FEDERAL TRADE COMMISSION

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UNITED STATES OF AMERICA

FEDERAL TRADE COMMISSION

In the Matter of:)

Rambus, Inc.) Docket No. 9302

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Tuesday, June 17, 2003

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TRIAL VOLUME 29

PART 1

PUBLIC RECORD

BEFORE THE HONORABLE STEPHEN J. McGUIRE

Chief Administrative Law Judge

Federal Trade Commission

600 Pennsylvania Avenue, N.W.

Washington, D.C.

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P R O C E E D I N G S

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JUDGE McGUIRE: This hearing is now in order.

Any items that you wish to take up before we start this morning?

MR. OLIVER: Not at this time, Your Honor.

JUDGE McGUIRE: Okay. Then at this time we'll begin with the cross-examination of the witness.

Mr. Jacob, would you please take the stand. I caution you you're still under oath from your prior testimony.

THE WITNESS: Thank you, Your Honor.

comparative study that you performed of contemporary DRAM architectures in 1998. Do you recall that?

A. It was -- yes. Yes.

Q. And I believe you testified that you modeled the performance of the various architectures that you were comparing as precisely as possible using software simulation; is that right?

A. Correct.

Q. Now, with respect to the -- and yesterday you discussed various alternatives to four particular features of synchronous DRAMs. Do you recall that?

A. Yes, I do.

Q. Now, with respect to those alternatives that you discussed yesterday, did you do this sort of precise software simulation with respect to any of them?

A. No, I did not.

Q. One of the features that you were proposing alternatives for you referred to as dual-edged clocking. Do you recall that?

A. One of the features that -- that I --

Q. Well, let me try to say that in a less convoluted manner.

A. Thank you.

Q. Yesterday you discussed with Mr. Oliver the

dual-edged clocking feature of DDR SDRAMs; correct?

A. Yes.

Q. And you proposed certain alternatives to that technology; correct?

A. Yes, I did.

Q. And one of the alternatives that you proposed was to increase the number of pins on the DRAM; correct?

A. Correct.

Q. And another one of the alternatives that you proposed was to increase the number of pins on the module; correct?

A. Correct.

Q. Now, with respect to those two alternatives in particular, you consulted some data that you had gathered in connection with an earlier academic study that you had done in order to get some idea of what the performance would be of those alternatives; correct?

A. Correct.

Q. And yesterday you also discussed alternatives to the programmable burst length feature of SDRAMs; correct?

A. Yes, I did.

Q. And one of the alternatives that you discussed

there was to use a burst terminate command; right?

A. Yes.

Q. And in connection with the burst terminate command alternative, you had a graduate student perform some sort of a statistical study to give you some idea of what the performance of that alternative would be; correct?

A. I and the graduate student did it together.

Q. Now, other than with respect to those three alternatives that I just mentioned now that you discussed yesterday, increasing the number of pins on the DRAM, increasing the number of pins on the module and using the burst terminate command for burst length, you did no simulation or modeling of any kind with respect to the other alternatives you testified about; correct?

A. Not that I can recall.

Q. Yesterday you discussed programmable CAS latency in SDRAMs with Mr. Oliver. Do you recall that?

A. Yes.

Q. And you proposed various alternatives to that?

A. Yes.

Q. And one of the alternatives that you proposed was to just fix the latency of the SDRAMs; right?

For Tat?j you didr2AMs; right?

A. Correct.

Q. And that if you wanted to have SDRAMs with different CAS latencies you'd have to produce multiple parts; correct?

A. Correct.

Q. And if multiple SDRAM parts were produced, that could lead to higher inventory costs for the DRAM manufacturers; correct?

A. I'm not certain that it would.

Q. Potentially it could; right?

A. Well, for example, manufacturers currently separate out into different part numbers different parts with different CAS latencies, like 133 megahertz CAS 2 has a different part number from 133 megahertz CAS 3.

Q. You stated in your report, expert report in this matter, that having multiple fixed latency parts could potentially lead to higher inventory costs for the DRAM manufacturers. Do you recall that?

A. Yes, I do.

Q. And when I took your deposition, I asked you about that, and you confirmed that; right?

A. Yes. It could potentially lead to higher costs, but as I noted, currently, at least some manufacturers already do distinguish between different

CAS latencies, so at least for those manufacturers there doesn't seem to be a difference. There wouldn't be a difference.

Q. With respect to those potential higher inventory costs that might exist, you don't know what those inventory costs would be, do you?

A. You're asking me to speculate on the potential costs of something that might not exist?

Q. Well, you don't know whether it exists or not, that's your testimony; right?

A. I am suggesting that it probably wouldn't exist since already manufacturers do separate out parts with different CAS latencies, so you're telling me that if -- if they don't do that, which I have stated they already do, then what would the costs be, and so I don't really understand the question.

Q. You stated in your report, as you've just discussed now, that having the multiple parts could lead to higher inventory costs; right?

A. Right.

Q. When you said that in your report, you didn't have any idea of what those costs would be; is that right?

A. Correct.

Q. As one of the advantages of going to a fixed

latency part, yesterday you testified that if you did that, you could eliminate the mode register in SDRAMs; right?

A. Correct.

Q. Now, the mode register in SDRAMs is used for purposes other than to store CAS latency, isn't it?

A. Yes, it is.

Q. In particular, it stores the burst length; is that right?

A. Yes.

Q. And it stores the burst type; right?

A. Yes.

Q. And in DDR SDRAMs they expand the use of the mode register and they store other things in the mode register; right?

A. I believe so.

Q. And in DDR-II SDRAMs they're expanding the use of the mode register yet further again, storing even more things in the mode register; right?

A. I'm not certain about that.

Q. You don't know one way or the other?

A. I don't have the DDR-II spec in front of me and I have not consulted it recently, so I don't know offhand.

Q. If you just remove the programmable CAS latency

A. Yes, I did.
Q. What DRAM manufacturers are those?
A. I believe Infineon and Micron and possibly Hynix.
Q. And do you know what parts they're using those electrical fuses in?
A. I don't know the part numbers.
Q. Do you know how many parts Micron is using electrical fuses in?
A. I believe a substantial number.
Q. Is Micron using the electrical fuses in all of its DRAM products?
A. I don't know if it's all, but I believe it's a substantial number. That's my understanding.
Q. Do you know how many?
A. A substantial number of the parts that they create.
Q. Do you know what percentage?
A. No.
Q. Do you know what percentage of Infineon's parts use electrical fuses?
A. No, I do not.
Q. Now, you know that electrical fuses are not as reliable as laser-blown fuses; right?
A. No, I do not know that.

Q. Now, you said earlier that the fuses, if they were electrical fuses, could be blown by the OEMs after the parts were shipped by the DRAM manufacturer; right?

A. Wait. Could you restate that question.

Q. Didn't you testify yesterday that since electrical fuses can be blown after packaging, they could be blown by an OEM after the DRAM parts had been shipped by the DRAM manufacturer?

A. Yes.

Q. Now, if that were done, then the DRAM manufacturer couldn't test the parts; isn't that right?

A. Yes, they could test the parts. They couldn't test it after blowing the fuse, but they could certainly test the functionality the way they currently do now and see, for example, what circuit is working.

Q. Well, they couldn't tell if the part with the

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ncwg,nufacturer?

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OEMs blow fuses after shipping?

A. No, I do not.

Q. Another alternative that you mentioned for programmable CAS latency was to identify the CAS latency in the command. Do you recall that?

A. Yes, I do.

Q. Now, identifying the CAS latency in the command has the negative side effect of limiting the simultaneous issuing of independent commands that is possible with current SDRAMs; isn't that right?

A. I'm not sure what you're referring to. Currently, you can only issue one command at a time, for example, a read or a write or a row activate, precharge. These commands can't be issued simultaneously. You can issue one command at a time.

Q. Well, let me show you your report, professor.

May I approach, Your Honor?

JUDGE McGUIRE: Yes.

MR. DETRE: May I hand you a copy of the report.

BY MR. DETRE:

Q. And if I could direct you to page 54 of your report.

And on that page you're discussing this alternative; right, of identifying CAS latency in the

command?

A. Yes.

Q. And if you would look at the very last sentence in your paragraph 108 on that page, you stated in your report, with respect to this alternative, "This would have the negative side effect of limiting the simultaneous issuing of independent commands that is possible with the current command set, for example, setting DQ mask during the same cycle as issuing a column write," and you go on; is that right?

A. Yes. Yes. Typically --

JUDGE McGUIRE: Well, have you asked him a question?

THE WITNESS: I'm sorry.

MR. DETRE: No, I haven't, Your Honor.

JUDGE McGUIRE: You just made the comment. So wait until he asks you a question.

BY MR. DETRE:

Q. You stated that in your report; right, Professor Jacob?

A. Yes, I did.

Q. Let me show you another document.

Pull up RX-1308.

You can set the report aside for the moment.

And this is a document with -- a patent with

patent number 5,835,956.

Do you see that, Professor Jacob?

A. Yes, I do.

Q. And Matthew, if you could go down just a little bit lower, highlight the top part of it, including the title.

It's -- the title of the patent is Synchronous DRAM Having a Plurality of Latency Modes.

Do you see that?

A. Yes, I do.

Q. It was assigned to Samsung and filed on March 17, 1997, the application. Do you see that?

A. Yes, I do.

Q. But if you look just a little bit lower -- right there, yes -- you'll see that under Related U.S. Application Data, it lists various parent applications going all the way back to 1993.

Do you see that?

A. Yes.

Q. Now, did you consider whether this patent issued to Samsung might cover this alternative that you mentioned yesterday about identifying the CAS latency in the command?

A. No, I did not.

Q. Did you check to see whether there might be any

patent coverage over that alternative?

A. No, I did not.

Q. Now, did you check to see whether there was any patent coverage over any of the alternatives for programmable CAS latency that you mentioned yesterday?

A. No, I did not.

Q. Now, yesterday you mentioned that another possible alternative with respect to programmable CAS latency was just to use asynchronous DRAM. Do you recall that?

A. Yes. Yes, I do.

Q. And you testified that SDRAM was a synchronous design; right?

A. A synchronous design?

Q. Yes. That SDRAM was a design of synchronous DRAM; is that right?

A. Yes. Yes, it is.

Q. And in the mid-1990s there was another proposal for high-speed DRAM called SyncLink or SLDRAM.

Are you familiar with that?

A. Yes, I am.

Q. And that was also a synchronous design; correct?

A. Correct.

Q. And another type of high-speed DRAM in the

mid-1990s was Rambus DRAM or RDRAM.

Are you familiar with that?

A. Yes, I am.

Q. And the Rambus design was also synchronous; right?

A. Yes.

Q. So isn't it a fact that all of the high-speed DRAMs being seriously considered in the mid to late 1990s were synchronous DRAMs?

A. Being considered by whom?

Q. Being considered by DRAM manufacturers and chipset companies as the next generation of high-speed DRAMs.

that Micron has numerous patents covering burst EDO technology?

A. No.

Q. You didn't look into that when you were considering the asynchronous alternative?

A. No, I did not. I was looking at technical alternative.

Q. Now, yesterday, you also testified about alternatives to programmable burst length in SDRAMs. Do you recall that?

A. Yes, I do.

Q. And one of the alternatives that you suggested was to use a burst terminate command that already exists; is that right?

A. Yes.

Q. And that's the alternative where you mentioned earlier today that you and this graduate student had done a statistical study to get some idea of what impact using a burst terminate command instead of programmable burst length might have on performance; right?

A. Correct.

Q. And this study showed that using the burst terminate command could affect the efficiency of the system by 10 to 15 percent; is that right?

A. I don't believe -- it could -- I think it could have been that in hypothetical worst-case situations, but I think we determined that it would be in most situations less than that. That's my recollection.

Q. Well, let's just have a look at your deposition if we might, and I -- do you have a copy of your deposition there, Professor Jacob, over on the right-hand side?

A. Oh. Yes, I do.

Q. This was, according to the cover anyway, this was a deposition of yourself taken on March 19, 2003?

A. Yes.

Q. Does that sound about right for the date?

A. Yes, it does.

Q. Now, if I could ask you to turn to page 123.

And at -- and in discussing your statistical study of the burst terminate command, if we could read at line 13, I asked, "What were the results of that simulation?"

And you answered, "The results were that it didn't look like it was going to be very -- it wouldn't have caused much overhead."

And I asked you, "How much overhead would it have caused?"

And you said, "I don't remember offhand, but it was 10-15 percent or less."

Do you see that?

A. Yes, I do.

Q. And that's what you testified to at your deposition; right?

A. Well, this is a -- this is my deposition, yes.

Q. Now, still talking about the burst terminate alternative, let me show you a document.

JUDGE McGUIRE: You may approach, Mr. Detre.

MR. DETRE: Sorry, Your Honor. Thank you.

BY MR. DETRE:

Q. And if we could pull up CX-415.

There we go.

Now, the cover of this document identifies this as a set of slides entitled DDR Memory, Past, Present and Future, Desi Rhoden, Advanced Memory International, Inc., and the date is March 17, 2000.

Do you see that on the cover?

A. Yes, I do.

Q. And Desi Rhoden was one of the gentlemen who you spoke to in connection with your work on this case; right?

A. Yes, he is.

Q. Now, if I could ask you to turn to page 10 of

this document, Major Changes with DDR, do you see that?

A. Yes, I do.

Q. And down at the bottom, the last bullet point, it says, "Eliminate burst stop command, an internal device timing nightmare."

Do you see that?

A. Yes, I do.

Q. Now, the burst stop command, that's just another name for what you're calling burst terminate, isn't it?

A. Yes, it is.

Q. And did Mr. Rhoden discuss with you that the burst stop command was an internal device timing nightmare?

A. I'm not sure if he did or not. I know that some engineers did. I don't recall exactly who said what.

Q. Now, another alternative that you -- you can put that document aside, Professor Jacob.

Another alternative that you discussed for programmable burst length was the use of the CAS pulse to control data output. Do you recall that?

A. Yes.

Q. And you could describe that as basically a

burst EDO style of bursting data; is that right?

A. Similar to either burst EDO or toggle mode, or you can also think of it as being similar to DDR, DDR's use of DQS.

Q. You mentioned toggle mode just then, and by that, I think you testified yesterday you were referring to a technology proposed by IBM; is that right?

A. Yes.

Q. And that was a form of asynchronous technology; correct?

A. That was -- I believe they were calling that an asynchronous DRAM at the time, but it depends upon your definition of "synchronous" and "asynchronous."

Q. Well, yesterday your definition of an asynchronous DRAM was one in which the RAS and the CAS actually controlled the operation of the DRAM rather than the system clock; right?

A. Correct.

So toggle mode has an asynchronous capture of commands, but it has a synchronous capture of data, so that's why it's sort of in that gray area.

Q. RAS and CAS are asynchronous in the IBM design; right?

A. I believe so in that toggle mode design.

Q. Now, let me show you another document.

If we could pull up RX-2099 -- excuse me -- RX-2099-007.

May I approach, Your Honor?

JUDGE McGUIRE: Yes, you may.

MR. DETRE: Thanks to Mr. Perry, I remembered.

JUDGE McGUIRE: Thank you, Mr. Perry.

BY MR. DETRE:

Q. And this is a paper entitled A White Paper on the Benefits of Chipkill Correct ECC for PC Server Main Memory.

Do you see that on the cover, Professor Jacob?

A. Yes, I do.

Q. And that's by one Timothy J. Dell; is that right?

A. Yes, it is.

Q. And it's from the IBM Microelectronics Division.

Do you see that?

A. Yes, I do.

Q. Now, if we could turn to page 16 of this document, and there's a section at the bottom entitled Design Trade-Offs.

Do you see that?

A. Yes, I do.

Q. And there, Mr. Dell writes, "For example, a forerunner of the emerging double data rate DDR SDRAM called toggle mode was implemented in conjunction with the low multibit piecepart architecture."

Do you see that?

A. Yes, I do.

Q. And he goes on to say, "The cumulative effect of these design trade-offs was to present a DRAM that was very fast and very RAS friendly but also very big, very hot and very nonstandard."

Do you see that?

A. Yes, I do.

Q. And you know that the IBM toggle mode part was very big and very hot, don't you?

A. Well, this is describing that research part, yes.

Q. Your understanding is that the IBM toggle mode part was a research part?

A. Their implementation of it at the time was a research part. It wasn't in volume production, so by definition, it was a research part.

Q. And Mr. Dell goes on to say in his next paragraph at the last sentence that in the commodity market these attributes, referring to the toggle mode attributes that we just mentioned, are disastrous;

right?

A. Yes, he says that.

Q. Now, staying on toggle mode for a second, Professor Jacob, are you aware that Gordon Kelley of IBM testified at this hearing? Is that one of the transcripts that you've reviewed?

A. I don't recall. I recognize the name, but I'm not sure if I've read the testimony.

Q. Well, do you recall or have you heard that Mr. Kelley has testified in this hearing that IBM has patents on its toggle mode design?

A. No, I do not know that.

Q. Do you know that according to IBM witnesses, IBM's licensing rates for its patents are in the 1 to 5 percent range?

MR. OLIVER: Objection, Your Honor. Mischaracterizes the testimony.

JUDGE McGUIRE: Sustained.

BY MR. DETRE:

Q. Now, yesterday you testified that you don't think of toggle mode really as an alternative to DDR because it's essentially the same thing; is that right?

A. It's -- the problem is that it's sitting in that gray area. If you look at dual-edged clocking as

patents?

A. Do I know that or do I believe it to be true?

Q. Do you know it?

A. No, I don't know it for a fact.

Q. Now, toggle mode was one of the alternatives that you were suggesting to the dual-edged clocking feature of DDR SDRAMs; right?

A. Well, as I think I mentioned in testimony yesterday, it was listed there more out of -- for the sake of completeness. I'm not sure whether it was an alternative or not, and that depends upon your viewpoint. It was there because Rambus believes it to be different and so I figured I would provide that alternative for the sake of completeness.

Q. And the patent office believes it to be different, too; right?

A. If you tell me so, then I believe you.

Q. One of the other alternatives you mentioned for dual-edged clocking was interleaving on-chip banks. Do you recall that?

A. Yes, I do.

Q. You've never tried to design such a system, have you?

A. I did an architectural design of that system. That's in the 19 -- study published in 1999 and the

follow-on published in 2001.

Q. Well, let's have a look at your deposition. Have you still got that there, Professor Jacob?

A. Yes, I do.

Q. And if you would turn to page 179, and if you would just look at the very last question on that page at line 25.

You were asked the question: "Have you tried to design such a system?"

And you responded at the very top of page 180: "An interleaved system? No, I have not."

Do you see that?

A. Yes, I do.

Q. And that's what you stated at your deposition; right?

A. I believe that the question referred to a physical design. And yes, that's what I said in response.

Q. Now, that interleaved system or interleave alternative that you were discussing yesterday, that used two clocks; right? One clock went to one bank and another clock went to the other bank; is that right?

A. That is right.

Q. Let me show you another document.

there's a claim 27.

Could we blow that up.

And claim 27 states, "A memory device having at least one memory section which includes a plurality of memory cells, the memory device comprises," and then it lists "a first clock receiver to receive a first external clock signal; a second clock receiver to receive a second external clock signal; and input receiver circuitry, coupled to the first and second clock receivers, to sample information on a bus synchronously with respect to the first and second external clock signals."

Do you see that?

A. Yes, I do.

Q. Did you consider this patent or any of its claims when you were proposing the interleaving of on-chip banks as an alternative to DDR?

A. No, I did not.

Q. Now, yesterday you also testified, Professor Jacob, about alternatives to on-chip DLL as used in DDR SDRAMs; correct?

A. Yes.

Q. And yesterday you testified that a PLL and a DLL were similar circuits but whereas a PLL uses an oscillator to generate a clock signal, a DLL does not

use an oscillator; correct?

A. Correct.

Q. A DLL uses variable delay circuitry to delay one signal so that it is in sync with another signal; correct?

A. Correct.

Q. And a PLL uses an oscillator instead of varying the delay circuitry; right?

A. Correct.

Q. But both can be used for that same purpose, to get one clock signal in sync with another; right?

A. Both can be used to produce two clock signals that are in sync with each other.

Q. Now, the DLL as it's used in DDR SDRAMs is transparent in DRAM interface; correct?

A. Correct.

Q. And that means that the rest of the system doesn't care whether there is a DLL there or some other kind of circuitry so long as the data arrives at the controller in the appropriate timing window; right?

A. Yes.

Q. So if you took a PLL and stuck it on the DDR SDRAM instead of the DLL, it would operate just fine; right?

A. I believe so. I'm not absolutely certain, but I believe so.

Q. Now, one of the alternatives that you mentioned yesterday to this idea of using an on-chip DLL was a vernier circuit; right?

A. Yes.

Q. And you're aware, correct, that the SLDRAM chip designed by SyncLink used a vernier?

A. Yes, I am.

Q. And isn't it also true that the SLDRAM chip used an on-chip DLL in addition to the vernier in order to make the timing more accurate?

A. I'm not sure what you mean by making the timing more accurate. The DLL was not used to capture data. That's not the timing that it was making more accurate.

So I don't know what you're getting at.

Q. Well, you testified in your deposition that the purpose of that DLL on top of the vernier in SyncLink SLDRAMs was to make the timing more accurate, didn't you?

A. I didn't say it was on top of the vernier.

Q. Could we turn to your deposition, at page 167.

And on that page, we're discussing a conversation that you had with Mr. Terry Lee of Micron

about the use of verniers and DLLs and SLDRAMs.

Do you see that?

A. Yes, I do.

Q. And you're describing what Mr. Lee told you in your response there; right?

A. I am describing my understanding of the way the vernier and the DLL are used in the SLDRAM work.

Q. And in the sentence of your response, lengthy response that begins at line 17, you state, "And so this static calculation was done, and the vernier was set in each of the DRAMs, and that the DLL was used to make that timing a little bit more accurate"; correct?

MR. OLIVER: Objection, Your Honor.

Counsel has read a half of a sentence here. I believe if the entire answer is read you'll see that the answer is completely consistent with his testimony this morning.

JUDGE McGUIRE: I'll give you that opportunity to do that either on your questioning or I'll let you interject at this time after he's done with that half question and I guess complete, you know, the statement.

MR. OLIVER: I'd like to do that at this time if I could, please, Your Honor.

JUDGE McGUIRE: All right.

BY MR. DETRE:

Q. Do you have the question in mind, Professor Jacob?

A. No, I do not.

Q. If we could begin reading at line 17 of your response, you state, "And so this static calculation was done, and the vernier was set in each of the DRAMs, and that the DLL was used to make that timing a little bit more accurate."

That's what you stated; correct?

A. That's what I state there.

MR. OLIVER: Your Honor, may I read the entire question?

JUDGE McGUIRE: Yes, Mr. Oliver.

MR. OLIVER: Thanks, Your Honor.

Beginning on page 167, line 1, reading through page 167, line 25:

"QUESTION: And what did Mr. Lee tell you about the use of verniers in DLLs and SLDRAMs?

"ANSWER: He said that contrary to what Soderman had said, that the SLDRAM part that was built did use verniers. Soderman had said that they abandoned the use of a vernier in favor of a DLL and therefore that the vernier is a useless mechanism. Lee said that the verniers were used at both the controller

side and the DRAM side to capture data.

"They were used to, quote-unquote, level the bus so that all DRAMs responded to transactions at nominally the same time so that even though a nearby DRAM would receive a request sooner than a faraway DRAM, the nearby DRAM would delay its response so that it appeared -- so that it would write things out onto the bus at the same time that the further-away DRAM would.

"And so this static calculation was done, and the vernier was set in each of the DRAMs, and that the DLL was used to make that timing a little bit more accurate, and that the verniers were used to delay the data with respect to the strobe so that the strobe captured the data.

"So the verniers, according to Mr. Lee, were used in the capture of data and not the DLL. That's my recollection."

JUDGE McGUIRE: All right. Mr. Detre, you may proceed.

MR. DETRE: Thank you, Your Honor.

BY MR. DETRE:

Q. Let me show you a document, Professor Jacob.

May I approach, Your Honor?

JUDGE McGUIRE: Yes.

BY MR. DETRE:

Q. Could we pull up RX-1701.

And if you'd blow up that usual top part, please.

I've handed you, Professor Jacob, a patent with patent number 6,115,318. It's titled Clock Vernier Adjustment. It's assigned to Micron Technology. And it was filed on December 3, 1996.

Do you see that?

A. Yes, I do.

Q. When you were proposing your vernier alternative, did you consider this patent?

A. No, I did not.

Q. Do you know whether this patent covers the type of vernier technology that you were proposing?

number 5,917,760, Deskewing Data Signals in a Memory System, assigned to SLDRAM, Inc., filed September 19, 1997.

Professor Jacob, do you know whether this patent covers the use of verniers as used in SLDRAM devices?

A. No, I do not.

Q. Did you consider this patent when you were proposing your vernier alternative?

A. No, I did not.

Q. Let me move on, Professor Jacob, to another topic that you covered yesterday with Mr. Oliver.

And you discussed with Mr. Oliver whether certain Rambus patent claims pending between 1991 and 1996 covered JEDEC work. Do you recall that?

A. Yes.

Q. Now, when you were responding to those questions, what did you understand by "a patent claim covering JEDEC work"? What did you understand by "cover"?

A. My understanding was that for it to cover, an engineer reasonably versed in the art would reasonably understand the -- that the engineer's interpretation of the claims, using the normal and customary meanings of the terms, would relate to the work in question, the

work going on in the JEDEC subcommittee.

Q. That it would relate to the work going on in the JEDEC subcommittee; is that right?

A. That every element in the claim would correspond to something going on within JEDEC at the time, so every claim would need to be satisfied. You know, it couldn't just be this is near, this is near to it. Every element would have to be satisfied.

Q. So that a product actually built to the specifications being discussed at JEDEC would infringe the patent claims; is that what you meant?

MR. OLIVER: Objection, Your Honor. To the 1rt elT2Pkihe's askbeinaboutld infrinleme,is that woulctuahe 4 forat legalit nclusctied.

1512 JUDGE McGUIREER:S juainfied.

1612 BY MRDETREE.

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24 9 Q.Aponasat yoteetiisfiet jus knmet y dor. 2512 underjuapond that claiiarave to b nterpreefiefrom o the

point of view of a person of ordinary skill in the art to which the patent pertains; correct?

A. Correct.

Q. And you would consider a person of ordinary skill in the art to have a technical understanding of DRAMs and several years experience in designing DRAM systems, architectures and/or circuits; correct?

A. Correct.

Q. Let's look at one of the claims you testified about yesterday, CX-1504.

May I approach, Your Honor?

JUDGE McGUIRE: Yes.

BY MR. DETRE:

Q. I've handed you a copy, Professor Jacob, of one of the exhibits Mr. Oliver used with you yesterday, CX-1504, a copy of the file wrapper, U.S. serial number 08/910,810, and if we could turn to page 216.

And blow up just the top part there, please.

You've testified about this amendment that begins on page 216 yesterday. Do you recall that, Professor Jacob?

A. I believe so, yes.

Q. And if we look at this amendment, in the block at the top right it identifies the serial number of the application that's being amended as 07/847,961.

specification.

Q. So that if --

A. And would therefore cover the implementation of CAS latency, yes.

Q. Sorry. I didn't quite catch it. You said therefore it covered the implementation of?

A. Of the programmable CAS latency. Because you said programmable CAS latency; correct?

Q. Okay. So it's your understanding that claim 160, as well as the other claims that you testified about in this amendment --

A. Well, actually let me -- I'm sorry. I don't have these -- the numbers of the claims memorized the way all the lawyers do. Let me reread this.

Q. Sure. Take your time.

(Pause in the proceedings.)

A. Yes. Yes. I'm sorry. Yes.

Q. You testified that claim 160, as well as certain other claims in this amendment, would cover the mode register as specified for SDRAMs and consequently would cover SDRAMs that contain such a mode register; is that right?

A. Yes.

Q. Now, let me show you a document, RX-2111.

Could you blow up the top half, please.

Professor Jacob, I've handed you an opinion of the United States Court of Appeals for the Federal Circuit in the case of Rambus, Inc. versus Infineon Technologies, et al.

Do you see that?

A. Yes, I do.

Q. Have you seen this document before?

A. I'm not sure. I may have.

Q. Did you review the Federal Circuit's opinion in the Rambus case after it came out earlier this year?

A. Are you referring to the one that I mentioned in my deposition? Is this that document?

Q. I believe it is.

A. Okay. Well, then yes. I read it, and if this is it, then I've read this document. My printout looks very different from this, so it's hard to recognize.

Q. And the opinions are produced in various different formats, that's true.

court also identified application" -- I'm not going to need both pages. We can just -- let's just start with that page. Let's just look at that line.

"The court also identified application numbers 07/847,651" -- now let's go on to the next page -- "('651 application) filed in March 1992 and 07/847,961 ('961 application) filed in March 1992 but later abandoned as having claims directed toward CAS latency."

Do you see that?

A. Yes, I do.

Q. And that application, which the court refers to as the '961 application, that's the same '961 application that you were testifying about yesterday; correct?

A. If the numbers match up, then yes, it is.

Q. And if you could look at the next paragraph on that page, the very first couple of sentences: "The (sic) court has examined the claims of the cited applications," referring to the applications in the previous paragraph, including the '961 application, "as well as the relevant portions of the SDRAM standard.

standard."

Do you see that?

A. Yes, I do.

Q. Now, in reading the Federal Circuit's opinion, did that cause you to in any way revise your opinion that claim 160 and the other claims you testified about in the '961 application had claims that would cover an SDRAM with a mode register?

A. No, it would not.

Q. Do you disagree with the Federal Circuit's finding there?

A. I'm not sure what this says.

Q. You don't understand those sentences?

A. You asked me about this in my deposition, and I still don't understand the meaning of that sentence.

Q. Well, let's move to the end of that paragraph, the last two sentences beginning with "similarly."

It states, "Similarly, claims in the '961 application were limited to the device identifier feat tht.r.cnot.

Q. Now, do reading those sentences change in any way your opinion that the claims that you testified about yesterday would read on SDRAMs?

A. Not at all because the claims that I talked about were not limited to the device identifier feature.

Q. Okay. So if the Federal Circuit is saying that those claims in the '961 application were so limited, you simply disagree; is that right?

JUDGE McGUIRE: Well, I'm a little bit confused about that answer that you just gave, professor. Would you expound on that for my edification.

THE WITNESS: Sure. The sentence here says, "Similarly, claims in the '961 application were limited to the device identifier feature," and indeed if you read through that application, there are claims that are explicitly limited to the device identifier feature, and then there are other claims that are not explicitly limited to the device identifier feature.

Some of them explicitly use that language; they say this is a bus that uses device identifiers. And then there are other claims that omit that wording.

JUDGE McGUIRE: Okay. You may proceed, Mr. Detre.

BY MR. DETRE:

Q. So you do not believe, Professor Jacob, that all the claims in the '961 application were limited to the device identifier feature; is that right?

A. The claims that I looked at did not say anything about device identifiers.

Well, the claims that I used.

Q. Could we go back to CX-1504. Have you still got that in front of you, Professor Jacob? Excuse me. That's the big document with the '961 amendment in the middle.

A. Okay. Yes. Yes, I have it.

Q. And if we could go back to -- let's see -- page 216.

Now, if we blow up the top part of that again, do you see the date over on the right-hand side, January 6, 1995?

A. Yes, I do.

Q. So you understand this amendment was sent to the patent office on that date; is that right?

A. Frankly, I don't know exactly what that date means.

Q. If you look at the mailroom stamp at the top left, do you see it's stamped January 10, 1995 at the Patent and Trademark Office?

A. Yes.

Q. Do you know that these claims that you testified about yesterday were canceled in June of 1995 and so were only pending at the patent office for about six months?

A. Do I know that.

No, I do not know that offhand.

Q. Let's move on to the '692 application if we could.

May I approach, Your Honor?

JUDGE McGUIRE: Yes.

BY MR. DETRE:

Q. Excuse me. CX-1502. It's the '481 patent file wrapper.

Now, if we could turn to page 205 of this document.

And this is identified as a preliminary amendment in patent application serial number 07/847,692.

Do you recall testifying about claim 151 in that preliminary amendment yesterday, Professor Jacob? And maybe we could just turn to claim 151, which appears on page 208.

A. Yes. That looks familiar.

Q. And if we could just blow up claim 151 at the

very top of the page.

Now, one element of that claim identified by the letter C calls for a phase-locked loop, PLL, coupled to the clock signal -- excuse me -- coupled to the clock signal receiving circuit and the memory array for providing a variable delay to the local clock signal such that the delayed local clock signal is synchronized with the external clock signal received by the clock signal receiving circuit.

Do you see that?

A. Yes, I do.

Q. Now, that description of the PLL circuitry providing a variable delay to the local clock signal, that actually describes a DLL, doesn't it, Professor Jacob?

A. Yes. That's my understanding of a DLL.

Q. Let's put that aside for a second and let's look at the NEC presentation that you compared this claim to yesterday, Professor Jacob.

A. Okay.

Q. And that's going to be JX-21.

May I approach, Your Honor?

JUDGE McGUIRE: Yes.

BY MR. DETRE:

Q. If we could turn to page 91 of that document.

buffer?

A. It's not clear.

Q. Now, you testified yesterday also about the little diagram that appears at the bottom of this picture which shows the clock signal and the internal clock in sync.

Do you see that?

A. Yes, I do.

Q. And you said that they were synchronized by variable delay. Do you recall that?

A. Yes, I do.

Q. What on this diagram indicates to you that they were synchronized through the use of a variable delay element?

A. Well, because you're sending two clock signals into the PLL.

Q. Isn't it the case that that PLL could be synchronizing the internal clock with the clock using an oscillator?

A. Well, but then you wouldn't require sending two clocks into the PLL; you would just have one input. This is showing two inputs from the left-hand side and one output to the right.

Q. You see two clocks going in at the left-hand side?

A. Yeah. Clock and I-clock.
Q. Oh, you're talking about the little diagram?
A. Oh, yeah. What -- I'm sorry. Then maybe I misunderstood your question.
Q. Perhaps we're talking at cross-purposes.
At the top of this diagram, a clock signal goes into the PLL; right?
A. Correct.
Q. And I-clock comes out of the PLL; right?
A. And then feeds back into the PLL, yes.
Q. Oh, I see what you're saying.
A. Yes.
Q. Now, if you were using a PLL with an oscillator, you would -- that's a loop; correct? It's called a phase-locked loop; is that right?
A. Yes.
Q. So something from the output of the PLL feeds back into the PLL; right?
A. Correct.
MR. DETRE: I think this would be a good time for a break, Your Honor, if that's okay.
JUDGE McGUIRE: That's fine. We'll take a ten-minute break.
But before we go, I want to ask of any respondent, the other day I granted provisional

in camera treatment to some items of Micron, and I'm getting ready to issue an order on that pending motion. Was there any opposition that you intended to file on that, Mr. Perry?

MR. PERRY: Your Honor, I wasn't involved in that. If I could get back to you at the lunch break with an answer to your question.

JUDGE McGUIRE: Okay. Because if you are, your time is if not already expired is about to, so...

MR. PERRY: I'll take that into consideration when discussing it.

JUDGE McGUIRE: So will I.

All right. Thanks very much.

This hearing is in recess for ten minutes.

MR. DETRE: Thank you, Your Honor.

(Recess)

BY MR. DETRE:

Q. Professor Jacob, before the break, we were talking about PLLs; correct?

A. Yes, we were.

Q. And you testified earlier that a PLL has an oscillator in it; right?

A. Yes, I did.

Q. And a PLL also has a phase comparator in it; is that right?

A. Correct.

Q. And the phase comparator compares the phase of two signals; is that right?

A. It -- yes.

Q. And it uses those two signals then to generate the signal output by the PLL?

A. It uses two signals -- that's not a very precise statement. What do you mean?

Q. It uses information gleaned from those two signals in order to generate the output?

A. The comparator? The comparator doesn't generate the output.

Q. The PLL.

A. Oh, the PLL. The PLL has an oscillator and a reference and it synchronizes the oscillator's output to the reference.

Q. Yesterday you testified about Rambus' '327 patent. Do you recall that?

A. Yes, I do.

Q. Let me hand you a copy of CX-1494.

May I approach, Your Honor?

JUDGE McGUIRE: Yes.

BY MR. DETRE:

Q. If we could go to page 23 of the patent.

And if we could blow up claim 1.

And claim 1 begins, "A dynamic random access memory (DRAM) comprising a first circuit for providing a clock signal."

Do you see that?

A. Yes, I do.

Q. Now, that part of claim 1 indicates to you that claim 1 is referring to a synchronous DRAM; correct?

A. No. It indicates to me that it's -- it is referring to a DRAM that has a clock signal.

Q. Do you still have your report handy?

A. My what?

JUDGE McGUIRE: Your expert report.

THE WITNESS: My expert report.

MR. DETRE: Thank you.

BY MR. DETRE:

Q. And if you would turn to page 48.

And on that page, you have a chart analyzing the '327 patent; right?

A. Uh-huh.

Q. And in the top left box on the right-hand side, you have the language I just read you from claim 1 of the '327 patent?

A. Yes.

Q. "Dynamic random access memory (DRAM)

comprising a first circuit for providing a clock signal"; right?

A. Correct.

Q. And then in the box next to that you have claim interpretation; right?

A. Yes, I do.

Q. And you were interpreting that claim as a person of ordinary skill in the art there; right?

A. Yes.

Q. And you state, "This claim applies to a synchronous DRAM, i.e., one that uses a clock signal to time the DRAM's operations"?

A. Correct. I thought you were -- I thought you meant synchronous as in capital S.

Q. Oh, no. I meant synchronous. --

A. Yes.

Q. -- as you defined it yesterday, namely a DRAM which uses the system clock to drive the DRAM's operations.

A. What's the question?

Q. When you referred to this claim applying to a synchronous DRAM on page 48, you meant synchronous the way you defined it yesterday as a DRAM in which a system clock is used to drive not only the memory controller's operations but also the DRAM?

A. No. Right here I say very clearly what I mean. I say a synchronous DRAM is one that uses a clock signal to time the DRAM's operations. That's...

Q. Now, isn't it a fact that in DDR SDRAMs the system clock is all but ignored in the data transfer, in the data transfer portion of DDR write requests?

A. Correct.

Q. In fact, in DDR SDRAMs, the DRAM samples the incoming data with respect to not that clock but instead a separate signal known as a DQS; right?

A. Correct.

Q. That's sometimes also referred to as a data set; right?

A. Yes.

Q. Now, if you've still got the '327 patent there, yesterday you also -- CX-1494, page 23, the top right-hand column -- you also discussed claim 7; right?

A. Yes, I did.

Q. And one of the elements that claim 7 requires is a multiplexer; right?

A. Yes.

Q. Now, isn't it the case that if you could come up with a circuit that performs the function that the multiplexer performs in some DDR SDRAMs but isn't a multiplexer, then the multiplexer isn't a necessary

part of the DDR specification?

A. In theory, yes, but in reality, there's no such thing that performs the function of a multiplexer that isn't a multiplexer. A multiplexer by definition is something that multiplexes between things and it says -- the term itself has no implications of its implementation, so anything that multiplexes between two inputs is by definition a multiplexer.

Q. Well, when -- you could do types of interleaving between two banks without a multiplexer, couldn't you?

A. Correct.

Q. Going back briefly to your discussion about alternatives yesterday, you proposed, as we discussed earlier, a number of different alternatives to four features found in SDRAMs and DDR SDRAMs; right?

A. Yes.

Q. Now, you can't say with any certainty what the cost would be to implement any of the alternatives that you discussed yesterday; isn't that right?

A. Well, I list the advantages and disadvantages wherever appropriate and I discuss cost in a general sense in that this would require more design effort, this would require less design effort, more pins, fewer pins, that sort of thing.

Q. Beyond that, you can't specify with any certainty what the costs would actually be, can you?

A. No. I've not done an economic analysis of the implications.

Q. Now, yesterday you also testified about the implications of a redesign today. Do you recall that?

A. Yes, I do.

Q. Now, if we go back a little bit further in time, isn't it correct to say that with respect to programmable CAS latency and programmable burst length in SDRAMs that many alternative technologies could have been used even in the mid-1990s after the SDRAM standard was set but before it had become widely deployed?

A. Correct.

Q. And moving on to the DDR standard, isn't it a fact that JEDEC could have eliminated programmable CAS latency and programmable burst mode from the DDR standard at any point prior to the standard being finalized?

A. Yes.

Q. Now, you mentioned with respect to many of your proposed alternatives that if you were to try to implement those today, it would cause disruption, it you were to t

And if we could turn to page 2, that contains the list of Rambus patents you discussed; right?

A. Yes, it does.

Q. And if we could just -- thanks, Matthew.

Now, the very first patent on that list is patent number -- let me step back for a second. Excuse me.

Now, you testified yesterday that all of these patents fall into one of three categories. Do you recall that?

A. I believe I said at least one of three.

Q. And the three categories that you mentioned were: one, restricted to a narrow, packetized bus; two, outside the scope of JEDEC's 42.3 committee; or three, describing minor implementation details that JEDEC did not consider.

Do you recall that?

A. Yes.

Q. Now, the first patent on the list is patent number 5,319,575 (sic). Do you see that?

A. Yes, I do.

Q. Now, that patent --

Q. Now, that patent focuses on low-voltage swing signaling; correct?

A. Just looking at the number, I don't know.

Q. Well, perhaps your recollection would be refreshed by looking at page 38 of your expert report.

A. Sure.

Q. If you'd look at the very last patent on that -- well, excuse me. I got my patent numbers mixed up, so I'm glad -- this has actually refreshed my recollection. I don't mean to be focusing on the top patent. I mean to be focusing on one further down, 5,473,575.

A. Okay.

Q. And that one in fact focuses on low-voltage swing signaling; correct?

A. I believe so.

Q. Pardon me?

A. Yes.

Q. Yes.

And if we look at the second patent on the list, number 5,355,391, that patent focuses on current mode drivers; correct?

A. Yes. I believe so.

Q. Now, yesterday you testified about Rambus' '898 patent application. Do you recall that?

A. Yes.
Q. Let me hand you a copy.
May I approach, Your Honor?
JUDGE McGUIRE: Yes.
BY MR. DETRE:
Q. And that's CX-1451.
And if we could turn to page 16, please.
And there's some discussion on that page I believe you discussed with Mr. Oliver of access-time registers. Do you recall that?
Are you on the right page, Professor Jacob?
A. This is 16, CX-1451-016?
Q. Yes.
And in the second paragraph it discusses access-time registers and again in the third paragraph?
A. Okay. Yes. Access-time registers, yes.
Q. Now, if we look at the first part of the last paragraph on that page, it begins, "Most of these registers can be modified and preferably are set as part of an initialization sequence that occurs when the system is powered up or reset"; right?
A. Yes, I do see that.
Q. And I believe yesterday you testified that in common use anyway, the mode register in SDRAMs is --

the programmable CAS latency in the mode registers in SDRAMs is set at initialization; is that right?

A. Correct.

Q. Now, if we look a little bit further down in that paragraph, I believe it's the second to last sentence, beginning, "Each slave" -- you can just blow up the whole paragraph.

The second to last sentence: "Each slave may have one or several access-time registers"; right?

A. Yes, I see that.

Q. And "slave" in that sentence can refer to a DRAM; is that right?

A. Yes.

Q. Now, if we could turn ahead to page 148 of this document, figure 12 of the patent.

You testified about that yesterday; correct, Professor Jacob?

A. Yes.

Q. And you testified I believe that figure 12 does not show either a PLL or a DLL?

A. Yes.

Q. But figure 12 does look like two DLLs coupled together, doesn't it?

A. It looks vaguely like two DLLs coupled together, but it -- it isn't.

Q. It's got variable delay circuitry?

A. Absolutely.

Q. It's got a feedback loop?

A. It's got a feedback loop.

Q. It is true, however, that the '898 application nowhere shows a PLL circuit with an oscillator; right?

A. Correct.

Q. You don't have any patents in your name, do you, Professor Jacob?

A. No.

Q. Now, many JEDEC representatives have numerous patents in their names; right?

A. I have no way of knowing.

yowork o appcase A. Correct.

16wing.

Q. You spoke to Kevin Ryan of Micron in connection with this case; is that right?

A. Yes, I did.

Q. Did Mr. Ryan tell you that he has over 30 patents?

A. No, he did not.

Q. Now, do you know whether Rambus has any patents that cover the use of programmable CAS latency as it's used in SDRAMs?

MR. OLIVER: Objection, Your Honor. Beyond the scope of his report and beyond the scope of his testimony.

JUDGE McGUIRE: Sustained.

BY MR. DETRE:

Q. You understand, Professor Jacob, that before a patent claim is allowed to issue by the patent office, the patent examiner reviews the claim in the application to determine whether the claim meets certain criteria?

A. Yes.

Q. One of those criteria is called the written description requirement; is that right?

MR. OLIVER: Objection, Your Honor. It goes beyond the scope of the expertise of this witness.

JUDGE McGUIRE: I'll let him answer that if he

can.

THE WITNESS: What is the question again?

BY MR. DETRE:

Q. Are you familiar with a requirement for patents called the written description requirement?

A. I -- not by that name. That doesn't, you know --

Q. Okay. Well, you understand that after a patent application is filed, additional claims can then be filed in what are sometimes called continuation applications?

A. Yes.

Q. And that in order to be valid, those -- the patent application as originally filed must convey with reasonable clarity to those of ordinary skill in the art that the applicant was in possession of the invention being claimed as of the filing date of the application?

MR. OLIVER: Objection, Your Honor. Requirements for validity of a patent are beyond this witness' expertise.

JUDGE McGUIRE: Sustained.

BY MR. DETRE:

Q. So, Professor Jacob, you're not offering any opinion as to whether Rambus has any patents that cover

the SDRAM or DDR SDRAM JEDEC-compliant devices?

A. Well, as I've shown, I found patent claims that were active or were being considered at the time of Rambus' involvement in JEDEC and I've shown there are claims that would cover SDRAM's programmable CAS latency. Whether all of those claims or any of those claims were ultimately granted I don't know offhand. I don't know if that's what you're asking, but I've shown that claims -- there existed claims at the time that covered it.

Q. You don't know whether any of those claims actually issued in patents?

A. I don't know off the top of my head.

Q. Well, didn't you testify yesterday that claims of the '327 patent in your opinion would cover DDR SDRAM devices?

A. Like I said, I don't know the numbers the way you guys do. If you say "'327 patent," that doesn't necessarily recall to me any particular.

Q. I think you've got it in front of you. It's CX-1494.

A. Okay. CX-1494.

Q. I believe you testified about claims 1 and 7.

A. All right. Let's see.

Okay. Yes, the dual-edged clocking patent.

Okay. Yes, I'm with you.

Q. And that was your testimony yesterday, that in your opinion those claims read on DDR SDRAM devices?

A. Yes.

Q. And you know that these claims were duly issued by the patent office; right?

A. I would assume so. This looks like an issued patent.

Q. And you don't know what criteria the patent office applies when it chooses to issue claims, that's outside the scope of your expertise; is that right?

A. You mean, for example, I don't know how the patent office decides to issue claims on biomedical stuff or -- is that what you mean?

Q. No. I mean you don't know --

A. Issue claims outside of my expertise?

Q. No. I mean you don't know that when the patent office decides to issue a claim, it checks whether the patent application as originally filed conveys to persons of reasonable skill -- of ordinary skill in the art that the applicant was in possession of the invention claimed as of the date of the filing of the applicationeion of e..3w 22tmean yo0i2osew you don't know -2

A. -- how I interpret patent claims as an engineer or are you -- and how that would be different from the way a patent examiner would interpret the claims or...

Q. No. I'm asking you whether you know, one way or the other, that before a patent examiner will allow a claim, he checks to see whether the application as originally filed would convey with reasonable clarity to a person of ordinary skill in the art that the applicant was in possession of the invention being claimed when he filed his original patent application.

A. And I'm still lost on the question. I think what you're saying is do I know what patent examiners -- do I know how patent examiners go about their job, and since I'm not a patent examiner, I don't know exactly what they do, but I can tell you what standards I used to interpret these claims.

JUDGE McGUIRE: Well, that's not the question, so...

BY MR. DETRE:

Q. Okay. Well, let me ask that question.

Did you, in reviewing these claims of the '327 patent, determine whether the patent application as originally filed -- that's the '898 application -- conveyed with reasonable clarity to those of ordinary

skill in the art that the applicant was in possession of the invention being claimed as of the filing of that --

A. Oh, I think I see what you're saying. Okay.

that.

BY MR. DETRE:

Q. Okay. Did you check to see whether there was sufficient support in the specification of the '327 patent so that one of ordinary skill in the art would understand that Rambus could claim the inventions that it actually is claiming in the claims?

A. Oh, did I do a validity check on the claim?

Q. Well, that's one aspect of patent validity, I agree with you.

A. I did not try to do a validity check on this patent. I just read the claims as an engineer versed in the art would interpret it, using common, normal meanings of the terms.

Q. Well, you testified that the claims of the '327 patent covered dual-edged clocking; right?

A. Yes.

Q. And you also testified that one of -- you testified that it covered dual-edged clocking as used in DDR SDRAMs; right?

A. Yes, I did.

Q. And you also testified that one of ordinary skill in the art looking at the specification of the '327 patent, substantially similar to the '898 application, wouldn't see dual-edged clocking?

A. Would not see.

Q. Would not see dual-edged clocking as used in DDR SDRAMs in there, didn't you?

A. Oh, I see what you're -- what I said was that the implementation -- okay. Okay.

What I was talking about at the time was would an engineer reading the '898 application, not the '327 patent but the '898 application, an engineer reading the '898 application, would they have thought that this implementation of dual-edged clocking was the same as JEDEC's implementation and I showed how the implementations were different.

Q. Okay. And so you think that an engineer of ordinary skill in the art reading the '898 application would not see in there support for claims covering dual-edged clocking as used in DDR SDRAMs; is that right?

MR. OLIVER: Objection, Your Honor. It mischaracterizes the testimony.

JUDGE McGUIRE: Sustained.

BY MR. DETRE:

Q. Do you know whether an engineer reading the '898 application would see in the '898 application support for claims to dual-edged clocking as used in DDR SDRAMs?

A. What I've shown is that an engineer in the early to mid-'90s reading the specification in the '898 application would have seen that this is a different implementation of dual-edged clocking than what was considered in JEDEC.

Q. And you don't know what an engineer would have realized about the breadth of claims that Rambus might be able to obtain based on that?

A. I mean, they could have -- I still don't quite get what you're getting at.

Q. Well, you've now said that all you testified about yesterday was the differences between Rambus' implementation in the '898 application of dual-edged clocking and the way it's implemented in DDR SDRAMs; right?

MR. OLIVER: Objection, Your Honor. Mischaracterizes the testimony.

MR. DETRE: Sustained.

BY MR. DETRE:

Q. You testified yesterday you discussed the differences between the implementation of dual-edged clocking as used in the '898 application and as used in DDR SDRAMs; right?

A. What I showed was that -- or the question that I was asked to answer was would an engineer reading the

'898 application have suspected that Rambus would be able to claim intellectual property over the work that was going on within JEDEC, and what I showed was that an engineer would have read the application and seen that it was a different implementation of dual-edged clocking, and so an engineer would not have suspected that.

Now, that's, you know -- I answered the question I was asked to answer.

Q. So an engineer looking at the specification in the '327 patent would also have seen that it's a different implementation of dual-edged clocking than what's in DDR SDRAMs; right?

A. Very possibly.

Q. But in your opinion, the claims of the '327 patent do read on DDR SDRAMs; right?

A. Yes.

Q. Now, in connection with your testimony -- well, yesterday you testified that in your opinion no reasonable engineer would have understood from looking at Rambus' original '898 application that Rambus might someday have patents covering various features in JEDEC standard devices; right?

A. That sounds familiar.

Q. In reaching that opinion, did you look at any

of the evidence about what technical information was provided by Rambus to various DRAM companies in the early 1990s?

A. I don't believe so. That was largely centered on the '898 application.

Q. Do you know whether or not any engineers ever reviewed Rambus' '898 application in the early 1990s?

A. I believe it was made available to JEDEC, either in its application form or as the specifications of patents.

Q. Did anyone ask you to give an opinion about whether a reasonable engineer would have understood from looking at Rambus' international patent application whether Rambus might someday have patents covering features in various JEDEC standard devices?

A. No. I was -- I've been -- it's my understanding that it is substantially the same as the '898 application.

Q. Now, before you gave your opinion about what reasonable engineers would or would not understand, did you make any effort to learn whether there was any evidence that what engineers actually did understand in that time frame about Rambus' patent application?

A. Such as?

Q. Anything -- any documents?

A. Well, I read numerous articles from the time period, you know, trade publications, things in EETimes, and so forth.

Q. Well, let me show you some documents and ask you whether you considered them.

May I approach, Your Honor?

JUDGE McGUIRE: Yes.

BY MR. DETRE:

Q. RX-286-A.

Now, if we blow up the top portion of this with the names, this is identified as being from W. Meyer of Infineon, employee, and this is about a telephone conference, participants Gordon Kelley IBM, Dr. Peisl and Mr. Meyer.

Dr. Peisl was one of the people you spoke to; correct, Professor Jacob?

A. Yes.

And if we go up to the very top, you see the date 4-30-92.

Do you see that, Professor Jacob?

A. Yes, I do.

Q. Okay. And now, if we can go back to that paragraph on Rambus, "Rambus has announced a claim against Samsung for USD 10 million due to the similarity of the SDRAM with the Rambus storage device architecture."

Do you see that?

A. Yes, I do.

Q. Did you consider this information in Exhibit RX-286-A in forming your opinion about the state of mind of a reasonable engineer in the early 1990s?

A. No, I did not.

Q. Well, let me show you another document.

May I approach, Your Honor?

JUDGE McGUIRE: Yes.

BY MR. DETRE:

Q. RX-290.

And these are some notes taken by Mark Kellogg at the JEDEC JC-42.3 meeting in New Orleans, May 7, 1992, it says at the very top.

Do you see that heading?

A. Yes, I do.

Q. And you spoke to Mr. Kellogg; right, in connection with this case?

A. I believe so.

Q. Now, if you could turn to page 3 of that document, there's a heading Siemens, the fourth one down.

Do you see that?

A. Yes.

Q. It says: "Kernel of chip. Similar to Rambus."

Do you see that?

A. Yes, I do.

Q. Were you here for Mr. Kellogg's testimony last Friday?

A. No, I was not.

Q. Are you aware that he testified that this is a reference to the similarity in the fundamental architecture of the SDRAM and a Rambus device?

A. No.

Q. And then after that it says "Patent concerns?" Do you see that?

A. Yes, I do.

Q. Now, you didn't consider this document either in coming up with your opinion about reasonable engineers; is that right?

A. No.

Q. Now, in talking to Mr. Kellogg, did you find him to be a reasonable engineer?

A. Yes. Yes, I did.

Q. Let's look a little bit --

MR. PERRY: Pardon me, Your Honor.

(Pause in the proceedings.)

BY MR. DETRE:

Q. Let me just clarify one point. Mr. Perry has pointed out that due to my inartful phrasing of a question, a double negative, an answer may not have been clear.

A. Oh.

Q. Did you consider this document RX-290 in

A. Yes.

Q. And then it says, a sentence later, "Suspect claims won't hold."

Do you see that?

A. Yes, I do.

Q. And you said your understanding was that the international application was similar or identical in material respects to the '898 application; is that right?

A. Yes. That's what's been related to me.

Q. Now, those notes taken from what the NEC representative said, they don't say that the application is irrelevant, do they?

MR. OLIVER: Objection, Your Honor. I believe the witness has already said he did not believe he considered this document in forming his opinion.

MR. DETRE: Sustained.

BY MR. DETRE:

Q. Have you spoken to Howard Sussman, who was the NEC representative at that time in 1992?

A. Well, I don't know that he was the NEC representative, but I have spoken to Howard Sussman, yes.

Q. In connection with this case; right?

A. In connection with this case.

That's fine.

Do you see, Professor Jacob, that this document is dated June 10, 1993 at the top?

A. Yes, I see that.

Q. And I'll indicate to you that this is a document produced by Mitsubishi.

MR. OLIVER: Excuse me, Your Honor. Before we continue, could we have a foundation to see if this witness has considered this document?

JUDGE McGUIRE: Mr. Detre?

MR. DETRE: Well, I'd like to fTjent?tssE: Yes, . Yes,5

views and interpretations of experts."

And then a little bit below that in paragraph 4: "What are the measures for dealing with this? The buses of the future will not be limited to the Rambus, but we will probably be able to use technological elements that are partially similar to Rambus as described in 3."

Did you consider that, Professor Jacob, when you formulated your opinion about what reasonable engineers would have understood in looking at Rambus' patent application?

A. No, I did not.

Q. Let me show you one more document, RX-2213-A.

And if I may approach, Your Honor?

JUDGE McGUIRE: Yes.

MR. DETRE: And just as a question of timing, Your Honor, I only have about five more minutes on this line of questioning and then I'll be done.

JUDGE McGUIRE: All right. Very good.

BY MR. DETRE:

Q. And this is another Mitsubishi document.

If you could turn to the fifth page, Bates number MEC 001424 at the bottom.

Have you got that page? And I'm not going to ask you to read that page either, but there are parts

of it you can read.

Do you see it says "Rambus" at the top?

A. Yes.

Q. And I'll point you to a translated page shortly, but I just want to see if you see "Rambus" at the top.

A. Yes, I see "Rambus" at the top.

Q. Then in the box below that it says "103."

Do you see that? Near the top?

MR. OLIVER: Objection, Your Honor. Could we establish a foundation and see if this witness has ever seen this document before?

JUDGE McGUIRE: It would be a lot easier, Mr. Detre, if you would just ask that question first and then we could perhaps save some time if he hasn't seen it.

MR. DETRE: Okay. Your Honor, if I could just point him perhaps to the last translated page, because perhaps he would not recognize the Japanese.

JUDGE McGUIRE: Okay. Well, I'll let you do that.

BY MR. DETRE:

Q. If we could go to the very last page of this document, and just looking about halfway down the page where it says -- I'm just going to read one line,

said, hey, latency is a novel, you know, hey, this is a great new idea.

Q. Let me just show you --

A. Not that I recall at least.

Q. -- show you a document and see if it refreshes your recollection about whether you saw anything like that, RX-199.

May I approach, Your Honor?

JUDGE McGUIRE: Go ahead.

BY MR. DETRE:

Q. This is a fax. It's dated December 10, 1991, from Jim Townsend.

And if I could just turn right away to page 2 and just point you to one sentence and ask if it refreshes your recollection about whether you saw this document.

It says at the very top of page 2, "Kalter of IBM said programmable latency was the cleverest item Toshiba ever created."

Do you see that?

A. Yes.

Q. Does that refresh your recollection about whether you actually saw this document or any other about the inventiveness of programmable latency?

read it from this document or if I read it in one of the trial transcripts or deposition transcripts, but that, that sentence certainly looks familiar.

Q. Oh, you saw that one?

Now, as we discussed earlier today, it's your opinion that a reasonable engineer would have understood from looking at the '327 patent's claims that it covered the use of dual-edged clocking in DDR SDRAMs; right?

A. Yes.

Q. Let me show you a document, RX-1214.

May I approach, Your Honor?

JUDGE McGUIRE: Yes.

BY MR. DETRE:

Q. This is apparently an e-mail from Mr. H.J. Oh of Hyundai to Farhad Tabrizi and various other people, with a list of Rambus patents, and if you look at number 22 down on the list -- excuse me -- 23, you see the '327 patent; right?

A. I see something that ends "327." Is that the same number? Is that the same '327 patent?

Q. I'll represent to you that it is.

A. Okay.

Q. And this e-mail is dated July 13, 1998; correct?

A. Yes.

Q. Now, did you interview any of the engineers from Micron, Hynix, Texas Instruments, IBM, Siemens, Mitsubishi, Compaq or VLSI who got this e-mail?

A. Yes, I did.

Q. You spoke to Mr. Rhoden, for example; right?

A. Yes, I did.

Q. He got this e-mail?

A. Well, according to the cc list, yes, he did.

Q. And you spoke to Terry Lee at Micron, for example?

A. Yes.

Q. He's on this e-mail?

A. I spoke to him. I'm looking for his name. Yes, T. Lee.

MR. OLIVER: Objection, Your Honor. To the extent this line of questioning --

JUDGE McGUIRE: Okay. Mr. Detre, it would just save an awful lot of time if you could ask him that right ofpve allll1 M D8x0eftually wthee a savsomthe f time ive hasn't se8x0it Q. Nowm thHe'e aeasiefor protocolng foo the Yollllsoke tfollowSI 8x0itHe es alckor throughoo thtranscriptee.

F foT thReaccoes,nc..

MRDETUIRE: I'eftually gording td ask hiaor hypoo tticalof questi alsed's on thidoctrumees.

BY MR. DETRE:

Q. Now, if these gentlemen who you spoke to and other gentlemen on the list were reasonable engineers, they would have known from looking at the '327 patent that it covered the DDR SDRAM device they were working on; right?

A. Yes.

Q. And you know that that device wasn't actually finally standardized until one year later in August 1999; right?

A. I believe that was when the final standard appeared, yes.

Q. Did you ask any of the engineers who received this e-mail, RX-1214, whether they had voted to standardize the DDR device after knowing that the '327 patent covered it?

A. No, I did not ask them that question.

MR. DETRE: I have no further questions.

JUDGE McGUIRE: Okay. Thank you, Mr. Detre.

It's ten after twelve. Why don't we take a break and convene again after lunch at 1:30.

MR. PERRY: Your Honor, it's up to you obviously. If Mr. Oliver has only a few seconds here, then some of our team can leave.

JUDGE McGUIRE: Oh. Well, sure.

sentence that Mr. Detre asked you about: "Similarly, claims in the '961 application were limited to the device identifier feature."

Do you recall Mr. Detre asking you some questions about that?

A. Yes, I do.

Q. If I could then ask you to locate CX-1504 in front of you, please, one of the thick documents.

A. 1504. I have it.

Q. And Mr. Detre then asked you some questions about the amendment appearing at page 216 within CX-1504.

A. Yes. I'm there.

Q. And again, he pointed out the reference to the '961 application in the upper left-hand corner there and then asked you some questions about the claims, and you said that you recall that, if I recall your testimony correctly, that certain of chose claims did contain references to the Rambus device identifier feature?

A. Yes.

Q. Do you recall that testimony?

A. Yes, I do.

Q. If I could ask you to turn, please, to page 219.

And if I could ask you to look specifically at claim 153 that appears in the bottom of that page and carries over to the top of page 220, and I'd like to ask you what, if any, language in claim 153 pertains to the Rambus device identifier feature.

A. For example, the phrase "wherein each semiconductor device is assigned an identification number based upon its position in the bus."

Q. And if you look above that, claim 152, is there similar language in that claim?

A. Yes, there is. The phrase "wherein the register is an identification register operative to store an identification number for the semiconductor device."

Q. And does that correspond to the device identifier feature contained in the '898 application?

A. Yes. Absolutely.

Q. And if I could then direct your attention to claim number 160, it appears at the bottom of page 221, CX-1504.

A. Yes. I'm there.

Q. And does -- is this one of the claims you analyzed yesterday? Do you recall that?

A. Yes.

Q. Does that claim contain any similar language?

A. No, it does not.

Q. If I could direct your attention to claim 151 appearing on page 218, carries over to the top of page 219.

A. I'm there.

Q. Does that claim contain any language referencing the Rambus device identifier?

A. No, it does not.

Q. If I could ask you to look, please, at claim number 164 that appears on page 223.

A. All right.

Q. I apologize. I'm getting a little bit -- I'm getting ahead of my assistant at the computer.

Claim 164, is there any language in that claim that identifies the Rambus device identifier feature?

A. No, there is not.

Q. And likewise, claim 165 appearing at the same page?

A. No, there is no such language.

Q. Again, just to be certain the record is clear on that, is there any language in claim 165 that relates to the Rambus device identifier feature?

A. Noertalre is not.

Counsel, it's about twenty after twelve. We'll reconvene at twenty until two.

Hearing in recess.

(Whereupon, at 12:16 p.m., a lunch recess was taken.)

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

(1:40 p.m.)

JUDGE McGUIRE: This hearing is now in order. Complaint counsel may call its next witness.

MR. OLIVER: Your Honor, because we were not certain about the length of Professor Jacob's testimony, we don't have any other live witnesses. We're going to proceed with the deposition of Mr. Joel Karp this afternoon.

JUDGE McGUIRE: Okay.

MR. OLIVER: Before we do that, I did promise you a courtesy copy of the demonstratives we used with Professor Jacob.

JUDGE McGUIRE: Oh, yes.

MR. OLIVER: May I approach, Your Honor?

JUDGE McGUIRE: Yes. And I guess your side already has a copy?

MR. STONE: Yes. He already provided them to us, Your Honor.

JUDGE McGUIRE: Okay. Thank you.

MR. WEBER: Good afternoon, Your Honor.

JUDGE McGUIRE: Good afternoon.

MR. WEBER: Let me hand up the hard copy of the video that we're looking at and I'll also hand up the FTC deposition which, when we finish the Infineon

deposition, we'll start with that one.

JUDGE McGUIRE: Okay.

Mr. Stone, where are all your colleagues? They must have found better things to do today.

MR. STONE: I think the excitement of the morning got to them, Your Honor.

MR. WEBER: Your Honor, we stopped at page 90 I believe, was where we got to.

JUDGE McGUIRE: Now, which one are we on?

MR. WEBER: We are on the Infineon one, which would be the January 9.

MR. STONE: And this one page, the one reason we stopped here, Your Honor, is because this one page is impacted I think by the order you issued this morning, and my view is that this one page is an effort to question about the brief without any showing that he had seen the brief before. I think your ruling this morning stands for the proposition that the question on page 90 should not be part of the record.

JUDGE McGUIRE: Well, like I said this morning, unless complaint counsel is able to lay an adequate foundation that Karp was involved in that brief being prepared, then it's hearsay and I'm not going to entertain any inquiries from that deposition.

MR. WEBER: Okay. The question and answer on page 90 starting at line 13 deals with whether or not Mr. Karp agrees with the statement about whether it's a proper definition of an open standard, and I don't think he actually needed the brief to ask the question.

So it's based on Mr. Karp's experience and it's not hearsay because Your Honor has already ruled that this deposition is a party admission.

JUDGE McGUIRE: How does it pertain then to the brief, Mr. Stone?

MR. STONE: Well, Your Honor, my view is, if you wouldn't mind looking at page 90 --

JUDGE McGUIRE: Yes. Which page is that?

MR. STONE: Page 90.

MR. WEBER: Page 90, the question is -- the portion is lines 3 through 21.

JUDGE McGUIRE: Okay.

Well, it does refer to the brief. On the other hand, it's an open question that I don't think has any pertinence to the brief itself, so on that basis I'm going to overrule the objection.

MR. WEBER: Okay. So if we could play that clip, please, which would be clip number 41.

This is again page 90, lines 3 through 21.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: The next excerpt relates to his ITC declaration which I think Your Honor has just ruled on, and this would be page 100 at line 9 and the clip continues to page 102, line 21, so if we could play that, please.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: Next we're going to do two short excerpts together. This would be page 104, lines 6 through 16 and then page 104, line 25 continuing to page 107, line 9.

(Whereupon, the videotape was played for the record in open court.)

MR. STONE: Your Honor, if I can interrupt for a moment.

JUDGE McGUIRE: Cut the tape.

MR. STONE: Your Honor, again, this is just an effort to read the brief for the truth of what's in the brief. It doesn't refresh his recollection. There's no showing it refreshes his recollection.

So I think this is just an effort to get the contents of a brief he hadn't seen before into the record through a question.

JUDGE McGUIRE: Mr. Weber?

MR. WEBER: Your Honor, I think he was shown the brief to -- as either possible impeachment or refreshing recollection over what is meant by the phrase "the intellectual property right." That is the

different subject matter from the same transcript. It's page 131, line 14 through page 133, line 16.

And then we're going to continue on with the next two clips, which are page 139, line 21 through page 141, line 12 and page 142, line 8 through page 143, line 9.

MR. STONE: Your Honor, I have no objection to the substance of the testimony. This goes into how much stock Mr. Karp had at the time in Rambus. I wonder if that's the kind of information that is not entitled to in camera protection. With respect to documents in the case, we have kept that kind of information confidential.

I know different judges have had different views. I don't know if it's come up in this case.

JUDGE McGUIRE: I have no problem with that. I think if that's going to be an area of his personal concern, then perhaps it should be in camera.

And I assume this isn't going to take very long; right?

MR. WEBER: No. We may have an in camera issue later with respect to some Rambus information.

MR. STONE: We do.

JUDGE McGUIRE: Can we go in camera and do both of them at once?

what we're going to have to do is probably stay in the public session until we hit the next in camera thing and then come back to these, and then that's probably the easiest way.

JUDGE McGUIRE: Whatever is the easiest way to do it. So you advise me whenever you're ready to go in in camera.

MR. WEBER: So I think what we'll do is just play page 142, line 8 through 143, line 9, which I don't think has any of this information in it.

JUDGE McGUIRE: Okay.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: Next we're going to have a clip that is on the topic of Mr. Karp's ITC declaration. This is page 150, line 8. It continues to page 151, line 6.

Following that, there's a counter-designation which we actually have an objection to, so I think we'll just play the first clip and then we'll get to the objection.

JUDGE McGUIRE: All right.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: The next excerpt is a

counter-designation starting at page 151, line 17 and it continues through page -- the clip continues through page 152, line 4, and then there's a second clip 152, line 5 through line 12.

We object that the question is a hypothetical and calls for speculation. In fact, the counsel for Rambus actually objected to the question at the time.

JUDGE McGUIRE: Mr. Stone?

MR. STONE: Yes, Your Honor. Counsel for Rambus I think objected to some of the earlier questions on this subject as well, but what this does is try to put in context what he meant in this preceding statement in the declaration that he was asked about because he's then asked, well, if you change the sentence, he's trying to say would you be comfortable with it today. He's trying to explore his current understanding, and I think that's relevant to put in context what it was that was said and meant by this statement in the declaration, so this is offered to clarify the statement that he was just asked about.

JUDGE McGUIRE: Sustained.

MR. WEBER: I think then that that takes us to the bottom of page 153, line 24 and continuing through 154, line 7.

And then there is also another clip 154,

line 12 through 158, line 5.

We do have an objection to one of the answers, but I'll stop the tape when it comes to that part.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: That takes us to page 155, line 21.

There's a question that's asked starting at line 23 and also at the top of page 156 through line 5, and then there's a long answer that we're objecting to as nonresponsive to the question. It starts at page 156, line 6 and actually continues on to the top of page 157.

And then we also have the same objection to the next answer given at page 157, line 11 that Mr. Karp is just engaging in a monologue and not really responding to specific questions.

JUDGE McGUIRE: Let me just go through that and I'll just first read it.

MR. WEBER: Certainly.

JUDGE McGUIRE: We're talking about starting on line 23 at page 155?

MR. WEBER: Yes, that's where the question is starting. And I think he actually rephrases it at the top of the next page, and it's a fairly simple question, but then there's this long answer which we

don't think is responsive to the question.

(Pause in the proceedings.)

JUDGE McGUIRE: And then it goes down through where, Mr. Weber?

MR. WEBER: Your Honor, I think it actually winds up going to the top of page 158 because there's another question at page --

JUDGE McGUIRE: Right, there's a question on page --

MR. WEBER: It's the same objection to both answers.

JUDGE McGUIRE: All right. But the first answer concludes on line 3 at page 157?

MR. WEBER: All right.

JUDGE McGUIRE: I mean, is that correct?

MR. WEBER: Yes.

JUDGE McGUIRE: Then that objection is overruled.

MR. WEBER: Okay. So you want us to play that?

JUDGE McGUIRE: Go ahead.

MR. WEBER: Can we also get a ruling on the next question and answer and play the rest of the tape?

JUDGE McGUIRE: The other one starts on

page 157 at line 4.

MR. WEBER: That's the question, and the answer starts at line 11, yes, Your Honor.

JUDGE McGUIRE: And then it ends on line 5 on page 158.

MR. WEBER: That's correct, Your Honor.

JUDGE McGUIRE: All right. Let me just look at that.

(Pause in the proceedings.)

I'm having trouble understanding the question here. That's probably why the answer is so short.

(Pause in the proceedings.)

MR. WEBER: Your Honor, if it makes things go quickly, we'll be just happy to play the rest of the tape.

JUDGE McGUIRE: All right. That's fine.

MR. WEBER: At this point.

So if we could continue starting at 155, line 23 and we'll continue to the end of this tape, which I think goes through 158, line 5.

JUDGE McGUIRE: Yes.

MR. WEBER: Thank you.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: Your Honor, the next clip there's

no objections to. It's page 159, line 1 continuing through page 161, line 19.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: Let me confer with counsel on the next designation.

JUDGE McGUIRE: Go ahead.

(Pause in the proceedings.)

MR. WEBER: We just saved some time here, Your Honor.

The next clip, though, relates to a document. It's a document that I think has been discussed before. It's JX-17 and it's specifically going to be some questions on pages 7 and 8. I think this is a different version than was marked in the deposition, but I have a copy for Your Honor. I think once you hear the clip, I think it will be clear what's being asked about.

MR. STONE: What are you showing him?

MR. WEBER: This is JX-17, which I think is the -- it was Defendant's Exhibit 25 in the hearing.

And I believe the part that's going to be discussed is pages 7 and 8. We have a copy for counsel as well.

MR. STONE: This is not -- I mean, the Bates

numbers don't match up.

MR. WEBER: Right. Right. I think it was a different version that he was using, but I think it's the same meeting minutes that discussed the --

MR. STONE: I don't know how we -- I can't tell --

JUDGE McGUIRE: I'm a little confused as to what we're doing here, Mr. Weber.

MR. WEBER: We're just hopefully going to make things a little less confusing. Maybe we should just play the clip.

But basically this is talking about a situation that arose over a particular JEDEC meeting involving quad CAS. And there's a particular section of the minutes that is read into the record.

JUDGE McGUIRE: I see. How long is that section?

MR. WEBER: It's very short.

MR. STONE: I don't mind the testimony coming in. I have no objection to the testimony. I just wasn't sure --

JUDGE McGUIRE: I wasn't sure either.

MR. WEBER: The clip starts at page 180, line 9 through page 182, line 25.

JUDGE McGUIRE: Well, I said I have no problem

with just seeing the hard copy, but I'm just not sure where it is or -- it's page 7 of what?

MR. WEBER: I think it's going to be page 7 or 8 of JX-17. Actually I think the discussion starts on page 7. The parts that's quoted in the --

JUDGE McGUIRE: See, I don't know what's JX-17. You haven't marked it.

MR. WEBER: JX-17, it's JEDEC meeting minutes from I believe September of '93.

JUDGE McGUIRE: Okay. I've got that. All right. That's page 7 or 8 then?

MR. WEBER: Page 7 or 8, which is the discussion of this topic involving the quad CAS situation. And part of the minutes are actually read in in the question, so...

JUDGE McGUIRE: Mr. Stone, do you have a preference?

MR. STONE: If they think these are the right minutes, I'm not going to argue that they're not. I can't tell from the testimony if they are or not.

JUDGE McGUIRE: Then let's watch the tape.

MR. STONE: I think it's fine.

MR. WEBER: I've just been informed that CX-57-A is the same version with the exact same Bates numbers, but you know, in the interest of trying to

keep the documents to a minimum, we just put in one version.

MR. STONE: I'm fine.

MR. WEBER: Again, this is page 180, line 9 through page 182, line 25.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: The next item is an excerpt on this same subject and -- but there's a counter-designation that we're objecting to the question.

So I propose playing page 184, line 10 up through page 185, line 15, and the question that we have the objection to and the answer we have the objection to starts at line 17 of page 185 to the top of 186.

We can play up to that part and then you can rule, Your Honor.

JUDGE McGUIRE: All right.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: The next question is in the form of a hypothetical question and we would object as it's hypothetical, calls for speculation. It's the same kind of question that they've objected to when we've asked witnesses in this case.

JUDGE McGUIRE: Mr. Stone, do you want to be heard on that?

MR. STONE: We have objected on that. The objections have generally been overruled. I think consistency would suggest that the objection be overruled here as well.

MR. WEBER: My only point is that this is a hypothetical about something that doesn't even necessarily involve this case directly. It's the TI controversy. It's not the -- if Rambus would have disclosed, what would the but-for world have been like, so I think it's even farther removed from this case.

JUDGE McGUIRE: I think some of these issues, counsel -- I know in respondent's opening statement they talked about the but-for world, and I've allowed some speculation from the other side to address that

here, CX-208, which is the -- I believe it's manual 21-I. And there's going to be some specific questions with parts of that manual in the next few clips, so we're going to try to grab a copy of it and I think this will be -- do you guys need any more copies?

MR. STONE: I'm fine. Go ahead.

MR. WEBER: I think again the questions will be at page 15, which is -- no. Actually on this version it's -- it's page 19 of our version. It's going to be page 15 of the -- again, this is the problem of having two different versions. And then there's also appendix F, I believe the last page, there's questions on that.

And this document in the deposition, just for the context, was referred to as Defendant's Exhibit 48.

So we will play the clip at page 190, line 20 through 192, line 1, and then it also picks up at page 192, line 10 through page 193, line 18.

And continuing along the same topic, page 194, line 10 through page 195, line 20.

And I think we'll also read in page 197, line 21 through 24, which is on the same topic.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: Next we're going to combine two

of clips.

JUDGE McGUIRE: Okay.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: Your Honor, I think we're up to the clip that was potentially in camera.

Does that comport with Mr. Stone on that?

MR. STONE: I agree.

MR. WEBER: Can we agree on what the remaining clips are in camera on this?

MR. STONE: I think it's the ones we held back earlier and then I think it's 236, line 2 through 237, line 3.

MR. WEBER: Just this one clip?

MR. STONE: I don't know that there's any -- it's just the percentage figures for certain license agreements. I don't know that those numbers come up again. I don't think they do, so I think that's all.

MR. WEBER: Okay. We can do it one of two ways. We can continue in public session, finish up this video and then go back to the in camera, or we can go into in camera right now and finish up -- there's actually three clips. They're like less than five minutes total time.

JUDGE McGUIRE: You mean the in camera is less

than five minutes?

So we move at this time for treatment in camera of the testimony you're about to hear.

JUDGE McGUIRE: All right. So noted.

Then let me again advise the court reporter that we are now in the in camera session, and will counsel certify that everyone on their side of the room is certified for access to this in camera treatment.

MR. STONE: Yes, Your Honor.

MR. WEBER: Yes, Your Honor.

(The in camera testimony continued in Volume 29, Part 2, Pages 5727 through 5728, then resumed as follows.)

JUDGE McGUIRE: Okay. Mr. Weber, you may proceed.

MR. WEBER: We're just going to finish up this last part of the clip in public session. It's page 141, line 5 through 12.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: Now we're going to go ahead and page through the transcript to where we were before we left off and we have three short excerpts: page 238, line 13 through 17; page 138, line 25 through page 259, line 9; and page 239, line 19 through page 240, line 4.

This includes designations by both sides.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: Your Honor, next we have a series of clips where we have some objections to their counter-designations.

The first one is page 248, the question at line 19 and the answer at line 24. Our objections are that it is beyond the scope of our designations, it lacks foundation and calls for opinion testimony.

MR. STONE: Your Honor, our response, just briefly -- I won't belabor it -- is that it's directly responsive to the question and answer we just heard.

JUDGE McGUIRE: Let's see. What page were we just on right now?

MR. WEBER: We're on page 248 --

JUDGE McGUIRE: I mean prior to that. The one we just saw.

MR. WEBER: It's eight pages prior to that. I think it's like 240 -- the last one we just read?

JUDGE McGUIRE: Yes.

MR. WEBER: It stops at 240. It starts at 239, line 19.

And basically they counter-designated a question and answer at the top of 240, so I think that

counter-designation goes with what was just read in at the bottom of --

JUDGE McGUIRE: I'll hear the question.

MR. WEBER: Okay. So let's play clip -- the clip at 23 -- 248, line 19 through 249, the answer at 249, line 5, so that's actually the next two clips.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: We have a similar objection to the next clip and also it's vague and ambiguous as being out of context. This is at 249, line 19.

JUDGE McGUIRE: The question is: "And why do you say that?"

MR. WEBER: Right.

JUDGE McGUIRE: And that's on the prior answer that we just heard?

MR. WEBER: Well, not really because there's a series in between the answer, so it's a little unclear what the "that" is, for one thing. We obviously weren't there to object, make a form objection, but in addition to the other objections I mentioned with the prior --

MR. STONE: Well, I didn't -- if counsel thinks we need to read the intervening testimony, we should just read it into the record orally. If he feels we

need that for context.

JUDGE McGUIRE: Why don't you do that because it would otherwise be confusing I think.

MR. WEBER: Well, it's their counter-designation, so if they want to read it --

MR. STONE: Then I will read the question beginning at page 249, line 6 and continuing through the answer at page 249, line 17, the lead-in to the objection.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Again, we would object to that as being -- first of all, they didn't counter-designate this, so he's adding this today, but if I had to on the fly object, then I would make the same objections that Rambus' attorney did as being an incomplete hypothetical, calls for expert opinion, calls for a legal conclusion.

JUDGE McGUIRE: Mr. Stone, what was your opposition to the objection?

MR. STONE: Your Honor, the point of that was that this clarifies and fills out the content of what he was earlier asked in the preceding testimony about whether he thought the JEDEC standards would or would not have required disclosure, and now he's being asked

to explain why it would or would not have covered or required the disclosure. This is just his explaining his reasoning and I think it gives context and meaning to --

JUDGE McGUIRE: I'll hear the question again.

MR. WEBER: I think he just read it in, so you heard it.

JUDGE McGUIRE: Right. I'll hear the answer then.

MR. WEBER: I think you read in the answer, Greg?

MR. STONE: I read in the part that you said made it misleading with respect to what begins at page 249, line 19. I think that's where we are now.

MR. WEBER: We have the clip starting at 249, line 19. The reason we didn't have what Mr. Stone read in was because it wasn't designated, just so the record is clear.

JUDGE McGUIRE: I understand.

MR. WEBER: So we can play the clip of 249, line 19 through 250, line 2.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: And finally we have one other clip that we have an objection to. It starts -- the

question is at page 251, line 10, the answer then at 251, line 16.

And we believe this question calls for a legal conclusion. He's asking whether Rambus is observing the JEDEC policy of nondiscriminatory and fair and reasonable rates, and so we think this calls for opinion testimony from a lay witness.

MR. STONE: I agree, Your Honor, that the question as framed asks for his opinion. I think he gives his understanding. I would offer it only as evidence of his understanding. I would not argue --

JUDGE McGUIRE: I will hear it as to his understanding, in that context only.

MR. WEBER: Okay. Therefore, we will play 251, lines 10 through 12 and 201, lines 16 through 18.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: Next we have one short clip that they've counter-designated and we have no objection to, page 252, line 5 through 24.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: Your Honor, the next series of clips relate to questions and answers about a claim in a patent application and also matching up to one of the

JEDEC presentations. This relates to on-chip PLL.

I have a copy of one of the documents that I believe was used which was -- has been marked as CX-1459. But I think you could probably follow along just from reading the --

JUDGE McGUIRE: Yeah, I'll do that.

MR. WEBER: So this is going to be -- let me just read in the pages -- 270, line 24 through 272, line 19 and then page 274, line 15 through 275, line 11.

And we might as well finish this off with 277, line 1 through 5; 277, line 11 through 21; and then 280, line 7 through 25; and finally, 282, lines 23 through 24.

And this concludes the excerpts from this deposition.

JUDGE McGUIRE: All right. Thank you.

(Whereupon, the videotape was played for the record in open court.)

MR. WEBER: Your Honor, that concludes the Infineon video from Mr. Karp's deposition. We're prepared to continue with a live read-in of the FTC deposition, but perhaps now would be a good time for a short break.

JUDGE McGUIRE: Yes. Let's take a break for

ten minutes. We'll come back.

(Recess)

the record in open court.)

MR. WEBER: And continuing at the bottom of page 9, line 24 through page 10, line 11.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: And continuing at the bottom of page 10 starting at line 20 through page 11, line 17.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Continuing to page 14, lines 4 through 17.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Page 15, lines 10 through 13.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Okay. Page 20, line 11 through 21, line 8.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Continuing at page 22, line 8 through line 23.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Page 23, lines 4 through 15.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Page 31, lines 3 through 11.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Okay. Page 31, line 17 through page 32, line 15.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Okay. Your Honor, we're going to try and pull up the next exhibit on the screen, but we're asking about the December 1991 JEDEC meeting minutes, and it's at page 41 of the transcript and I think it's section 6.2 of those minutes. I don't know which page number. I don't happen to have a page number here, if we can pull that up on the screen.

And that's what this question is about, so we'll go to page 41, lines 16 through 23.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Next we have a reference to CX-2955, if we could pull that document on the screen, and we'll be reading from page 44, line 10 through 45, line 10. And there's a specific document that's introduced at this point.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Now we're continuing with page 47, line 24 through page 48, line 7.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Next we have a counter-designation which we have an objection to. It's page 50, line 4 through 12.

He's basically asked the question and he gives a nonresponsive answer talking about Colin Powell and Saddam Hussein. We just don't think it should be entered into evidence. It's not responsive to any of our designations either.

JUDGE McGUIRE: Sustained.

MR. WEBER: Next we're at page 58, line 13.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Page 60, line 16 through 25.

(Whereupon, the transcript cites were read into the record in open court.)

MR. STONE: Your Honor, unless I renew my objection here, to save time, Mr. Weber doesn't need to note if I objected to a question.

JUDGE McGUIRE: Right. You don't need to state

the objections.

MR. WEBER: That's fine. It will go faster. I appreciate it.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Continuing with page 61, lines 13 through 18.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Page 62, line 16 through page 63, line 25.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: The next excerpt is page 70, line 18 through 71, line 9.

There's an objection from counsel. I don't know if you're still preserving this objection or not.

JUDGE McGUIRE: Do you want to play his role or is it necessary?

MR. STONE: If I need to raise my objections, I will.

JUDGE McGUIRE: Otherwise, we're just going to skip through them.

MR. STONE: We can just go forward.

MR. WEBER: Okay. So starting at page 70,

line 18 continuing through 71, line 9.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: The next excerpt is page 78, line 5 -- oh, this is actually -- counsel reminded me. This is actually a license agreement that I think they want in camera this testimony.

MR. STONE: Yes. And I wonder if it makes sense if we just let Your Honor -- maybe we can just let Your Honor read 78, line 5 through 80, line 15 as opposed to us reading it to you, then you can read it to yourself.

JUDGE McGUIRE: That's a good idea. I'll just take this time right now and read that.

MR. STONE: Then we don't need to exclude anybody.

MR. WEBER: We'll be happy to proceed on that basis, Your Honor.

JUDGE McGUIRE: All right. Let me read this.

MR. WEBER: We can skip ahead, but the next section --

JUDGE McGUIRE: Hold it. I'm going to read it right now.

MR. WEBER: I'm sorry. I'm sorry. I apologize.

(Pause in the proceedings.)

JUDGE McGUIRE: Okay. Then that ends on page 80 at line 15?

MR. WEBER: Yes, Your Honor.

JUDGE McGUIRE: Okay. I read it.

MR. WEBER: Okay. We're going to continue on to page 85, line 7 through 22, but if we could pull up JX-31 at page 68, which is attachment U, that's what's being discussed here. It was a Samsung presentation at I believe the March 1996 JEDEC meeting.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Then we move to page 86, line 21 through page 87, line 13.

Is this something that you want in camera? It's referring to that agreement again.

MR. STONE: I guess we'd ask you to read this as well, Your Honor.

JUDGE McGUIRE: All right. Page 87 --

MR. STONE: 86, line 21 through 87 --

JUDGE McGUIRE: 87, line 13.

MR. WEBER: Yes. It references the provision in that contract.

JUDGE McGUIRE: Okay. I'll read it.

(Pause in the proceedings.)

Okay.

MR. WEBER: Question at page 87, line 23 through page 88, line 8.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: Next we have a counter-designation by respondent that starts at page 91, line 9, and we have an objection to a question that's at page 92, line 13, which we think calls for speculation. I'll read it in up to that point, Your Honor, if that's all right.

JUDGE McGUIRE: All right. Go ahead.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: We're objecting to the reading in of the next two questions and answers on the grounds that it calls for speculation. This would basically be page 92, line 13 through 24.

JUDGE McGUIRE: Mr. Stone, any response to the objection?

MR. STONE: No, Your Honor. I think you can read it and decide either way.

through 96, line 1.

(Whereupon, the transcript cites were read into the record in open court.)

MR. WEBER: And now, the next excerpt talks about a specific document. Your Honor, this is a very long document, so I don't know what your schedule is today, but this will take a while and we could either finish up with this document or continue with it the next time, whatever Your Honor's convenience is.

It's a -- it's actually -- we're going to be talking about a very thick notebook that Mr. Karp kept along with his agreements.

JUDGE McGUIRE: How much more time do you think it would take either if we do it today or on into other points in time to conclude this deposition?

MR. WEBER: I don't know. It's been moving fairly quickly, so -- I don't have as good a sense of this as the video because of the video being timed. I think we're probably looking at at least another hour to complete this, just a rough ballpark, but I -- you know, we haven't actually practiced.

JUDGE McGUIRE: Mr. Stone, do you have any preference? Do you want to get out early today or do you want to go ahead and try and finish this up today?

and Your Honor, I'm fine. I think it's probably at least an hour. I'm just -- it's hard to estimate because I haven't timed it either, but I suspect -- this was a full-day deposition and I would guess a significant percentage is designated along the way, so we're probably looking at more than an hour.

JUDGE McGUIRE: Mr. Oliver?

MR. OLIVER: I was just going to indicate, for what it's worth, that I expect that the witness tomorrow will not be a full-day witness.

JUDGE McGUIRE: Why don't we carry over tomorrow and finish this up and maybe we can get out today somewhat early and then we'll complete this deposition reading tomorrow.

MR. WEBER: Okay.

JUDGE McGUIRE: Okay?

MR. STONE: Thank you, Your Honor.

JUDGE McGUIRE: You both have some hard copy up here that I'm going to ask that you collect.

Should I just go ahead and keep the transcript up here that we're working from?

MR. OLIVER: That would be fine, Your Honor.

JUDGE McGUIRE: Then you all can grab your other hard copy.

And then we'll convene tomorrow morning at

9:30.

Anything else we need to discuss before we adjourn today?

MR. STONE: I don't believe so, Your Honor.

JUDGE McGUIRE: Okay. Very good. We'll see you in the morning.

MR. STONE: Thank you.

(Time noted: 4:03 p.m.)

C E R T I F I C A T I O N O F R E P O R T E R

DOCKET NUMBER: 9302

CASE TITLE: RAMBUS, INC.

DATE: June 17, 2003

I HEREBY CERTIFY that the transcript contained herein is a full and accurate transcript of the notes taken by me at the hearing on the above cause before the FEDERAL TRADE COMMISSION to the best of my knowledge and belief.

DATED: June 17, 2003

JOSETT F. HALL, RMR-CRR

C E R T I F I C A T I O N O F P R O O F R E A D E R

I HEREBY CERTIFY that I proofread the transcript for accuracy in spelling, hyphenation, punctuation and format.

DIANE QUADE