it
17 describes that, yes.

18 Q. And you contend that the power-up
19 sequence only applies when there is an SDRAM
12:03 20 compatible interface present; is that right?

21 A. That in Tsunoda that only applies when
22 Tsunoda is describing embodiments with that SDRAM

1 compatible interface.

2 Q. And why are you making that -- are you
3 making -- why are you making that presumption, that
4 Tsunoda only applies -- that the power-up sequence
12:03 5 only applies when there's an SDRAM compatible
6 interface?

7 MR. AUCHTER: Objection, form.

8 BY MR. RIFFE:

9 Q. Let me just rephrase that. Why are you
12:03 10 making the assumption that the power-up sequence
11 only applies when there's an SDRAM interface?

12 A. As that was how Tsunoda described its
13 various embodiments.

14 Q. And where in Tsunoda did it say it was
12:04 15 limited, that start-up power-up sequence was limited
16 to the SDRAM interface?

17 A. I guess we'll have to go back through
18 Tsunoda's specification. But as I recall, that's
19 how it described certain of the embodiments and did
12:04 20 not describe other of the embodiments.

21 Q. You're an inventor on a number of patent
22 applications, right?

1 A. That's right.

2 Q. And is it your understanding that you
3 have to describe each and every implementation
4 detail in your patent application in order to obtain
12:04 5 a patent?

6 A. My technical understanding is that not
7 every technical detail needs to be described in
8 every context.

9 Q. In other words, you can describe a
12:04 10 power-up sequence, for example, in certain of the
11 embodiments but not others because as -- a person of
12 skill in the art reading your patent would
13 understand that unless you specifically say that
14 this particular sequence is not applicable to
12:05 15 certain embodiments, then a person of ordinary skill
16 in the art would have an understanding that a
17 description would not need to be applied to each and
18 every embodiment, correct?

19 MR. AUCHTER: Objection to form.

12:05 20 A. I think it would probably depend on the
21 context as to what needs to be described in terms of
22 what a person of skill reading the patent would

1 understand to practice the patent.

2 BY MR. RIFFE:

3 Q. Okay. So based on that, it's your
4 understanding that only the embodiments of Tsunoda
12:05 5 that have an SDRAM interface employ a power-up
6 sequence in order to transfer data from, for
7 example, the flash memory to the SDRAM upon
8 start-up; is that correct?

9 MR. AUCHTER: Objection to form.

12:05 10 A. That Tsunoda's only description of the
11 copying from the nonvolatile memory to the volatile
12 as part of that power-up is only in the SDRAM
13 interface embodiments.

14 BY MR. RIFFE:

12:06 15 Q. In an MMC implementation, to your
16 knowledge, is data written from the flash to the
17 volatile memory upon start-up?

18 MR. AUCHTER: Objection to form.

19 A. Are you asking in Tsunoda?

12:06 20 BY MR. RIFFE:

21 Q. Yes, in the context of Tsunoda and its
22 use of an MMC interface only. Is there a reason why

1 flash memory -- data would not be written from the
2 flash to the SDRAM upon start-up of the device?

3 MR. AUCHTER: Objection to form.

12:06 4 A. Is there a specific section of Tsunoda
5 you're asking about?

6 BY MR. RIFFE:

7 Q. Well, I'm just asking -- if we look at
8 Figure 14 as the example of Tsunoda that has the
9 MMC-only interface, it has a flash memory and SDRAM
12:07 10 similar to the other embodiments that have the SDRAM
11 interface and/or a combination of SDRAM and MMC
12 interfaces, correct?

13 A. It has an MMC interface -- I'm referring
14 to Figure 14.

12:07 15 Q. Okay.

16 A. It has an MMC interface. Elsewhere in
17 the device it has a flash memory component 102 and
18 an SDRAM component 103.

19 Q. It has also a data transfer control unit
12:07 20 1406, correct?

21 A. That's correct.

22 Q. And it has an MMC interface control unit

1 1403 and then a flash memory interface control unit
2 106, correct?

3 A. Correct.

4 Q. And my question is, if -- if the

12:07 5 Figure 14 implementation of the memory module --
6 memory apparatus is being used in a device such as,
7 you know, Tsunoda describes one of the digital
8 cameras, et cetera, telephone, upon start-up of that
9 device is there a reason why you would not write
12:08 10 data from flash memory to the SDRAM upon start-up?

11 MR. AUCHTER: Objection to form.

12 A. I'd need to go back and look at what
13 Tsunoda says. As I -- as I was mentioning earlier,
14 Tsunoda explicitly doesn't describe that. If you're
12:08 15 asking in general why there might be conditions that
16 would be the case, I don't recall discussing that in
17 my declaration.

18 BY MR. RIFFE:

19 Q. Based on your years of experience in the
12:08 20 field, when you have a memory apparatus like the one
21 shown in Figure 14 of Tsunoda that has an MMC
22 interface without an SDRAM interface, is data upon

1 start-up of the device written from flash memory to
2 SDRAM?

3 MR. AUCHTER: Objection to form.

4 A. In generally, if I've got some device
12:09 5 with some of the components shown in blocks in this
6 figure, there may be a number of reasons why you
7 wouldn't do that. Again, Tsunoda explicitly doesn't
8 describe doing that.

9 BY MR. RIFFE:

12:09 10 Q. What are the reasons why you would not
11 write from flash to SDRAM under the start-up
12 condition?

13 A. Again, just in a hypothetical scenario,
14 you might need the SDRAM to go through a number of
12:09 15 either built-in self-test routines or a host-driven
16 set of steps to figure out what's going on in the
17 system before, in your hypothetical, you might want
18 to copy something from a flash to a SDRAM or
19 something like that.

12:09 20 Q. And under your reading of the claims,
21 that data, when it's written from the nonvolatile
22 memory to the volatile memory when the connector is

1 connected, under your reading of the claims, does it
2 have to happen, and by does it, I mean writing from
3 flash to SDRAM, does it have to happen
4 instantaneously?

12:10 5 MR. AUCHTER: Objection to form.

6 A. I don't recall discussing whether what's
7 described in that step of the claims is
8 instantaneous or not.

9 BY MR. RIFFE:

12:10 10 Q. But going back to your answer to the --
11 my hypothetical, you said that you could do some of
12 these processes with the SDRAM before you wrote from
13 flash to SDRAM. And my question then is, is that,
14 in your opinion, not writing data from flash to the
12:10 15 SDRAM upon start-up, power-up under that condition
16 that you described?

17 MR. AUCHTER: Objection to form.

18 A. I guess I haven't performed an
19 analysis -- or I don't recall Dr. Liu offering a
12:11 20 definition of what you're asking about as, quote,
21 start-up. I was just --

22

1 BY MR. RIFFE:

2 Q. I meant to say power-up.

3 A. Or a window of time that defines or
4 limits, quote, power-up.

12:11 5 Q. You would agree with me, however, that in
6 use in Figure 14 of an MMC interface only data is
7 written from flash to SDRAM upon power-up under
8 certain conditions, correct?

9 MR. AUCHTER: Objection to form.

12:11 10 A. Where in Tsunoda are you referring to?

11 BY MR. RIFFE:

12 Q. I'm just asking you based on your
13 experience.

14 A. I don't recall Tsunoda --

12:11 15 Q. As a person of skill in the art.

16 A. -- describing that.

17 Q. So based on your testimony and your years
18 of experience in the field, looking at Figure 14 of
19 Tsunoda with its MMC interface only implementation,
12:12 20 is it your testimony that upon power-up flash
21 memory -- data in the flash memory 102 is never
22 written to data in the SDRAM 103?

1 MR. AUCHTER: Objection to form.

2 A. I don't recall, one, discussing that in
3 my declaration or, two, Tsunoda describing that for
4 this embodiment.

12:12 5 BY MR. RIFFE:

6 Q. So is it your testimony that a person of
7 skill in the art looking at Figure 14 of Tsunoda
8 would not understand that upon power-up data is
9 written from the flash memory to SDRAM?

12:12 10 MR. AUCHTER: Objection to form.

11 A. I would think if that's what Tsunoda was
12 describing, that's what Tsunoda would have said.

13 BY MR. RIFFE:

14 Q. Referring to Figure 9 of Tsunoda. You
12:12 15 can see this has an SDRAM interface 112?

16 A. Yes.

17 Q. And this embodiment has the power-up
18 sequence then that we were -- we've been discussing
19 this morning, correct?

12:13 20 A. As I recall, Tsunoda mentions -- has a
21 description of its Figure 9. I'm trying to find
22 myself in Tsunoda. One moment. Okay.

1 Q. And where are you reading from?

2 A. That's a good question. Paragraph 113.

3 I'm just refreshing myself. So 113 of Tsunoda talks
4 about the memory apparatus with the MMC interface
12:13 5 and the SDRAM interface.

6 Q. Does Tsunoda discuss with respect to
7 Figure 9 the power-up sequence we've just been
8 discussing?

9 A. I'm just -- I don't see the phrase
12:14 10 "power-up sequence" in paragraph 113.

11 Q. Okay. So how is it that the embodiment
12 shown in Figure 9 knows when to start the power-up
13 sequence, to your knowledge?

14 MR. AUCHTER: Objection to form.

12:15 15 A. It looks like at least 112 mentions --
16 paragraph 112 of Tsunoda mentions, quote, By
17 executing the data transfer from the flash memory
18 102 to the SDRAM 103 according to the command from
19 host 111 beforehand. The host 111 can access data
12:15 20 on the SDRAM at high speed.

21 So here it looks like it's describing
22 that a command comes from the host to transfer data.

1 BY MR. RIFFE:

2 Q. And that's in the context of Figure 8,
3 correct, that paragraph 112?

4 A. That looks correct, following on from
12:15 5 paragraph 111.

6 Q. So I guess focusing in again on Figure 9,
7 again, and you can reference Figure 1 if you'd like,
8 the only difference between Figure 1 and Figure 9 is
9 the addition of the MMC interface control unit,
12:16 10 correct?

11 MR. AUCHTER: Objection to form.

12 A. Well, I mean, there's the -- there's
13 block 903 in Figure 9 which contains the command
14 control circuit 904, and a separate arrow between
12:16 15 903 and 905, which is the data transfer control unit
16 and it also has the MMC interface 907 to the host.

17 BY MR. RIFFE:

18 Q. Would you agree that Figure 9, the
19 embodiment of Figure 9, includes the SDRAM interface
12:16 20 112 would also include the power-up sequence that
21 you say is required for the writing of flash
22 memory -- data in flash memory to the SDRAM?

1 MR. AUCHTER: Objection to form.

2 A. So it -- in my declaration I'm referring
3 to the copying in the power-up sequence as described
4 in paragraphs -- of Tsunoda at paragraphs 80 and 93,
12:17 5 and that that sequence is not present in Tsunoda's
6 embodiment without the SDRAM interface.

7 BY MR. RIFFE:

8 Q. But there's nothing in Tsunoda that says
9 that, correct? Tsunoda doesn't say that the
12:18 10 start-up -- the power-up procedures of paragraphs 80
11 and 93 are limited just to the SDRAM interface,
12 correct?

13 MR. AUCHTER: Objection to form.

14 BY MR. RIFFE:

12:18 15 Q. That's your interpretation?

16 A. So that's what's explicitly described in
17 paragraph 80 with regard to the SDRAM when the power
18 supply is started. And then in paragraph 93 it also
19 talks about the host issuing operation instruction,
12:19 20 dot, dot, dot. And when we see the description of
21 the latter embodiment without the SDRAM interface,
22 we don't see this description.

1 Q. We actually don't see that description in
2 the embodiment of Figure 9 either, correct, or
3 Figure 1 for that matter? My point being is that
4 the embodiments in the paragraphs you've pointed to
12:19 5 in your support for this power-up procedure are all
6 relative to the embodiments shown in Figure 24 and
7 25 which are the general overviews of the
8 configuration examples of the memory apparatus.

9 Then we get to specific implementations
12:19 10 at Figure 1, Figure 9, Figure 14 and would you agree
11 with me that the descriptions of that overall memory
12 apparatus in view of figures 24 and 25, a person of
13 skill in the art reviewing those would understand
14 that those apply across the specific embodiments of
12:20 15 Figures 1, 9 and 14, for example?

16 MR. AUCHTER: Objection to form.

17 A. I would say in this specific case, no,
18 that the embodiment of the figure we were just
19 looking at without the SDRAM interface and only the
12:20 20 MMC interface is not described in the same way.

21 BY MR. RIFFE:

22 Q. Well, if you look at Figure 1, for

1 example, that begins -- the embodiment of Figure 1,
2 the description that begins on paragraph 96, and
3 that proceeds over to -- through paragraph 97,
4 that's discussing the specific embodiment shown in
12:20 5 Figure 1. That doesn't talk about the power-up
6 process and the writing of data from flash to SDRAM,
7 correct? And you're welcome to peruse those two
8 paragraphs.

9 A. I'm just reviewing it.

12:21 10 Q. Sure.

11 (Witness reviews document.)

12 A. So your question again?

13 BY MR. RIFFE:

14 Q. Sure. My question is, the description in
12:22 15 the paragraphs that you've relied upon for the
16 power-up sequencing, which I believe you pointed to
17 paragraph 80 and 93, those are in the context of the
18 general discussion of the memory apparatus 4000
19 shown in Figures 24 and then further discussed with
12:22 20 respect to Figure 25, correct?

21 A. Those are discussing -- earlier in the
22 specification in alignment with what's discussed as

1 part of this power-up sequence and they talk about
2 for instance things that are going on through this
3 SDRAM interface. And those are -- some of those
4 things aren't even present in the figure you're
12:22 5 asking about.

6 Q. Where in this earlier discussion is it
7 saying that it's only present -- it's only going
8 through this SDRAM interface?

9 MR. AUCHTER: Objection to form.

12:23 10 A. Well, I guess the figure you were asking
11 about is a different embodiment that doesn't even
12 have an SDRAM interface.

13 BY MR. RIFFE:

14 Q. The power-up sequence is not talking
12:23 15 about the SDRAM interface. The power-up sequence is
16 talking about what's happening between the data in
17 the flash going to the SDRAM, correct?

18 MR. AUCHTER: Objection to form,
19 foundation.

12:24 20 A. Well, even paragraph 93 is talking about,
21 for example -- I'm about a third of the way down
22 this paragraph: During the execution of the

1 operation to prevent competition of access to the
2 SDRAM, for example, SDRAM accessing of the host
3 4040.

12:24 4 Again, the figure you were asking about,
5 there is no SDRAM interface.

6 BY MR. RIFFE:

7 Q. But you would agree with me fundamentally
8 that the description of the power-up sequencing and
9 what happens between the provisioning of data from
12:24 10 the flash to the SDRAM is talked about with respect
11 to Figures 24 and 25 that begins at paragraph 38 of
12 Tsunoda and extends all the way over to paragraph 95
13 of Tsunoda before he starts then talking about
14 specific implementations, correct?

12:25 15 MR. AUCHTER: Objection to form.

16 A. I guess -- I'm not sure exactly where in
17 Tsunoda it specifically starts talking about the
18 power-up sequence if that's your question or where
19 it stops or if that's what it only talks about in
12:25 20 that section.

21 BY MR. RIFFE:

22 Q. I think you point to these figure -- or

1 these paragraphs. If you look at paragraph 67 and
2 68, that's where the discussion is around the
3 voltage detector monitoring power supply voltage in
4 paragraph 67.

12:25 5 A. I see that.

6 Q. And then in paragraph 68 it talks about
7 using the voltage detector. The control unit 430
8 loads data in a predetermined area of the flash to a
9 predetermined area of the SDRAM, for example, when
12:25 10 power becomes equal to or higher than a
11 predetermined value and stores the data held in a
12 predetermined area of the SDRAM in a predetermined
13 area of the SDRAM -- I think that's a mistake there,
14 it should have said maybe in the flash -- when power
12:26 15 becomes equal to then a predetermined area.

16 That is where you point to with respect
17 to the power-up sequencing and the actual units that
18 are involved as part of that voltage detection,
19 correct, in your declaration?

12:26 20 A. It looks like you're referring to in my
21 declaration paragraph 40 talking about that
22 triggering event for data copies.

1 Q. Right. Correct. And my point is is that
2 even with respect to Figure 1 of the Tsunoda patent
3 that clearly has an SDRAM interface, Figure 1's
4 description does not go back and describe or even
12:26 5 reference the power-up sequencing and what happens
6 upon power-up of writing the data from the flash to
7 the SDRAM, correct?

8 A. I guess I would have to go back and look
9 at Tsunoda's full description of Figure 1 again.

12:27 10 Q. Well, they're two paragraphs, and you're
11 welcome to. 96 and 97.

12 (Witness reviews document.)

13 MR. AUCHTER: When we get to a good
14 stopping point.

12:27 15 MR. RIFFE: I'd like to try to finish
16 this module and we can take a break for lunch.

17 A. So in paragraphs 96 and 97 I don't see
18 Tsunoda calling back to the paragraphs I think were
19 67 and 68 we discussed a moment ago.

12:28 20 BY MR. RIFFE:

21 Q. Okay. And is that the same for Figure 9
22 embodiment, which is discussed at paragraph 113 of

1 Tsunoda?

2 MR. AUCHTER: Objection, form.

3 Sorry.

12:28 4 A. So paragraph 113 starts out that it's
5 talking about a second embodiment and I see that --
6 it goes on to describe Figure 9. I don't see an
7 explicit callback when it's talking about this
8 embodiment.

9 BY MR. RIFFE:

12:29 10 Q. And despite that, you would agree with me
11 that Figure 1 embodiment and Figure 9 embodiment
12 include the control unit with the control register
13 and voltage detector that are used upon power-up to
14 write data from the flash memory to the SDRAM,
12:29 15 correct, as described, for example, in figures -- in
16 paragraphs 67 and 68 of Tsunoda?

17 A. You lost me. I'll have to hear it again.
18 Wait, let me get the figures before you re-ask the
19 question. All right. Go ahead.

12:29 20 Q. And despite the fact that the description
21 of Figures 1 embodiment and Figures 9 embodiment do
22 not reference the power-up sequence, you would agree

1 with me that the control registers and the control
2 unit in the voltage detector that are described in
3 paragraphs 67 and 68 would be applicable to each of
4 Figures 1 and 9 embodiments of Tsunoda, correct?

12:30 5 MR. AUCHTER: Objection to form.

6 A. So I see that they're -- I see that
7 Figure 9 has the MMC IF control unit and Figure 1
8 doesn't. And I've described these figures in my
9 declaration, I believe. Maybe you can ask a more
12:30 10 specific question because I'm having difficulty --

11 BY MR. RIFFE:

12 Q. Let me re-ask, then. Would you agree
13 with me then that Figures 1 and Figures 9
14 embodiments of Tsunoda include a power-up sequence
12:30 15 that uses the control unit and voltage detector that
16 are described in paragraphs 67 and 68 of Tsunoda
17 even though they aren't specifically described with
18 respect to those specific embodiments of Figures 1
19 and 9?

12:31 20 MR. AUCHTER: Objection to form.

21 A. That -- as I talk about in my paragraph
22 39, that the power-up sequence of Tsunoda is

1 described only in these embodiments where the SDRAM
2 interface -- or the SDRAM compatible interface is
3 present.

4 BY MR. RIFFE:

12:31 5 Q. And that would be, for example, in
6 Figures 1 and Figures 9 embodiments, correct,
7 because they both have an SDRAM interface?

8 A. They both have an SDRAM interface, yes.

9 Q. Okay. If you turn your attention to
12:31 10 paragraph 114 of Tsunoda, and here it says: As
11 shown in Figure 10 the MMC interface includes
12 totally seven terminals and it goes on to list those
13 terminals. One of which is a power supply terminal
14 VCC1 1004 from the host 906.

12:32 15 Do you see that?

16 A. Yeah. Sorry, right at the top. A power
17 supply terminal VCC1 1004 from the host 906.

18 Q. And the host supplies power to the MMC
19 through that power supply terminal, correct?

12:32 20 A. That looks to be what paragraph 114 is
21 describing for Figure 10.

22 Q. If we reference paragraph 122 of Tsunoda.

1 Are you with me?

2 A. Yes.

3 Q. It says: In the previous embodiments
4 access to the SDRAM 103 from the hosts 111 and 906
12:33 5 was carried out through the SDRAM interface 112,
6 correct? Did I read that correctly?

7 A. Yes.

8 Q. And it says: In the configuration of the
9 present embodiment, and this is referring to
12:33 10 Figure 14 that has just the MMC interface, it says:
11 Access to the SDRAM 103 is also carried out through
12 the MMC interface 1407.

13 Do you see that?

14 A. I see that sentence, yes.

12:33 15 Q. And so here Tsunoda is telling the person
16 of skill in the art that access to the SDRAM from
17 the host in the embodiment of Figure 14 is carried
18 out through the MMC interface instead of the SDRAM
19 interface, correct?

12:34 20 A. That it looks like that is in part what
21 Figure 112 is getting at when it's describing the
22 signaling flow in this Figure 14.

1 Q. Did you mean to refer to Figure 112 or
2 paragraph 122?

3 A. I was referring to paragraph 122 in
4 Figure 14.

12:34 5 Q. Okay. And Tsunoda goes on to state that
6 in addition to its function as the MMC, the memory
7 apparatus 1401 can issue a command for instructing
8 data transfer between the flash memory and the SDRAM
9 or access the SDRAM from the MMC interface, correct?

12:34 10 Do you see that?

11 A. Where are you reading -- I'm sorry.

12 Q. Sure. At the top of page 37 of Tsunoda,
13 it says: That is in addition to its function as the
14 MMC, the memory apparatus 1401 can issue a command
12:35 15 for instructing data transfer between the flash
16 memory 1102 and the SDRAM 103 or access the SDRAM
17 103 from the MMC interface 1407.

18 A. I see that.

19 Q. So you agree that there's nothing in this
12:35 20 section of Tsunoda that prohibits the transfer of
21 data from the flash memory and the SDRAM upon
22 power-up of the memory module shown in Figure 14,

1 correct?

2 MR. AUCHTER: Objection to form.

3 A. That in paragraph 112 for this embodiment
4 it states: In addition to its function as the MMC,
12:35 5 the memory apparatus 1401 can issue a command for
6 instructing data transfer between the flash memory
7 1102 and SDRAM 103.

8 BY MR. RIFFE:

9 Q. And you -- in fact, for each of the
12:36 10 embodiments that's described in Tsunoda, Figure 1, 9
11 and now 14, that is the main purpose or one of the
12 main purposes of writing data from the flash to the
13 SDRAM is so that the data can be accessible to the
14 host from the quicker SDRAM, correct?

12:36 15 MR. AUCHTER: Objection to form.

16 A. I would say that in general Tsunoda talks
17 about the speed of accessing data from the DRAM.

18 BY MR. RIFFE:

19 Q. And then in fact, at the end of
12:36 20 paragraph 122 Tsunoda states: As in the case of the
21 previous embodiments, the SDRAM 103 can be accessed
22 from the memory control unit 1402, correct?

1 A. At the last sentence it states:
2 Accordingly, as in the case of the previous
3 embodiments, the SDRAM 103 can be accessed from the
4 memory control unit 1402.

12:37 5 Q. So to be clear, we agree that the host
6 supplies power to the MMC through the power supply
7 terminal VCC1 1004 as described in Tsunoda
8 photograph 114, correct?

9 A. The paragraph 114 describing Figure 10
12:37 10 talks about the VCC1 power supply terminal, yes.

11 Q. And consistent with the other
12 embodiments, Tsunoda describes that data can be
13 written from flash to SDRAM in the MMC embodiment of
14 Figure 14, for example, at power-up like the other
12:37 15 embodiments shown in Figures 1 and 9, for example,
16 correct?

17 A. That at the end of paragraph 122 Tsunoda
18 states: As in the case of the previous embodiments
19 the SDRAM can be accessed from the memory control
12:38 20 unit.

21 Q. And it also describes the writing of data
22 from the flash to the SDRAM as in the previous

1 examples, correct?

2 MR. AUCHTER: Objection to form.

3 A. Then in paragraph 122 in describing this
4 embodiment, it talks about a command for instructing
12:38 5 data transfer between the flash memory and the
6 SDRAM.

7 BY MR. RIFFE:

8 Q. And then consistent with the other
9 embodiments, I think you just said this, Tsunoda
12:38 10 describes that data can be accessed by the host from
11 the SDRAM using the memory control unit 1402 of the
12 MMC of Figure 14, correct?

13 MR. AUCHTER: Objection to form.

14 A. That -- yeah, at the end of -- sorry. At
12:38 15 the end of paragraph 122 it states, quote, the SDRAM
16 103 can be accessed from the memory control unit
17 1402.

18 MR. RIFFE: You guys want to go off
19 the record a minute?

12:39 20 (Recess taken from 12:39 p.m. to
21 1:19 p.m.)
22

1 BY MR. RIFFE:

2 Q. Welcome back, Dr. Brogioli. Did you have
3 any discussions with your counsel during the break
4 about your testimony today?

13:19 5 A. No, I did not.

6 Q. Let's turn, if you will, to paragraph 45
7 of your declaration. And here you say that Tsunoda
8 discloses issuing a busy signal that prevents the
9 host from stopping supply of power to the memory
13:19 10 apparatus until the busy signal is released by the
11 memory apparatus, correct?

12 A. That's correct.

13 Q. How does the presence of a busy signal
14 prevent the host from stopping supply of power?

13:20 15 A. I think I've got my pages out of order.
16 I apologize.

17 Q. No worries.

18 A. So I'm just going back to paragraph 85 in
19 Tsunoda. So it's -- about halfway through 85
13:21 20 Tsunoda describes this process between the host and
21 the memory apparatus. And we can see where it
22 states: Upon reception of a shutdown instruction

1 from the host, going out towards the apparatus, the
2 apparatus sets this signal in a register and that's
3 used to notify the host of the status of the memory
4 apparatus. And then this process continues while
13:21 5 the memory apparatus does its own internal
6 functions.

7 And if I skip ahead to -- if I skip ahead
8 to paragraph 87, about halfway through: After the
9 end of register saving, and that's within the memory
13:22 10 apparatus, the busy signal of the control register
11 is released and then the host stops supplying of the
12 power to the memory apparatus when it detects the
13 releasing of the busy signal by the polling, but I
14 think that should say polling, of the control
13:22 15 register.

16 Q. Does the busy signal prevent the user
17 from turning off the power switch on the host?

18 A. I don't see that Tsunoda talks about that
19 one way or the other if you're referring to, like, a
13:22 20 power button outside the box kind of thing.

21 Q. Right. So is it your experience based on
22 your years of experience that that busy signal from

1 the memory would prevent the user from turning off
2 the power switch on the host?

13:23 3 A. Tsunoda doesn't talk about how the other
4 components of the system are set up, but if there
5 was a power button on the front of the computer,
6 let's say, I would think someone could go hit that
7 button.

8 Q. When Tsunoda's memory apparatus is
9 unplugged, the memory can't issue the busy signal to
13:23 10 a host, correct?

11 A. If Tsunoda's memory apparatus were
12 removed from the system, put on a shelf or
13 something, that register that the host would poll
14 presumably -- or the memory apparatus couldn't set
13:23 15 those bits for the host to poll.

16 Q. When Tsunoda's memory apparatus is
17 unplugged, there's no power supply from the host to
18 the memory apparatus, correct?

13:24 19 A. I would say when Tsunoda's apparatus is
20 physically removed from a host machine, if it's air
21 gapped or something like that, there wouldn't be any
22 power being provided to it.

1 Q. The power supply from the host to
2 Tsunoda's memory apparatus is stopped when the
3 memory apparatus is unplugged, correct?

4 MR. AUCHTER: Objection to form.

13:24 5 A. I guess I would say if someone were to
6 physically remove Tsunoda's device from a host
7 machine, there wouldn't be any external signals
8 connected to it, including power.

9 BY MR. RIFFE:

13:24 10 Q. And in your declaration at paragraph 74,
11 you say that Tomio is not portable because of the
12 significant problems and catastrophic consequences
13 with unplugging without previous notification to the
14 host.

13:25 15 Do you see that?

16 A. I see the paragraph, but I didn't track
17 the sentence you were reading.

18 Q. Okay. About middle way down you say: A
19 POSITA would have known that unplugging memory
13:25 20 without previous notification to the host device
21 would create significant problems and could be
22 catastrophic.

1 A. I see that, yes.

2 Q. And then you go on to say: There would
3 be a loss of data integrity and possible damage to
4 the host or the portable memory apparatus, correct?

13:25 5 A. That's correct.

6 Q. And from -- that's one reason why you say
7 that Tomio is not portable, in other words, it's --
8 the issues with plugging and unplugging it could
9 result in these catastrophic events; is that right?

13:26 10 A. That's correct with regard to Tomio.

11 MR. RIFFE: Go ahead and mark as
12 Exhibit 3 MTI-1005.

13 (Deposition Exhibit 3 marked for
14 identification.)

13:26 15 BY MR. RIFFE:

16 Q. Dr. Brogioli, you've been handed what's
17 marked as Exhibit 3. It's also Exhibit MTI-1005 to
18 the proceeding.

19 Do you recognize this?

13:26 20 A. I do, yes. This is the Sukegawa
21 reference.

22 Q. And this is Sukegawa referenced that you

1 analyzed as part of your declaration?

2 A. That's right, yes.

3 Q. And Sukegawa you would agree describes a
4 USB flash drive memory device, correct?

13:27 5 A. That's generally right. It talks about a
6 USB device that has a NAND flash memory.

7 Q. And when you want to unplug a USB flash
8 drive like Sukegawa, you would use an eject drive or
9 safely remove hardware feature on the computer
13:27 10 system generally before you'd want to unplug the USB
11 flash drive, correct?

12 A. That's the case in some -- in some
13 operating systems, yes.

14 Q. Why would you want to do that?

13:27 15 A. There could be various reasons, I
16 suppose.

17 Q. Is it because the USB flash drive could
18 become damaged or corrupt if you unplug without
19 first using that eject drive or safely remove
13:27 20 hardware feature?

21 A. It depends. There's some cases where,
22 like, the operating system or drivers are buffering

1 data that hasn't gone out to the device yet. So if
2 I was trying to write a megabyte and the last 20
3 percent never went out to the device, it might still
4 be in the host, then it might not have the full file
13:28 5 or something like that.

6 Q. Were there any other reasons that you
7 could think of where you would want to -- where the
8 device could become damaged or corrupt if you unplug
9 it without first notification -- using one of those
13:28 10 notification features?

11 A. I guess I'd probably have to look at a
12 specific example for you.

13 Q. Are you aware of instances where if you
14 removed a USB flash drive, the data could become
13:29 15 damaged or corrupt based on your years of experience
16 without first using that eject drive or safely
17 remove hardware feature?

18 A. I guess I would say I haven't really
19 analyzed all the scenarios where that could happen.
13:29 20 It sort of changed over the years. Maybe you can be
21 more specific I guess.

22 Q. Okay. Sitting here today, you can't

1 recall any specific examples of where that would
2 happen?

13:29 3 A. I mean, it would depend on how things are
4 being written or what the file system is on the USB
5 drive or how the hosts were doing things.
6 It -- sometimes things may become corrupt.

7 Q. So under certain conditions using USB
8 flash drives if you unplug the drive without first
9 using that safely remove hardware feature, there are
13:29 10 instances where the data can become damaged or
11 corrupt, correct?

12 MR. AUCHTER: Objection, form,
13 foundation.

14 A. No, I would say there might be situations
13:30 15 where data, if you're transmitting ten units of data
16 to the device, maybe only eight of them went out and
17 two are still sitting on the host. But from the
18 user-facing perspective, you're told the file
19 copied, which I recall were some reasons those
13:30 20 features existed. We'd need to probably get into
21 more specifics than that.

22

1 BY MR. RIFFE:

2 Q. In Sukegawa at column 1, lines -- around
3 lines 30 to 31, it says that USB 2.0 has a raw data
4 rate at 480 megabits per second.

13:30 5 Do you see that?

6 A. USB 2 has a raw data rate at 480 megabits
7 per second, correct.

8 Q. Does Sukegawa disclose the flash memory
9 access rate?

13:31 10 A. I don't recall if -- well, I guess I'll
11 answer, I don't recall addressing if Sukegawa says
12 that or not in terms of the raw I/O bit rate of the
13 internal NAND flash.

14 Q. Do you know what the flash memory access
13:31 15 rate is, in general?

16 A. It varies. I'd probably need to go back
17 in some spec sheets to get you a firm number on
18 that.

19 Q. Would it be less than 480 megabits per
13:31 20 second, in other words, less than the raw data rate
21 of the USB 2.0?

22 A. I'm going from memory. I'd have to look

1 at a data sheet for you.

2 Q. Would it generally be less than the raw
3 data rate, that being -- let me strike that.

4 Would the flash memory access rate
13:31 5 generally be less than the raw data rate for a USB
6 device?

7 MR. AUCHTER: Objection, form.

8 A. Can you ask the question a little
9 differently? I'm not sure I -- which direction
13:32 10 you're asking.

11 BY MR. RIFFE:

12 Q. Would the flash memory access rate
13 generally be less than the raw data rate for a USB
14 device?

13:32 15 MR. AUCHTER: Same objection.

16 A. I'd need to go back and look at, for
17 example, this time frame for different flash
18 memories, what their -- if you're asking what the
19 raw I/O data speed was versus a USB interface.

13:32 20 BY MR. RIFFE:

21 Q. Okay. So sitting here today you can't --
22 you don't know what the flash memory access rate

1 generally would be if it would be less than the raw
2 data rate for USB?

13:32 3 A. I would want to go back and look because
4 we're talking about -- it sounds like you're asking
5 about USB a couple different flavors of 1 or 1.1
6 versus 2 versus what were flash -- NAND flash raw
7 I/O rates in this time frame. I don't recall those
8 numbers from memory.

13:33 9 Q. So after everything we've discussed
10 today, is there any other errors or changes that you
11 would want to make to your declaration?

12 A. Not that I recall, no.

13 Q. Is there anything you expected to testify
14 about today that we haven't discussed?

13:33 15 A. No, I don't think so.

16 MR. RIFFE: I don't believe I have
17 any further questions at this time.

18 MR. AUCHTER: I just have a few
19 questions, if I could, please.

13:34 20 EXAMINATION

21 BY MR. AUCHTER:

22 Q. Dr. Brogioli, do you recall discussions

1 of the floppy disk and CD-ROM with reference to the
2 Tsunoda prior art?

3 A. Yes, I do.

4 Q. And can a floppy disk be read by a
13:34 5 computer without a floppy disk drive?

6 MR. RIFFE: Objection, form.

7 A. No.

8 BY MR. AUCHTER:

9 Q. Can a CD-ROM be read by a computer
13:34 10 without a CD-ROM drive?

11 MR. RIFFE: Objection, form.

12 A. No.

13 BY MR. AUCHTER:

14 Q. Can a floppy disk be written to by a
13:34 15 computer without a floppy disk drive?

16 MR. RIFFE: Objection, form.

17 A. No.

18 BY MR. AUCHTER:

19 Q. Can a CD-ROM be written to without a
13:34 20 CD-ROM drive assuming it's a writable CD-ROM?

21 MR. RIFFE: Objection, form.

22 A. Same answer. No.

1 BY MR. AUCHTER:

2 Q. Does Dr. Liu provide any disclosures of
3 portable floppy disk drives?

4 A. Not that I recall, no.

13:35 5 Q. Does Dr. Liu provide any disclosures of
6 portable CD-ROM drives?

7 A. Not that I recall.

8 Q. Is it accurate to say that when a floppy
9 disk or a CD-ROM is described as portable memory,
13:35 10 it's only portable in the sense that it still has to
11 have a drive before it can be read or written to?

12 MR. RIFFE: Objection, form.

13 A. That's right. The media is portable, but
14 it needs the drive.

13:35 15 BY MR. AUCHTER:

16 Q. Directing your attention now to Exhibit
17 No. 2, MTI-1004, Tsunoda, et al. Specifically to
18 paragraph 82 of Exhibit 2.

19 A. Okay.

13:36 20 Q. Does paragraph 82 describe the power-up
21 sequence and specifically in the context of SDRAM
22 compatible interfaces?

1 MR. RIFFE: Objection, leading.

2 BY MR. AUCHTER:

3 Q. What does paragraph 82 describe?

4 A. So it's describing waiting until a
13:37 5 voltage from the power supply is detected or a
6 predetermined value and then talks about accessing
7 from the host using the SDRAM compatible interface
8 to the control register and load processing from
9 flash memory using the SDRAM interface.

13:37 10 Q. And looking at paragraph 82 and the
11 description of the power-up sequence, is it your
12 opinion that the power-up sequence requires the
13 SDRAM interface?

14 MR. RIFFE: Objection, leading.

13:37 15 A. Yes, that's what's being described.

16 MR. AUCHTER: I have no further
17 questions.

18 MR. RIFFE: I have no further
19 questions.

13:37 20 (Deposition concluded at 1:37 p.m.)

21

22

1 REPORTER'S CERTIFICATION

2 I, Micheal A. Johnson, Registered Diplomat
3 Reporter and Notary Public within and for the State
4 of Texas do hereby certify:

5 That MICHAEL C. BROGIOLI, Ph.D., the witness
6 whose deposition is hereinbefore set forth, was duly
7 sworn by me before the commencement of such
8 deposition and that such deposition was taken before
9 me and is a true record of the testimony given by
10 such witness.

11 I further certify that the adverse party,
12 Sonrai Memory Limited, was represented by counsel at
13 the deposition.

14 I further certify that the deposition of
15 MICHAEL C. BROGIOLI, Ph.D. occurred at the offices
16 of Fish & Richardson, P.C., 111 Congress Avenue,
17 Suite 2000 on Friday, May 31, 2024, commencing at
18 9:02 a.m. to 1:37 p.m..

19 I further certify that I am not related to
20 any of the parties to this action by blood or
21 marriage, I am not employed by or an attorney to any
22 of the parties to this action, and that I am in no

1 way interested, financially or otherwise, in the
2 outcome of this matter.

3 IN WITNESS WHEREOF, I have hereunto set my
4 hand this 4th day of June, 2024.

5

6

7



8

MICHEAL A. JOHNSON, RDR, CRR

9

My commission expires: 8/8/2024

10

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