PUBLIC

UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION

In the Matter of	)	
	)	
Rambus Incorporated,	)	**DOCKET NO. 9302**
a corporation.	)	
	)	

ANSWER OF RESPONDENT RAMBUS INCORPORATED

Introduction

The Complaint in this action asserts that Respondent Rambus, Inc. ("Rambus") engaged in a pattern of conduct "that served to deceive an industry-wide standard-setting organization." According to the Federal Trade Commission's (FTC's) press release that accompanied the Complaint, the "message" contained in the FTC's Complaint "is this: if you are going to take part in a standards process, be mindful to abide by the ground rules and to participate in good faith."

Putting aside for the moment the question of whether Section 5 of the Federal Trade Commission Act (FTC Act) or any other antitrust law reaches such allegations, the evidence in this case will show that Rambus at all times acted in accordance with JEDEC's written rules for its members. *The Complaint does not allege otherwise.* Instead, the Complaint alleges that the purported requirement that Rambus violated – to disclose a broad range of patent applications – was "commonly known" to JEDEC members as a result of *oral* statements by JEDEC committee chairs during committee meetings. Complaint, ¶ 21.

The evidence does not and will not offer any substantial support for this allegation, which is based almost entirely on the tenuous recollections of financially interested witnesses. The evidence will instead show that the disclosure requirement that was shown to JEDEC members at the beginning of committee meetings and on JEDEC ballots *throughout* Rambus's membership in JEDEC required disclosure only of *patents*, not patent *applications*, and only of patents that contained claims covering products adhering to a proposed JEDEC standard.

The evidence will also show that Rambus did not have, until long after it left JEDEC, any undisclosed patent or patent application that contained claims reading on products adhering to a proposed JEDEC standard. Again, *the Complaint does not allege otherwise*. Instead, the Complaint alleges that some Rambus employees believed (erroneously) that Rambus did have such pending applications, and it alleges that Rambus hoped to *file* such applications in the future. Neither belief nor hope, however, triggers any disclosure duty even under the broad disclosure requirements alleged in the Complaint.

Moreover, even if -- as is not the case -- Rambus had failed to comply fully with its alleged disclosure obligations to JEDEC, any such failure had no adverse impact on the market and no anticompetitive effect. JEDEC did not rely on any alleged silence by Rambus. DRAM manufacturers used Rambus innovations not because of any standardization work by JEDEC, but because of the cost/performance advantages of those innovations, for which no reasonable alternatives exist and which at least one DRAM manufacturer expressly recognized to be "revolutionary". Indeed, JEDEC is continuing to this day to use Rambus innovations in newly proposed standards, including a new proposed standard that it calls DDR II, because there are no viable alternatives to those innovations. This lack of causation/reliance/market impact is true no matter which of JEDEC's shifting characterizations of its disclosure rules one accepts.

In sum, Rambus did not violate any JEDEC disclosure policies and did not violate Section 5 or any other law. For these reasons, and for the reasons set out below, the Complaint has no merit and should be dismissed.

Response to the Specific Allegations in the Complaint

Pursuant to Rule 3.12 of the Commission's Rules of Practice, 16 C.F.R. § 3.12, Rambus hereby answers the complaint in the above-captioned matter.

Except to the extent specifically admitted herein, Rambus denies each and every allegation contained in plaintiff's complaint.

1. Through this action, the Commission challenges a pattern of anticompetitive acts and practices, undertaken by Rambus over the course of the past decade, and continuing even today, whereby Rambus, through deliberate and intentional means, has illegally monopolized, attempted to monopolize, or otherwise engaged in unfair methods of competition in certain markets relating to technological features necessary for the design and manufacture of a common form of digital computer memory, known as dynamic random access memory, or "DRAM."

   ANSWER: Rambus admits that dynamic random access memory, or "DRAM," is a common form of digital computer memory. Otherwise, the allegations in Paragraph 1 of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations of Paragraph 1 of the Complaint.

2. Rambus's anticompetitive scheme involved participating in the work of an industry standard-setting organization, known as JEDEC, without making it known to JEDEC or to its members that Rambus was actively working to develop, and did in fact possess, a patent and several pending patent applications that involved specific technologies proposed for and ultimately adopted in the relevant standards. By concealing this information — in violation of JEDEC's own operating rules and procedures — and through other bad-faith, deceptive conduct, Rambus purposefully sought to and did convey to JEDEC the materially false and misleading impression that it possessed no relevant intellectual property rights. Rambus's anticompetitive scheme further entailed perfecting its patent rights over these same technologies and then, once the standards had become widely adopted within the DRAM industry, enforcing such patents worldwide against companies manufacturing memory products in compliance with the standards.

   ANSWER: Rambus avers that it first attended a meeting of JEDEC subcommittee JC-42.3 as a guest in December 1991 and attended several additional JC-42.3 meetings between 1992 and December 1995. Rambus further avers that it sought and continues to seek patent protection for its inventions as permitted by the patent laws. Otherwise, Rambus denies the allegations in Paragraph 2 of the Complaint.

3. The pattern of anticompetitive conduct by Rambus that is at issue in this action has materially caused or threatened to cause substantial harm to competition, and will in the future materially cause or threaten to cause further substantial injury to competition and to consumers, absent the issuance of appropriate relief in the manner set forth below.

ANSWER: The allegations of Paragraph 3 of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations of Paragraph 3 of the Complaint.

4. Rambus is a public corporation organized, existing, and doing business under and by virtue of the laws of the State of Delaware, with its office and principal place of business located at 9440 El Camino Real, Los Altos, California 94022.

ANSWER: Rambus admits that it is a corporation incorporated and existing under the laws of Delaware and that its principal place of business is Los Altos, California. Rambus denies that the street address of this office is 9440 El Camino Real and avers that its actual address is 4440 El Camino Real.

5. Rambus designs, develops, licenses, and markets high speed chip connection technology to enhance the performance of computers, consumer electronics, and communications systems. The company licenses semiconductor companies to manufacture and sell memory and logic integrated circuits incorporating Rambus chip-connection technology and markets its solutions to systems companies to encourage them to design this technology into their products. For the fiscal year that ended on September 30, 2001, Rambus reported revenues of approximately $117 million.

ANSWER: Rambus admits that it designs, develops, licenses and markets, among other things, high-speed chip-connection technology intended, among other things, to enhance the performance of computers, consumer electronics, and communications systems. Rambus admits that, for the fiscal year that ended on September 30, 2001, it reported revenues of approximately $117 million. Otherwise, Rambus denies the allegations in Paragraph 5 of the Complaint.

6. Rambus is, and at all relevant times has been, a corporation as "corporation" is defined by Section 4 of the Federal Trade Commission Act, 15 U.S.C. § 44; and at all times relevant herein, Rambus has been, and is now, engaged in commerce as "commerce" is defined in the same provision.

ANSWER: Rambus admits the allegations in Paragraph 6 of the Complaint.

7. Within the array of components that together comprise a typical computer, the computer's "memory" functions to store digitally recorded information such that it is available to be accessed when needed by the central processing unit ("CPU"). Computer memory is produced in the form of semiconductor "chips," which are connected with other computer components — such as the CPU and the chipset — via a collection of circuit lines, or a "bus," that routes electronic signals and, in this way, communicates commands and transports data.

ANSWER: Rambus avers that the meaning of "typical" is unclear as used in Paragraph 7 of the Complaint; that the descriptions in the second sentence of this paragraph are not universally accurate; and that the meaning of the claim term "bus" as used in the claims of several Rambus patents is the subject of ongoing litigation in several Federal District Courts and the United States Court of Appeals for the Federal Circuit. Accordingly,

Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 7 of the Complaint and therefore denies those allegations.

8. DRAM is the most common form of computer memory in use today. Another form of memory is known as static random access memory, or "SRAM." DRAM and SRAM differ principally in the following ways: SRAM, unlike DRAM, is able to continuously hold information while power is being supplied to memory. With DRAM, on the other hand, the electronic charges that serve to hold the stored information in place dissipate over time, causing information to "leak" out of memory. To counteract this phenomenon, DRAM memory chips must be constantly "refreshed" with new electronic pulses. DRAM and SRAM also differ in that the latter generally is both faster and more expensive.

ANSWER: Rambus avers that the meanings of terms used in this Paragraph, including "most common," "DRAM," "SRAM," "leak" and "refreshed" differ depending on the context in which they are used. Accordingly, Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 8 of the Complaint and therefore denies those allegations.

9. DRAM is an essential input into a variety of downstream products, including a wide variety of computers, such as personal computers, work stations, and servers, as well as various other types of electronic devices, such as fax machines, printers, digital video recorders, video game equipment, and personal digital assistants. Total sales of DRAM in the United States exceeded $12 billion in 2000, and for the same year worldwide DRAM sales exceeded $28 billion.

ANSWER: Rambus admits that memory is important to many consumer products. Rambus is otherwise without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 9 of the Complaint and therefore denies those allegations.

10. Over the years, a series of different architectures for designing DRAM chips has been introduced. As in most other aspects of the computer industry, over time older-generation designs have given way to newer-generation designs or to improvements on existing architectures. A driving force behind this continual process of evolution in DRAM design is the quest for improved computer performance. In particular, as the performance of other computer components and subsystems is enhanced, the marketplace demands equivalent improvements in the speed and other performance characteristics of computer memory.

ANSWER: Rambus admits that different architectures for DRAM chips have been either proposed and/or implemented. Rambus is otherwise without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 10 of the Complaint, and therefore denies those allegations.

11. During the late 1980s and early 1990s, developments and improvements in the performance of CPUs and other computer components were moving forward at a rapid

clip. It was perceived, however, that developments in DRAM technology had not kept pace, and that performance constraints inherent in the available DRAM architectures were hindering technological progress in the computer industry, creating a virtual "memory bottleneck."

ANSWER: Rambus admits that there were developments and improvements in the performance of CPUs and other computer components in the late 1980s and early 1990s, and that Rambus's founders and initial inventors, Dr. Michael Farmwald and Dr. Mark Horowitz, recognized that there would be a "memory bottleneck." Otherwise, Rambus denies the allegations in Paragraph 11 of the Complaint.

12. It was in this environment that "synchronous" DRAM was developed. The essential innovation underlying synchronous DRAM — as compared to the prior generation of DRAM, also known as "asynchronous" DRAM — was to link memory functions to a "system clock," allowing for more rapid sequencing of communications between the CPU and memory, thereby improving overall system performance. The system clock, in effect, consists of a continuous series of evenly spaced electronic pulses. The period of time (measured in nanoseconds) elapsing between the initiation of two succeeding pulses is referred to as a single "clock cycle."

ANSWER: Rambus admits that an essential innovation underlying the development of synchronous DRAM devices was to link memory functions to a "system clock," as described in detail in Rambus's patent application serial number 07/510,898 filed April 18, 1990 ("the '898 application"). Otherwise, Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 12 of the Complaint and therefore denies those allegations.

13. The introduction of synchronous DRAM offered a potentially promising solution to the memory bottleneck. Yet the success of synchronous DRAM depended importantly upon the ability of the computer industry to adopt standards governing the design and implementation of synchronous DRAM.

ANSWER: Rambus denies the allegations in Paragraph 13 of the Complaint.

14. The JEDEC Solid State Technology Association ("JEDEC") — originally known as the Joint Electron Device Engineering Council, from which the acronym JEDEC derives — is one of several standard-setting bodies affiliated with the Electronic Industries Alliance ("EIA"), a trade association representing all segments of the electronics industry. As explained in JEDEC's Manual of Organization and Procedure (hereinafter, the "JEDEC Manual"), the organization's primary purpose and function is to "promote the development and standardization of terms, definitions, product characterization, test methods, manufacturing support functions and mechanical standards for solid state products."

ANSWER: Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in the first sentence of Paragraph 14 of the Complaint and therefore denies those allegations. Rambus admits that the document entitled JEDEC

Manual of Organization and Procedure JEP21-I (appropriately called the "JEDEC Chairman's Manual," not *the* "JEDEC Manual," as alleged in the Complaint) dated October 1993 and, upon information and belief, distributed contemporaneously to committee and subcommittee Chairmen but not to JEDEC members and not to Rambus, states in part that "JEDEC's function is to promote the development and standardization of terms, definitions, product characterization, test methods, manufacturing support functions and mechanical standards for solid state products." Otherwise, Rambus denies the allegations in the second sentence of Paragraph 14 of the Complaint.

15. According to the JEDEC Manual, membership in JEDEC is freely available to "[a]ny company, organization, or individual conducting business in the USA that ... manufactures electronic equipment or electronics-related products, or provides electronics or electronics-related services." To become a JEDEC member, an eligible company need only submit an application, pay membership fees, and agree to abide by JEDEC's rules. JEDEC members, currently numbering in excess of 200, include many of the world's top designers and manufacturers of semiconductors and related products, as well as many of the largest purchasers of such products.

ANSWER: Rambus admits that the version of the JEDEC Chairman's Manual dated October 1993 states a single criterion for membership eligibility: "[a]ny company, organization, or individual conducting business in the USA that itself or through a related entity manufactures electronic equipment or electronics-related products, or provides electronics or electronics-related services, shall be eligible for membership." Rambus has not attended a JEDEC meeting since December 1995 and is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 15 of the Complaint and therefore denies those allegations.

16. JEDEC's internal structure consists of a Board of Directors (formerly known as the JEDEC "Council") and numerous operational committees, subcommittees, and task groups. Standards typically are proposed, evaluated, and formalized at the committee or subcommittee level and then presented for approval to the Board of Directors, which has final authority to approve or disapprove all proposed standards.

ANSWER: Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 16 of the Complaint and therefore denies those allegations.

17. At all times relevant herein, JEDEC has steadfastly maintained a commitment to promoting free competition within the semiconductor industry. Thus, JEDEC has insisted that its members abide by all applicable laws, including but not limited to laws prohibiting anticompetitive conduct.

ANSWER: Rambus denies the allegations of Paragraph 17 of the Complaint.

18. The JEDEC Manual provides that all JEDEC meetings "shall comply with the current edition of EIA Legal Guides." These Legal Guides — which are explicitly "incorporated ... by reference" into JEDEC's own governing rules, and currently are

posted on JEDEC's own website under the heading "Manuals" — provide that standardization programs must be "conducted under strict policies designed to promote and stimulate our free enterprise system and to make sure that laws for maintaining and preserving this system are vigorously followed."

ANSWER: Rambus has not attended a JEDEC meeting since December 1995 and is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 18 of the Complaint and therefore denies those allegations.

19. The EIA/JEDEC Legal Guides establish a "basic rule" that standardization programs conducted by the organization "shall not be proposed for or indirectly result in ... restricting competition, giving a competitive advantage to any manufacturer, [or] excluding competitors from the market."

ANSWER: Rambus has not attended a JEDEC meeting since December 1995 and is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 19 of the Complaint and therefore denies those allegations.

20. Consistent with its commitment to promoting unfettered competition, at all times relevant herein JEDEC also has maintained a commitment to avoid, where possible, the incorporation of patented technologies into its published standards, or at a minimum to ensure that such technologies, if incorporated, will be available to be licensed on royalty-free or otherwise reasonable and non-discriminatory terms. Toward this end, JEDEC has implemented procedures designed to ensure that members disclose any patents, or pending patent applications, involving the standard-setting work being undertaken by the organization.

ANSWER: Rambus denies the allegations of Paragraph 20 of the Complaint. In particular, Rambus denies that a standard-setting body that refuses to incorporate patented technology in its standards is acting to "promot[e] unfettered competition." Instead, as the FTC recognized in bringing an enforcement action against the American Society of Sanitary Engineering, such a policy is anticompetitive, serves to exclude "innovative product[s]" from the market, and constitutes a concerted refusal to deal and unlawful combination on the part of the association's members. See In the Matter of American Society of Sanitary Engineering, 106 F.T.C. 324 (1985).

21. At all times relevant herein, meetings of the pertinent JEDEC subcommittee routinely were opened with a statement by the chairperson underscoring the existence of such disclosure obligations. This practice is in conformity with requirements set forth in the JEDEC Manual, the current edition of which provides:

> "The chairperson of any JEDEC committee [expressly defined to include, among other things, subcommittees] must call to the attention of all those present the requirements contained in EIA Legal Guides, and the obligation of all participants to inform the meeting of any knowledge they may have of any patents, or

> pending patents, that might be involved in the work they are undertaking."

Although the above provision was first added to the JEDEC Manual in October 1993, the existence and scope of these disclosure obligations were commonly known within JEDEC before that time, and indeed throughout the entirety of Rambus's involvement in the organization, from late 1991 through mid-1996.

ANSWER: Rambus attended its last JEDEC meeting in December 1995 and is without knowledge or information sufficient to form a belief as to the truth of the allegations in the first sentence of Paragraph 21 of the Complaint and therefore denies those allegations. Rambus admits that the version of the JEDEC Chairman's Manual dated October 1993 included the language (excluding the bracketed material) quoted in the second sentence of Paragraph 21 of the Complaint. Rambus avers that, during the time Rambus attended JEDEC JC-42.3 meetings, the quoted language was not read, shown, or reflected in the minutes. Instead, the following language was shown at each meeting and attached to the minutes of most meetings:

> "No program of standardization shall refer to a product on which there is a known patent unless all the technical information covered by the patent is known to the Formulating committee."

Rambus further avers that the JC42 Members' Manual dated September, 1994, which was disseminated to JC-42.3 members, states in Section 4.1, entitled "First Presentation": "All first presentations must be accompanied by written handouts for all companies present giving complete details of the material being presented. In addition, the presenter must reveal any known or expected patents, *within his company*, on the material presented." (Emphasis in original.) Rambus further avers that the voting ballots distributed during the time Rambus attended JEDEC JC-42.3 meetings contained the following language: "If anyone receiving this ballot is aware of patents involving this ballot, please alert the Committee accordingly during your voting response." Rambus further avers that it was never a presenter at any JEDEC meeting; and that its employees were never chairmen of any JEDEC committee or subcommittee. Otherwise, Rambus denies the allegations of Paragraph 21 of the Complaint.

22. While JEDEC does not altogether prohibit the use of patented items in the standards that it promulgates, the JEDEC Manual does mandate that the use of such items "be considered with great care." Indeed, consistent with procedures and practices followed within JEDEC throughout the relevant time period, the JEDEC Manual, at least since October 1993, has required that no standard be drafted to include "patented items" — or "items and processes for which a patent has been applied" — absent both

(1) a well-supported technical justification for inclusion of the patented item; and

(2) express written assurance from the parent holder that a license to the patented technology will be made available either "without compensation" or under

"reasonable terms and conditions that are demonstrably free of any unfair discrimination."

ANSWER: Rambus attended its last JEDEC meeting in December 1995 and is without knowledge or information sufficient to form a belief as to the truth of the allegations in the first sentence of Paragraph 22 of the Complaint and therefore denies those allegations. Rambus avers that the version of the Chairman's Manual dated October 1993 contained the following language: "JEDEC standards and publications are adopted without regard to whether or not their adoption may involve patents or articles, materials, or processes." Otherwise, Rambus denies the allegations in Paragraph 22 of the Complaint.

23. The JEDEC Manual, at least since October 1993, has expressly provided that the disclosure and licensing obligations discussed above apply "with equal force" when JEDEC members, subsequent to the adoption of a standard, discover new information about existing patent rights — or otherwise obtain new patent rights -- involving that standard. In such situations, the JEDEC member must make the same disclosures and provide the same assurances as would be required if the member knew of such patent rights prior to adoption of the relevant standard.

ANSWER: Rambus denies that the version of the Chairman's Manual dated October 1993 refers to "patent rights" as alleged in Paragraph 23 of the Complaint. Rambus avers that the quoted portion of the Chairman's Manual refers only to "patents" and contains the following language: "By its terms, the EIA Patent Policy applies with equal force to situations involving: 1) the discovery of patents that may be required for use of a standard subsequent to its adoption, and 2) the initial issuance of a patent after the adoption of a standard." Otherwise, Rambus denies the allegations in Paragraph 23 of the Complaint.

24. Fairly interpreted, the policies, procedures, and practices existing within JEDEC throughout all times relevant herein imposed upon JEDEC members certain basic duties with regard to the disclosure of relevant patent-related information and the licensing of relevant patent rights:

a. First, to the extent any JEDEC member knew or believed that it possessed patents or pending patent applications that might involve the standard-setting work that JEDEC was undertaking, the member was required to disclose the existence of the relevant patents or patent applications and to identify the aspect of JEDEC's work to which they related.

b. Second, in the event that technologies covered by a member's known patents or patent applications were proposed for inclusion in a JEDEC standard, the member was required to state whether the technology would be made available either "without compensation" or under "reasonable terms and conditions that are demonstrably free of any unfair discrimination." Absent the member's agreement to one of these two conditions, the JEDEC rules would not allow the technology to be incorporated into a proposed standard.

ANSWER: Rambus denies the allegations in Paragraph 24 of the Complaint, except that Rambus admits that during the time it attended JEDEC JC-42.3 meetings, the JEDEC ballots distributed to members contained the following language: "If anyone receiving this ballot is aware of patents involving this ballot, please alert the Committee accordingly during your voting response." Rambus avers that the current JEDEC ballot contains the following language: "PATENTS: **If anyone receiving this ballot is aware of patents involving this ballot, please alert the committee accordingly during your voting response.** MANDATORY: **If the above patent box is checked, the corresponding patent number must be referenced here.**" (Emphasis in original.)

25. The JEDEC committee responsible for overseeing the development of standards relating to memory devices is known as the JC-42 Committee on Solid State Memories ("JC-42"), which has several subcommittees, one of which is particularly relevant for purposes of the instant complaint: the JC-42.3 Subcommittee on RAM Devices ("JC-42.3").

ANSWER: Rambus admits that during the time it attended JEDEC JC-42.3 meetings, the JEDEC committee responsible for overseeing the development of standards relating to memory devices was the JC-42 Committee on Solid State Memories, which had a subcommittee called the JC-42.3 Subcommittee on RAM Devices. Otherwise, Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 25 of the Complaint and therefore denies those allegations.

26. Beginning in or around 1990, JC-42.3 commenced work on standards relating to the design and architecture of synchronous DRAM, referred to within JC-42.3 as "SDRAM." JEDEC members involved in the SDRAM-related work of JC-42.3 have over time included virtually all leading memory designers, manufacturers, and users, whether based in the U.S. or abroad.

ANSWER: Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 26 of the Complaint and therefore denies those allegations. Rambus further denies that the term "synchronous DRAM" is equivalent for all purposes with the term "SDRAM," as the latter term is used in the context of JEDEC standards.

27. During the 1990s, JEDEC issued several SDRAM related standards, the first of which was published in November 1993 and was identified as Release 4 of the 21-C Standard. Subsequent releases of the 21-C Standard followed after that, only small portions of which related to SDRAM, as opposed to other memory-related technologies. In August 1999, however, JEDEC published a substantially augmented SDRAM standard Release 9 of the 21-C Standard --- which introduced a second generation of SDRAM. This second-generation standard became known as "double data rate," or "DDR," SDRAM.

ANSWER: Rambus denies that the JEDEC DDR SDRAM standard is a "second generation SDRAM standard," as alleged in Paragraph 27. Rambus admits that portions of the JEDEC standard commonly known as "SDRAM" were first included in the compendium of computer standards known collectively as JEDEC Standard 21-C,

Release 4, dated November 1993. Rambus avers that JEDEC announced in a press release dated May 8, 1998, more than two years after Rambus attended its last JEDEC meeting, that: "the JEDEC JC-42.3 Memory Committee approved a comprehensive set of ballots completing the definition of the Double Data Rate (DDR) SDRAM/SGRAM family of memory products"; and that the JEDEC DDR SDRAM standard was published as a separate specification (known as JESD79) in June 2000, four and a half years after Rambus attended its last JEDEC meeting. Rambus further avers that JEDEC meeting minutes and other records reflect that the first proposal for the DDR SDRAM standard was presented by Fujitsu at a JEDEC JC-42.3 meeting in December 1996, one year after Rambus attended its last JEDEC meeting. Rambus further avers that the first ballot adopting any aspect of the JEDEC DDR SDRAM standard occurred in June 1997, a year and a half after Rambus attended its last JEDEC meeting. Otherwise, Rambus denies the allegations in Paragraph 27 of the Complaint.

28. Although the second-generation SDRAM standard was not issued until 1999, the work that culminated in that standard commenced, at the very latest, shortly after the first-generation SDRAM standard was adopted in 1993. Indeed, it may have commenced even earlier than that, inasmuch as at least one of the technological features initially considered (but ultimately rejected) for the first-generation SDRAM standard was later adopted in the second-generation standard. In addition, most, if not all, of the technologies encompassed in the first SDRAM standard were carried forward in the second-generation standard as well.

ANSWER: Rambus denies that the JEDEC DDR SDRAM standard is a "second generation SDRAM standard," as alleged in Paragraph 28. Rambus avers that the first presentation relating to the JEDEC DDR SDRAM standard occurred in December 1996, one year after Rambus attended its last JEDEC meeting, when Fujitsu made what Fujitsu and JEDEC referred to as a "first showing" entitled "Fujitsu DDR SDRAM, 1st Showing." Rambus further avers that no JEDEC proposals for the DDR SDRAM standard predate this December 1996 first showing. Otherwise, Rambus denies the allegations in Paragraph 28 of the Complaint.

29. The process through which JEDEC adopted and published these standards proceeded essentially as follows:

a. At regularly scheduled meetings of the JC-42.3 Subcommittee, which typically occurred on a quarterly basis — as well as affiliated committee and task group meetings, which were scheduled as needed — members were allowed to make presentations concerning specific concepts or technologies they proposed for inclusion in a standard under development.

b. Such presentations generally were accompanied by written materials, which, in addition to being shared with all members present at the meeting, were reproduced and attached to the official meeting minutes.

c. Before any proposal could be considered for adoption, it was necessary that it be presented a second time at a later subcommittee meeting.

d. At that point, a member could move that the proposal be presented to the subcommittee membership for approval through a formal balloting process, pursuant to which written ballots were distributed and received by mail.

e. Votes were then tabulated at the subsequent meeting of the subcommittee, at which time members voting "No" were required to explain their reasons for opposing the proposal.

f. Technically, a two-thirds majority was required, but in practice proposals rarely passed without a consensus of all voting members.

g. Individual proposals, once approved by JC-42.3, were often held at the subcommittee level until a complete package of related proposals was ready to be forwarded to the Council for final ratification.

ANSWER: Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 29 of the Complaint and therefore denies those allegations.

30. JEDEC's specifically, the JC 42.3 Subcommittee's work on SDRAM standards continues today, and a third-generation SDRAM standard, known as "DDR II," is expected to be completed later this year.

ANSWER: Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 30 of the Complaint and therefore denies those allegations. To the extent that a JEDEC "DDR II" standard is expected, Rambus denies that it would be a "third generation SDRAM standard," as alleged in Paragraph 30.

31. Rambus was founded in 1990 by two electrical engineers, Mark Horowitz and Michael Farmwald, who together developed their own, proprietary synchronous DRAM architecture. They named the new architecture Rambus DRAM, or simply "RDRAM," and contributed the technology to the new corporation upon its formation.

ANSWER: Rambus admits that Dr. Horowitz is an electrical engineering professor at Stanford University who holds B.S. and M.S. degrees in Electrical Engineering from MIT and a Ph.D. in Electrical Engineering from Stanford, a renowned circuit designer, and one of the founders of Rambus. Rambus further admits that Dr. Farmwald is a former associate professor of Electrical and Computer Engineering at the University of Illinois who holds a B.S. degree in Mathematics from Purdue University and Ph.D. in Computer Science from Stanford, and is one of the founders of Rambus. Rambus further admits that Dr. Farmwald and Dr. Horowitz conceived of and patented numerous fundamental inventions in the field of computer memory and signaling technology, many of which have application in high-speed memory; that these patented inventions are used, in varying numbers and combinations, in many types of memory, including JEDEC SDRAMs and JEDEC DDR SDRAMs; that Dr. Farmwald and Dr. Horowitz, at one point in time, named one commercial implementation of certain of their inventions "RDRAM;" and that Dr. Horowitz and Dr. Farmwald assigned the rights to the '898 patent application to Rambus. Otherwise, Rambus denies the allegations in Paragraph 31 of the Complaint.

32. RDRAM, as originally designed, differed from traditional DRAM architectures in several ways, including but not limited to the following:

ANSWER: Rambus avers that the phrases "originally designed" and "traditional DRAM" lack meaning as used in Paragraph 32 of the Complaint. Accordingly, Rambus denies the allegations in Paragraph 32 of the complaint.

a. First, the RDRAM architecture specified the use of many fewer bus lines than was common in traditional DRAM designs. Thus, RDRAM was said to be a "narrow-bus" architecture. By comparison to RDRAM, traditional DRAM incorporated what was referred to as a "wide-bus" or "broad-bus" design.

ANSWER: Rambus avers that the phrases "traditional DRAM" and "RDRAM architecture" lack meaning as used in Paragraph 32a of the Complaint; that the identity of the declarant referred to in Paragraph 32a is unclear; and that the suggested distinction between the terms "narrow bus" and "wide bus" or "broad bus" is incorrect. Rambus denies the allegations in Paragraph 32a of the Complaint.

b. Second, in the RDRAM architecture, each bus line was capable of carrying three types of information essential to memory functionality: (1) data; (2) "address" information, specifying the location where needed data could be found, or should be placed, in memory; and (3) "control" information, specifying, among other things, the relevant command (*e.g.*, whether the computer should "read" data from memory or "write" new data to memory). By comparison, in traditional DRAM architectures, each bus line was generally dedicated to carrying only one of these three types of information. Thus, the RDRAM bus was sometimes said to be "multiplexed" or "triply multiplexed."

ANSWER: Rambus avers that the phrases "traditional DRAM" and "RDRAM architecture" lack meaning as used in Paragraph 32b of the Complaint and that the identity of the declarant referred to in Paragraph 32b is unclear. Rambus denies the allegations in Paragraph 32b of the Complaint.

c. Third, rather than transmitting data, address, and control information separately, as was common in a traditional DRAM architecture, RDRAM transmitted such information together in groupings, called "packets." For this reason, RDRAM is also sometimes referred to as a "packetized" system.

ANSWER: Rambus avers that the phrases "traditional DRAM" and "RDRAM architecture" lack meaning as used in Paragraph 32c of the Complaint and that the identity of the declarant referred to in Paragraph 32c is unclear. Rambus denies the allegations in Paragraph 32c of the Complaint.

33. Though Rambus has designed, and obtained patents on, various DRAM-related technological concepts or features, Rambus does not itself manufacture such technologies, choosing instead to license its designs for a fee to downstream memory manufacturers. Beginning in the early 1990s and continuing through the present, Rambu

has sought to market and license its proprietary RDRAM technology to manufacturers of computer memory and related products, including a number of companies holding membership in JEDEC.

ANSWER: Rambus admits that it has obtained patents on numerous inventions in the fields of, among others, computer memory and signaling technology, many of which have application in high-speed memory; that it manufactures no products; that it licenses its technology and its patents; and that Rambus seeks to market and license its proprietary RDRAM architecture to, among others, manufacturers of computer memory and related products. Otherwise, Rambus denies the allegations in Paragraph 33 of the Complaint.

34. On April 18, 1990, Rambus filed its first DRAM-related patent application with the United States Patent and Trademark Office ("PTO") — Application No. 07/510,898 (hereinafter, "the '898 application"). The application contained a 62-page specification and 15 drawings, all purporting to describe Rambus's DRAM-related inventions. In addition, the '898 application contained 150 separate claims, each of which was limited to a narrow-bus, multiplexed, packetized DRAM design.

ANSWER: Rambus admits that Dr. Farmwald and Dr. Horowitz, through their attorneys, filed patent application serial number 07/510,898 ("the '898 application") in the United States Patent & Trademark Office ("PTO") on April 18, 1990 and thereafter assigned the rights to this patent application to Rambus. Rambus avers that the '898 application contains a 125-page specification -- not a 62-page specification -- 150 claims, and 15 figures. Otherwise, Rambus denies the allegations in Paragraph 34 of the Complaint.

35. Patents and patent applications consist of two principal parts. The first part is a written description, whereby the patent applicant (or, if the application issues as a patent, the patent holder) describes the invention, through technical specifications and drawings, in a manner that would allow a person skilled in the art to which the invention applies to understand and practice the invention without undue experimentation. The second part of the patent or patent application consists of one or more "claims" defining, or delineating, the scope — or outer bounds — of the patent holder's exclusive rights (or, in the case of an application, the exclusive rights the applicant seeks to obtain).

ANSWER: To the extent that Paragraph 35 purports to describe all patents and patent applications, Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations. To the extent that Paragraph 35 purports to state legal conclusions, no response from Rambus is required. To the extent a response is necessary, Rambus denies all of the allegations in Paragraph 35 of the Complaint.

36. Because all 150 claims contained in Rambus's '898 patent application were limited to a narrow-bus, multiplexed, packetized DRAM design, through this application Rambus was not seeking — nor, absent amendment to the application, could it obtain -- any patent rights exceeding those limitations.

ANSWER: Rambus denies the allegations in Paragraph 36 of the Complaint.

37. In March 1992, Rambus broke out portions of its '898 application into 10 divisional patent applications, each of which "claimed priority back" to the '898 application and to its April 1990 filing date. The original '898 application and these 10 divisional applications, in turn, gave rise to numerous other amended, divisional, or continuation patent applications -- all technically the "progeny" of the '898 application and eventually resulted in the issuance of numerous Rambus patents.

ANSWER: Rambus admits that beginning in March 1992, Rambus filed several divisional patent applications to the '898 application in part to overcome a restriction requirement issued by the PTO; that these divisional patent applications claim priority to the filing date of the '898 application; that some of these divisional patent applications, as well as subsequent continuation patent applications and divisional patent applications, have issued as patents. Otherwise, Rambus denies the allegations in Paragraph 37 of the Complaint.

a. The process of obtaining patents or "perfecting" patent claims, otherwise known as patent prosecution, often involves amending, dividing, or continuing patent applications on file with the PTO.

ANSWER: Rambus avers that the meaning of "perfecting" is unclear as used in Paragraph 37a of the Complaint, and therefore Rambus denies the allegations in Paragraph 37a of the Complaint.

b. Through an "amendment" to a pending patent application, a patent applicant may delete or alter certain claims contained in the pending application, or may add new claims, while at the same time retaining the same specification, drawings, and (to the extent not amended or deleted) claims of the previously pending application.

ANSWER: The allegations in Paragraph 37b of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations in Paragraph 37b of the Complaint.

c. A "divisional" application is one that carves out one of multiple distinct inventions from a prior application and seeks to obtain patent rights over that distinct invention, without adding any new matter to the written description of the invention described in the earlier application.

ANSWER: The allegations in Paragraph 37c of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations in Paragraph 37c of the Complaint.

d. A "continuation" application is a second application, covering the same invention described in a prior application, that is filed before the earlier application either issues as a patent or is abandoned and, again, adds no new matter to the written description of the invention described in the earlier application.

ANSWER: The allegations in Paragraph 37d of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations in Paragraph 37d of the Complaint.

e. Before issuing any patent, the PTO first seeks to determine whether the invention claimed in the relevant patent application is preceded by "prior art" — that is, by preexisting inventions or other publicly known facts or information that demonstrates the lack of novelty in the invention for which a patent is sought.

ANSWER: Rambus is without knowledge or information sufficient to form a belief as to the truth the allegations in Paragraph 37e and therefore denies those allegations.

f. Generally speaking, determinations of whether prior art exists in a given case are made by reference to the date on which the patent application is filed, otherwise known as the "priority date."

ANSWER: The allegations in Paragraph 37f of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations in Paragraph 37f of the Complaint.

g. When a patent application is amended, divided, or continued in the manner described above, the patent applicant may "claim priority back" to an earlier filed application — thus benefiting from the earlier filing date — but only if the amended, divisional, or continuation application "adds no new matter" to the written description of the invention described in the earlier application. As noted above, divisional and continuation applications, by definition, include no new matter not contained within the earlier-referenced application.

ANSWER: The allegations in Paragraph 37g of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations in Paragraph 37g of the Complaint.

h. Subsequent amendments, divisionals, or continuations claiming priority back to an earlier-filed patent application are sometimes said to be within the same "family" as the earlier-filed application, or otherwise are said to be the prior application's "progeny."

ANSWER: Rambus admits that the term "family" is commonly used in the context of a collection of patents and/or patent applications with common ancestry. Rambus avers that the identity of the declarant is unclear. Rambus is therefore is without knowledge or information sufficient to form a belief as to the truth the remaining allegations in Paragraph 37h and denies those allegations.

i. Thus, the fact that, as stated above, each Rambus patent application in the '898 "family" — or each of the '898 application's "progeny" — claimed priority back to the '898 application, means that all of the patent applications in the '898 family contained the same specification and drawings as were contained in the '898 application itself. In fact, in each amended, divisional, and continuation patent application Rambus filed claiming priority back to the '898 application's April 1990 filing date, Rambus was required to -- and did -- expressly warrant to the PTO that the application added "no new matter" beyond what was contained in the '898 application's 62-page specification and 15 drawings.

ANSWER: Rambus admits that all patents and patent applications claiming priority to the '898 application contain, in all material respects, identical written descriptions and similar figures. Otherwise, Rambus denies the allegations in Paragraph 37i of the Complaint.

38. Though all of the Rambus patent applications in the '898 family contained the same specification and drawings as the '898 application itself, over time Rambus sought to expand the claims contained within these applications in order to obtain patent rights extending beyond the narrow-bus, multiplexed, packetized design inherent in the RDRAM design. In other words, in the course of prosecuting the '898 family of patent applications, Rambus made a conscious effort to withdraw the narrow-bus limitations contained in the original application's claims, and thereby sought to significantly expand the scope of its potential patent rights, while still clinging to the '898 application's April 1990 priority date.

ANSWER: Rambus admits that, in the manner intended under the patent laws, it filed additional patent claims in an effort to fully protect the inventions disclosed in the '898 application, the international version of which, International Patent Application WO 91/16680, was made public on October 31, 1991. Rambus further admits that many of the inventions disclosed in the '898 application were described to and/or shared with JEDEC participating companies under non-disclosure agreements prior to JEDEC's drafting or consideration of any synchronous DRAM standard. Otherwise, Rambus denies the allegations in Paragraph 38 of the Complaint.

39. Even before Rambus was formally incorporated in early 1990, its founders outlined a strategy whereby, in an effort to obtain high royalties for RDRAM, they would seek to establish RDRAM as the actual or *de facto* industry standard.

ANSWER: Rambus admits that it seeks to license its proprietary inventions and designs to as many manufacturers as possible, and that it seeks royalties for the use of its inventions from those manufacturers. Otherwise, Rambus denies the allegations in Paragraph 39 of the Complaint.

40. Partly with this goal in mind, Rambus attended its first JEDEC meeting in December 1991, and it officially joined the organization shortly thereafter. Although JEDEC was conducting other potentially relevant work at that time, of particular relevance to Rambus was the work then underway within the JC-42.3 Subcommittee, which was in the process

of developing a first generation of standards for SDRAM. From December 1991 through December 1995, Rambus representatives regularly attended JC-42.3 meetings.

ANSWER: Rambus admits that it attended its first JEDEC meeting in December 1991 as a guest and at the invitation of Toshiba, then a major DRAM manufacturer; that it subsequently became a member of JEDEC; that at least one Rambus employee attended JC-42.3 meetings between December 1991 and December 1995; and that the JEDEC meeting minutes reflect that the JC-42.3 subcommittee announced an "SDRAM" standard in March 1993. Otherwise, Rambus denies the allegations in Paragraph 40 of the Complaint.

41. Though Rambus attended its last JC-42.3 meeting in December 1995, it remained a member of JEDEC, and continued to receive official mailings and other information from JEDEC, until June 1996, when it formally withdrew from the organization.

ANSWER: Rambus admits that it attended its final JEDEC meeting in December 1995; that it did not renew its membership for 1996 in response to a JEDEC dues invoice dated January 10, 1996; and that Rambus sent a letter to JEDEC dated June 17, 1996, which stated in part as follows: "Rambus Inc. has received the above invoice form the 1996 JEDEC dues for committees JC-15, JC-16, JC42.1, JC-42.3, JC- 42.4 and JC-42.5. I am writing to inform you that Rambus Inc. is not renewing its membership in JEDEC." Rambus further admits that it continued to receive certain JEDEC mailings for some time after it attended its last JEDEC meeting in December 1995. Otherwise, Rambus denies the allegations in Paragraph 41 of the Complaint.

42. Shortly after becoming involved in JEDEC, it became apparent to Rambus that JC-42.3 was committed to developing SDRAM standards based on the traditional wide-bus, non-packetized DRAM architecture, relying to the extent possible on non-proprietary technologies. In other words, it was highly unlikely JC-42.3 would be interested in standardizing RDRAM, an architecture that was both proprietary and distinctly non-traditional.

ANSWER: Rambus denies the allegations in Paragraph 42 of the Complaint.

43. Rambus, of course, would have preferred that its own RDRAM technology be adopted as the industry standard. Failing that, Rambus might have preferred to see any efforts at adopting an industry-wide SDRAM standard fail, inasmuch as industry adoption of such a standard would make it more difficult for Rambus to market its proprietary RDRAM technology. By mid-1992, however, Rambus had seized upon an alternative business plan — one that, if successful, might allow Rambus to achieve the goal of charging high royalties even if the DRAM industry were to adopt as its standard something other than RDRAM. Rambus's CEO, Geoff Tate, laid out this scheme in a June 18, 1992 draft of the Rambus 1992-1997 Business Plan:

> "For about 2– years a JEDEC committee has been working on the specifications for a Synchronous DRAM. No standard has yet

> been approved by JEDEC. Our expectation is a standard will not be reached until end of 1992 at the earliest.
>
> * * *
>
> [W]e believe that Sync DRAMs infringe on some claims in our filed patents; and that there are additional claims we can file for our patents that cover features of Sync DRAMs. Then we will be in position to request patent licensing (fees and royalties) from any manufacturer of Sync DRAMs. Our action plan is to determine the exact claims and file the additional claims by the end of Q3/92. Then to advise Sync DRAM manufacturers in Q4/92."

ANSWER: Rambus admits that Rambus's 42-page draft business plan dated June 1992 contains the language quoted out of context in Paragraph 43 of the Complaint. Rambus avers that the quotation in Paragraph 43 misleadingly omits nearly two pages of text, which states in part as follows:

> A few companies (Samsung, Toshiba and TI) are already working on Sync DRAMs with plans to introduce their products in late 92 through mid-93. *However, none of these versions are compatible with each other and none conforms to the JEDEC standard, since it is not yet set.* So it will be a long time before market forces determine what the Sync standard will be. This will be a major problem for systems customers.

(Emphasis added.) Rambus avers that the omitted portion of this section of the draft business plan dated June 1992 demonstrates that the second partially-quoted text in Paragraph 43 refers not to JEDEC SDRAMs, but rather to "Sync DRAMs" that, in this context, are meant to be and are distinct from the JEDEC SDRAM standard. Otherwise, Rambus denies the allegations in Paragraph 43 of the Complaint.

44. In what appears to be the final draft of the same Rambus Business Plan, dated September 1992, Tate further elaborated on the scheme:

> "Rambus expects the patents will be issued largely as filed and that companies will not be able to develop Rambus-compatible or Rambus-like technology without infringing on multiple fundamental claims of the patents .... Rambus' patents are likely to have significant applications other than for the Rambus Interface."

In the same document, Tate also wrote: "Sync DRAMs infringe claims in Rambus's filed patents and other claims that Rambus will file in updates later in 1992."

ANSWER: Rambus admits that the draft of Rambus's business plan dated September 1992 contains the language quoted in Paragraph 44 of the Complaint. Rambus avers that the quotation in Paragraph 43 misleadingly omits relevant text from the quoted section of this business plan, which states in part as follows:

> A Synchronous DRAM is an incremental extension of page mode DRAMs. The interface is clocked allowing a level of pipelining to gain a higher cycle rate and the ability to access sequential data within pages every cycle. The JEDEC standard under discussion is for x8 and x9 output 16/18Mbit Synchronous DRAMs with 50, 66 and 100 Mhz grades. *A few companies (Samsung, Toshiba, and TI) are already working on Sync DRAMs with plans to introduce their products in late 92 through mid 93. None of these versions are compatible with each other or the JEDEC standard.*

(Emphasis added.) Rambus avers that the omitted portion of this section of the business plan dated September 1992 demonstrates that the partially-quoted text refers not to JEDEC SDRAMs, but rather to "Sync DRAMs" that, in this context, are meant to be and are distinct from the JEDEC SDRAM standard. Otherwise, Rambus denies the allegations in Paragraph 44 of the Complaint.

45. In actuality, events unfolded somewhat differently than Rambus's CEO envisioned in these statements, in a manner that affected the timing, but not the core substance, of Rambus's scheme. For instance, although Rambus's '898 application was pending at the time these statements were written, not until 1996 was Rambus — through a separate application claiming priority back to the '898 application — able to obtain its first patent broad enough to arguably cover aspects of the wide-bus DRAM architecture incorporated into the JEDEC standards. In addition, Rambus ultimately elected to wait until late 1999, after DRAM manufacturers and their customers had become "locked in" to the JEDEC standards, before seeking to enforce its patents against memory manufacturers producing JEDEC-compliant SDRAM.

ANSWER: Rambus avers that the first patent claims issued to it that would arguably be infringed by products built to the DRAM architecture incorporated in JEDEC standards were submitted to the PTO no earlier than November 1998 and issued in a U.S. patent no earlier than June 1999. Otherwise, Rambus denies the allegations in Paragraph 45 of the Complaint.

46. Aside from such timing issues, the Rambus business plans quoted in Paragraphs 43 and 44 set forth quite accurately the basic scheme upon which the company would embark — that is, a scheme whereby Rambus would actively seek to perfect patent rights covering technologies that were the subject of an ongoing, industry-wide standardization process, in which Rambus itself was a regular participant, without disclosing the existence of such patent rights (or the pertinent patent applications) to other participants, many of whom, by producing products compliant with the standards, would later be charged with infringing Rambus's patents.

ANSWER: Rambus admits that it intended to and did file new patent applications and amend the claims of existing patent applications in an effort to obtain patents to fully protect its inventions, as it was entitled to under the patent laws. Otherwise, Rambus denies the allegations in Paragraph 46 of the Complaint.

47. During the course of its participation in JEDEC, from late 1991 through mid-1996, Rambus observed multiple presentations regarding technologies, proposed for (and later included in) JEDEC's SDRAM standards, that Rambus either (1) knew or believed to be covered by claims contained in its then-pending patent applications, or (2) believed could be covered through amendments to those applications expanding the scope of the patent claims while adding no new matter to the underlying technical specification.

ANSWER: Rambus denies the allegations in Paragraph 47 of the Complaint

48. That is, at all times relevant herein, Rambus believed that a number of the specific technologies that were proposed for, and later incorporated in, the relevant JEDEC standards were encompassed by the 62-page technical specification and 15 related drawings common to Rambus's '898 application (filed in 1990) and the numerous amended, divisional, and continuation applications that stemmed from the '898 application. Rambus further believed that, to the extent the pending claims of the '898 application and its later-filed progeny failed to cover these technologies as proposed to be used in JEDEC's SDRAM standards, such claims could be amended to cover these technologies, while still claiming priority back to the '898 application's April 1990 filing date.

ANSWER: Rambus denies the allegations in Paragraph 48 of the Complaint.

49. As Rambus's CEO described in the company's internal planning documents in mid-1992 (*see* Paragraphs 43-44 above), the initial phase of Rambus's "action plan" required that it first "determine the exact claims" in its pending applications that covered technologies being incorporated into the JEDEC standards, and then, as needed, "file ... additional claims" to perfect Rambus's patent rights over such technologies. In executing these steps, Rambus placed heavy reliance upon two individuals: Richard Crisp, Rambus's designated representative to the JC-42.3 Subcommittee, and Lester Vincent, an attorney with the law firm of Blakely, Sokoloff, Taylor & Zafman, who served as Rambus's outside patent counsel.

ANSWER: Rambus incorporates by reference its answers to Paragraphs 43 and 44 of the Complaint. Rambus further admits that Richard Crisp was one of the Rambus employees who attended JEDEC JC-42.3 meetings between 1992 and 1995; that Lester Vincent was an attorney with the law firm of Blakely, Sokoloff, Taylor & Zafman ("Blakely Sokoloff"); and that members of Blakely Sokoloff, including but not limited to Lester Vincent, participated in the prosecution of Rambus patent applications between 1991 and 2001. Rambus avers that, in November 1998, Neil Steinberg assumed responsibility for the prosecution of patent applications claiming priority to the '898 application. Otherwise, Rambus denies the allegations in Paragraph 49 of the Complaint.

50. Richard Crisp, an electrical engineer, joined Rambus in 1991. He attended his first JC-42.3 meeting in February 1992 and continued to attend such meetings regularly through December 1995. (In addition to Crisp, David Mooring, at that time Rambus's vice president for business development, and Billy Garrett, another Rambus engineer, sometimes attended JC-42.3 meetings.) In May 1992, Crisp became Rambus's

designated representative to JC-42.3. As such, he personally received any information, such as meeting minutes and ballot forms, that JEDEC furnished to Rambus by mail.

ANSWER: Rambus admits that Richard Crisp was an electrical engineer hired by Rambus in 1991; that Mr. Crisp first attended a JEDEC JC 42.3 meeting in February 1992; that Mr. Crisp attended JC-42.3 subcommittee meetings between February 1992 and December 1995; and that he received certain meeting minutes and ballot forms from JEDEC during that time. Rambus further admits that David Mooring, Rambus's then vice president for business development, and Billy Garrett, another Rambus engineer, each attended at least one JC-42.3 meeting between December 1991 and December 1995. Otherwise, Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 50 of the Complaint and therefore denies those allegations.

51. Throughout the duration of Crisp's participation in the JC-42.3 Subcommittee, it was his customary practice to send comprehensive reports to his superiors and others within Rambus describing in detail the technologies that were being proposed for inclusion in the JEDEC SDRAM standards. Typically, these reports were communicated via e-mails authored and sent while the JC-42.3 meetings were still in progress.

ANSWER: Rambus admits that Mr. Crisp sent several internal Rambus e-mails discussing JEDEC meetings he attended. Otherwise, Rambus denies the allegations in Paragraph 51 of the Complaint.

52. Lester Vincent and his law firm, Blakely, Sokoloff, were retained as patent counsel by Rambus in the summer of 1991, at which time Vincent assumed primary responsibility for prosecuting Rambus's '898 application before the PTO. For several years thereafter, Vincent and his colleagues assisted Rambus with its DRAM-related patent strategy, providing frequent advice to Rambus on patent-related issues and assuming primary responsibility for drafting, filing, and prosecuting the various continuation and divisional patent applications that stemmed from the '898 application.

ANSWER: Rambus admits that members of Blakely Sokoloff, including but not limited to Lester Vincent, participated in the prosecution of some Rambus patent applications between 1991 and 2001. Otherwise, Rambus denies the allegations in Paragraph 52 of the Complaint.

53. In late March 1992, Vincent met with Crisp and Allen Roberts, the Rambus vice president with responsibility for patents, to discuss, among other things, Rambus's participation in JEDEC. At this meeting, Vincent, Crisp, and Roberts discussed whether Rambus, having joined JEDEC and participated in JEDEC meetings, was at risk of forfeiting — on grounds of equitable estoppel — its rights to enforce future patents covering aspects of the JEDEC standards. Vincent advised that there could be an equitable estoppel problem if Rambus were to convey to other JEDEC participants the false or misleading impression that it would not seek to enforce its patents or its future patents. He further advised that, in order to reduce such risks, Rambus might remain silent and abstain from voting on any proposed JEDEC standards. Rambus in fact did

abstain from voting on the scores of JC-42.3 ballot initiatives that arose during the course of its participation in JEDEC. Richard Crisp did vote on one occasion, however, registering a "No" vote on four separate ballot items.

ANSWER: Rambus admits that Richard Crisp and Allen Roberts met with Lester Vincent in March 1992. Rambus further admits that during the time it attended JEDEC JC-42.3 meetings, Rambus representatives voted on only one occasion and on only four JC-42.3 ballots out of more than one hundred in the applicable time frame; that Richard Crisp was the Rambus employee who completed those four ballots; and that Crisp voted "No" on all four of those ballots. Otherwise, Rambus denies the allegations in Paragraph 53 of the Complaint.

54. Throughout its four and one-half years of participation in the JC-42.3 Subcommittee, Rambus engaged in a continuous pattern of deceptive, bad-faith conduct. Rambus's bad-faith participation in JEDEC, although evidenced in other ways as well, was perhaps best exemplified in the coordinated activities of Crisp and Vincent. During his four-year tenure as Rambus's representative to JC-42.3, Crisp observed multiple presentations relating to technologies Rambus believed were covered — or, through amendment, could be covered — by pending Rambus patent applications. In fact, in a number of instances, Crisp, while participating in JC-42.3 meetings, sent e-mails back to Rambus headquarters expressing a belief that Rambus had pending applications covering certain technologies being discussed in such meetings, or otherwise suggesting that Rambus's pending patent applications be reviewed, and if necessary amended, to ensure they covered such technologies. On several occasions, Crisp — based in part on information learned through attending JC-42.3 meetings — developed specific proposals for amending Rambus's pending patent claims and communicated such proposals directly (or via a Rambus colleague) to Vincent. Likewise, in some cases, Vincent sent copies of draft amendments to Rambus's patent applications to Crisp, among others, soliciting his input before finalizing such amendments. Plainly, in light of Rambus's failures to disclose pertinent patent-related information to JEDEC, the activities described in this paragraph constituted bad faith.

ANSWER: Rambus admits that Richard Crisp attended portions of several JEDEC meetings between February 1992 and December 1995; that Mr. Crisp shared some of the information discussed at JEDEC meetings with various Rambus employees; that Mr. Crisp posed questions to various Rambus employees relating to information discussed at JEDEC meetings; and that Lester Vincent shared drafts of documents related to the prosecution of Rambus patent applications with various Rambus employees, including but not limited to Mr. Crisp. Otherwise, Rambus denies the allegations in Paragraph 54 of the Complaint.

55. As underscored elsewhere in this complaint, Rambus never disclosed to JEDEC the fact that, throughout the duration of its membership in the organization, Rambus had on file with the PTO, and was actively prosecuting, patent applications that, in its view, either covered or could easily be amended to cover elements of the existing and future SDRAM standards.

ANSWER: Rambus denies the allegations in Paragraph 55 of the Complaint.

56. Among other specific technologies adopted or proposed for inclusion in the SDRAM standards during the period of Rambus's participation in JEDEC, which Rambus believed were covered by its then-pending patent applications or could be covered through amendments to such applications, were the following: (1) programmable CAS latency; (2) programmable burst length; (3) on-chip PLL/DLL; and (4) dual-edge clock.

ANSWER: Rambus avers that the meanings of terms used in this Paragraph, including "programmable CAS latency," "programmable burst length," "on-chip PLL/DLL," and "dual-edge clock," are undefined and differ depending on the context in which they are used. Accordingly, Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 56 of the Complaint and therefore denies those allegations.

57. Column address strobe (or "CAS") latency refers to the amount of time it takes for the memory to release data after receiving a signal, known as the column address strobe, in connection with a read request from the CPU. The technology known as programmable CAS latency allows memory chips to be programmed such that this aspect of the memory's operation can be tailored to facilitate compatibility with a variety of different computer environments.

ANSWER: Rambus admits that certain JEDEC SDRAM and DDR SDRAM devices, among other memory devices, contain a programmable register to store a value that is representative of a delay time after which the device responds to a read request. Otherwise, Rambus denies the allegations in Paragraph 57 of the Complaint.

58. Burst length generally refers to the number of times information (or data) is transmitted between the CPU and memory in conjunction with a single request or instruction. The technology known as programmable burst length allows memory chips to be programmed to adjust this aspect of the memory's operation in order to facilitate compatibility with a variety of different computer environments.

ANSWER: Rambus admits that certain JEDEC SDRAM and DDR SDRAM devices, among other memory devices, receive block size information that defines an amount of data to be output by the memory device in response to a read request. Otherwise, Rambus denies the allegations in Paragraph 58 of the Complaint.

59. From December 1991 through May 1992, Crisp and other Rambus representatives observed multiple JC-42.3 presentations pertaining to programmable CAS latency and programmable burst length, both of which were proposed to be incorporated in the first JEDEC SDRAM standard. Soon thereafter, in the summer of 1992, Crisp received, and voted upon, a ballot calling for inclusion of both technologies in the standard. This was the only time that Crisp voted on a JEDEC ballot, and he voted "No," for technical reasons that he was called upon to, and did, explain, but without saying anything to suggest that Rambus might possess relevant intellectual property.

ANSWER: Rambus admits that Richard Crisp completed four JEDEC JC-42.3 ballots dated June 11, 1992; that he voted "No" on all four of those ballots; and that each of those four ballots contained the following language: "If anyone receiving this ballot is aware of patents involving this ballot, please alert the Committee accordingly during your voting response." Rambus avers that it had no issued United States patents at the time Mr. Crisp completed those four ballots; and that Mr. Crisp therefore did not alert the committee to any patents during his voting response. Otherwise, Rambus denies the allegations in Paragraph 59 of the Complaint.

60. At the time of these events, Crisp and others within Rambus believed that both programmable CAS latency and programmable burst length were encompassed by the inventions set forth in the specification and drawings of the '898 application and related applications that were then pending at the PTO, and that Rambus — by amending the claims in those pending applications — had the ability to perfect patent rights covering such technologies as used in the SDRAM standard. Indeed, beginning in May 1992, Crisp, Roberts, and other Rambus representatives began a series of consultations with Vincent for the purpose of drafting new claims, linked to the '898 application, that would cover use of certain technologies in the wide-bus architecture adopted by the SDRAM standard. Programmable CAS latency and programmable burst length were both among the technologies discussed for inclusion in these new wide-bus claims.

ANSWER: Rambus admits that, beginning in or about May 1992, Richard Crisp, Allen Roberts, and other Rambus representatives met on a number of occasions with Lester Vincent of Blakely Sokoloff for the purpose of improving Rambus's patent portfolio. Otherwise, Rambus denies the allegations in Paragraph 60 of the Complaint.

61. In March 1993, a Rambus representative attended the JC-42.3 meeting at which both programmable CAS latency and programmable burst length were approved for inclusion in the first SDRAM standard and were forwarded to the JEDEC Council, along with a collection of other approved technologies, as part of a comprehensive standard proposal. Despite Rambus's belief that these technologies were subject to pending Rambus patent claims, the Rambus representative remained silent throughout the meeting. In May 1993, the Council formally adopted the proposed SDRAM standard, which was published in November of that year. (Both of these technologies were later carried forward in the second-generation SDRAM standard published in August 1999.) Also in May 1993, Vincent's law firm (Blakely, Sokoloff) first filed patent claims on behalf of Rambus intended to cover use of DRAM technologies in a wide-bus architecture. From that time through the present, Rambus has continued its efforts to perfect patent rights covering use of programmable CAS latency and programmable burst length as incorporated in the SDRAM standards.

ANSWER: Rambus admits that Rambus employee Billy Garrett attended a JEDEC JC-42.3 meeting in March 1993. Rambus avers that the JC-42.3 minutes for the March 1993 meeting state in part as follows: "The Committee agreed to issue a press release stating that the sync. DRAM standard had been approved by the Committee." Rambus lacks information and knowledge sufficient to form a belief as to when the JEDEC Council purportedly adopted the JEDEC SDRAM standard. Rambus further admits that

sporadically prior to 1998, and continuously thereafter, Rambus has sought to obtain patent claims covering devices, including certain SDRAM and DDR SDRAM devices, among other memory devices, that contain a programmable register to store a value that is representative of a delay time after which the device responds to a read request. Rambus further admits that since February 1999, Rambus has sought to obtain patent claims covering devices, including certain SDRAM and DDR SDRAM devices, among other memory devices, that receive block size information that defines an amount of data to be output by the memory device in response to a read request. Otherwise, Rambus denies the allegations in Paragraph 61 of the Complaint.

62. The design objectives served by inclusion of programmable CAS latency and programmable burst length technologies in the first- and second-generation JEDEC standards likely could have been accomplished through use of alternative DRAM-related technologies available at the time these standards were developed. At a minimum, there would have been uncertainty at that time regarding the potential to identify or develop feasible alternative technologies. In either event, had Rambus disclosed to the JC-42.3 Subcommittee that it possessed pending patent applications purporting to cover or that could be amended to cover — programmable CAS latency and burst length technologies in a wide-bus synchronous DRAM architecture, such disclosures likely would have impacted the content of the SDRAM standards, the terms on which Rambus would later be able to license any pertinent patent rights, or both.

ANSWER: Rambus denies the allegations in Paragraph 62 of the Complaint.

63. Phase lock loop ("PLL") and delay lock loop ("DLL") are closely related technologies, both of which are used to synchronize the internal clock that governs operations within a memory chip and the system clock that regulates the timing of other system functions. The former, PLL, synchronizes the two clocks by adjusting the internal clock's frequency to match the system clock's frequency, whereas the latter, DLL, achieves synchronization by delaying the internal clock. "On-chip" PLL/DLL refers to the approach of placing these technologies on the memory chip itself, as opposed to the alternative approach of placing these technologies on, for instance, the memory module or the motherboard — the latter being known as "off-chip" PLL/DLL.

ANSWER: Rambus admits that certain DDR SDRAM devices, among other memory devices, contain delay locked loop circuitry to generate an internal clock signal using an external clock signal. Otherwise, Rambus denies the allegations in Paragraph 63 of the Complaint.

64. Beginning in September 1994, Crisp observed presentations and other work in the JC-42.3 Subcommittee involving proposals to include on-chip PLL in the second generation of the SDRAM standard. At that time, Crisp and others within Rambus believed that on-chip PLL was encompassed by the inventions set forth in the specification and drawings of the '898 application and related applications then pending at the PTO, and they had already discussed with Vincent their desire to perfect patent rights covering use of this technology in SDRAMs. Indeed, in June of 1993 Vincent's law firm filed, on Rambus's behalf, an amendment to a pending patent application — Application No. 07/847,692 —

adding claims that, on their face, covered use of on-chip PLL/DLL technology in either a wide-bus or narrow-bus DRAM architecture. From June 1993 through the present, Rambus has continued its efforts to perfect patent rights covering use of on-chip DLL technology as ultimately incorporated in the second generation SDRAM standard published in August 1999.

ANSWER: Rambus admits that in June 1993, Blakely Sokoloff filed an amendment to Application No. 07/847,692. Otherwise, Rambus denies the allegations in Paragraph 64 of the Complaint.

65. The design objectives served by inclusion of on-chip DLL technology in the second-generation JEDEC standard likely could have been accomplished through use of alternative DRAM-related technologies available at the time these standards were developed. At a minimum, there would have been uncertainty at that time regarding the potential to identify or develop feasible alternative technologies. In either event, had Rambus disclosed to the JC-42.3 Subcommittee that it possessed pending patent applications purportedly covering — or that could be amended to cover — on-chip PLL/DLL technologies in a wide-bus synchronous DRAM architecture, such disclosures likely would have impacted the content of the SDRAM standards, the terms on which Rambus would later be able to license any pertinent patent rights, or both.

ANSWER: Rambus denies the allegations in Paragraph 65 of the Complaint.

66. Dual-edge clock is a technology that permits information to be transmitted between the CPU and memory twice with every cycle of the system clock, thereby doubling the rate at which information is transmitted compared to the first generation of SDRAM, which incorporated a "single-edge clock" and hence permitted information to be transmitted only once per clock cycle.

ANSWER: Rambus admits that certain JEDEC DDR SDRAM devices, among other memory devices, output, in response to a read request, a first portion of data synchronously with respect to a rising edge of an external clock signal and a second portion of data synchronously with respect to a falling edge of the external clock signal, wherein the rising and falling edges both transpire in the same clock period of the external clock signal. Otherwise, Rambus denies the allegations in Paragraph 66 of the Complaint.

67. Between December 1991 and April 1992, Crisp and other Rambus representatives attended JC 42.3 meetings at which they observed presentations and other work involving dual-edge clock technology and a closely related technology known as "toggle-mode." Ultimately, the JC-42.3 Subcommittee decided not to incorporate these technologies into the first-generation SDRAM standard. At the time this decision was reached, however, certain JC-42.3 members expressed the view that such technologies would be appropriate for reconsideration in connection with the next generation of SDRAM. Dual-edge clock technology was again discussed by the JC-42.3 Subcommittee in May 1995. Soon thereafter, in October 1995, a survey ballot relating in part to dual-edge clock technology was distributed to JC-42.3 members, and the same

ballot was later discussed at a JC-42.3 meeting in December 1995. A formal proposal to include dual-edge clock technology in the second-generation SDRAM standard was made at a JC-42.3 Subcommittee meeting in March 1996. Following Rambus's withdrawal from JEDEC in June 1996, dual-edge clock technology was the subject of further presentations, and the technology ultimately was incorporated into the second-generation SDRAM standard.

ANSWER: Rambus admits that in or about October 1995 a survey ballot entitled "Future Synchronous DRAM (SDRAM) Features" was distributed to JC 42.3 members. Otherwise, Rambus denies the allegations in Paragraph 67 of the Complaint.

68. In September 1994, Vincent's law firm, on behalf of Rambus, filed an amendment to Rambus's Patent Application No. 08/222,646, adding dual-edge clock claims that were not limited to a narrow-bus RDRAM design, but rather purported to cover use of dual-edge clock technology in any synchronous DRAM architecture, including a wide-bus architecture of the sort that was the focus of JEDEC's SDRAM standards. This application, as amended to include dual-edge clock claims, issued as U.S. Patent No. 5,513,327 (hereinafter, "the '327 patent") in April 1996, while Rambus was still a member of JEDEC. From September 1994 through the present, Rambus has continued its efforts to perfect patent rights covering use of dual-edge clock technology as used in a wide bus synchronous DRAM architecture.

ANSWER: Rambus admits that Lester Vincent of Blakely Sokoloff filed an amendment to Application No. 08/222,646 in September 1994, and that this application issued as U.S. Patent No. 5,513,327 in April 1996. Rambus avers that products that purport to comply with the JEDEC SDRAM or DDR SDRAM standards need not infringe the '327 patent. Otherwise, Rambus denies the allegations in Paragraph 68 of the Complaint.

69. The design objectives served by inclusion of dual-edge clock technology in the second-generation SDRAM standard likely could have been accomplished through use of alternative DRAM-related technologies available at the time these standards were developed. At a minimum, there would have been uncertainty at that time regarding the potential to identify or develop feasible alternative technologies. In either event, had Rambus disclosed to the JC 42.3 Subcommittee that it possessed patents or pending patent applications arguably covering (or that, with respect the applications, could be amended to cover) dual-edge clock technology in a wide-bus synchronous DRAM architecture, such disclosures likely would have impacted the content of the SDRAM standards, the terms on which Rambus would later be able to license any pertinent patent rights, or both.

ANSWER: Rambus denies the allegations in Paragraph 69 of the Complaint.

70. At no time during its involvement in JEDEC did Rambus ever disclose to the organization the fact that it possessed an issued patent -- the '327 patent discussed in Paragraph 68 above — that purported to cover use of a specific technology proposed for inclusion in the JEDEC SDRAM standards. Nor did Rambus ever disclose to JEDEC that it had on file with the PTO various pending patent applications that purported to

cover, or could be amended to cover, a number of other technologies included or proposed for inclusion in the JEDEC SDRAM standards. More generally, Rambus never said or did anything to alert JEDEC to (1) Rambus's belief that it could claim rights to certain technological features not only when used in the context of its proprietary, narrow-bus, RDRAM designs, but also when used in the traditional wide-bus architecture that was the focus of JEDEC's SDRAM standard-setting activities; or (2) the fact that Rambus, while a member of JEDEC, was actively working to perfect such patent rights.

ANSWER: Rambus denies the allegations in Paragraph 70 of the Complaint.

71. On the contrary, Rambus's very participation in JEDEC, coupled with its failure to make required patent-related disclosures, conveyed a materially false and misleading impression — namely, that JEDEC, by incorporating into its SDRAM standards technologies openly discussed and considered during Rambus's tenure in the organization, was not at risk of adopting standards that Rambus could later claim to infringe upon its patents.

ANSWER: Rambus denies the allegations in Paragraph 71 of the Complaint.

72. On at least two occasions during Rambus's involvement in JEDEC, Crisp was asked by JEDEC representatives whether Rambus had any patent-related disclosures to make pertaining to technologies discussed within JC-42.3. In neither instance did Rambus elect to make such disclosures. One of these instances, however, prompted Rambus to present a letter to the JC-42.3 Subcommittee, dated September 11, 1995, which stated in part:

> "At this time, Rambus elects to not make a specific comment on our intellectual property position .... Our presence or silence at committee meetings does not constitute an endorsement of any proposal under the committee's consideration nor does it make any statement regarding potential infringement of Rambus intellectual property."

ANSWER: Rambus admits that Rambus presented a letter dated September 11, 1995 during a JEDEC JC-42.3 meeting that included the language quoted above. Otherwise, Rambus denies the allegations in Paragraph 72 of the Complaint.

73. Beyond these statements, the September 1995 letter said nothing concerning Rambus's patent position. In particular, it made no reference to the fact that Rambus possessed pending patent applications that purported to cover, or were being amended to cover, both (1) technologies included in already published JEDEC standards, and (2) additional technologies then being considered for inclusion in future JEDEC standards. Moreover, the episode that gave rise to Rambus's September 1995 letter involved discussion of a narrow-bus, multiplexed, packetized SDRAM design — known as "SyncLink" — that bore a strong resemblance to Rambus's own narrow-bus, multiplexed, packetized RDRAM design. As explained elsewhere in this complaint, the wide-bus, non-packetized synchronous DRAM design adopted by JEDEC differed significantly from Rambus's RDRAM design, and hence from the SyncLink design as well. Thus, to the extent

Rambus's September 1995 letter could be interpreted to suggest that Rambus might possess relevant intellectual property rights, JEDEC's members would naturally have understood that any such rights related to the SyncLink design, not to the use of certain technologies in the JEDEC standards.

ANSWER: Rambus denies the allegations in Paragraph 73 of the Complaint.

74. In connection with the same incident that gave rise to this September 1995 letter, Crisp and others within Rambus internally debated the extent to which, and manner in which, Rambus should consider making patent-related disclosures to JEDEC or to individual JEDEC members. In this regard, on May 24, 1995, Crisp sent an e-mail to Rambus's CEO, Geoff Tate, as well as other Rambus executives, suggesting a possible bifurcated approach to disclosure. As to any "really key" technologies, Crisp suggested that Rambus should consider making disclosures. But "[i]f it is not a really key issue," Crisp stated, "then ... it makes no sense to alert them to a potential problem they can easily work around."

ANSWER: Rambus admits that, on May 24, 1995, Richard Crisp sent an e-mail to numerous Rambus employees, including Rambus CEO Geoff Tate, which stated in part that, after a review of Rambus's "issued patents": "If it is something really key, then we may want to mention it *to Hyundai in our attempts to get the negotiation underway again*. If it is not a really key issue, such as the initialization issue, then I think it makes no sense to alert them to a potential problem they can easily work around." (Emphasis added.) Otherwise, Rambus denies the allegations in Paragraph 74 of the Complaint.

75. In the same e-mail, Crisp outlined a second possible approach to dealing with the disclosure issue:

> "We may want to walk into the next JEDEC meeting and simply provide a list of patent numbers which we have issued and say 'we are not lawyers, we will pass no judgment of infringement or non-infringement, but here are our issued patent numbers, you decide for yourselves what does and does not infringe.'"

Although Rambus in this particular instance did not adopt this approach to disclosure, Crisp's suggestion foreshadowed quite closely the manner in which Rambus would later announce its withdrawal from JEDEC roughly a year later, in June 1996 (*see* Paragraphs 81-88 below).

ANSWER: Rambus admits that, on May 24, 1995, Richard Crisp sent an e mail containing the language quoted in Paragraph 75 of the complaint. Otherwise, Rambus denies the allegations in Paragraph 75 of the Complaint.

76. Prior to withdrawing from the organization in June 1996, Rambus did make one patent-related disclosure to JEDEC. In September 1993, Rambus informed JEDEC of the issuance of U.S. Patent No. 5,423,703 (hereinafter, "the '703 patent"). Although the '703 patent claimed priority back to Rambus's '898 application and thus contained the same specification and drawings, the claims of the '703 patent related to a specific clocking

technology, unique to RDRAM, that differed significantly from any clocking technology considered by JEDEC. For this reason, the patent rights conferred upon Rambus by the '703 patent — as reflected in the patent's claims — did not relate to or involve JEDEC's work on SDRAM standards. Furthermore, Rambus's disclosure of this patent did nothing to alert JEDEC's members to Rambus's belief that the specification and related drawings common to the '703 patent and all other patent applications in the '898 family provided a basis upon which it could claim additional patent rights covering technologies incorporated in the SDRAM standards.

ANSWER: Rambus admits that it disclosed the existence of its first issued United States patent, Patent No. 5,423,703 ("the '703 patent"), during a JEDEC JC-42.3 meeting on September 23, 1993, 16 days after it was issued by the U.S. Patent and Trademark Office; that the written description of the '703 patent is identical in all material respects to the written description of the '898 application and all patents claiming priority to the '898 application; and that the '703 patent identifies the existence of a continuation and numerous divisional applications Rambus was prosecuting at the time the '703 patent issued. Otherwise, Rambus denies the allegations in Paragraph 76 of the Complaint.

77. Other than the foregoing, Rambus made no patent-related disclosures to JEDEC or to the JC-42.3 Subcommittee prior to withdrawing from JEDEC in June 1996. While Rambus was a member of JEDEC, however, some JEDEC members obtained (or viewed) copies of one or more foreign patent applications filed by Rambus, which contained the same specification and drawings as the '898 application and its progeny. In light of the various information (identified in, *inter alia*, Paragraphs 54-55, 60, 64, 68, 70, 73, and 76 above) that Rambus failed to disclose to JEDEC, simply viewing these foreign patent applications would have done nothing to alert JEDEC's members to the fact that Rambus believed the specification and related drawings common to the foreign applications and the '898 family of U.S. patent applications permitted it to claim additional patent rights covering the SDRAM standards.

ANSWER: Rambus admits that its International Patent Application WO 91/16680, which is identical in all material respects to the '898 application, including the written description, the figures, and all 150 claims, was made public by law on October 31, 1991; and that the international application was discussed at a JEDEC meeting in May 1992. Otherwise, Rambus denies the allegations in Paragraph 77 of the Complaint.

78. Finally, before, during, and after its tenure as a JEDEC member, in connection with its ongoing efforts to market and license RDRAM, Rambus made limited, private disclosures about its technology to some of the companies participating in JC-42.3. Upon information and belief, these disclosures were made pursuant to agreements prohibiting the company receiving such information from disclosing it to others. In any event, these limited, private disclosures concerning Rambus's proprietary, narrow-bus RDRAM technology were not adequate to satisfy Rambus's disclosure obligations, nor did such disclosures do, or convey, anything to place individual JEDEC members on notice of Rambus's belief that it could claim patent rights over technologies used in the JEDEC SDRAM standards.

ANSWER: Rambus admits that, under non-disclosure agreements, Rambus shared the details of its inventions with many of the companies participating in JEDEC JC-42.3 meetings. Otherwise, Rambus denies the allegations in Paragraph 78 of the Complaint.

79. As discussed above, upon joining JEDEC, Rambus became subject to the same basic disclosure duty applicable to all JEDEC members — the duty to disclose the existence of any patents or pending patent applications it knew or believed "might be involved in" the standard-setting work that JEDEC was undertaking, and to identify the aspect of JEDEC's work to which they related. (*See* Paragraphs 21 and 24 above.)

ANSWER: Rambus denies the allegations in Paragraph 79 of the Complaint.

80. Rambus violated this duty repeatedly, notwithstanding the limited patent-related disclosures discussed above. The fact is that Rambus, while participating as a JEDEC member, possessed a variety of patent applications — and at least one issued patent that covered, or were designed to cover, technologies involved in the JEDEC standard-setting work, as well as additional applications that Rambus believed could be amended to cover such technologies without the addition of any new matter. Rambus never disclosed these critical facts to JEDEC.

ANSWER: Rambus denies the allegations in Paragraph 80 of the Complaint.

81. In December 1995, Vincent learned of, and discussed with Anthony Diepenbrock, an in-house Rambus attorney, the Commission's proposed consent order in *In re Dell Computer Corporation*, which involved allegations of anticompetitive unilateral conduct occurring within the context of an industry-wide standard-setting organization. In January 1996, Vincent advised Rambus that it should terminate "further participation in any standards body," including JEDEC.

ANSWER: Rambus admits that in late 1995 or early 1996, Lester Vincent learned of, and discussed with Anthony Diepenbrock, an in-house Rambus attorney, the Commission's proposed consent order in *In re Dell Computer Corporation*, which involved allegations of anticompetitive unilateral conduct within the context of an industry-wide standard-setting organization. Rambus further admits that in January 1996 one or more attorneys for Rambus advised Rambus that it should no longer participate in any standards bodies, in part because the risks associated with such participation outweighed any benefits. Rambus avers that it attended its final JEDEC meeting in December 1995 and did not submit the 1996 dues requested in the January 10, 1996 JEDEC invoice. Otherwise, Rambus denies the allegations of Paragraph 81 of the Complaint.

82. On June 17, 1996, Rambus formally withdrew from JEDEC via a letter addressed to Ken McGhee, an EIA employee who at the time served as Secretary of JEDEC's JC-42 Committee. The letter was originally drafted by Richard Crisp; however, the final version reflected input from Lester Vincent, among others. Other than McGhee, the letter was sent to no one else within JEDEC, including no members of the JC-42.3 Subcommittee.

ANSWER: Rambus admits that it sent a letter to JEDEC Secretary Ken McGhee dated June 17, 1996, which stated in part as follows: "Rambus Inc. has received the above invoice form the 1996 JEDEC dues for committees JC-15, JC-16, JC42.1, JC-42.3, JC-42.4 and JC-42.5. I am writing to inform you that Rambus Inc. is not renewing its membership in JEDEC." Otherwise, Rambus denies the allegations in Paragraph 82 of the Complaint.

83. The letter opened by informing Mr. McGhee that Rambus would not be renewing its membership in the various JEDEC committees and subcommittees in which it had participated, including JC-42.3, and that it therefore was returning its membership invoices unpaid. The remainder of the letter stated as follows:

> "Recently at JEDEC meetings the subject of Rambus patents has been raised. Rambus plans to continue to license its proprietary technology on terms that are consistent with the business plan of Rambus, and those terms may not be consistent with the terms set by standards bodies, including JEDEC. A number of major companies are already licensees of Rambus technology. We trust that you will understand that Rambus reserves all rights regarding its intellectual property. Rambus does, however, encourage companies to contact Dave Mooring of Rambus to discuss licensing terms and to sign up as licensees.
>
> To the extent that anyone is interested in the patents of Rambus, I have enclosed a list of Rambus U.S. and foreign patents. Rambus has also applied for a number of additional patents in order to protect Rambus technology."

ANSWER: Rambus admits that it sent a letter to JEDEC Secretary Ken McGhee dated June 17, 1996, which stated in part as follows: "Rambus Inc. has received the above invoice form the 1996 JEDEC dues for committees JC-15, JC-16, JC42.1, JC-42.3, JC-42.4 and JC-42.5. I am writing to inform you that Rambus Inc. is not renewing its membership in JEDEC." Rambus further admits that the letter contains the language quoted in Paragraph 83 of the Complaint. Otherwise, Rambus denies the allegations in Paragraph 83 of the Complaint.

84. Although it attached a list of 23 Rambus patents, Rambus's June 1996 withdrawal letter said nothing to inform JEDEC how, if at all, the 23 listed patents — and the vague reference to additional, unspecified patent applications — might relate to the work of the JC-42.3 Subcommittee. The unstated message, as Crisp had suggested roughly a year earlier, was: "[H]ere are our issued patent numbers, you decide for yourselves what does and does not infringe." (*See* Paragraph 75 above.)

ANSWER: Rambus admits that the letter attached a list of 23 Rambus patents. Otherwise, Rambus denies the allegations in Paragraph 84 of the Complaint.

85. The list of 23 Rambus patents attached to this letter consisted of 21 U.S. and two foreign (one Taiwanese and one Israeli) patent numbers, with no accompanying explanation.

ANSWER: Rambus admits that the letter attached a list of 23 Rambus patents. Otherwise, Rambus denies the allegations in Paragraph 85 of the Complaint.

a. Of the 21 U.S. patents on the list, five fell within the '898 family and the remaining 16 fell outside the '898 family.

ANSWER: Rambus admits the allegations in Subparagraph 85a of the Complaint only to the extent that the phrase "fell within the '898 family" means "claim priority to U.S. patent application serial number 07/510,898." Otherwise, Rambus denies the allegations in Subparagraph 85a of the Complaint.

b. Of the latter group of 16, several related to discrete designs for generic electronic circuits — that is, they did not relate uniquely to DRAM design or specifically to Rambus's RDRAM architecture. Several other patents included within this group of 16 did relate in some way to DRAM design but did not bear any direct connection to either Rambus's narrow-bus RDRAM architecture or the wide-bus architecture incorporated into the JEDEC SDRAM standards. The remaining few patents from this group of 16 related to specific implementations of Rambus's narrow-bus architecture. There is no indication that any of these 16 patents related to any specific technology or technological feature adopted or considered for adoption in the SDRAM standards.

ANSWER: Rambus denies the allegations in Subparagraph 85b of the Complaint.

c. The five U.S. patents that did fall within the '898 family included the '703 patent discussed in Paragraph 76 above, which Rambus had previously disclosed to JEDEC. Of the remaining four, three of the listed patents — like the '703 patent — contained only claims that either (1) were expressly limited to the narrow-bus RDRAM architecture, or (2) dealt with a specific aspect of the Rambus RDRAM architecture unrelated to JEDEC's work. The final patent within this group — U.S. Patent No. 5,473,575 — contained claims that, although potentially broader in scope than the other four, were limited to the low-voltage design used in Rambus's RDRAM architecture, which materially differed from the higher-voltage designs that had been the focus of JEDEC's work.

ANSWER: Rambus denies the allegations in Subparagraph 85c of the Complaint.

d. The remaining two Rambus patents on the list of 23 were the two foreign patents. Beyond the fact that one of these was written in Chinese, these foreign patents, had they been reviewed by JEDEC's members, would not have sufficed to place them on notice of Rambus's patent rights, or potential patent rights, for reasons discussed above.

ANSWER: Rambus denies the allegations in Subparagraph 85d of the Complaint.

86. More important than what the June 1996 withdrawal letter said is what it failed to say. Among other things, the letter made no mention of the fact that Rambus possessed pending patent applications covering, or that could be amended to cover, specific technologies included, or proposed for inclusion, in the JEDEC SDRAM standards. Nor did the letter say anything to alert JEDEC to Rambus's belief that it could claim rights to certain technological features not only when used in the context of its proprietary, narrow-bus, RDRAM designs, but also when used in the traditional wide-bus architecture that was the focus of JEDEC's SDRAM standard-setting activities.

ANSWER: Rambus denies the allegations in Paragraph 86 of the Complaint.

87. But this was not all the June 1996 letter failed to disclose. As of June 1996, when Rambus submitted its formal withdrawal letter to JEDEC, the company actually possessed 24 issued patents, not 23. That is, one — but only one — of Rambus's issued patents was omitted from the list attached to the June 1996 withdrawal letter. The omitted patent was Rambus's '327 patent, which issued in April 1996, two months before Rambus's withdrawal from JEDEC. As discussed in Paragraph 68 above, the '327 patent contained claims purporting to cover use of dual-edge clock technology in any synchronous DRAM architecture. As such, it was the only patent actually obtained by Rambus while a member of JEDEC that arguably covered use of a specific technology included, or considered for inclusion, in JEDEC's wide-bus SDRAM standards.

ANSWER: Rambus admits that the '327 patent was inadvertently omitted from the attachment to Rambus's June 17, 1996 letter to JEDEC, because the list was generated before the '327 patent issued. Rambus avers that products that purport to comply with the JEDEC SDRAM or DDR SDRAM standards need not infringe the '327 patent. Otherwise, Rambus denies the allegations in Paragraph 87 of the Complaint.

88. Even after withdrawing from JEDEC, Crisp and others within Rambus continued to closely monitor JEDEC's ongoing work on SDRAM standards, including work involving specific technologies on which Rambus sought to perfect patent rights.

ANSWER: Rambus admits that, after withdrawing from JEDEC, it continued to receive information released by JEDEC to the public concerning, among other things, JEDEC activities. Otherwise, Rambus denies the allegations in Paragraph 88 of the Complaint.

89. In the years following the issuance of JEDEC's first SDRAM standard in November 1993, DRAM manufacturers and their customers began designing, testing, and ultimately manufacturing memory and memory-related products incorporating, or complying with, JEDEC's standardized SDRAM designs. By 1995, JEDEC-compliant SDRAM had begun to replace older-generation, asynchronous DRAM architectures. Thereafter, the shift to the more modern SDRAM technology progressed rapidly. By 1998, total worldwide sales of JEDEC-compliant SDRAM, on a revenue basis, exceeded sales of asynchronous memory. And by 1999, JEDEC-compliant SDRAM had largely replaced asynchronous DRAM in virtually all relevant uses. Toward the end of this period — roughly 1999 to 2000 — some DRAM manufacturers and their customers also began

using RDRAM, but only in very limited end uses, accounting for a relatively small portion (*i.e.*, in the range of 5%) of overall DRAM production.

ANSWER: Rambus admits that various DRAM manufacturers make, use, sell, and/or offer for sale in the United States memory devices that purport to comply with the JEDEC SDRAM and DDR SDRAM standards. Rambus further admits that various DRAM manufacturers manufacture and sell Rambus-compliant products. Otherwise, Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 89 of the Complaint and therefore denies those allegations.

90. Leading up to and following the issuance of JEDEC's second-generation SDRAM standard — or DDR SDRAM -- in August 1999, DRAM manufacturers and their customers began designing, testing, and (to a limited extent) producing memory and memory-related products incorporating, or complying with, the DDR SDRAM standard. By 2000, DDR SDRAM was beginning to be manufactured in increasing volumes. This trend continued during 2001, and a number of DRAM manufacturers and their customers began to replace first-generation SDRAM and RDRAM with DDR SDRAM for certain high-end uses. Current projections indicate that total sales of DDR SDRAM, on a revenue basis, may account for as large as 40% of all DRAM produced worldwide in 2002, and by 2004 this figure is expected to exceed 50%.

ANSWER: Rambus is without knowledge or information sufficient to form a belief as to the truth of the allegations in Paragraph 90 of the Complaint and therefore denies those allegations.

91. Throughout the late 1990s, as the DRAM industry became increasingly locked in to use of JEDEC-compliant SDRAM, and subsequently DDR SDRAM, Rambus continued the process of perfecting patent rights on certain technologies incorporated within the JEDEC SDRAM standards. By the late 1990s, Rambus had succeeded in obtaining numerous patents, not expressly limited to a narrow-bus RDRAM architecture, that purported to cover, among other technologies encompassed by the JEDEC standards, programmable CAS latency, programmable burst length, on-chip DLL, and dual-edge clock.

ANSWER: Rambus avers that the first patent claims issued to it that would arguably be infringed by all products purporting to comply with either JEDEC's SDRAM or DDR SDRAM standards were submitted to the PTO no earlier than November 1998 and issued in a U.S. patent no earlier than June 1999. Otherwise, Rambus denies the allegations in Paragraph 91 of the Complaint.

92. In late 1999, Rambus began contacting all major DRAM and chipset manufacturers worldwide asserting that, by virtue of their manufacture, sale, or use of JEDEC compliant SDRAM, they were infringing upon Rambus's patent rights, and inviting them to contact Rambus for the purpose of promptly resolving the issue.

ANSWER: Rambus admits that, in or about November 1999, it began contacting certain memory manufacturers to notify them that, based on analyses of the datasheets of products made by those companies, Rambus believed those products infringed certain of

Rambus patents. Otherwise, Rambus denies the allegations in Paragraph 92 of the Complaint.

93. Thereafter, Rambus entered into license agreements with seven major DRAM manufacturers: Matsushita Electric Industrial Co., Ltd.; Elpida Memory, Inc.; Samsung Electronics Co.; NEC Corporation; Toshiba America Inc.; Oki Electric Industry Co.; and Mitsubishi Electronics America Inc. Pursuant to these licenses, Rambus allowed each company to use those aspects of its technology necessary for the design and manufacture of JEDEC-compliant SDRAM. In exchange, each company agreed to pay Rambus ongoing royalties reflecting 0.75% of revenues associated with the manufacture and sale of SDRAMs and 3.5% of revenues associated with the manufacture and sale of DDR SDRAMs. By comparison, Rambus typically licenses all the information needed to develop Rambus-compatible RDRAM memory at royalty rates ranging up to a maximum of approximately 2.5% of revenues.

ANSWER: Rambus admits that, beginning in June 2000, it entered into patent license agreements with Toshiba Corporation; Hitachi, Ltd.; OKI Electric Industry Co., Ltd.; NEC Corporation; Elpida Memory, Inc.; Samsung Electronics Co., Ltd.; Mitsubishi Electric Corporation; Matsushita Electric Industrial Co., Ltd. and Intel Corporation. Rambus further admits that, pursuant to these agreements, Rambus has licensed certain of its patents for the manufacture of, among other things, SDRAMs and DDR SDRAMs. The terms of each of these licenses speak for themselves; none are identical. Otherwise, Rambus denies the allegations in Paragraph 93 of the Complaint.

94. After disclosing its patents, Rambus stated publicly that it would demand even higher royalties from any DRAM manufacturer that refused to license the Rambus patents and instead chose to litigate. Rambus also publicly threatened that it might simply refuse to license its patents to any DRAM manufacturer that was unsuccessful in litigation.

ANSWER: Rambus avers that patents are disclosed to the public no later than the date they are issued by the PTO. Rambus admits that certain Rambus employees have said that Rambus might treat firms that chose to litigate rather than enter licensing agreements with Rambus less favorably than others. Otherwise, Rambus denies the allegations in Paragraph 94 of the Complaint.

95. In January 2000, Rambus filed the first in a series of patent infringement suits. That suit, which was filed in federal district court in Delaware and named only one defendant — Hitachi — was subsequently settled, conditioned upon Hitachi's agreement to submit to Rambus's license terms.

ANSWER: Rambus admits that it filed a patent infringement lawsuit against Hitachi, Ltd. and Hitachi Semiconductor (America), Inc., in January 2000 in federal district court in Delaware, and that that lawsuit was settled when the parties entered into a license agreement. Otherwise, Rambus denies the allegations in Paragraph 95 of the Complaint.

96. With the signing of the Hitachi license, combined with the seven additional licenses discussed above, Rambus had succeeded in obtaining licenses covering roughly 50% of

total worldwide production of synchronous DRAM technology. At current market prices for SDRAM, such licenses entitle Rambus to royalties in the range of $50-100 million per year, a number that could increase significantly in the event Rambus were to prevail in the ongoing litigation and secure licenses from the remaining manufacturers of SDRAMs. Indeed, under such circumstances, Rambus's SDRAM-related patent rights could allow Rambus to extract royalty payments well in excess of a billion dollars from the DRAM industry over the life of the patents.

ANSWER: Rambus denies the allegations in Paragraph 96 of the Complaint.

97. In August 2000, Rambus filed suit against another DRAM manufacturer — Infineon — in federal district court in Virginia, accusing Infineon of patent infringement. Infineon later asserted various affirmative defenses and counterclaims. In April 2001, the case proceeded to trial, resulting in a jury finding of fraud against Rambus relating to its involvement in the standard-setting activities of JC-42.3 and a legal ruling that Rambus's patents were not infringed by Infineon's use of the SDRAM standards. These and other legal issues are currently pending on appeal before the U.S. Court of Appeals for the Federal Circuit, which heard oral argument June 3, 2002. (Infineon's antitrust claim against Rambus was dismissed due to a technical failure of proof concerning the relevant geographic market. This ruling has not been appealed.)

ANSWER: Rambus admits that Rambus filed a patent infringement lawsuit against Infineon Technologies AG and related entities (collectively "Infineon") in the United States District Court for the Eastern District of Virginia in August 2000; that Infineon asserted various affirmative defenses and counterclaims; that the case was tried to a jury in April and May 2001; that the district court dismissed Infineon's breach of contract and antitrust counterclaims and Rambus's patent infringement claims as a matter of law; that the jury returned a verdict in favor of Rambus on Infineon's RICO counterclaim and against Rambus on Infineon's actual and constructive fraud counterclaims; that the district court dismissed Infineon's constructive fraud counterclaim and Infineon's actual fraud counterclaim relating to DDR SDRAM as a matter of law, after trial, finding that Rambus had left JEDEC before any DDR SDRAM standard-setting had begun; and that some of these and other legal issues are currently pending on appeal before the United States Court of Appeals for the Federal Circuit, which heard oral argument on June 3, 2002. Otherwise, Rambus denies the allegations in Paragraph 97 of the Complaint.

98. Also in August 2000, Rambus itself was sued, in federal district court in California, by another DRAM manufacturer — Hynix — seeking a declaratory judgment that its manufacture and sale of JEDEC-compliant SDRAM did not infringe Rambus's patents. In addition to seeking declaratory relief, Hynix accuses Rambus of, among other things, antitrust violations, unfair competition, and breach of contract. Meanwhile, Rambus counterclaimed, alleging patent infringement, and the suit was subsequently stayed pending a ruling by the Federal Circuit in the *Infineon* litigation.

ANSWER: Rambus admits that, on August 29, 2000, Hynix Semiconductor, Inc., Hynix Semiconductor American, Inc., Hynix Semiconductor U.K. Ltd., and Hynix Semiconductor Deutschland GmbH (collectively "Hynix," then known as Hyundai

Electronics Industries Co., Ltd., and Hyundai Electronics America) sued Rambus in the United States District Court for the Northern District of California seeking, among other things: (1) declaratory judgment of invalidity, unenforceability and noninfringement of several Rambus patents that claim priority to the '898 application; and (2) damages and injunctive relief from Rambus for various claims similar to those Infineon asserted against Rambus. Rambus further admits that it asserted in response that various Hynix products infringe several Rambus patents; and that the suit was subsequently stayed. Otherwise, Rambus denies the allegations in Paragraph 98 of the Complaint.

99. In a second suit filed against Rambus in August 2000, in federal district court in Delaware, another major DRAM manufacturer — Micron — seeks a declaratory judgment that its manufacture and sale of JEDEC-compliant SDRAM does not infringe Rambus's patents. In addition to seeking declaratory relief, Micron accuses Rambus of monopolization, attempted monopolization, fraud, and inequitable conduct. As in the *Hynix* suit, Rambus has asserted counterclaims against Micron, accusing it of patent infringement, and the suit has been stayed, at least for purposes other than discovery, pending resolution of the *Infineon* appeal.

ANSWER: Rambus admits that, on August 28, 2000, Micron Technology Inc. filed suit against Rambus in the United States District Court for the District of Delaware seeking, among other things: (1) declaratory judgment of invalidity, unenforceability and noninfringement of several Rambus patents that claim priority to the '898 application; and (2) damages and injunctive relief from Rambus for various claims similar to those Infineon asserted against Rambus. Rambus further admits that it asserted in response that various Micron Technology Inc. and Micron Electronics Inc. products infringe several Rambus patents. Rambus avers that the District Court postponed trial until after a ruling by the Federal Circuit in the *Infineon* litigation, but ordered the parties to complete all necessary discovery in the interim. Otherwise, Rambus denies the allegations in Paragraph 99 of the Complaint.

100. In the *Infineon*, *Hynix*, and *Micron* lawsuits combined, Rambus has asserted that a dozen or more of its patents have been infringed through the production and sale of JEDEC-compliant SDRAM by these three companies. Each of the patents upon which Rambus has sued stems from, and claims priority back to, Rambus's '898 application.

ANSWER: Rambus admits that each of the Rambus patents in suit in the *Infineon*, *Micron* and *Hynix* lawsuits claims priority to Rambus's '898 application. Otherwise, Rambus denies the allegations in Paragraph 100 of the Complaint.

101. Upon information and belief, Rambus also possesses additional patents and patent applications, some claiming priority back to the '898 application, that it has not yet sought, but could in the future seek, to enforce against memory manufacturers producing JEDEC compliant SDRAM, absent issuance of the relief requested below.

ANSWER: The allegation in the last clause of Paragraph 101 of the Complaint attempts to state a legal conclusion and therefore no response from Rambus is required. To the

extent a response is required, Rambus denies that allegation. Otherwise, Rambus admits the allegations in Paragraph 101 of the Complaint.

102. In addition to the foregoing, Rambus is involved in other litigation in various foreign countries relating to foreign patents that cover, or purport to cover, many of the same DRAM-related technologies that are at issue in the U.S. litigation.

ANSWER: Rambus admits that it is involved in patent infringement lawsuits in various foreign countries that involve foreign patents that cover some of the same inventions at issue in the U.S. litigation. Otherwise, Rambus denies the allegations in Paragraph 102 of the Complaint.

103. Notably, while Rambus has licenses covering roughly 50% of the synchronous DRAM industry, Rambus asserts in litigation that all or virtually all synchronous DRAM produced worldwide incorporates Rambus technology and that those synchronous DRAM manufacturers that are not paying royalties to Rambus are liable in damages. In addition to facing the threat of potential damages, those companies that have chosen to litigate against Rambus have been forced to incur substantial litigation costs, reaching into the millions, if not tens of millions, of dollars. Unless they prevail against Rambus in litigation, such companies also face the prospect of being denied licenses to Rambus's patents, or otherwise being required to pay royalties significantly in excess of the amounts paid by the memory manufacturers that acquiesced to Rambus's licensing demands without resort to litigation.

ANSWER: Rambus denies the allegations in Paragraph 103 of the Complaint.

104. Rambus also has licensed companies, such as Intel, that do not produce memory chips but do produce related computer components — in Intel's case, chipsets — that are designed to be compatible with synchronous DRAMS.

ANSWER: Rambus admits that it has entered into a patent license agreement with Intel Corporation for the manufacture and sale of various Intel products, including but not limited to Intel chipsets. Rambus further admits that it has entered into patent license agreements with companies that do not produce memory chips but that do produce components that are compatible with certain memory products, including JEDEC-compliant SDRAMs. Otherwise, Rambus denies the allegations in Paragraph 104 of the Complaint.

105. Given the extensive degree to which the DRAM industry has become locked in to the JEDEC SDRAM standards, it is not economically feasible for the industry to attempt to alter or work around the JEDEC standards in order to avoid payment of royalties to Rambus. Any such effort would face innumerable practical and economic impediments, including but not limited to the out-of-pocket costs associated with redesigning, validating, and qualifying SDRAM products to conform with a revised set of standards. On top of this, such manufacturers could be forced to absorb potentially massive revenue losses if, as a result of modifying the JEDEC standards, their introduction of new products were delayed.

ANSWER: Rambus denies the allegations in Paragraph 105 of the Complaint.

106. Agreeing upon revised SDRAM standards could in itself be a very costly and time-consuming process. Indeed, it is unclear whether the industry would be able to reach any such consensus, given complications inherent in the current market environment, including the fact that some DRAM manufacturers have acquiesced to Rambus's licensing demands while others have not.

ANSWER: Rambus avers that DRAM manufacturers frequently and continuously alter the design of their DRAM products and offer suggestions for revisions to existing DRAM standards or completely new standards. Otherwise, Rambus denies the allegations in Paragraph 106 of the Complaint.

107. Added to these complications is the fact that purchasers and other users of JEDEC-compliant SDRAM technology - - including manufacturers of computers, chipsets, graphics cards, and motherboards — have themselves become locked in to the JEDEC standards. For this and other reasons, even if the DRAM industry were otherwise able to undertake the complicated and costly task of revising the JEDEC standards to work around Rambus's patent claims, it is unclear whether downstream purchasers of synchronous DRAM would welcome or accept such an action, given the costs that they would be forced to incur in order to conform their own product designs and manufacturing processes to a revised set of standards. Nor is it clear whether downstream purchasers and other users of SDRAM technology would tolerate the delay in the introduction of new products that likely would result from the process of changing the standard.

ANSWER: Rambus denies the allegations in Paragraph 107 of the Complaint.

108. Any effort to revise the JEDEC standards on a going forward basis could also interfere with the ability of DRAM designers, manufacturers, and users to maintain the backwards compatibility among successive generations of synchronous DRAM that JEDEC has sought to preserve.

ANSWER: Rambus avers that there is no backwards compatibility between memory devices compliant with the JEDEC DDR SDRAM standard and those compliant with the JEDEC SDRAMs standard. Otherwise, Rambus denies the allegations in Paragraph 108 of the Complaint."

109. For these and other reasons, the DRAM industry has had little or no practical ability to work around Rambus's patent claims, and it is not at all clear the industry could do so in the future.

ANSWER: Rambus admits that, at least since the filing date of the '898 application, the DRAM industry has shown little or no practical ability to work around Rambus's patented inventions. Rambus avers that there are no commercially viable alternatives to those patented inventions. Otherwise, Rambus denies the allegations in Paragraph 109 of the Complaint.

110. Synchronous DRAM is produced throughout the world by various memory manufacturers located or doing business in the U.S. and various foreign countries. Synchronous DRAMs, and products incorporating synchronous DRAMS, are imported and exported throughout the world in large volumes.

ANSWER: Rambus admits the allegations in Paragraph 110 of the Complaint.

111. Commercial DRAM chip manufacturers wishing to design and produce synchronous DRAM chips, wherever they may be located throughout the world, are practically limited to using one of two alternative architectures: the JEDEC-compliant SDRAM architecture or Rambus's own proprietary RDRAM architecture, itself a synchronous DRAM technology. No other synchronous DRAM architectures have been developed and made available for wide-spread commercial use.

ANSWER: Rambus admits that, at least since the filing date of the '898 application, the DRAM industry has shown little or no practical ability to work around Rambus's patented inventions. Rambus avers that there are no commercially viable alternatives to those patented inventions. Otherwise, Rambus denies the allegations in Paragraph 111 of the Complaint.

112. The RDRAM and JEDEC-compliant SDRAM architectures, in turn, each consist of a variety of subsidiary technologies or technological features — that are necessary in order successfully to design and manufacture a synchronous DRAM chip. These subsidiary technologies may be regarded as essential technology inputs into the design and manufacture of synchronous DRAMS.

ANSWER: Rambus denies the allegations in Paragraph 112 of the Complaint.

113. As in other aspects of engineering, electrical engineers involved in the design of synchronous DRAM chips select from among alternative technological features, concepts, or approaches in order to address or solve issues, or problems, that arise in the course of developing such chips. The alternative technologies available to address a given technical issue arising in the course of synchronous DRAM design together may comprise a separate, well-defined product market. At least four such markets are relevant for purposes of the instant complaint, including the following:

a. The market for technologies used to specify the length of time — or "latency" period between the memory's receipt of a read request and its release of data corresponding with the request (hereinafter, the "latency technology market"). This market includes programmable CAS latency and any alternative technologies that may be economically viable substitutes for the use of programmable CAS latency in synchronous DRAM design.

b. The market for technologies used to specify the number of times information (data) is transmitted between the CPU and memory -- *i.e.*, the "burst length" associated with a single request or instruction (hereinafter, the "burst length technology market"). This market includes programmable burst length and any

alternative technologies that may be economically viable substitutes for the use of programmable burst length in synchronous DRAM design.

c. The market for technologies used to synchronize the internal clock that governs operations within a memory chip and the system clock that regulates the timing of other system functions (hereinafter, the "clock synchronization technology market"). This market includes on-chip DLL technology and any alternative technologies that may be economically viable substitutes for the use of an on-chip DLL in synchronous DRAM design.

d. The market for technologies used to accelerate the rate at which data are transmitted between the CPU and memory (hereinafter, the "data acceleration technology market"). This market includes dual-edge clock technology and any alternative technologies that may be economically viable substitutes for the use of a dual-edge clock in synchronous DRAM design.

ANSWER: The allegations in Paragraph 113 of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations in Paragraph 113 of the Complaint.

114. Technologies used in the design of synchronous DRAM chips, to solve separate but related design issues, may be viewed as economic complements. The complementary nature of such design technologies is evidenced by, among other things, the fact that they sometimes are licensed together in a package, as is the case with respect to the patented Rambus technologies encompassed by each of the aforementioned product markets. Where such close relationships exist among a group of technologies, all of which are necessary inputs into the design or manufacture of a common downstream product, one may appropriately define a product market encompassing the group of complementary technologies and their close substitutes. Thus, in addition, or in the alternative, to the four product markets identified above, there is a fifth well-defined product market that is relevant for purposes of this complaint -- namely, a market comprising, collectively, all technologies falling within any one of these narrower markets (hereinafter, the "synchronous DRAM technology market").

ANSWER: The allegations in Paragraph 114 of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations in Paragraph 114 of the Complaint.

115. Technologies encompassed within each of the foregoing product markets are used on a worldwide basis. Technologies originating outside the United States frequently are considered for and used in JEDEC standards, and indeed have been used in both the first- and second-generation SDRAM standards promulgated by JEDEC. The technologies selected for inclusion in these JEDEC standards, in turn, have been incorporated and used by synchronous DRAM manufacturers throughout the world.

ANSWER: Rambus denies the allegations in Paragraph 115 of the Complaint.

116. Both proprietary and non-proprietary technologies have been used in synchronous DRAM design. To the extent such technologies are non-proprietary, they are free to be used, on a non-royalty-incurring basis, by any synchronous DRAM manufacturer or downstream user worldwide. On the other hand, to the extent such technologies are proprietary, inasmuch as they are subject to patents or potential patent claims in one or more jurisdictions, the use of such technologies by synchronous DRAM manufacturers or downstream users may depend upon the user's agreement to specific license terms negotiated with the patent holder. In the event that patent rights are similar in most relevant jurisdictions, however, there is no apparent legal or economic impediment that would preclude licenses from being made available on a multi-national or worldwide basis. Indeed, Rambus, which holds synchronous DRAM-related patents issued in the United States and numerous foreign countries, commonly grants licenses to companies in the U.S. and abroad encompassing rights to use Rambus's patented technologies worldwide.

ANSWER: The allegations in Paragraph 116 of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations in Paragraph 116 of the Complaint, except that Rambus admits that it has granted licenses to use Rambus proprietary technology in the U.S. and abroad.

117. For these and other reasons, each of the technology-related product markets identified above is worldwide in scope.

ANSWER: The allegations in Paragraph 117 of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations in Paragraph 117 of the Complaint, except that Rambus avers that both patent rights and the laws that govern them differ from country to country.

118. Alternatively, or in addition, the geographic scope of such product markets might appropriately be defined as the United States if, for example, Rambus's U.S. patent rights differed significantly from rights recognized in various foreign jurisdictions, or if Rambus otherwise had the ability to vary royalty rates from one jurisdiction to another.

ANSWER: The allegations in Paragraph 118 of the Complaint attempt to state legal conclusions and therefore no response from Rambus is required. To the extent a response is required, Rambus denies the allegations in Paragraph 118 of the Complaint.

119. The foregoing conduct by Rambus, during and after its involvement in JEDEC's JC-42.3 Subcommittee, has materially caused or threatened to cause substantial harm to competition and will, in the future, materially cause or threaten to cause further substantial injury to competition and consumers, absent the issuance of appropriate relief in the manner set forth below.

ANSWER: Rambus denies the allegations in Paragraph 119 of the Complaint.

120. The threatened or actual anticompetitive effects of Rambus's conduct include but are not limited to the following:

a. increased royalties (or other payments) associated with the manufacture, sale, or use of synchronous DRAM technology;

b. increases in the price, and/or reductions in the use or output, of synchronous DRAM chips, as well as products incorporating or using synchronous DRAMS or related technology;

c. decreased incentives, on the part of memory manufacturers, to produce memory using synchronous DRAM technology;

d. decreased incentives, on the part of DRAM manufacturers and others, to participate in JEDEC or other industry standard-setting organizations or activities; and

e. both within and outside the DRAM industry, decreased reliance, or willingness to rely, on standards established by industry standard-setting collaborations.

ANSWER: Rambus denies the allegations in Paragraph 120 of the Complaint.

121. Rambus has engaged in a systematic effort — blessed if not orchestrated by its most senior executives — to destroy documents and other information. Upon information and belief, among other pertinent files destroyed as a result of this campaign were notes and other documentation relating to, among other things, Rambus's involvement in the JC-42.3 Subcommittee. Upon information and belief, this document-destruction campaign was undertaken, wholly or in substantial part, with the purpose of avoiding or minimizing the adverse legal repercussions of the anticompetitive conduct described in the instant complaint. Partly as a consequence of these document-destruction activities, in combination with other bad-faith litigation conduct, Rambus was required by the federal district court presiding over the *Infineon* litigation to pay a sanction exceeding $7 million.

ANSWER: Rambus denies the allegations in Paragraph 121 of the Complaint.

122. As described in Paragraphs 1-121 above, which are incorporated herein by reference, Rambus has willfully engaged in a pattern of anticompetitive and exclusionary acts and practices, undertaken over the course of the past decade, and continuing even today, whereby it has obtained monopoly power in the synchronous DRAM technology market and narrower markets encompassed therein — namely, the latency, burst length, clock synchronization, and data acceleration markets discussed above — which acts and practices constitute unfair methods of competition in violation of Section 5 of the FTC Act.

ANSWER: Rambus denies the allegations in Paragraph 122 of the Complaint.

123. As described in Paragraphs 1-121 above, which are incorporated herein by reference, Rambus has willfully engaged in a pattern of anticompetitive and exclusionary acts and

practices, undertaken over the course of the past decade, and continuing even today, wit a specific intent to monopolize the synchronous DRAM technology market and narrowe markets encompassed therein, resulting, at a minimum, in a dangerous probability of monopolization in each of the aforementioned markets, which acts and practices constitute unfair methods of competition in violation of Section 5 of the FTC Act.

ANSWER: Rambus denies the allegations in Paragraph 123 of the Complaint.

121. As described in Paragraphs 1-121 above, which are incorporated herein by reference, Rambus has willfully engaged in a pattern of anticompetitive and exclusionary acts and practices, undertaken over the course of the past decade, and continuing even today, whereby it has unreasonably restrained trade in the synchronous DRAM technology market and narrower markets encompassed therein, which acts and practices constitute unfair methods of competition in violation of Section 5 of the FTC Act.

ANSWER: Rambus denies the allegations in Paragraph 124 of the Complaint.

Affirmative Defense

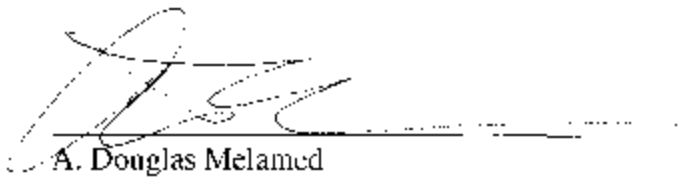
The Complaint fails to state a claim under Section 5 of the FTC Act.

Rambus reserves the right to assert additional affirmative defenses as discovery proceed

PRAYER FOR RELIEF

WHEREFORE having fully answered the plaintiff's complaint, Rambus denies that plaintiff is entitled to any relief whatsoever, and it respectfully requests judgment dismissing the complaint with prejudice and awarding to Rambus the costs of the action, expert fees and reasonable attorney fees, as may be allowed by law; and such other relief as the Court deems just and appropriate.

Respectfully submitted,



A. Douglas Melamed
Robert B. Bell
Kenneth A. Bamberger*
WILMER, CUTLER & PICKERING
2445 M Streeet, NW
Washington, DC 20037
(202) 663-6000

Gregory P. Stone
Steven M. Perry
Sean P. Gates
Peter A. Detre
MUNGER TOLLES & OLSON LLP
355 South Grand Avenue
35th Floor
Los Angeles, CA 90071
(213) 683-9100

Counsel for Respondent Rambus, Inc.

*Admitted in MA and NY only.

Of counsel:

John D. Danforth
Robert G. Kramer
RAMBUS, INC.
4440 El Camino Real
Los Altos, CA 94022
(650) 947-5000

Dated: July 29, 2002

CERTIFICATE OF SERVICE

I hereby certify that this 29th day of July, 2002, the original and two copies of the foregoing Answer of Respondent Rambus, Inc. were filed with the Secretary of the Commission, and that I caused a true and correct copy to be served on the following persons by hand delivery:

Hon. James P. Timony
Administrative Law Judge
Federal Trade Commission
Room H-112
600 Pennsylvania Avenue, N.W.
Washington, D.C. 20580

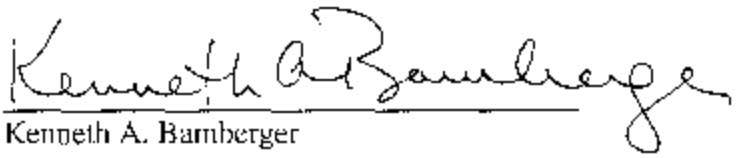
R. Sean Royall
Deputy Director, Bureau of Competition
Federal Trade Commission
Room H-378
600 Pennsylvania Avenue, N.W.
Washington, D.C. 20580

Joseph J. Simons
Director, Bureau of Competition
Federal Trade Commission
Room H-372
600 Pennsylvania Avenue, N.W.
Washington, D.C. 20580

Richard B. Dagen
Assistant Director
Bureau of Competition
Federal Trade Commission
600 Pennsylvania Avenue, N.W.
Washington, D.C. 20580

Geoffrey D. Oliver
Deputy Assistant Director
Bureau of Competition
Federal Trade Commission
601 Pennsylvania Avenue, N.W.
Washington, D.C. 20580

Malcolm L. Catt
Attorney
Federal Trade Commission
Room 3035
601 Pennsylvania Avenue, N.W.
Washington, D.C. 20580



Kenneth A. Bamberger