Public

UNITED STATES OF AMERICA
BEFORE FEDERAL TRADE COMMISSION

In the Matter of RAMBUS INCORPORATED, a corporation.	Docket No. 9302

COMPLAINT COUNSEL'S POST-HEARING BRIEF

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INTRODUCTION

The most valuable patents are ones that must be used in order to be in compliance with a standard.[1]

These words, authored by Rambus's primary JEDEC representative, Richard Crisp, capture the essence of this case, and the essence of Rambus as a company. Mr. Crisp, based on four years of participation in JEDEC's open standards process, was well acquainted with JEDEC's rules and its purposes. Yet he understood that Rambus's corporate objectives were fundamentally at odds with JEDEC's objectives.[2] Geoffrey Tate, the only CEO in Rambus's history, whom Rambus elected not to call as a witness at trial, knew this as well. His objective, set out in the Rambus business plan he drafted in June 1992, just months after Rambus began attending JEDEC meetings, was to gain control of the dominant DRAM industry standards. Indeed, Tate and others at Rambus fully appreciated that the company's intellectual property – its only real asset – would become valuable only if it was embedded in an industry standard. This case is not about an innovative company that emerged as a monopolist through the quality of its inventions. Rather, it is about a company whose inventions have come to possess immense market value solely because the company subverted an open standards process through deception and bad faith.

As Your Honor has ruled, this case comes down to three basic questions:

- Did the Respondent, Rambus Inc., engage "in a pattern of deceptive, exclusionary conduct by subverting an open standards process"?
- Did Rambus utilize "such conduct to capture a monopoly in technology-related markets"?

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[1] CX0903 at 2 (emphasis added).

[2] In the same paragraph of the previously cited document, Mr. Crisp wrote: "The job of JEDEC is to create standards which steer clear of patents which must be used to be in compliance with the standard whenever possible." CX0903 at 2 (emphasis added).

- Does Rambus's challenged conduct violate "well-established principles of antitrust law"?

See Order Denying Respondent's Motion for Summary Decision at 12 (Apr. 14, 2003). The voluminous evidentiary record – the product of a 54-day administrative hearing involving 44 live witnesses and roughly 1770 admitted exhibits – compels the same answer for each question: a resounding yes. As explained in this post-hearing brief, through its challenged conduct Rambus did indeed violate well-established principles of antitrust law, subjecting itself to liability under Section 5 of the FTC Act, 15 U.S.C. § 45.

Section I provides an overview of how the evidence developed through the administrative hearing substantiates every material allegation contained in the Commission's Complaint.

Section II discusses the elements of the Commission's claims, the overarching theory of liability, the relevant burdens of proof, and certain inferences and presumptions that should be taken into account in assessing the sufficiency of the proof.

Section III analyzes the central legal and factual issues bearing upon the subject of liability and explains why Rambus should be held liable under each of the three counts outlined in the Commission's Complaint.

Finally, Section IV addresses the subject of relief and demonstrates why Rambus's conduct warrants a broad, forward-looking remedy that will effectively restore competitive conditions to the markets at issue and bar Rambus from further exploiting its ill-gotten monopoly power to the detriment of competition and consumers.

Although Complaint Counsel has endeavored in this post-hearing brief to provide a comprehensive discussion of the record facts as they bear on issues of liability and remedy, the

brief should be read in conjunction with Complaint Counsel's Proposed Findings of Fact ("CCFF"), which distills the factual record in considerably greater detail.[3]

I. THE RECORD SUBSTANTIATES ALL MATERIAL ALLEGATIONS OF THE COMMISSION'S COMPLAINT

The Complaint in this matter sets forth detailed factual allegations that, in the unanimous view of the Commission, warranted this enforcement action against Rambus, and the assertion of three separate claims of liability – monopolization (Count I), attempted monopolization (Count II), and unfair methods of competition (Count III). The legal and economic underpinnings of the Commission's Complaint are sound. Commission precedents, antitrust case law, well-accepted principles of economic theory (on which Rambus's own experts, among others, have written), and this Court's pretrial rulings all validate the theory of liability upon which this case is predicated.[4] The Complaint's allegations have now been proven by overwhelming evidence, and that evidence conclusively establishes Rambus's liability under each count in the Commission's Complaint.

Broadly speaking, the record in this case can be summarized by reference to several categories of evidence, which closely track the Complaint's allegations:

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[3] More generally, Complaint Counsel incorporates herein CCFF 1-3.

[4] *See, e.g.*, Mark A. Lemley, *Intellectual Property Rights and Standards Setting Organizations*, 90 Cal. L. Rev. 1889, 1930 (2002) ("It is certainly feasible for an IP owner to gain a market advantage by concealing its IP rights from an SSO long enough for the SSO to adopt a standard. And where adoption of the standard is likely to determine the way the market develops, one wielding the power to control that standard may ultimately control the market. This is an antitrust risk that needs to be addressed."); *id.* at 1930 n.163 ("[C]ompanies that subvert cooperative standard setting processes to create their own proprietary, closed systems should face severe penalties."), quoting Dennis W. Carlton and Robert H. Gertner, *Intellectual Property, Antitrust and Strategic Behavior* (Nat'l Bureau of Economic Research, Working Paper No. 8976, 2002), at 3.

The DRAM Industry (Complaint ¶¶ 7-13). As a foundation for understanding the conduct at issue here, the relevant markets, and the manner in which Rambus's conduct has injured competition and consumers in such markets, Complaint Counsel has developed a thorough factual record relating to the nature of dynamic random access memory ("DRAM"), the processes through which it is produced, the economic factors affecting supply and demand, the technologies used in designing DRAMs, and the evolutionary development of the DRAM industry and DRAM industry standards, throughout the relevant time period (roughly 1990 to the Tj T* -0.0143s

proprietary standards for synchronous DRAMs, which embodied a far more conventional, "wide-bus" architecture. *See* CCFF 700-66, 800-1357.

Rambus's Scheme to Develop Patents Covering SDRAMs and "Future SDRAMs"(Complaint ¶¶ 39-55). The record likewise compellingly demonstrates that Rambus, starting in the early 1990's, while a member of JEDEC, set out to amend and broaden[5] its pending patent applications for the specific purpose of covering technological features that were adopted or being considered for adoption in JEDEC's competing SDRAM standards – all the while deliberately keeping these activities secret from JEDEC. *See* CCFF 500-658, 800-1357. Explicit documentary proof and corroborative witness testimony reveal the precise nature of Rambus's scheme, and the manner in which it was implemented. Such evidence clearly demonstrates, among other things, that Rambus knew or believed various technological features contained in JEDEC's SDRAM standards, or considered for inclusion in future SDRAM standards, either were covered by pending Rambus patent applications or could be covered through amendments to such applications, without exceeding the scope of the inventions

[5] The term "broaden" is used here to refer to the fact that Rambus's initial patent claims were drafted with the RDRAM architecture in mind. Hence, Rambus's effort to obtain patent coverage over SDRAMs not only involved amending patent claims to specify, with particularity, certain technological features used in SDRAMs, but also generalizing such claims to extend to more conventional DRAM architectures. This was done, in part, by removing limitations in Rambus's earlier patent claims that reflected peculiarities, or novelties, associated with the RDRAM design. *See* CCFF 700-766, 800-1357.

The Four "Rambus" Technologies (Complaint ¶¶ 56-69). The following four technologies were among the DRAM-related technologies considered or adopted by JEDEC while Rambus was a member of the organization that Rambus, during the same time period, specifically set out to cover through amended patent claims: (1) programmable CAS latency; (2) programmable burst length; (3) on-chip PLL/DLL; and (4) dual-edge clocking (collectively referred to hereinafter as "the 'Rambus' technologies"). Record evidence shows that JEDEC incorporated the first two of these technologies into its initial SDRAM standards, finalized in October 1993, more than two and a half years before Rambus withdrew from JEDEC; that JEDEC included all four technologies in JEDEC's subsequently adopted DDR SDRAM standards; and that the work on what eventually became known as "DDR SDRAM" commenced (if not earlier) in late 1993, very shortly after JEDEC's initial SDRAM standards were completed. *See* CCFF 500-658. The evidence also shows that express claims in various Rambus patent applications filed with the U.S. Patent and Trademark Office ("PTO") while Rambus was a member of JEDEC were arguably broad enough to cover use of these "Rambus" technologies in devices built in compliance with JEDEC's SDRAM and DDR SDRAM standards. *See* CCFF 500-658, 1122-1237. Finally, it is undisputed that Rambus, starting in or around early 2000, began to enforce various patents, all deriving from the '898 application, against JEDEC-compliant SDRAM and DDR SDRAM devices, specifically relating to the use of the aforementioned technologies in such devices. *See* CCFF 1950-1974.

Rambus's Failure to Make Required Patent-Related Disclosures to JEDEC (Complaint ¶¶ 70, 79-80). Despite clear evidence that Rambus, while a member of the organization, knew or believed that JEDEC's standards would likely infringe upon its own patented or patent-pending technologies, and despite ongoing efforts by Rambus and its lawyers

to obtain ever-broader coverage over SDRAMs and "Future SDRAMs" (which came to be known as DDR SDRAMs) in the 1992-1996 time frame and beyond, Rambus never disclosed to JEDEC that it possessed patents or applications directly related to JEDEC's work. *See* CCFF 800-1357. Indeed, the evidence shows that Rambus deliberately concealed such information from JEDEC participants throughout the time it participated in JEDEC (ending in June 1996), and that it continued to conceal such information for many years thereafter, even as it developed increasingly confident views that SDRAMs and DDR SDRAMs did (or would) infringe Rambus patents. *See* CCFF 1238-1357, 1676-1700. Rambus's actions in this regard undermined and subverted JEDEC's most basic purposes and principles and directly violated well-established JEDEC policies, rules, and procedures.

Rambus's Limited and Misleading Disclosures (Complaint ¶¶ 71-88). The record evidence shows that Rambus did make limited patented-related disclosures to JEDEC. *See* CCFF 968-76, 1109-14. Importantly, however, these disclosures did not relate to Rambus's efforts to cover SDRAMs and "Future SDRAMs" or to Rambus's belief that it had succeeded in doing so. *See* CCFF 917-18, 926. Specifically, in September 1993 Rambus disclosed to JEDEC the issuance of its first RDRAM-related patent – U.S. Patent No. 5,423,703 (hereinafter, "the '703 patent"). When it withdrew from JEDEC in June 1996, Rambus also disclosed, with no explanation, the numbers of each of its then-issued patents, with one important exception: It is undisputed that Rambus omitted from its JEDEC withdrawal letter the only issued patent – U.S. Patent No. 5,513,327 (hereinafter, "the '327 patent") – that Rambus then possessed containing claims arguably broad enough to cover technological features used in JEDEC's far more conventional "wide-bus" SDRAM architecture. These limited disclosures, the record shows, were not sufficient to place JEDEC's membership on notice that Rambus possessed patents or patent applications relevant to JEDEC's work. Indeed, Rambus did more than withhold such

information from JEDEC. When, as occurred on several occasions, JEDEC members confronted Rambus about the possibility that Rambus might possess intellectual property relevant to JEDEC's work, the evidence shows that Rambus provided misleading responses calculated to quell any such fears or suspicions. *See* CCFF 902-09; *see also id.* 1260-65.

The Anticompetitive Nature of Rambus's Challenged Conduct (Complaint ¶¶ 1-3, 121-24). The record contains ample factual support to demonstrate that Rambus's challenged conduct was deceptive, and was undertaken in bad faith with the purpose of excluding competition. Among other evidence bearing on the exclusionary and anticompetitive nature of Rambus's challenged conduct, and Rambus's underlying intent, the record shows that:

- Rambus viewed JEDEC's SDRAM standards as a serious competitive threat to RDRAM, particularly given that many DRAM makers and users alike preferred SDRAM's more conventional design and the fact that SDRAM was an open standard, presumptively free of royalty-bearing patents (*see* CCFF 754-63, 1677, 1977-1980; *see also id.* 1683, 1814-37);

- Rambus recognized that securing patent rights over SDRAM could provide it with the ability to impose royalties on, and hence raise the price of, SDRAM devices, thereby restricting competition from SDRAM and making the RDRAM technology comparatively more attractive in the marketplace (*see* CCFF 800-12, 1711-12);

- Rambus understood that if JEDEC learned it possessed patents or patent applications relevant to SDRAM, JEDEC could have worked around Rambus's patented technologies, thereby preserving the openness of the SDRAM standards (*see* CCFF 734-35, 814, 1046);

- Rambus also understood that its ability to gain "leverage" over SDRAM, through the assertion of patent claims, would increase if it waited before disclosing its patents (*see* CCFF 1678);

- Rambus was advised by its lawyers, early on during its tenure in JEDEC, that participating in the organization, while at the same time seeking to obtain patent rights over features of the JEDEC standards – without disclosing to JEDEC that it was doing so – could result in serious legal repercussions, including injunctions against the enforcement of Rambus patents on either equitable estoppel or antitrust grounds (*see*

- notwithstanding such known legal risks, Rambus continued to participate in JEDEC, without disclosing relevant patent information, through mid-1996, its decision to withdraw from JEDEC being heavily influenced by legal advice concerning the potential to be sued by the FTC for antitrust violations, as occurred in *Dell Computer Corp.*, a matter that became public for the first time in December 1995 (*see* CCFF 422, 851, 1083-86, 1090, 1755);

- Rambus continued to conceal its JEDEC-related patents for several years after leaving JEDEC, viewing its "strategic," JEDEC-related "patent portfolio" as an "intellectual property card" that it would "play" against DRAM makers if and when needed to better ensure the success of RDRAM, a scenario that Rambus envisioned occurring only if its coveted relationship with Intel (which by late 1996 was a strong proponent of RDRAM) were to "blow up" (*see* CCFF 1676-1697, 1870-75, 1921, 3000);

- in gearing up for the potential of enforcing its JEDEC-related patents, Rambus launched a massive, company-wide document destruction campaign, which – it has been determined, for purposes of this litigation – was instituted "in part, for the purpose of getting rid of documents that might be harmful" in future anticipated patent infringement suits[6] (*see* CCFF 1718-58);

- Rambus's relationship with Intel in fact did blow up, in October 1999, when Intel informed Rambus that "[i]ndustry acceptance of RDRAM was poor at best" and that Intel had "no choice" but to reassess its relationship with Rambus[7] (CCFF 1916-17; *see also id.* 1913-15, 1918-19);

- in the same month, October 1999, Rambus's Board of Directors met to discuss "target selection" – *i.e.*, which companies to sue first on JEDEC-related patents – and Rambus proceeded to commence enforcement efforts against Hitachi (CCFF 1920);

- Rambus's policy, in terms of licensing its DDR SDRAM-related patents, is that the royalties should be set at levels higher than the RDRAM royalties, with the stated objective of preventing "a competitive device" (CCFF 1712; *see also id.* 1977-80); and

- Rambus's publicly stated licensing policy, both with respect to SDRAM and DDR SDRAM, is that companies that choose to litigate will pay more, whereas companies that litigate and lose may not be licensed at all (*see* CCFF 1983, 1986, 1990-94, 2037, 2980-82).

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[6] Order Granting Complaint Counsel's Motion for Collateral Estoppel at 5 (Feb. 26, 2003).

[7] CX2541.

All of these facts and others support the conclusion that Rambus's challenged conduct was exclusionary in nature and was undertaken for anticompetitive purposes.

Alternatives to the "Rambus" Technologies (Complaint ¶¶ 62, 65, 69). The record of this case contains substantial evidence concerning various DRAM features, technologies, and designs that are capable of performing the same functions that are performed by the "Rambus" technologies, as incorporated into SDRAM and DDR SDRAM, including evidence relating both to the technical feasibility and commercial viability of such alternatives. *See* CCFF 507, 528-531, 539, 568-76, 601-13, 615-17, 625-28, 631, 638, 642, 644, 2100-07, 2130-14. Such evidence shows that JEDEC, had it known of Rambus's patented technologies at the time that the SDRAM and DDR SDRAM standards were being developed, could have selected from an array of viable options.

JEDEC's Likely Response to Rambus Patent Disclosures in a "But-For" World (Complaint ¶¶ 22, 24, 62, 65, 69). The evidentiary record not only reveals the variety of technological options that would have been open to JEDEC in a hypothetical (or "but-for") world in which Rambus had made proper patent-related disclosures concerning the four technologies in issue, but in addition shows that the most likely outcome in such a scenario is that JEDEC would have pursued alternative SDRAM and DDR SDRAM specifications, which avoided the Rambus patents and hence preserved the goal of creating open, non-proprietary standards. *See* CCFF 3021. It is also clear from the record that before JEDEC could even consider the possibility of incorporating Rambus's patented technology into its standards, JEDEC's rules would require that it receive from Rambus advance, written assurances that any Rambus patents implicated by the standards would be made available for licensing on reasonable and non-discriminatory (or so-called "RAND") terms. *See* CCFF 347-53. However, record evidence indicates that Rambus very likely would not have been willing to provide such

"RAND" assurances, as it would be inconsistent with Rambus's licensing-based business model to agree to such limitations. *See* CCFF 1091, 2418-32, 3024-25. Even in the event that Rambus, in the but-for world, would have provided RAND assurances to JEDEC, record evidence indicates that JEDEC members – in part owing to the availability of alternatives, and in part owing to Rambus's positioning as a pure intellectual property company, and the promoter of a competing, proprietary standard (*i.e.,* RDRAM) – would not have been willing to support the use of Rambus technology in JEDEC's standards absent Rambus's agreement, in advance, to royalty rates considerably lower than the rates Rambus has charged in the real world. *See* CCFF 2441-64, 3029-36. Taken as whole, the record evidence conclusively shows that proper patent-related disclosures by Rambus in the but-for world would have resulted in materially different circumstances: most likely, Rambus's technologies would not have been used at all in JEDEC's standards, and if they were used it would have been subject to Rambus's agreement to materially different, and considerably more competitive, license terms. *See* CCFF 347-53, 2433-64, 3021-36.

Industry Adoption of JEDEC Standards and "Lock-In" (Complaint ¶¶ 89-92).

Compelling record evidence shows that the SDRAM and DDR SDRAM standards ultimately adopted by JEDEC were in turn widely adopted and incorporated both by producers and users of DRAMs, as well as by producers of complementary products (such as microprocessors, chipsets, motherboards, and graphics cards), and that the same standards have, since the mid-1990's, clearly been the dominant worldwide standards for commodity DRAM memory devices. *See* CCFF 85-87, 234, 577, 2039, 2643-44, 2904. The evidence further shows that the industry's broad commitment to the technology path reflected by SDRAM and DDR SDRAM makes it economically infeasible for the industry to shift to alternative standards, a condition that economists refer to as "lock-in."

only after the industry became "locked-in" to this technology path that Rambus – in early/mid 2000 – began to reveal the existence of its JEDEC-related patents to the outside world, and began to demand royalties from all major producers of JEDEC-compliant SDRAMs. *See* CCFF 1954-58, 1995-96.

Relevant Technology Markets (Complaint ¶¶ 110-18). The record evidence, including economic expert testimony, supports the conclusion (a conclusion apparently not contested by Rambus) that this case involves a total of five relevant technology markets – four of which correspond to the four "Rambus" technologies and all commercially viable alternatives to such technologies, and a fifth, "cluster" market aggregating these four markets into one. *See* CCFF 2763-87, 2885-86. Each of these five relevant markets, the record shows, is worldwide in

this monopoly power, not through competition on the merits or through any inherent advantage in its patented technology, but rather through the very pattern of deceptive, exclusionary conduct challenged by this lawsuit. *See* CCFF 2986-3044.

Anticompetitive Effects of Rambus's Conduct (Complaint ¶¶ 119-20). Rambus not only has acquired monopoly power through its exclusionary conduct, but in addition, the record shows, Rambus has exercised this monopoly power in a manner that has harmed – or threatens to harm – competition and consumers both within and also extending beyond the relevant technology markets. The evidence shows that, among other actual and threatened anticompetitive effects, Rambus's conduct has imposed substantial costs on DRAM makers, including but not limited to the costs of the anticompetitive and discriminatory royalties that Rambus has charged in connection with use of the four "Rambus" technologies in SDRAM and DDR SDRAM devices and the costs of litigation. *See* CCFF 3050-60. Rambus's conduct also threatens, absent appropriate relief, to:

- lead to increases in the price of SDRAM and DDR SDRAM devices (*see* CCFF 3050-51);
- disrupt JEDEC's ability to develop timely DRAM industry standards, thereby slowing progress in the development and implementation of DRAM industry standards (*see* CCFF 3052-54);
- impose additional costs of DRAM makers, who may be forced to expend limited design resources in developing and implementing alternative standards that avoid Rambus patents (*see* CCFF 3058); and
- discourage industry participation not only in JEDEC, but also other "open" standards organizations, while at the same time discouraging reliance upon standards developed by such organizations, thereby causing substantial injury to the wide range of markets that traditionally have benefitted from the same types of collaborative standard setting processes that have been integral to the development of the DRAM marketplace (*see* CCFF 3053-54).

Remedy (Notice of Contemplated Relief ¶¶ 1-6).

The record compels imposition of the proposed remedy. In order to restore market conditions as closely as possible to those that would have prevailed in the absence of Rambus's conduct, to prevent future harm to the markets at issue and related markets, and to prevent harm to the standard setting process, Rambus should be prohibited from enforcing certain of its patents relating to JEDEC-compliant SDRAM and DDR SDRAM. This proposed order goes no further than reasonably necessary to correct the harm. It permits Rambus to enforce any of its patents against any products other than products that comply with or interface with the JEDEC SDRAM standards. It also permits Rambus to enforce all of its patents with a priority date after it withdrew from JEDEC against any and all products, including those that comply with or interface with the JEDEC SDRAM standards. Such an order is amply justified by the record evidence and falls well within the Commission's broad remedial power.

II. ELEMENTS AND BURDENS OF PROOF APPLICABLE TO THE COMMISSION'S COMPLAINT

Before turning to a discussion of the evidence bearing on liability and relief issues, this section summarizes the elements and burdens of proof applicable to each of the Commission's claims against Rambus.

A. Essential Elements of Proof

It is well settled that Section 5 of the FTC Act, 15 U.S.C. § 45(a)(1), which prohibits "unfair methods of competition," extends to "practices that violate the Sherman Act and the other antitrust laws," as well as to "practices that the Commission determines are against public policy for other reasons." *FTC v. Indiana Federation of Dentists,* 476 U.S. 447, 454 (1986). In this case, the Commission has asserted three separate counts of liability, two of which are based

on causes of action established by Section 2 of the Sherman Act, 15 U.S.C. § 2. Count I of the Commission's Complaint sets forth a Sherman Act-based claim of monopolization. Count II sets forth a Sherman Act-based claim of attempted monopolization. And finally, Count III sets forth a claim of unfair methods of competition, which arises purely under Section 5 of the FTC

2. Attempted Monopolization (Count II)

The separate offense of attempted monopolization under Section 2 of the Sherman Act requires proof of three elements: (1) exclusionary or anticompetitive conduct; (2) a specific intent to monopolize; and (3) a dangerous probability of achieving monopoly power. *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 456 (1993). The conduct element of an attempted monopolization claim is no different than that of a monopolization claim. *See* ABA SECTION OF ANTITRUST LAW, ANTITRUST LAW DEVELOPMENTS at 299-300 (5th ed. 2002). The differences in the two types of Section 2 claims relate to the elements of intent and market or monopoly power.

The specific intent element requires showing "a 'specific intent' to accomplish the forbidden objectives." *Aspen Skiing*, 472 U.S. at 602. It may be proved by direct evidence of intent, such as statements of the defendant or its agents or "inferred from the defendant's anticompetitive practices." *M&M Medical Supplies & Service, Inc. v. Pleasant Valley Hosp., Inc.*, 981 F.2d 160, 166 (4th Cir.) (*en banc*), *cert. denied*, 508 U.S. 972 (1993); *Volvo N. Am. v. Men's Intern. Pro. Tennis Coun.*, 857 F.2d 55, 74 (2d Cir. 1988) ("Proof . . . anticompetitive or exclusionary conduct, may be used to infer the second element, specific intent to monopolize. . . .").

Actual monopoly power is not required to establish liability for attempted monopolization. The lesser required showing of a "dangerous probability of monopolization" can be demonstrated by "proof of the same character, but not the same quantum" as would be required to demonstrate monopolization – that is, proof that the challenged conduct could, in light of relevant market conditions, easily lead to the acquisition of a monopoly, even though that may not (or not yet) have occurred. *McGahee v. Northern Propane Gas Co.*, 858 F.2d 1487, 1505 (11th Cir. 1988), *cert. denied*, 490 U.S.1084 (1989).

3. Unfair Methods of Competition (Count III)

Section 5 of the FTC Act authorizes the Federal Trade Commission to define and proscribe "unfair methods of competition." 15 U.S.C. § 45(a)(1). Accordingly, the Commission may proscribe "conduct which, although not a violation of the letter of the antitrust laws, is close to a violation or is contrary to their spirit." *E.I. Du Pont de Nemours & Co. v. FTC*, 729 F.2d 128, 136-37 (2d Cir. 1984); *see also FTC v. Sperry & Hutchinson Co.*, 405 U.S. 233, 239 (1972); *Grand Union Co. v. FTC*, 300 F.2d 92, 98-99 (2d Cir. 1962). This statute empowers the Commission with broad authority to "declare trade practices unfair." *FTC v. Brown Shoe Co.*, 384 U.S. 316, 321 (1966). Specifically, "Congress intentionally left development of the term 'unfair' to the Commission rather than attempting to define 'the many and variable unfair practices which prevail in commerce.'" *Atlantic Refining Co. v. FTC*, 381 U.S. 357, 367 (1965) (citing S. Rep. No. 592, 63d Cong., 2d Sess., 13 (1914)). Indeed, the Commission has acted on this authority to attack "collusive, predatory, restrictive [and] deceitful conduct that substantially lessens competition," *Du Pont*, 729 F.2d at 137, and "activities that violate the spirit of certain Sherman and Clayton Act sections that were clearly intended to promote competition and deter anticompetitive acts." *In the Matter of General Motors Corp.*, 103 F.T.C. 641, 701 (1984).

Of particular relevance here, the Commission has determined that exclusionary conduct that results in anticompetitive effects, even if it fails to satisfy all the elements of a Section 2 offense, violates Section 5 of the FTC Act. *See In the Matter of Ethyl Corp.*, 101 F.T.C. 425, 597 (1983) (noting that "single-actor conduct which is unfair competitive behavior but which falls short of an attempt to monopolize under Section 2 of the Sherman Act" violates Section 5), *vacated sub nom. E.I. Du Pont de Nemours & Co. v. FTC*, 729 F.2d 128, 136-37 (2d Cir. 1984).

The Commission's third claim against Rambus (Count III) alleges that Rambus has engaged in exclusionary, unfair methods of competition, which have resulted in material adverse

effects on competition. This claim differs from the monopolization claim (Count I) principally in that there is no need to demonstrate actual monopoly power – proof of market power and material adverse effects on competition will suffice. The unfair methods of competition claim differs from the attempted monopolization claim (Count II) in two respects: (1) it requires proof of actual (as opposed to probable) adverse effects on competition, albeit not necessarily rising to

[8] A requirement that the Commission show anticompetitive effects fully satisfies the limitations various courts have placed on the FTC's authority to proscribe unfair methods of competition. *See Du Pont*, 729 F.2d at 137. *See also Boise Cascade Corp. v. FTC*, 637 F.2d 573, 581-82 (9th Cir. 1980).

pattern of anticompetitive acts challenged in this case did more than violate JEDEC's patent disclosure rules. As the Complaint explains, through its challenged conduct, Rambus also violated, undermined, and subverted other JEDEC rules and policies, including

(1) JEDEC's "'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'" (Complaint ¶ 19); and

(2) a variety of other policies, rules, and procedures through which JEDEC, at all relevant times, sought "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" (Complaint ¶ 20).

Of course, this case does not turn on the narrow question of whether Rambus's concealment of relevant patents and applications technically violated JEDEC's disclosure rules. Rambus, with the purpose of excluding competition, has engaged in a pattern of bad-faith, deceptive, and exclusionary acts. Through such acts, Rambus has caused substantial harm to several well-defined technology markets and ultimately threatens to cause hundreds of millions, if not billions, of dollars of harm to downstream consumers – *i.e.*, the businesses and individuals throughout this country and the world who buy DRAMs and products, such as personal computers and fax machines, that incorporate modern DRAM devices. Whatever else may be said of Rambus's challenged conduct, it is clear beyond any reasonable dispute that Rambus's actions were deceptive and undertaken in bad faith, and through such actions Rambus consciously subverted, undermined, and violated the integrity of JEDEC's policies and procedures.[9]

[9] The majority decision in *Rambus Inc. v. Infineon Technologies AG*, 318 F.3d 1081 (Fed. Cir. 2003) (petition for *certiorari* pending), on which Rambus has placed considerable reliance, seems to reach this very conclusion. *See id.* at 1104 (noting that Rambus "wanted to obtain [patent] claims covering the SDRAM standard" and that it "tried to do so" while participating as

a member JEDEC, "an open standards-setting committee"; and further concluding that "[s]uch actions" not only fail to "put Rambus in the best light," but indeed "impeach Rambus's business ethics") (emphasis added).

[10] *See also Allied Tube & Conduit Corp. v. Indian Head, Inc.*

antitrust liability where firm allegedly acquired market power by failing to disclose relevant patents to a standards-setting organization).[11]

Another element of the legal theory relates to the concept of lock-in. That is, the theory of liability set forth in the Complaint is predicated in part on the allegation that Rambus's bad-faith, deceptive conduct permitted it to acquire monopoly power because by the time Rambus finally began to reveal, publicly, that it possessed patents covering JEDEC's SDRAM standards, the DRAM industry had become "locked-in" to the existing JEDEC standards and thus was unable to avoid Rambus's patents by switching to alternative, non-infringing standards. This aspect of the theory of liability here – which is rooted in basic economic theory – is well accepted. Rambus's own economic expert, Professor David Teece, recently wrote a recent article on standard setting:

> The asymmetry between the low *ex ante* cost of choosing an alternative proposed standard and the higher *ex post* cost of
>
> ab co.134.2 0 Tf -0.0086 Tc 030126 T . . . [O]eranin the stand an
>
> A
>
> [illegible]

[11] *See also* Mark R. Patterson, *Antitrust Liability for Collective Speech: Medical Society Practice Standards*, 27 IND. L. REV. 51, 84 (1993) (interpreting *Allied Tube* as "show[ing] little tolerance for deception in the standard-setting process"); Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 Cal. L. Rev. 1889, 1927-35 (2002) (discussing bases for imposing antitrust liability for abuse of a standard setting process).

1. The Preponderance-of-the-Evidence Standard Governs This Case

As Rambus itself has acknowledged,[12] the preponderance-of-the-evidence standard typically governs in FTC enforcement actions. *See In the Matter of Adventist Health System/West*, 117 F.T.C. 224, 297 (1994) ("Each element of the case must be established by a preponderance of the evidence"); *In the Matter of Washington Crab Assn.*, 66 F.T.C. 45, 55 (1964) (violation of Sherman Act, Section 2, and thus F.T.C Act, "by a preponderance of the reliable, probative and substantial evidence") (Initial Decision, *aff'd* by Commission); *FTC v. Abbott Laboratories*, 853 F. Supp. 526, 535 (D.D.C. 1994) (holding that the government must show "by a preponderance of the evidence that [defendant's] action was the result of collusion with its competitors"). *See also* Complaint Counsel's Pretrial Brief at 128-130.

In fact, the preponderance standard typically governs civil actions brought by the government, regardless of the agency involved, and as the Supreme Court has noted, "[e]xceptions to this standard are uncommon." *Price Waterhouse v. Hopkins*, 490 U.S. 228, 253 (1989). Moreover, the Supreme Court has pointed to civil antitrust suits as an example of a type of litigation in which "proof by a preponderance of the evidence suffices."

[12] *See* Trial Brief of Respondent Rambus Inc. at 27.

[13] Your Honor has acknowledged as much in noting that Complaint Counsel's proof "need not reach the level of fraud" to demonstrate that Rambus's conduct was "illegal and intended to create a monopoly in one or more DRAM markets." May 13, 2003, Order on Reconsideration of Complaint Counsel's Motion to Compel Discovery Relating to Subject Matters for Which Respondent Asserts Privilege at 11.

2. This Is Not a *Walker Process* Case Meriting a Clear-and-Convincing Standard of Proof

There is one context in which courts have held that civil antitrust claims should be subjected to a heightened, clear-and-convincing standard of proof – namely, where the claimed misconduct involves alleged misconduct in procuring a patent from the PTO. *See Walker Process Equipment, Inc. v. Food Machinery & Chemical Corp.*, 382 U.S. 172 (1965). Courts have required a heightened burden of proof in so-called "*Walker Process*" cases due to concerns linked to: (1) the fact that the alleged misconduct occurred in connection with procuring a patent from the PTO, and (2) the nature of the remedies sought. *Id.* at 180. Of course, this is not a *Walker Process* case, nor can this case be likened to a *Walker Process* suit. The policy-related concerns that have caused courts to demand heightened levels of proof in the *Walker Process*

'technical fraud' which occur in the absence of a deliberate plan to deceive and mislead the PTO." *In the Matter of VISX, Inc.,* Dkt. No. 9286, 1999 WL 33577396 (F.T.C.) (emphasis added). *See also Cataphote Corp. v. DeSoto Chemical Coatings, Inc.*, 450 F.2d 769, 772 (9th Cir. 1971), *cert. denied*, 408 U.S. 929 (1972) ("The road to the Patent Office is so tortuous and patent litigation is usually so complex, that 'knowing and willful fraud' as the term is used in *Walker,* can mean no less than clear, convincing proof of intentional fraud involving affirmative dishonesty . . . .") (emphasis added).

The heightened burden in the specific context of patent procurement makes sense from a policy and efficiency perspective, not just because of the complex patent application process, but also because that process involves its own adjudicatory and review procedures. Establishing *Walker Process* claims in court after-the-fact necessarily requires second-guessing the outcome of the PTO's internal processes, which merits heightened scrutiny. The misconduct at issue here – Rambus's anticompetitive scheme to monopolize technology markets by subverting an open standards process – does not implicate the complex patent procurement process, nor does it require oversight of the PTO's fact-finding and adjudicatory procedures. Accordingly, the policy rationales for employing special scrutiny in the *Walker Process* cases have no relevance here.

b. The Remedy Sought Does Not Merit Applying the Clear-and-Convincing Evidence Standard

The second reason courts have imposed a heightened standard in *Walker Process* cases is because of concern about the harshness of the applicable remedies: treble damages and invalidation of a patent. The Complaint in this cases does not, and legally cannot, propose either of these remedies.

Rather, the proposed remedy here is equivalent to the remedy obtained by proving equitable estoppel in an infringement action – non-enforcement of the patent against the entities affected by a patent holder's misconduct. The Federal Circuit has expressly held that preponderance of the evidence suffices to prove equitable estoppel. *See, e.g.*, *Gasser Chair Co. v. Infanti Chair Mfg Corp.*, 60 F.3d 770, 776 (Fed. Cir. 1995)**;** *see also In the Matter of Dell Computer Corp.*, 121 F.T.C. 616, 624-625 (1996) ("Moreover, the remedy in this case is consistent with those cases, decided under the concept of equitable estoppel, in which courts precluded patent-holders from enforcing patents when they failed properly to disclose the existence of those patents.").

Additionally, the Complaint does not seek treble damages, nor is such a remedy even permitted under the FTC Act. Thus, unlike in *Walker Process*, this case cannot possibly have any chilling effect of a treble damage remedy upon the disclosure of inventions through the patent process. *See, e.g.*, 382 U.S. at 180 (Harlan, J., concurring) (expressing concern that private antitrust suits "might well chill the disclosure of inventions through the obtaining of a patent because of fear of the vexations or punitive consequences of treble-damage suits").

c. FTC *Walker Process* Cases Do Not Support Application of a Heightened Burden Here

Although there are two FTC cases involving *Walker Process* claims, *VISX* and *American Cyanamid*, neither supports the application of a heightened burden here. First and foremost, both cases, unlike this case, involved specific *Walker Process* claims, and thus are inapplicable here. Moreover, neither case reflects binding Commission precedent as to the applicability of a heightened standard of proof to demonstrate bad faith, even in a *Walker Process* context.

The ALJ's decision in *VISX*, among other things, simply is not persuasive precedent for this matter for a number of reasons. First, as noted above, *VISX* involved clear *Walker Process*

claims; the administrative law judge applied a clear-and-convincing standard to allegations of fraud and inequitable conduct in connection with procuring a patent from the PTO. *In the Matter of VISX, Inc.,* Dkt. No. 9286, 1999 WL 33577396 (F.T.C.). Second, the ALJ in *VISX* did not have to expressly rule on the whether standard in private Walker Process cases should apply to those before the Commission, as Complaint Counsel had conceded that a clear-and-convincing standard applied. *See* Complaint Counsel's Post-Hearing Brief, *In the Matter of Summit Technology, Inc. and VISX, Inc.,* Dkt. 9286, at 9 n.26 ("Materiality, intent and 'but for' all must be proved by clear and convincing evidence"). Third, the Commission never reviewed, let alone adopted the ALJ's decision in *VISX* or the standard of proof it applied, and has since dismissed the complaint.[14]

In *American Cyanamid*, the Commission never expressly required the application of the heightened burden to prove the *Walker Process* claim. It referred to the clear-and-convincing standard to describe how other courts deal with allegations of "fraud in the procurement of a patent." *In the Matter of American Cyanamid Co.,* 63 F.T.C. 1747, 1963 FTC Lexis 77 at *224-5. In this regard, the decision states:

> In order for the government to prosecute successfully a suit for patent cancellation, common law fraud must be proven. . . . <u>But we do not find such a holding necessary to our disposition of the case</u>. Rather, we conclude that such conduct at the very least amount to 'unclean hands,' 'inequitableness' and 'bad faith.'

Id. at 225 (emphasis in original). Upon remand from the Sixth Circuit, the Commission again highlighted this distinction between fraud and bad faith. With no reference to a heightened burden of proof, the Commission first stated, "we conclude that Pfizer failed to abide by the standards of candor and good faith in procuring its patent, and that this conduct together with the

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[14] *See* February 7, 2001, Order Reopening the Record and Dismissing the Complaint, <www.ftc.gov/os/2001/02/summitvisxorder.htm>.

subsequent exploitation of the [relevant] patent constituted a violation of section 5 of the FTC Act." *In the Matter of American Cyanamid Co.,* 72 F.T.C. 623, 684-85 (1967), *aff'd, Charles Pfizer & Co. v. FTC*, 401 F.2d 574 (6th Cir. 1968). The Commission went on to state, "We further find, as an alternative ground, that the evidence is clear and convincing that Pfizer committed fraud upon the Patent Office in procuring its patent." *Id.* (emphasis added). Thus, the Commission – without applying a heightened standard – found that Pfizer's bad-faith conduct violated the FTC Act. Moreover, the only reference to "clear-and-convincing" is the Commission's acknowledgment that the record contained that quantum of evidence proving the existence of fraud. The case does not hold that the clear-and-convincing standard is the applicable standard in a *Walker Process* suit brought under Section 5, much less a Section 5 suit, like this one, in which no *Walker Process*

1. Inferences Against Rambus for Its Intentional Spoliation of Evidence

This Court has determined that "[w]hen Rambus instituted its document retention policy in 1998, it did so, in part, for the purpose of getting of documents that might be harmful" in future anticipated litigation involving "its JEDEC-related patents." February 26, 2003, Order Granting Complaint Counsel's Motion for Collateral Estoppel at 5 (internal quotation marks omitted). This Court has also determined that "Rambus's intentional destruction of documents" constituted "spoliation of evidence," and that – as a sanction against such misconduct – "for the remainder of the administrative proceedings of this matter" the following rebuttable adverse presumptions shall apply:

1. Rambus knew or should have known from its pre-1996 participation in JEDEC

[15] On February 27, 2003, Complaint Counsel filed a Motion to clarify this inference by modifying it to read: "While participating in JEDEC's development of RAM standards, Rambus knew or should have known that JEDEC RAM standards being developed at that time (*i.e.*, prior to mid-1996) would require the use of patents held or applied for by Rambus." *See* Complaint Counsel's Request for Immediate Clarification of February 26, 2003 Order on Complaint Counsel's Motions for Default Judgment and for Oral Argument. Complaint Counsel also asked that references to patents in the adverse inferences be broadened to cover patents applied for by Rambus. Judge Timony denied Complaint Counsel's motion, but in doing so noted that the requested modifications "would only add self-evident detail to the order." Order Denying Request for Clarification, February 27, 2003.

[16] As Your Honor has acknowledged, Rambus now bears the burden of rebutting each of these presumptions. April 15, 2003, Order Denying Complaint Counsel's Motion for Additional Adverse Inferences and Other Appropriate Relief at 5. *See also Welsh v. United States*, 844 F.2d 1239, 1248 (6th Cir. 1988) ("The burden thus shifts to the defendant-spoliator to rebut the presumption and disprove the inferred element of plaintiff's prima facie case."); *Nation-Wide Check Corp., v. Forest Hills Distributors, Inc.*

understood the potential that its deceptive behavior could render unenforceable its JEDEC-related patents on equitable estoppel or antitrust grounds. *See* CCFF 1718-1758. Second, as a matter of public policy, it is important to draw attention to impropriety of destroying documents that are known to be relevant to anticipated future litigation to send a clear message that this agency will not tolerate spoliation efforts affecting its administrative proceedings.

Finally, we note that Your Honor has not yet ruled on two issues relevant to spoliation – (1) whether Rambus has rebutted the adverse inferences imposed by Judge Timony, and (2) whether, in assessing that issue, it is appropriate to apply a heightened standard of proof. *See* April 15, 2003, Order Denying Complaint Counsel's Motion for Additional Adverse Inferences and Other Appropriate Relief at 5 (denying "as premature" Complaint Counsel's request for a "clear-and-convincing" evidence standard of proof in assessing whether Rambus has rebutted the adverse presumptions). Because Rambus bears the burden of proof as to whether it has rebutted the adverse inferences, Complaint Counsel will defer to the rebuttal brief further comments on this issue.[17]

2. Rambus's Decision Not to Call Its Senior Executives Warrants a "Missing Witness" Inference

Despite introducing him in the courtroom on the opening day of trial, and despite the fact that he more than any other person has directed Rambus's actions and business strategies throughout the relevant time period, Rambus, by its own admission, strategically chose not to call its CEO, Geoffrey Tate, as a witness at trial.

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[17] For reasons that have been briefed previously, however, Complaint Counsel submits that it is fully appropriate to apply a heightened standard of proof in these circumstances. *See* Complaint Counsel's Motion for Additional Adverse Inferences and Other Appropriate Relief at 29-31.

[18] *See* Stone, Tr. 10921-22.

a. Messrs. Tate, Mooring, and Davidow Are Peculiarly Available to Rambus

Witnesses are deemed "peculiarly available" to one party if they are biased in favor of that party, even if they may be available to the other party through compulsory process or their presence at trial. *See, e.g., Kean*, 469 F.2d at 1188 (availability for purposes of the missing witness rule "depends upon all the facts and circumstances bearing upon the witness's relation to the parties and not merely upon his physical presence at trial or accessability for service of a subpoena"); *Tyler v. White*, 811 F.2d 1204, 1207 (8th Cir. 1987) (reasoning that a witness "presumptively interested in the outcome" is not of "equal avail to both parties " even if subject to compulsory process). *See also Welsh v. United States*, 844 F.2d 1239, 1245, n.1 (6th Cir. 1988); *U.S. v. Hoenscheidt*, 7 F.3d 1528, 1531 (10th Cir. 1993). Specifically, courts view the basic employer-employee relationship as implicating the type of bias that renders a witness not truly available to the other side. *See, e.g., U.S. v. Beekman*, 155 F.2d 580, 584 (2d Cir. 1946); *Jones v. Otis Elevator Co.*, 861 F.2d 655 (11th Cir. 1988) ("Because of an employee's economic interests, the employer-employee relationship is recognized as one creating practical unavailability.").

In *Kean v. Commission of Internal Revenue*, the missing witness was present in the courtroom and accessible for service of a subpoena, but was determined to be not equally available to both parties. 469 F.2d at 1187-88. The court reasoned that because petitioner had employed the witness for 22 years and had a better understanding of his testimony, the witness not equally available, and failure to call him warranted an adverse inference. *Id.*

As applied in the present case, this same reasoning leads to the conclusion that Messrs. Tate, Mooring, and Davidow, despite being subject to compulsory process, were nonetheless "peculiarly available" to Rambus for purposes of the missing witness rule. As Rambus's senior-

most corporate representatives, their bias runs even deeper than that of the uncalled witnesses in *Kean* and various other cases in which courts have found that employees were practically unavailable to their employer's litigation adversaries. The proclivity of such high-ranking corporate officials to testify in a manner favorable to Rambus trumps any possible argument that these uncalled witnesses were practically available to be called by Complaint Counsel.

Moreover, with respect to Mr. Tate in particular, counsel for Rambus has demonstrated that it wields an even more tangible control over the uncalled witness. In a letter dated July 17, 2003, Rambus's lead trial attorney, Gregory Stone, informed Complaint Counsel that Mr. Tate was unavailable to appear in Complaint Counsel's rebuttal case, explaining that counsel for Rambus had "advised Tate that he could begin a sabbatical," for roughly two months – out of the country. *See* July 17, 2003, Letter from Gregory P. Stone to M. Sean Royall **[Tab 1].** The fact that Rambus's counsel was consulted about, and subsequently authorized, Mr. Tate's extended absence from the country during trial provides yet additional proof that Mr. Tate is peculiarly within Rambus's control.

b. Messrs. Tate, Mooring, and Davidow Would Have Provided Superior, Non-Cumulative Testimony

The circumstances here also satisfy the second criterion for the missing witness doctrine, that "the testimony of the uncalled witness must not be cumulative or inferior to the testimony already presented." *Kean*, 469 F.2d at 1188. Even if another witness has testified regarding an issue, the missing witness's testimony as to that issue is not viewed as cumulative if it could have corroborated the testimony already introduced. *See, e.g., Frierdich v. Commissioner*, 925 F.2d 180 (7th Cir. 1991) (court upheld adverse inference against defendant for failure to call widow to corroborate testimony explaining that an unusually structured transaction was indeed a bona fide loan to her lawyer). For example, in *Gaw v. Commissioner*, 1995 WL 664592, 1995

Tax Ct. Memo. LEXIS 530, *81-82 (U.S. Tax Ct.), the court drew an adverse inference for failure to call the owner of certain entities, even though the managing director and chairman of those entities had testified as to the relevant issues. *Id.* The court reasoned that because the uncalled witness's testimony would have corroborated the testimony already introduced it would not have been merely cumulative. *Id.*

As a general matter, the thoughts, strategies, and knowledge of Rambus's three most senior corporate representatives are highly relevant to multiple issues in this case, including Rambus's exclusionary conduct and anticompetitive intent. Moreover, each of these individuals played a central role in connection with events and transactions that go to the heart of this case. Indeed, the list of admitted trial exhibits, which includes literally hundreds of documents that were authored by, received by, or that otherwise relate to these three uncalled witnesses.[19]

Documents and other testimony identify Mr. Tate as a driving force behind, among other things, Rambus's efforts to make RDRAM a dominant industry standard (*see* CCFF 732-33, 868, 911-12); to broaden its patent applications to cover features of SDRAM and DDR SDRAM (*see* CCFF 911-13, 981, 993, 1003, 1054, 1057-58); to conceal its intellectual property from JEDEC and its members (*see* CCFF 926, 1098-99, 1676-78, 1682-84, 1686, 1696-97); to develop and implement a strategy to enforce its previously undisclosed JEDEC-related patents, in a way that reduced the attractiveness of SDRAM and DDR SDRAM and favored RDRAM (*see* CCFF 917, 1691-93, 1711, 1870-71, 1920, 1977, 1994); and to systematically destroy documents that could potentially harm Rambus in future anticipated litigation (*see* CCFF 1720, 1722, 1726). Plainly, as the company's CEO and the architect of Rambus's strategies in these other respects, Mr. Tate's testimony – had he been called to testify live at trial – would have provided superior, non-

[19] For instance, at least 407 of the admitted exhibits directly relate to Mr. Tate, many if not most of which could not have been used with any other witness.

cumulative evidence. The same can be said for Mr. Mooring and Mr. Davidow, both of whom played central roles with respect to key issues, such as Rambus's understanding of JEDEC's patent policy and its patent enforcement strategy, respectively. *See* CCFF 926, 938, 987, 1682, 1692, 1720, 1751, 1978, 1064, 1098-99 (Mooring). *See also id.* 1676, 1682, 1706, 1720, 1871, 1875, 1992, 1994, 1977, 2029 (Davidow).

Complaint Counsel submits that Your Honor should consider Rambus's strategic decision not to call its most senior executives in assessing both Rambus's challenges to the sufficiency of the evidence, and what weight to give documents which Complaint Counsel was unable to use at trial because Rambus's most senior corporate representative were unavailable for cross-examination.

[20] As one commentator recently noted, "the case law strongly suggests that merely joining an SSO is sufficient to constitute consent to be governed by the SSO's bylaws." Mark A. Lemley,

procedures, and the core purposes of JEDEC's open standards process, that Rambus acquired its monopoly in the relevant technology markets. Hence, the necessary starting point for any analysis of liability is the purposes of JEDEC as well as its policies, rules, and procedures. The evidence pertaining to these issues is summarized below but is addressed in far greater detail in Complaint Counsel's proposed findings of fact. *See* CCFF 300-443.

1. JEDEC Was Committed to Developing "Open" Standards and Avoiding Patented Technology When Possible

The rules and obligations incumbent on JEDEC members were critical to ensuring that JEDEC could pursue its key objectives in standard setting. JEDEC identified these objectives as:

- "setting open standards";
- being "especially careful not to unintentionally standardize patented technology";
- "prohibiting the incorporation of patented technology into a standard unless the patent owner is willing to grant a license on reasonable terms";
- requiring "JEDEC committee members to disclose, as early in the standard development process as possible"; and
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Intellectual Property Rights and Standard-Setting Organizations, 90 Cal. L. Rev. 1889, 1191 & n.69 (2002) (citing cases).

Rambus's primary JEDEC representative, agreed that JEDEC's goal was "to create standards

[21] The purpose of JEDEC's patent policy was to enable the development of open standards, free from patent encumbrances that could conflict with future use. CCFF 316.

[22] JEDEC was part of EIA and subject to the EIA Legal Guides during the 1991-1996 timeframe. CCFF 202-305.

- "[C]ommittees should ensure that no program of standardization shall refer to a product on which there is a known patent unless all the relevant technical information covered by the patent is known to the formulating committee, subcommittee, or working group." *Id*.

- "If the committee determines that the standard requires the use of patented items, then the committee chairperson must receive a written assurance from the organization holding rights to such patents that a license will be made available without compensation to applicants desiring to implement the standard, or written assurance that a license will be made available to all applicants under reasonable terms and conditions that are demonstrably free of any unfair discrimination." *Id*. (emphasis added); EIA Style Manual for Standards and Publications of EIA, TIA, and JEDEC, EP-7-A, § 3.4 (8/00/90), JX0054 at 9. CCFF 400.

- "The Chairperson of any JEDEC committee, subcommittee, or working group must . . . call attention to 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." JEDEC Manual, § 9.3.1 CX0208 at 19 (emphasis added).

The relationship among these provisions is significant. Without compliance with the disclosure obligation, enforcement of the prior three provisions is impossible.

Viewed at the highest level, the JEDEC patent policy imposed two basic duties. First, it imposed on JEDEC participants a duty to disclose any relevant patents or patent applications of which they are aware that might involve work of a JEDEC committee. Second, it imposed on the chairperson of any JEDEC committee a duty to ensure that no known patented or patent-pending technology was included in a JEDEC standard unless the committee had received advance, written assurance from the intellectual property owner that it agreed to license either on royalty-free or reasonable and non-discriminatory ("RAND") terms. CCFF 318. These duties were in place and mandatory throughout the time Rambus participated in JEDEC (CCFF 324, 330, 347, 349), and were disclosed clearly and routinely to all JEDEC participants. CCFF 357-418.

a. The Scope of the Patent Disclosure Requirement Was Clear and Was Well Understood by JEDEC Members

Many witnesses at trial testified as to their understanding of JEDEC's patent disclosure policies. *See* CCFF 316-356. A portion of that evidence is summarized here.

i. Disclosure Was Mandatory

JEDEC members understood that the patent disclosure policy was mandatory. CCFF 324, 330. Indeed, numerous JEDEC participants emphatically testified at trial as to the obligatory nature of the policy. (CX0208 at 19 ("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"); J. Kelly, Tr. 1979 ("any time a participant has knowledge of relevant intellectual property, patent or patent application, that is or may be required to comply with the work underway, then that participant has an absolute duty to disclose it."); Lee, Tr. 6595-96 ("there was a requirement to disclose patents or patent applications in progress to the committee if the work that they were doing may relate or if the patent may relate to the work the committee was doing."); Rhoden, Tr. 319, 615 (disclosure is an obligation); Sussman, Tr. 1346 ("Q. Again, based on your experience, did you view this patent disclosure policy we have been discussing as a voluntary option or was it a mandatory requirement on JEDEC members? A. It's required."); CX2057 at 200 (Meyer 12/13/00 Dep.) (disclosure is an obligation); *see also* CX0711 at 188 (Richard Crisp notes, in describing the patent policy, "The things we should not do are to not speak up when we know that there is a patent issue.")).

ii. Disclosure Duty Applied to Patent Applications and Anything in the Patent Process

The JEDEC patent disclosure rule applied not only to issued patents, but also to patent applications. CCFF 320. Witness after witness at trial corroborated this point. *See, e.g.*,

Landgraf, Tr. 1693-94 ("As soon as a member knew that they had – either they had a patent of their own or applications or even a third party's patent or application, if you knew that and it was touching on some element of the standard or proposed standard, you were supposed to disclose that to the committee."); G. Kelley, Tr. 2689 ("that new member would understand that it included patent applications from the beginning because we were dealing with patent applications from that new member's beginning and was clearly an issue at my meetings."); CX2057 at 211 (Meyer 12/13/00 Dep.) (understood that "patents" included patent applications); Calvin, Tr. 1006-07 (clear about fact that patent applications were required to be disclosed); Kellogg, Tr. 5024; 1886-88 (term "patent" included patent applications); Sussman, Tr. 1342 (understood in 1981 or 1982 that patent policy required disclosure of patent applications), cited in CCFF 320.

Witnesses also established clearly that the disclosure policy extended to anything in the patent process, meaning patentable items or items for which a patent application was in progress. *See, e.g.*, Lee, Tr. 6595-96 ("the patent policy had a few aspects to it. First of all, there was a requirement to disclose patents or patent applications in progress to the committee if the work that they were doing may relate or if the patent may relate to the work the committee was doing."); Rhoden, Tr. 307, 317-21 ("patent" has always been applied to anything in the patent process); Sussman, Tr. 1333-34 ("issued patents, patent applications . . . if you were about to apply for a patent"); G. Kelley, Tr. 2406-07 ("patent" as used by Mr. Townsend meant an "issued patent that was available from the patent office, patent applications that were being worked on with the patent office, and items that were probably going to become patents"); M. Kellogg, Tr. 5024 (Gordon Kelley made it clear that "any company was obligated to disclose patent activity"); M. Kellog, Tr. 5032 ("Patent activity to me is intent to file, file, the actual filing itself or the issuance of a patent, so I use the general term"); CX0306 (sign-in sheet

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patents and patent applications appeared on tracking lists distributed to members. CCFF 367-69; *see also* CX0042A at 7 (requesting members to research company position on "patents held or applied for"). Further, the patent reminder notice on the sign-in sheet that participants had to sign at each meeting included the term "patentable." CCFF 320, 370. JEDEC participants testified that they understood this term to refer to anything over which an individual company claimed ownership or anything that they claimed could be patentable. *See* CCFF 320; Rhoden, Tr. 336.

iii. Disclosure Duty Applied to Patents and Applications That "Might" Be Involved in Standards "Under Development"

JEDEC representatives and participants specifically reject the idea that the disclosure obligation is not triggered until a standard has been finalized, or a patent is known to be required. CCFF 335-38. First, EIA/JEDEC patent policy required disclosure of patents and patent applications that "might be involved" in the standards under development. CCFF 335 (*e.g.*, G. Kelley, Tr. 2705 ("any claim that might apply to the work of the committee it was required to disclose"); Landgraf, Tr. 1693-94 (disclose patents or applications "that would potentially be impacting the standard or proposed standard."); Sussman, Tr. 1346 (must disclose where there is a "gray" area); CX2057 at 203-04 (Meyer 12/13/00 Dep.) (disclosed patent when "sufficiently close" to work of JEDEC.); Williams, Tr. 909-11 (must disclose if "there would be a reasonable possibility that the patent was going to be associated with the work of JEDEC)). *See also* CCFF 337 (citing CX0353 at 1 (Letter from John Kelly stating that "assurances must be provided by the patent holder when it appears to the committee that the candidate standard may require the use of a patented invention") (emphasis in original)).

Moreover, the obligation to disclose was triggered as soon as a participant becomes aware that a relevant patent or pending patent might cover a technology incorporated in a

standard. CCFF 339, 345. Although the duty to disclose was not tied to any procedural formality in the JEDEC process, JEDEC participants generally understood that intellectual property should be disclosed as early as possible in the process. CCFF 340-41. Early disclosure promotes efficiency in the development of standards (CCFF 342) and allows JEDEC participants to design around potentially patented technology, to develop equally acceptable but unencumbered standards (CCFF 317).

Moreover, JEDEC's rules required that participants do more than merely provide a patent number without any context for how the patent might involve the prospective standard. CCFF 331-32 (Kellogg, Tr. 5060 ("JUDGE McGUIRE: Well, then let me ask a question. Under your understanding of the patent policy, when one discloses a patent, are you saying then that if they havbeligy,theertiding of the patenqueIanding14 Tw is22t aceEicyose iciwithout any of if they

extended to “everyone who is a member either in attendance or not in attendance, a guest, a –

whoever is either in the room at the time discussions are held or has access to pn in attendance, a guest, a –

licensing. . . That's their choice")). However, in the event that the owner of the relevant intellectual property did refuse to provide acceptable assurances of RAND license terms, JEDEC's rules did not permit it to use such intellectual property in its standards. CCFF 347. Determination of a reasonable royalty rate was not the responsibility of JEDEC, but rather was left to negotiation and market forces, or the courts. CCFF 354-55.

b. JEDEC Undertook Extensive and Effective Measures to Inform Members of the Applicable Disclosure Rules

JEDEC has had patent disclosure policies for many years, long predating Rambus's involvement in the organization. However, the early 1990's marked a new era of increased efforts by JEDEC leadership – especially the leadership of the JC-42.3 subcommittee – to heighten the level of awareness among members of their obligations to disclose relevant patents and patent applications.

Between December 1991 and June 1996, the period Rambus was a member of JEDEC, JEDEC leadership and members took a series of steps to ensure that all participants understood these obligations. JEDEC staff and leadership conveyed the existence and scope of the patent policy and rules to members during new member orientations, orally at every meeting, in every set of minutes, in JEDEC and EIA Manuals, at the top of ballots for standards, and through the application of the policy to the real-life disclosure (and in some cases non-disclosure) of patents and patent applications. CCFF 357-434. Every step of the JEDEC process contained some statement – either oral or written – that informed members of their obligations as a voluntary member of an organization, the primary purpose of which was to develop standards that were free of cumbersome intellectual property claims. *Id.* Through presentations, documents, and actual practice, all JEDEC members became aware of their obligations under the patent policy. *Id.*

New JEDEC members first became aware of the patent policies when they received copies of the JEDEC Manual of Organization and Procedure (CCFF 374), discussed above, and at new member orientations that included discussion of the patent policy when new members had questions (CCFF 373). This marks just the beginning, though, of the consistent information and reminders members received about the policy during their course of participation in JEDEC.

The person largely responsible for spearheading JEDEC's efforts to routinely remind JEDEC members of their disclosure obligations was Jim Townsend. He represented Toshiba at JEDEC and served as the chairman of the JC-42.3 subcommittee while Rambus was a JEDEC member. CCFF 359. Townsend's views on patent disclosure were well known to anyone who attended JEDEC meetings in the early through mid-1990's. CCFF 360. As JEDEC participants testified at trial, Townsend was committed to do everything possible to draw attention to, and highlight the importance of, JEDEC's patent disclosure policy. CCFF 359-60, 362-72.

The *Wang* litigation, which commenced in or around 1991, and which involved allegations that Wang deceived JEDEC by not disclosing relevant patent rights, stiffened the JC-42 committee's commitment to zealously enforcing the organization's patent disclosure policies. CCFF 362 (citing, *e.g.*, Landgraf, Tr. 1698-99 (*Wang* "served to reinforce the seriousness of the policy . . . if you are going to participate in an open standard formulation body, you need to disclose everything that is applicable or potentially impacting the standards that you're going to adopt."); Williams, Tr. 786-87 (Chairman Townsend and the rest of the board wanted to ensure [that *Wang*] never happened again, and so that's why there was so much emphasis placed upon why the policy was where it was and why there was discussion upon it and why it was at length discussed that this was so important")).

Beginning in mid-1991, Townsend routinely summarized JEDEC's patent disclosure policies at the beginning of every meeting of the JC-42.3 subcommittee. CCFF 360, 363.

JEDEC participants uniformly remember the Townsend presentations as one of the most important sources of information about the JEDEC disclosure policy. *See, e.g.*, CCFF 360, Williams, Tr. 771 ("Q. Between late 1991 through 1993, how did you learn about JEDEC's patent policy? A. Mainly by the presentations that were given at every meeting by Mr. Townsend."); G. Kelley, Tr. 2399 ("Jim Townsend made it a very big issue that the committee needed to deal with patents and what he called patent applications."); Lee, Tr. 6598 (Townsend "was pretty vocal at the beginning of meetings to state the policy and to clarify if any question came up."). Townsend's presentations made it clear that "members are cautioned to disclose their relevant patent applications." RX0356 at 2 (notes of Brett Williams from December 1992 JC-42.3 meeting).

The patent presentations were just one way Townsend kept JEDEC members apprised of their obligations under the patent policy. Mr. Townsend also kept a patent tracking list, which reflected patent-related information he had learned of through his work inside JEDEC. CCFF 367. The list served as a reminder to members and an educational tool for newcomers about the patent disclosure policy. CCFF 368.

A memorandum sometimes was shown and circulated with the patent tracking list.

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and discussions of terms of the patent policy, as well as a description of the disclosure of patents and patent applications that took place during the meeting. CCFF 363, 372. Indeed, Rambus received copies of this information with the minutes of meetings throughout the time it was a JEDEC member. CCFF 371 (citing CX0042A).

But that was not all JEDEC did to ensure its members understood and complied with the disclosure policy. In response to Wang's allegations that it did not understand that the patent policy applied with equal force to patent applications, JEDEC modified its "Meeting Attendance Roster" or sign-in sheet, which each participant in a JEDEC meeting was required to sign. CCFF 375-80. Beginning during the time that Rambus was a JEDEC member, the sign-in sheet contained a patent policy reminder stating that: "Subjects involving patentable or patented items shall conform to EIA Policy." CCFF 377-78 (citing CX0306 at 1). The sign-in sheet also referred participants to EIA's general counsel – at that time, John Kelly – who was responsible for interpreting the patent policy, concerning any questions. CCFF 380-81.

JEDEC also used the ballots as yet another mechanism to remind JEDEC members about their disclosure obligations. Every JEDEC ballot required that participants who had not yet alerted the committee but were "aware of patents involving this ballot, [to] please alert the Committee accordingly during your voting response." CCFF 383-85 (quoting JX0059 at 2).

Members also learned of the patent policy through various JEDEC and EIA publications. The JEDEC Manual of Organization and Procedure was the document according to which all

emphasize to members that the disclosure rule was obligatory, that it applied to all participants, and that it applied with equal force to patent applications:[24]

> **9.3.1 Committee Responsibility Concerning Intellectual Property** The Chairperson of any JEDEC committee, subcommittee, or working group must . . . call attention to 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.

JEDEC Manual of Organization and Procedure, JEP 21-I (10/00/93) CX0208 at 19. JEDEC also added a footnote to Section 9.3 of the JEDEC Manual, which clarified:

> **For the purpose of this policy, the word "patented" also includes items and processes for which a patent has been applied and may be pending.

Id., § 9.3 at 19. In addition to the operative language contained in the body of the Manual, Appendix E to the 21-I Manual contained the following summary of the EIA/JEDEC patent policy:

[24] The 1993 revision did not entail a change in the patent policy; rather, it was a mere clarification of what the members and the JEDEC staff previously understood. CCFF 416.

served to further solidify JEDEC members' understanding of their disclosure obligations. One particularly memorable event was the controversy involving the alleged failure of Texas Instruments to disclose properly its patent relating to Quad CAS technology and its subsequent efforts to assert its patent rights. Participants discussed the issue at JC-42.3 subcommittee meetings in 1993, and essentially accused Texas Instruments of having failed to comply with the JEDEC disclosure policy. CCFF 424-432. The minutes from the subcommittee's March 1994 meeting document some of the ensuing discussions:

> Applicability of patents to use of JEDEC standards was discussed. The issue is warning, IBM noted. Failure to disclose a patent prevents the Committee from considering the standard.
>
> The Committee was asked if the patent policy is clear. The

Discussions of revisions to the JEDEC manual as early as 1992 served as yet additional

[25] JEDEC specifically provided that all of its meetings were to "be conducted within the current edition of EIA legal guides . . . incorporated herein by reference." JEDEC Manual of

Organization and Procedure, JEP 21-I, § 9.1 ("JEDEC Manual" or "JEP 21-I") (10/00/93), CX0208.

[26] The good-faith rule was particularly important given the voluntary nature of JEDEC. CCFF 314, 419-21. JEDEC was strictly limited in its ability to punish or exclude members based on violation of JEDEC rules. CCFF 419-21. This limitation stemmed from a recognition by courts

its membership at JEDEC, Rambus was present at numerous meetings where Mr. Townsend and others explained the policy and reiterated its importance. CCFF 360-61, 363. With every set of minutes Rambus received, it also received summaries of Mr. Townsend's patent policy presentations and of member discussions about the patent policy, as well as patent memoranda and patent tracking lists. CCFF 372. JEDEC sign-in sheets, ballots, and manuals further reminded Rambus of its obligation to comply with the patent policy. CCFF 375-81, 383-85. Rambus representatives also witnessed first hand the patent policy in action, including incidents of disclosure and the consequences of non-disclosure. CCFF 423-34, 842, 871-75, 880-81, 902, 921, 929, 941-43, 950-51, 959, 968-69, 978-79, 983-85, 996, 1009, 1026, 1041, 1062, 1078. Indeed, Richard Crisp was present at the March 1994 JC-42.3 meeting when, at the conclusion of the QUAD CAS debate, those present were asked to indicate, by hand vote, whether the JEDEC patent policy was clear. By unanimous vote, members of the committee confirmed that the policy was clear. *See* Kellogg, Tr. 5028-30, JX00019 at 4-5 ("the committee was asked if the policy is clear. The committee felt it was clear."); CCFF 985. From all these sources, Rambus learned of JEDEC's disclosure rules, and rather than comply with the rules, Rambus knowingly chose to conceal its JEDEC-related intellectual property.

Moreover, the evidence demonstrates that Rambus not only understood the specific terms of the patent policy and discussed it internally, but also was well aware of the fundamental purpose of JEDEC. Rambus knew that the fundamental purpose of JEDEC was to develop open standards. (CCFF 300-04; *see also* CX0903 at 2 (Crisp e-mail: "The job of JEDEC is to create standards which steer clear of patents which must be used in compliance with the standard whenever possible."). CCFF 301, 838. Rambus also plainly knew that JEDEC and its members were concerned about a company enforcing patents against companies practicing a JEDEC standard. *See, e.g.*, CCFF 424-34; 839.

Beginning in May 1992, Richard Crisp was Rambus's primary representative to JEDEC. CCFF 823. Between 1992 and 1996, Crisp gained a clear understanding of how the EIA/JEDEC open standards process worked. During his time as JEDEC representative for Rambus, Mr. Crisp learned that meetings of JEDEC committees and subcommittees were conducted in accordance with the EIA Legal Guides. (Crisp, Tr. 2945; *see also* CCFF 835). Mr. Crisp also understood that the EIA Legal Guides provided that all EIA standardization programs shall be conducted in good faith. (Crisp, Tr. 2946-47; *see also* CCFF 836). In addition, Mr. Crisp was aware that the EIA rules stated that standards that required the use of patented items should be avoided and that EIA rules provided that no program of standardization should refer to a product on which there is a known patent unless all the technical information covered by the patent was known to the standards committee. (Crisp, Tr. 2948; *see also* CCFF 837).

Mr. Crisp, through attendance at JEDEC meetings and review of the JEDEC Manual of Organization and Procedure, learned of the specific requirements of the JEDEC patent policy. Mr. Crisp, during the time he was the primary JEDEC representative for Rambus, understood that there was a patent policy at JEDEC. (Crisp, Tr. 2949; *see also* CCFF 840). One of the ways that Mr. Crisp learned of the patent policy was through the presentations and discussions that Jim Townsend lead concerning the patent policy at every meeting of the JC-42.3 subcommittee. (Crisp, Tr. 2949; *see also* CCFF 360, 363, 840, 844). Mr. Crisp witnessed Mr. Townsend's presentations discussing the patent tracking lists, which included both patents and patent applications. (Crisp, Tr. 2950). Mr. Crisp also received minutes from JEDEC meetings, which included the slides from Mr. Townsend's presentations concerning the patent policy. (Crisp, Tr. 2951; *see also* CCFF 844).

Mr. Crisp was present at JEDEC meetings during discussions of revising the JEDEC Manual of Organization and Procedure to make it even clearer that the JEDEC disclosure duty

applied to patent applications as well as patents, as discussed above. Both Mr. Crisp and Mr. Mooring attended the JC-42.3 committee meeting in December 1992 at which this clarification was discussed. CCFF 410, 413. Mr. Crisp also attended the September 1993 meeting at which Mr. Townsend put on the overhead projector portions of the revised manual, including language referring to "pending or existing patents." (JX2092 at 63-4 (Crisp, Infineon Trial Tr.); CCFF 968). Mr. Crisp himself has admitted that by mid-1995, Mr. Crisp had received the JEDEC 21-I Manual and understood that it called for the disclosure of patent applications. CCFF 845.

JEDEC members were disclosing patent applications that pertained to the work at JEDEC.

C. By Concealing Relevant Patent Information and Engaging in Other Misleading Conduct, Rambus Violated and Subverted JEDEC's Policies and Underlying Purposes

As summarized above, the record evidence establishes that, under the JEDEC policies, rules, and procedures in effect throughout the time that Rambus was a JEDEC member, JEDEC participants with knowledge of patents or patent applications that might be involved in JEDEC's work were obligated to disclose in good faith the existence of such patents or applications, and the aspect of JEDEC's work (or finalized JEDEC standards) to which they related. The evidence also establishes that the purpose of such disclosure obligations was to advance JEDEC's most fundamental purpose – the goal of developing "open" industry standards that incorporated patented or patent-pending technologies only where justified, and even then, only upon receipt of express written assurances, from the intellectual property owner, that such technologies would be licensed on royalty-free or RAND terms.

Nothing could be more at odds with JEDEC's rules, or its underlying purposes, than for a member company to participate in JEDEC meetings while at the same time secretly working to develop proprietary patent claims designed to cover technological features incorporated in the organization's standards or being considered for inclusion in future standards. Yet, the record shows, that is precisely what Rambus did, starting in early 1992 and continuing for the duration of its JEDEC membership, ending in June 1996. Moreover, the record shows that Rambus had every intent to subsequently enforce and collect royalties on its growing portfolio of JEDEC-related patents. *See* CCFF 803, 805-06, 809-12, 815, 817.

Without question, Rambus's pattern of conduct throughout this period – including targeted effort to secure patent rights over JEDEC's standards, failures to disclose relevant patents or patent applications, and misleading statements designed to quell suspicions that it might possess relevant intellectual property – violated the policies, rules, and procedures of

JEDEC and subverted JEDEC's core principles. This section summarizes the record evidence relating to Rambus's challenged conduct. The evidence showing that Rambus engaged in such conduct with anticompetitive and exclusionary intent is discussed in Section III below.

1. Almost From the Outset of Its Participation in JEDEC, Rambus Believed It Possessed Patent Applications That Covered or Could Be Amended to Cover Features of JEDEC's SDRAM Standards

At least as of early March 1992, only a few months after it began attending JEDEC meetings,[27] Rambus was keenly aware that its already pending patent applications were broad enough to cover features of SDRAMs, and could be amended, without adding new substance to the underlying inventions, in a manner designed to better secure such patent coverage. The record evidence, only a portion of which is summarized here, shows that Rambus continued throughout the duration of its JEDEC membership to work with its outside patent attorney, Lester Vincent, on efforts to amend its patent claims with the precise objective of securing broad patent rights over SDRAMs and "Future SDRAMs." *See* CCFF 885-1114.

Rambus's efforts to cover specific features discussed within JEDEC for inclusion in the SDRAM standards began just three months after attending its first JEDEC meeting. In March 1992, Rambus began to consider whether its patent applications covered the use of "low swing signals" on DRAMs. CCFF 888. By June 1992, Rambus's business plan – a document drafted by the CEO, Geoffrey Tate, and discussed with the Board of Directors – refers to the company's belief that SDRAMs would infringe Rambus patents, and to its efforts to file amended patent claims to broaden its coverage of SDRAMs, with the goal of later enforcing such patents and

[27] Rambus first attended a JEDEC meeting, represented by William Garrett, in December 1991. CCFF 867. Rambus was not at the time a member, CCFF 871, but shortly thereafter applied for membership, CCFF 878. Richard Crisp replaced Garrett as Rambus's principal JEDEC representative, starting in May 1992, and he remained as Rambus's principal JEDEC representative until Rambus's withdrawal from JEDEC in June 1996. CCFF 867.

collecting royalties. CCFF 911-917. Later that year, in August, just weeks after a JEDEC meeting, Rambus again discussed with its patent counsel amending its patent claims to cover features being discussed for inclusion in the SDRAM standards. CCFF 928; *see also id.* 922 (discussion of CAS latency at July meeting). Rambus closed out its first year as a member of JEDEC by again discussing with its patent counsel adding claims to its patent applications. CCFF 939 Topics discussed at the meeting were broad enough to cover DRAM features discussed at previous JEDEC meetings. CCFF 939. Again, after the December 1992 JC-42.3 meeting, Rambus internally planned to compare the draft SDRAM specification to its patent applications to "check it for feature [it] needs to cover." CCFF 945.

Rambus continued to amend its patent applications in 1993, with the aim of securing patent rights over features under consideration for inclusion in the SDRAM specifications. In February, Richard Crisp, working with Lester Vincent, identified several technologies, including CAS latency and on-chip PLL, as well as external reference voltage, as potentially claimable by Rambus's patents. CCFF 948. Rambus followed up this work in April and May 1993 by finalizing its amendments to its patent application to cover programmable CAS latency. CCFF 958. In June 1993, Fred Ware, a Rambus engineer, confirmed that Rambus had filed these amendments, with claims that were "directed against SDRAMs." CCFF 962.[28] Later that same month, Rambus filed further amendments claiming external reference voltage, a technology discussed at JEDEC earlier in 1993. CCFF 965. It also filed amended claims to cover the use of PLL circuitry, which were targeted at "Future SDRAMs." CCFF 966.

Rambus continued to pursue this strategy of amending its patents to claim technologies proposed for inclusion in the JEDEC standards in 1994. Rambus requested that Mr. 86 Tc 6 ThFon in the ambu

[28] Rambus failed to call Mr. Ware, or any other witness, who could explain this admission.

assess whether its patent applications and amendments had sufficiently covered technologies discussed at JEDEC. CCFF 989. Specifically, Rambus sought to enhance its patent applications by claiming use of control registers in conjunction with programming CAS latency, a technology discussed several times at JEDEC committee meetings. CCFF 991. Rambus also requested that Vincent ensure that the applications covered two-bank design, another feature proposed at JEDEC. CCFF 990. Finally, Rambus sought to enhance its claims to ensure coverage of dual-edge clocking. CCFF 992.[29] By 1995, Rambus had sought patent claims to cover many of the technologies discussed at JEDEC. Nevertheless, it maintained its efforts to maximize its coverage. Vincent, at Rambus's request, filed new patent amendments on behalf of Rambus in October 1995 designed to broaden the company's claims over on-chip PLL technology. CCFF 1075.

The foregoing discussion merely highlights a few illustrative examples of a much broader body of record evidence showing that Rambus believed, throughout its JEDEC membership, that the company possessed patent applications that covered or could easily be amended to cover JEDEC's SDRAM standards. (For a more complete overview of the relevant evidence, *see* CCFF 867-1114.) This evidence, combined with the evidence discussed above concerning JEDEC's patent policy plainly demonstrates that Rambus – based on its own belief as to the scope of its intellectual property – had a duty to disclose patent-related information to JEDEC.

[29] Rambus planned even more efforts at covering technologies proposed for inclusion in JEDEC standards: it contemplated seeking claims on an auto-precharge feature, which had been discussed by JEDEC, given that patent rights over this feature would have "high harassment value." CCFF 1002; *see id.* 1001 (noting prior discussion of auto-precharge).

2. While a JEDEC Member, Rambus Possessed Multiple Patent Applications, and at Least One Patent, Containing Claims That "Read On" Features of JEDEC's Standards

As summarized above, JEDEC's disclosure obligation is triggered by the member's subjective belief that the patent or application is relevant to JEDEC's work. It is not excused if the claim does not cover the technology as a matter of objective patent analysis at the time of discussion at JEDEC. Nor is it excused if the claim contained in the relevant patent or application is not actually infringed. Nonetheless, the record demonstrates that Rambus's patent applications that were pending in the December 1991-June 1996 time period were in fact broad enough to literally "cover" or "read on" specific features that were considered by JEDEC during the same time period and ultimately incorporated in the final SDRAM and DDR SDRAM standards. Again, only a portion of the relevant evidence is summarized here. (For a more complete summary of the record evidence, *see* CCFF 1122-1237.)

a. Claims Covering SDRAM-Related Technologies

Rambus, while a member of JEDEC, submitted at least two amendments to pending patent applications containing claims that could be interpreted as covering the programmable burst length and programmable CAS latency features, both of which were incorporated in the final SDRAM standards and later carried forward in the DDR SDRAM standards. CCFF 1125-1182. Rambus's amendment to its patent application no. 07/847,961 ("the '961 application"), filed on January 6, 1995, is one example. CCFF1125. The amendment to the '961 application contains 18 claims, several of which are of critical importance to Rambus's present claims that it holds patents covering JEDEC-compliant SDRAM. Claim 160 of the '961 application, as amended, relates to both programmable CAS latency and programmable burst length. CCFF 1128. Claim 160 could be construed by a reasonable engineer to cover both of those features of

an SDRAM. Jacob, Tr. 5507-17. CCFF 1130; *see also* CCFF 1128-1129, 1131-1139 (elements

amended, could reasonably be construed to cover the programmable CAS latency feature of JEDEC-compliant SDRAM. CCFF 1174; *see also* CCFF 1173, 1175-1179 (elements of claim). Claim 185 could be construed by a reasonable engineer to cover the method of programming CAS latency used in a JEDEC-compliant SDRAMs. CCFF 1181; *see also* CCFF 1180, 1182 (elements of claim). Finally, claim 183 of the '490 application, as amended, could be interpreted to cover a computer system using a JEDEC-compliant SDRAM. CCFF 1167; *see also* CCFF 1166, 1168, 1172 (elements of claim).

b. Claims Covering DDR-Related Technologies

In addition, Rambus, while a member of JEDEC, also amended pending patent applications (one of which ripened into an issued patent, in April 1996) that could be construed to cover other features of what ultimately became known as DDR SDRAM discussed within JEDEC during the period of Rambus's membership – namely, phase-lock loops ("PLLs") on the SDRAM chip and use of a dual-edge clock. CCFF 1183-1237.

First, Rambus amended patent application 07/847,692 ("the '692 application") on June 28, 1993. CCFF 1184. That application could be interpreted as covering a PLL incorporated into a JEDEC-compliant SDRAM. CCFF 1183; *see also* CCFF 1185, 188-1191 (elements of claim 151). Claims 166 and 167 of the application could be construed to cover a computer system using a JEDEC-compliant SDRAM containing a PLL. CCFF1198; *see also* CCFF 1196-1197 (describing claims).

Second, Rambus's patent application 08/222,646 ("the '646 application") could be interpreted to cover a DDR SDRAM using a dual-edge clock. CCFF 1199. Rambus filed the '646 application on March 31, 1994, and filed a preliminary amendment to the application on September 6, 1994. CCFF 1008, 1204-1205, 1633. Claim 151 of the '646 application could be interpreted to cover dual-edge clocking as used in a JEDEC-compliant DDR SDRAM. CCFF

1008, 1077, 1207; *see also* CCFF 1206, 1208-1211 (describing elements of claim).[30] In October 1995, the patent office sent Rambus a Notice of Allowance, which is notification that the patent office believes the claim should issue. CCFF 1076, 1213. The '646 application subsequently issued to Rambus as patent 5,513,327 ("the '327 patent") on April 30, 1996. CCFF 1214, 1634. As with the application, a reasonable engineer could construe the '327 patent to cover dual-edge clocking as used in DDR SDRAM. CCFF 1217, 1224, 1234. This is true both for the first claim of the '327 patent, CCFF 1219, 1224; *see also* CCFF 1077, 1218, 1220-1223, 1225-1228 (analyzing elements of claim), and for the seventh claim of the patent, CCFF 1230, 1234; *see also* CCFF 1229, 1231-1233, 1235-1237.

3. Despite Having a Duty to Disclose, Rambus Concealed Its Patents and Patent Applications from JEDEC

Despite understanding the policies, rules, and procedures of JEDEC, and despite knowing022 Ti0e-27.6

[30] Rambus amended claims 151 and 152 on April 21, 1995, such that ultimately claim 152 incorporated the elements of claim 151, which was allowed by the patent examiner on October 6, 1995. CCFF 1213.

1995 JEDEC meeting, Richard Crisp made no mention that its patent claims might cover a new iteration of CAS latency, let alone the CAS latency already incorporated in the SDRAM standard. CCFF 1082.

As explained above, Rambus's '692 application contains claims that could be construed to cover a PLL on an SDRAM chip. Rambus filed this application in March 1992. It amended the application in June 1993 in order to cover the PLL feature. CCFF 1075. In September 1994, NEC Corporation proposed to the JEDEC 42.3 committee that the SDRAM standard incorporate on-chip PLL. CCFF 1010 (Crisp observed presentation). In fact, after the first presentation on on-chip PLL, Mr. Crisp informed everyone at Rambus by email that "**** They plan on putting a PLL on board their SDRAMs . . . ****I believe that we have now seen that others are seriously planning inclusion of PLLs on board SDRAMs. . . . What is the exact status of the patent with the PLL claim? ****." CX0711 at 36 (emphasis, *i.e.*, the multiple asterisks, in original). CCFF 605, 1012-1013. That proposal, if incorporated into the JEDEC SDRAM standard, could have been construed by a reasonable engineer to be covered by claim 151 of Rambus's '692 application. CCFF 1187.[31] Rambus subsequently amended its patent application to add two claims – claims 166 and 167 – that could be read to cover a computer system that uses a JEDEC-compliant SDRAM incorporating a PLL as proposed by NEC. CCFF 1196; *see also id.* 1197-98 (describing claims). Despite this amendment, made after Rambus observed the NEC proposal, Rambus made no disclosures to JEDEC to indicate that its '692 application, as amended, could cover both a PLL on an SDRAM or the use of an SDRAM with PLL in a computer system. CCFF 909.

[31] Furthermore, after Rambus amended the claims in the application, in June 1993, claim 152 of the '692 application could be construed to cover an SDRAM incorporating NEC's PLL proposal. CCFF 1195.

JEDEC placed the issue of whether to use the on-chip PLL/DLL feature on a survey ballot in October 1995 to determine its suitability for inclusion in the next generation of the SDRAM standard. CCFF 1072. The results of this ballot were discussed at the December 1995 meeting, which Richard Crisp attended on Rambus's behalf. CCFF 1078-79. Rambus nevertheless made no mention of its potential patent claims over this technology. CCFF 1082. This failure to disclose was particularly grievous in light of the fact that Mosaid did mention at the same meeting that it had potential patent claims over a related technology, even though those claims likely did not apply to the proposed JEDEC implementation. CCFF 1082.

Rambus recognized the possibility of amending its patent applications to cover use of dual-edge clocking in an SDRAM at least as early as mid-1994. As explained above, Rambus's '327 patent, which stemmed from the '646 application, contains claims that could be construed to cover dual-edge clocking. Rambus filed the '646 application in March 1994. CCFF 1204. In August 1994, Lester Vincent transmitted to Rambus a draft amendment to this pending patent application that would claim dual-edge clocking. CCFF 1004; *see also id.* 1008 (filing of amendment in September 1994). Proposals were made at JEDEC to include dual-edge clocking both before and after this application was made, all while Rambus was a member. Proposals to incorporate dual-edge clocking, any of which could be construed to be covered by the '646 application, were made in May 1992, December 1995, and March 1996. CCFF 1200-02, 1207; *see also id.* 1206, 1208-09 (elements of 151 claim could cover dual-edge clock proposals).[32] Yet

[32] Likewise, the patent as issued could be construed to cover a JEDEC-compliant SDRAM incorporating dual-edge clocking as proposed in May 1992 and March 1996, or as placed on the survey ballot in December 1995. CCFF 1219, 1230; *see also id.* CCFF 1218, 1220-23 (elements of claim 1 of '327 patent); CCFF 1229, 1230-33 (elements of claim 7 of '327 patent). Finally, an SDRAM complying with JEDEC specification JESD 79 could be construed to infringe the '327 patent. CCFF 1224, 1234; *see also id.* 1225-128 (elements of claims); 1234-37 (elements of claims).

Rambus never disclosed at any JEDEC meeting that Rambus had claims that could cover dual-edge clocking.

In May 1995, several proposals relating to technology under development by the SyncLink consortium were presented at a JEDEC JC-42.3 meeting with Richard Crisp in attendance. CCFF 1043. The proposals involved using both the rising and falling edges of the clock for data input, among other technologies. CCFF 1043. Rambus was aware of the technology and had determined that Rambus could potentially assert patent claims over it. CCFF 988, 992, 1004, 1008, 1037, 1043. Crisp was specifically asked whether Rambus had any patent claims that could cover the SyncLink proposal, but he failed to respond to the inquiry or to make any specific disclosure. CCFF 1044-48. Three months later, in September 1995,

edge clockin, inOctomber 199e. CCFe

[33] As described below, Rambus's withdrawal letter contained a list of issued patents. Yet none of the patents listed in fact related to JEDEC's work. CCFF 1114. Moreover, the '327 patent, which did relate to that work, was omitted from the list. CCFF 1114. On the very day it withdrew from JEDEC – June 17, 1996 – Rambus requested its outside patent counsel, Vincent, to provide an opinion on the enforcement readiness of its '327 patent, which had issued several months earlier. CCFF 1100.

Rambus left JEDEC having never cured the numerous instances in which, despite a clear duty to disclose, Rambus concealed relevant patents and patent application from JEDEC.

4. Rambus Made Deceptive Statements to Allay Concerns About Possible Patent Coverage

Rambus's misconduct extends beyond its simple failure to disclose its patents and patent applications as required by the Rules. In addition, Rambus made affirmatively misleading statements calculated to quell any concerns or suspicions of JEDEC members as to the possibility that Rambus had patents or patent applications relevant to JEDEC's work.

For instance, Rambus specifically sought to allay concerns about possible Rambus patent claims on the SyncLink presentation at JEDEC which included dual-edge clocking. Rambus declined to comment when requested specifically to state whether its patents could apply to SyncLink. CCFF 1044, 1048, 1522-1523. Yet Rambus went beyond merely stating that it had no "specific comment" with respect to the SyncLink proposal containing dual-edge clocking. Richard Crisp specifically reminded JEDEC that Rambus had in the past disclosed a patent (referring to the '703 patent).[34] CCFF 1066. By doing so, Rambus conveyed the message that it had in the past complied with JEDEC's disclosure rules and could be expected to do so at that time and in the future.

Rambus also made deceptive partial disclosures, implicating in particular dual edge clocking, upon its withdrawal from JEDEC. Rambus's withdrawal letter attached a list of patents for JEDEC to consider "[t]o the extent that anyone is interested." CCFF 1109-13. Yet none of the patents listed in fact related to JEDEC's work. CCFF 1114. Moreover, Rambus omitted the '327 patent, which did relate to JEDEC's work on dual-edge clocking. CCFF 1111-

[34] As explained below, the '703 patent did not in fact relate to JEDEC's work on SDRAM standards and hence the disclosure of this patent did nothing to alert JEDEC's members to the fact that Rambus possessed relevant intellectual property.

[35] Not only did Rambus engage in misrepresentations with respect to JEDEC members, it also affirmatively misled companies outside the context of JEDEC. Rambus witnesses at trial and in depositions have admitted that Rambus made no effort to inform Rambus RDRAM "partners" and potential licensees about the possibility that Rambus might one day claim IP outside of the unique RDRAM architecture. *See* CCFF 1238-43, 1259; *see also* CX2112 at 180 (Mooring,

Rambus's actions continued its ongoing strategy to"avoid[] discussing" its intellectual property with its "partners." CCFF 1676. For instance, while negotiating with Micron in early 1997, Rambus never disclosed that its patent rights could extend to SDRAM. CCFF 1679-80. Similarly, while negotiating with Siemens in 1997, Rambus made no mention of its potential patent claims over DDR SDRAM. CCFF 1682. Even more glaringly, Rambus said nothing to Lucky Goldstar ("LG") during negotiations, even though LG specifically explained that it favored DDR over RDRAM because it would be a "royalty-free . . . open JEDEC standard." CCFF 1683.

Rambus's CEO specifically instructed Rambus employees not to reveal that Rambus believed it had patents that might be infringed by DDR SDRAM. CCFF 1678 ("do *NOT* tell customers/partners that we feel DDR may infringe – our leverage is better to wait"). Mr. Tate repeated this admonition later that year. CCFF 1686. Rambus went so far as to create a "party line" that professed ignorance as to whether DDR SDRAMs would infringe Rambus's patents. CCFF 1687. Rambus continued this course until late 1999, as Mr. Tate continued to remind Rambus employees "not to indicate/hint/wink/etc. what [Rambus] expects the results of [its infringement] analysis to be." CCFF 1697.

During this same time period, Rambus sought to ready itself for future efforts to enforce

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sources supplying information about JEDEC's continuing activities. CCFF 1626 (describing receipt of information from "deep throat," "Mixmaster," and "Secret Squirrel"). This information was passed around Rambus and used to amend further Rambus's patent claims. CCFF 1627-28.

recommended that Rambus continue to conceal its patents and, when it did begin to enforce them, that Rambus approach companies one-by-one. CCFF 1713.

6. The Limited Information About Rambus's Patents That Was Publicly Available Was Insufficient to Put JEDEC Members on Notice That Rambus Possessed Relevant Intellectual Property

As explained above, Rambus engaged in a pattern of deceptive and misleading conduct to conceal its JEDEC-related patents throughout the duration of its membership in JEDEC and several years thereafter. It did not go public with its JEDEC-related patents until it began demanding royalties from all major DRAM makers in 2000. Yet, because Rambus had a proprietary DRAM architecture, RDRAM, Rambus did not seek to – nor did the success of its scheme require that it – block from public dissemination any information about its patent portfolio whatsoever. Thus, it was known within the DRAM industry, as of roughly 1993, that Rambus had obtained a patent and was in the process of applying for more patents in connection with RDRAM, an architecture substantially different from SDRAM and other more conventional DRAM designs. *See* CCFF 1238-1265.

Such information provided a useful cover for Rambus's secretive efforts to secure a patent monopoly over features being incorporated into JEDEC's SDRAM standards. The fact that publicly available information about Rambus's patents did not seem to implicate JEDEC's work on SDRAM standards served to assuage potential concerns that Rambus might possess relevant intellectual property. Indeed, as discussed above, this is something that Richard Crisp exploited in an effort to deflect questions about the scope of Rambus's patents and their potential relevance to JEDEC's work on SDRAM.

In attempting to transform public knowledge about its patents or patent applications into a defense to liability, Rambus has drawn particular attention to two items: (1) the international patent application Rambus submitted in April 1991 under the Patent Cooperation Treaty (the

"PCT application"),[37] which later became available for public review, CCFF 1267; and (2) Rambus's '703 patent, which issued on September 7, 1993, and which Rambus disclosed as a September 1993 JEDEC meeting, CCFF 971. Both the PCT application and the '703 patent derive from Rambus's original patent application – the '898 application, filed in April 1990 – and contain substantially the same specification and drawings as that original application, as is true of all of the patents that Rambus to date has sought to enforce against SDRAMs and DDR SDRAMs. CCFF 1267-1269. Yet nothing contained in either the PCT application or the '703 patent would have alerted a reasonable engineer that Rambus might possess or have the ability to obtain patent rights over features of JEDEC's SDRAM or DDR SDRAM standards. CCFF 972, 1268, 1270, 1341-1355. For instance, the '898 specification describes a bus that is significantly different from the bus used with a JEDEC-compliant SDRAM. *See* CCFF 1284-1340. Furthermore, the system specified in the '898 application would not be read by an engineer to allow Rambus to obtain patent rights over programmable burst length. CCFF 1318. Similarly, the '898 application's specification contains an implementation of CAS latency that is tied specifically to the narrow bus specified in the application, CCFF 1322, but that specification is sufficiently different from the programmable CAS latency used in the JEDEC SDRAM standard such that no engineer would have read the '898 application to allow Rambus to obtain patent rights over the JEDEC implementation. CCFF 1326.

Likewise, the clocking scheme specified in the '898 application differs significantly from that implemented by the JEDEC DDR standard. *See* CCFF 1327-1334. As a result, an engineer reviewing the '898 application would not have concluded that Rambus could obtain patent rights over dual-edge clocking as proposed for the JEDEC standard. CCFF 1334. Finally, the '898

[37] Rambus has referred to this previously as the World Intellectual Property Organization, or "WIPO" patent application.

application makes no mention at all of a PLL (or a DLL). CCFF 1337-1339. Accordingly, an engineer reading the '898 application would not conclude that Rambus could obtain patent rights over the PLL feature used in JEDEC-compliant DDR SDRAM. CCFF 1340.

For these and other reasons summarized in Complaint Counsel's proposed findings of fact, *see* CCFF 1238-1357, public knowledge about the existence of Rambus's '703 patent and its PCT application did not provide JEDEC's members with any basis to discern the scope of Rambus's patent applications, or even the fact that Rambus might possess intellectual property bearing on JEDEC's SDRAM standardization efforts.

7. Rambus's Deceptive Conduct Has Not Been Excused by the Federal Circuit's *Infineon* Ruling

Your Honor has asked the parties to address what bearing, if any, the Federal Circuit's decision in the *Infineon* case[38] should have on the outcome of this case.

Rambus initially sued Infineon for patent infringement and Infineon counterclaimed for fraud. A jury found, by clear and convincing evidence, that Rambus was subject to a duty to disclose patents and patent applications relating to JEDEC work, that Rambus intentionally violated that duty, and that JEDEC reli-3.9mithe ir detriTj -1* -0u1 8 at dwsis ectual proper636 0 TD -6.0079

[38] *Rambus Inc. v. Infineon Technologies AG*, 318 F.3d 1081 (Fed. Cir. 2003), *petition for cert. filed*, 72 U.S.L.W. 3092 (U.S. Jul. 03, 2003)(No. 03-37).

On appeal to the Federal Circuit, all three judges on the panel agreed with the jury and Judge Payne that JEDEC imposed a disclosure obligation requiring disclosure by all members of patents and patent applications. *Rambus Inc. v. Infineon Technologies AG*, 318 F.3d 1081 (Fed. Cir. 2003), *petition for cert. filed*, 72 U.S.L.W. 3092 (U.S. Jul. 03, 2003)(No. 03-37). A two-member majority found that patents or patent applications needed to be disclosed only if "a license under its claims reasonably might be required to practice the [JEDEC] standard." *Id.* at 1100. The dissenting judge opined that substantial evidence on the record supported the jury verdict and trial court judgment that Rambus committed fraud, based on substantial evidence that the JEDEC disclosure obligation applied to patents and patent applications that "might be involved in" JEDEC work, as found by the jury and Judge Payne. *Id.* at 1115. All three members of the panel affirmed Judge Payne's ruling that Infineon had failed to present clear and convincing evidence of a duty to disclose with respect to the DDR SDRAM standard. Infineon has filed a petition for writ of certiorari with the Supreme Court. As discussed in more detail below, five amicus curiae briefs have been filed in support of Infineon's petition.

a. The *Infineon* Ruling Should Have No Preclusive or Even Persuasive Effect with Respect to Complaint Counsel

First and foremost, it is beyond dispute that the Federal Circuit majority's decision in *Infineon* – in particular, its interpretation of JEDEC's rules and its conclusions as to whether Rambus's conduct violated such rules – in no way binds Complaint Counsel in this case, considering that Complaint Counsel was not a party to that proceeding. S*ee Parklane Hosiery Co., Inc. v. Shore*, 439 U.S. 322 (1979) (neither *res judicata* nor collateral estoppel binds a person who was not a party to the proceeding in which the ruling was rendered), and more generally that "collateral estoppel . . . simply does not apply against the government." *United*

[39] On the other hand, the *Infineon* majority did, as noted above, comment upon the unethical and bad-faith appearance of Rambus's actions.

more narrow record in the *Infineon* case, the conclusion of the *Infineon* court's two-member majority in this regard has been subject to challenge. *See generally* Judge Prost's dissent, 318 F.3d at 1107. Indeed, a number of amicus briefs supporting Infineon's pending petition for certiorari review by the Supreme Court have been filed, including briefs on behalf of JEDEC;[40] various companies active in standard setting activities, only some of whom are members of JEDEC;[41] various independent standard-setting organizations;[42] and a total of fifteen states, plus the Commonwealth of Puerto Rico.[43] The grant of a writ of certiorari is by no means assured even in a case generating this much attention from third parties. Nevertheless, the views and concerns expressed in these amicus briefs should give this Court, and ultimately the Commission, considerable pause before attributing any significant credence to the Federal Circuit majority's controversial conclusions.

Furthermore, as pointed out above, even under the artificially narrow standard applied by the Federal Circuit majority, the record in this matter (which was not presented in *Infineon*)

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[40] *See Amicus Curiae* Brief of JEDEC Solid State Technology Association in Support of Petitioners at 7 [Tab 2] ("JEDEC's patent policy requires members and participants to disclose to JEDEC committees any known patents or patent applications related to standardization work being undertaken by JEDEC committees.").

[41] *See* Brief of Advanced Micro Devices, Inc., et al., as *Amici Curiae* in Support of the Petitioners at 3 [Tab 3] ("The most fundamental flaw in the decision below lies in the Federal Circuit's substitution of its own, arbitrary view of what the JEDEC patent disclosure duty ought to have been for the duty that was actually adopted by JEDEC's members.").

[42] *See* Brief of *Amici Curiae*, Consumer Electronics Association, et al., in Support of Petition for Writ of *Certiorari* at 1 [Tab 4] ("*Amici curiae* represent a broad range of participants in the standard-setting process, and each is greatly concerned by the adverse effects that it anticipates will result from the application of the Federal Circuit Court's decision . . . in markets that extend far beyond memory chips.").

[43] *See* Brief of the Commonwealth of Virginia, et al., as *Amici Curiae* in Support of Petitioners at 3 [Tab 5] ("The Amici States . . . protest the Federal Circuit's substitution of its own view of the facts for that of a jury, thereby reversing the jury's determination of a state common law fraud claim.").

contains substantial evidence that claims contained in Rambus's '327 patent and '692, '646, '961 and '490 patent applications satisfied that standard.

The second area in which the Federal Circuit's conclusions depart dramatically from the evidence relates to the issue of when JEDEC commenced work on what ultimately came to be known as the DDR SDRAM standard. The Federal Circuit concluded that "JEDEC did not begin formal work on the DDR SDRAM standard until December 1996," roughly six months after Rambus formally withdrew from JEDEC. *Infineon*, 318 F.3d at 1105. As explained below, this conclusion finds no support in the record in this matter and is directly at odds with a substantial body of evidence in this case.

b. The *Infineon* Ruling Does Have Preclusive Effect on Rambus

By contrast, Rambus, because it had a full and fair opportunity to litigate these issues as a party in the *Infineon* matter, should be bound by the rulings of that case. As set forth in more detail in Complaint Counsel's March 26, 2003, Memorandum in Support of Motion *in Limine* to Bar Presentation, on Collateral-Estoppel Grounds, of Testimony and Arguments Regarding Issues That Rambus Has Previously Litigated and Lost ("Collateral Estoppel Mem."), the principles of collateral estoppel compel that several determinations established by the *Infineon* decision be given preclusive effect here. *See In re Microsoft Corp. Antitrust Litigation*, 232 F. Supp. 2d 534, 535 (D. Md. 2002). Over the course of the *Infineon* proceedings, the jury, Judge Payne, and Federal Circuit majority and the Federal Circuit minority have all agreed on certain determinations, which also enjoy overwhelming support by the record in this case: that JEDEC's rules imposed a mandatory patent disclosure duty and JEDEC's members understood this to be the case; that JEDEC's disclosure duty extended to patent applications as well as issued patents; that JEDEC's rules required disclosure of all patents and applications that "relate to" JEDEC's

work; and that JEDEC's disclosure rules applied to all members, including Rambus, and not just presenters. *See* Collateral Estoppel Mem.

Even if Your Honor were not inclined to deem these determinations as preclusive against Rambus, in light of their unanimous backing in the *Infineon* matter, and in light of the overwhelming evidence on this record that substantiates each one, Complaint Counsel submits that they should be persuasive in the matter.

8. JEDEC's Work on "Future SDRAMs," Culminating in the Adoption of the DDR SDRAM Standard, Started Long Before Rambus Withdrew from JEDEC in June 1996

JEDEC's work on what ultimately became labeled as DDR SDRAM began long before Rambus left the organization in June of 1996. Indeed, DDR SDRAM, as an evolutionary technology, was built upon earlier generations of DRAM technologies standardized by JEDEC over the prior decades. CCFF 653, 2572. For example, DDR incorporated the same programmable CAS latency and programmable burst length features that had been first adopted in SDRAM. CCFF 657. Moreover, JEDEC began to work on the next generation of SDRAM – which would later be termed "DDR" – in 1993, once it published the final SDRAM standard. CCFF 579-580. At that point, JEDEC continued its discussion of features that had long been under consideration at JEDEC, such as dual-edge clock and on-chip PLL/DLL.[44] Although JEDEC only later applied the term "DDR" to these technologies, JEDEC began considering them at least two years prior to Rambus's departure from JEDEC. CCFF 581-584.

a. Discussion of DDR Generally

The evidence amply establishes that JEDEC began to discuss the features that would be included in the next SDRAM generation – DDR SDRAM – as soon as it published the final

[44] As noted elsewhere and as Rambus has admitted, the concepts "on-chip DLL" and "on-chip PLL" are essentially synonymous. CCFF 595-597.

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Rambus President David Mooring, who received Crisp's report, also understood that JEDEC had begun to develop the next generation DRAM while Rambus was still a member. CX2112 at 249 (Mooring, FTC Dep.). Indeed, Mr. Mooring has testified that Rambus left JEDEC in part because Rambus believed the features being discussed there, including dual-edge clock, looked more and more like Rambus products. CX2112 at 202 (Mooring, FTC Dep.); CX2112 at 205, CX2056 at 190 (Mooring, Dep.)). In September of 1995, Rambus' CEO, Geoff Tate, acknowledged his awareness that a next generation SDRAM was coming when he wrote "SDRAM – now –next" in handwritten notes from a meeting with recently-hired intellectual property manager and in-house patent attorney Anthony Diepenbrock. CX1730 at 1, 830. Significantly, Messrs. Tate, Mooring and Ware (all of whom were on Rambus' final witness list) were not called by Rambus to testify at trial.

turned its attention to the next-generation SDRAM in the 1994-96 time frame. *See* CCFF 581, 631-32. Among the various discussions of dual-edge clock witnessed by Rambus during this period were the multiple presentations on Synclink architecture, which included a dual-edge clocking feature. CCFF 633-34, 1043. Again, Rambus, having claims in a pending patent application covering this technology, revealed nothing – even when asked. CCFF 1044, 1063-65, 1067.

c. Discussion of On-Chip PLL/DLL

The work begun by JEDEC after adoption of the SDRAM standard also included discussion of adding on-chip PLLs. CCFF 582, 594; *see, e.g.*, CCFF 600-616. During the course of 1994, Mr. Crisp observed discussions at JEDEC regarding using PLLs on memory modules to remove clock skew from the module. CCFF 602. In fact, after the first presentation on on-chip PLL, Mr. Crisp informed everyone at Rambus by email that "**** They plan on putting a PLL on board their SDRAMs . . . ****I believe that we have now seen that others are

d. Inclusion of All Four Technologies in "Next Generation" SDRAM Survey

The survey ballot distributed to JEDEC members in the fall of 1995 relating to "next generation" SDRAMs further establishes that JEDEC's work on DDR SDRAM – including consideration of dual-edge clocking and on-chip PLL – commenced prior to Rambus's departure. (CX0260). *See also* Lee, Tr. 6636 (indicating that features in the future SDRAM survey ballot later became known as DDR); CCFF 580. This survey ballot, which Rambus received and distributed internally, included questions relating to each of the four technologies at issue in this case: on-chip PLLs and DLLs, dual-edge clocking, programmable CAS latency, and programmable burst length. *See* 588-89, 609-12, 1072-73. These features were discussed again when JEDEC reported the survey results in December 1995. (JX0028 at 6, 36-48). At that point, Mosaid disclosed it had a pending patent relating to on-chip PLL. CCFF 612, 1086. By contrast, Rambus, which also had relevant intellectual property, again strategically remained silent. CCFF 1082. In the first half of 1996, these features were included in various presentations, copies of which were included in the minutes sent to Rambus. CCFF 575, 580, 590-91, 613-14, 616, 639, 641. Again, Rambus disclosed nothing relevant to these technologies at the time it left JEDEC.

Thus, although JEDEC may not have applied the label "DDR" until late 1996, the evidence demonstrates that the on-going JEDEC work and the concepts that were incorporated in DDR had been under consideration for several years prior to Rambus's June 1996 withdrawal from JEDEC.[47]

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[47] Pete McWilliams of Intel testified that he was aware of DDR in 1995. (McWilliams, Tr. 4815 (". . . we first heard about DDR in '95 when we went out to ask for options, which was one of the options we considered, the higher-speed SDRAM. One of the options was DDR.").

D. Rambus's Challenged Conduct Was "Exclusionary"

As the foregoing discussion demonstrates, JEDEC's open standards process and the rules developed by JEDEC to facilitate that process imposed mandatory obligations on JEDEC members to disclose relevant patents and patent applications. Throughout the four-plus year duration of Rambus's participation in JEDEC, Rambus possessed patent applications that it believed covered or could be amended to cover technological features included in JEDEC's

for a company like Rambus to engage in such conduct – that is, absent the expectation of longer-term benefits through the exclusion of competition. CCFF 3006-11.

This evidence leaves no room to conclude that Rambus's conduct was anything other than exclusionary. Although Rambus sought to establish, through the expert testimony of Dr. Richard Rapp, that its conduct was justified pursuant to legitimate business interests, Dr. Rapp admitted on cross-examination that his testimony in this regard was theoretical in nature and not rooted in the actual facts. *See* CCFF 2694-2702. A review of the actual facts shows that Rambus could have no possible legitimate business justification for the pattern of deceptive conduct challenged by this case.

Finally, in evaluating the issue of exclusionary conduct, this Court should again be mindful of the holding in *Allied Tube*, which, as discussed above, establishes that conduct of precisely the sort challenged here – that is, deliberate efforts to subvert an open standard-setting process – constitutes exclusionary, anticompetitive conduct and will give rise to an antitrust violation when the remaining elements of liability are satisfied. *See also Stearns Airport Equip. Co. v. FMC Corp.*, 170 F.3d 518, 526 (5th Cir. 1999) (applying *Allied Tube* in the context of claims of unilateral monopolization, and noting that the Second Circuit in *Allied Tube* found that the behavior at issue "constituted exclusionary conduct"); HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE 23 (2d ed. 1999) (discussing *Allied Tube* as an example of the sort of "exclusionary conduct" that, when used as a means to achieve monopoly, can impose a substantial "social cost").

E. Rambus Acted with an Intent to Monopolize

As described above, only Count II of the Commission's Complaint – the attempted monopolization claim – requires a showing of specific intent to monopolize, and such intent can be inferred from anticompetitive conduct. *M&M Medical Supplies & Service, Inc. v. Pleasant*

Valley Hosp., 981 F.2d 160, 166 (4th Cir.) (*en banc*). By contrast, Count I – monopolization – requires merely that the defendant had "an intent to bring about the forbidden act." *United*

F. Through Its Challenged Conduct, Rambus Has Succeeded in Acquiring Monopoly Power in Several Relevant Technology Markets

Through the conduct challenged in this case, Rambus succeeded in distorting the outcome of JEDEC's SDRAM standardization process and thereby acquiring a patent position over technological features specified in JEDEC's SDRAM and DDR SDRAM standards. Before the DRAM industry became aware of Rambus's JEDEC-related patents it had become locked in to the relevant JEDEC standards, such that it is now unable to avoid Rambus's patent claims. Consequently, the pattern of deception and concealment challenged by Complaint Counsel is a material cause of Rambus's monopoly power. Specifically, Rambus possesses monopoly power in five relevant technology markets corresponding with the same technological features of the JEDEC SDRAM standards over which Rambus has asserted patent claims.

1. There Are Five Relevant Technology Markets

There are five relevant product markets at issue in this case – four of which correspond to the four "Rambus" technologies at issue here, and fifth "cluster" market that aggregate these four markets into one. The geographic scope of each of these markets is worldwide. These market

2762, 2766-68 (McAfee testifying that considering likely buyer behavior appropriate method to determine relevant market); *id.*

[48] *See also* U.S. Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines* § 1.11 (revised Apr. 8, 1997) ("*Merger Guidelines*"). *See generally* CCFF 2759-61 (McAfee describing methodology).

technology market, the burst length technology market, the data acceleration technology market, and the clock synchronization technology market. CCFF 2787. In addition, there is a cluster market of next-generation DRAM technologies. CCFF 2885-89.

Latency Technology Market. There were at least five commercially viable alternatives in the latency technology market in 1992.[49] In addition to programmable CAS latency, fixed CAS latency, pin strapping, programming by READ command, and setting by fuses were commercially viable. CCFF 2793-96; *see id.* 2791-2792 (each alternative was technically feasible and considered by JEDEC); Section IV.F.2 (describing alternatives more fully), *infra*. As commercially viable alternatives, these other technologies constrained the price of Rambus's patented technology. CCFF 2797. Accordingly, the latency technology market included all five of these technologies at the time JEDEC was considering which one to include in the SDRAM standard.

Burst Length Technology Market. There were at least five commercially feasible alternatives in the burst length technology market in 1992.[50] In addition to programmable burst length, fixed burst length, programming with pins, programming with a read command, and using burst interrupt were all commercially viable alternatives. CCFF 2801-04; *see id.* 2799-2800 (each alternative was technically feasible and considered by JEDEC); Section IV.F.2 (describing alternatives more fully), *infra*. As commercially viable alternatives, these other technologies constrained the price of Rambus's patented technology. CCFF 2805. Accordingly,

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[49] The relevant time to determine commercially viable alternatives is prior to the issuance of the applicable standard. CCFF 2786. The relevant time for defining the latency technology market is 1992. CCFF 2790.

[50] The relevant time to determine commercially viable alternatives is prior to the issuance of the applicable standard. CCFF 2786. The relevant time for defining the burst length technology market is 1992. CCFF 2790.

the burst length technology market included all five of these technologies at the time JEDEC was considering which one to include in the SDRAM standard.

Clock Synchronization Technology Market. There were at least five commercially viable alternatives for clock synchronization in 1995.[51] In addition to use of on-chip PLL/DLL, putting DLL on the memory controller, putting the DLL on the module, using a Vernier technique, and using no DLL were all commercially viable alternatives. CCFF 2816-20; *see id.*

[51] The relevant time to determine commercially viable alternatives is prior to the issuance of the applicable standard. CCFF 2786. The relevant time for defining the clock synchronization technology market is 1995. CCFF 2807.

[52] The relevant time to determine commercially viable alternatives is prior to the issuance of the applicable standard. CCFF 2786. The relevant time for defining the data acceleration technology market is 1995. CCFF 2807.

market included all four of these technologies at the time JEDEC was considering which one to include in the DDR standard.

Synchronous DRAM Technology Market. The four relevant technology markets discussed above together can be aggregated into a fifth, "cluster" market of synchronous DRAM technology. Thus, a cluster market is established if (1) there is only one real source of market power in each of the individual markets, or (2) the defendant has the same market share, competitors, and barriers to entry in each market. HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY 102 (2d ed. 1999); *see United States v. Philadelphia National Bank*, 374 U.S. 321 (1963) (cluster of banking services constituted relevant market); *United States v. Central State Bank*, 817 F.2d 22, 23-24 (6th Cir. 1987) (same); *United States v. AT&T*, 524 F. Supp. 1336, 1375-76 (D.D.C. 1981). A cluster market including Rambus's patented technology used in next-generation RAM is appropriate in this case considering, among other things, that Rambus licenses the four relevant technologies as a package, and each technology is required by JEDEC's SDRAM standards – the programmability features being specified in the SDRAM standards, and all four features being specified in the DDR SDRAM standards. CCFF 2885-89.

b. Relevant Geographic Market

Antitrust market definition also requires the specification of a relevant geographic market. The relevant geographic market is the geographic area to which consumers seeking a substitute product could pract826 Twn RAM is appropriateabeing n eachronous DRed into a ew (JETw u108 . st

[53] *See* Richard T. Rapp, *The Misapplication of the Innovation Market to Merger Analysis*, 64 ANTITRUST L.J. 19, 23 n.19 (1995); *see also* Thomas N. Dahdouh, *The Shape of Things To Come: Innovation Market Analysis in Merger Cases*, 64 ANTITRUST L.J. 405, 422 (1996); Richard T. Gilbert and Steven C. Sunshine, *Incorporating Dynamic Efficiency Concerns in the Merger Analysis: The Use of Innovation Markets*, 63 ANTITRUST L.J. 569, 594-95 (1995).

[54] Assuming arguendo the Court concluded Rambus did not possess monopoly power in such markets, at a miniy.w.0075 Tcnmph. DANTI Cir Tc e als TD /F087.8 Tf7.6 Efficiency Concerns507ts

Du Pont, 351 U.S. at 391; *see* CCFF 2898 (monopoly power allows company to maintain prices substantially above competitive levels). The offense of monopolization is complete with the acquisition of monopoly power, even if that power is not yet exercised. *Berkey Photo v. Eastman Kodak Co.*, 603 F.2d 263, 275 (2d Cir. 1979) ("Unlawfully acquired power remains anathema even when kept dormant."), *cert. denied*, 444 U.S. 1093 (1980). Proof of a change in price or output in the marketplace is not required so long as the conduct in question has resulted in the power to affect the market.

Guidelines § 2.2; *Mozart Co. v. Mercedes-Benz of N. Am.*, 833 F.2d 1342, 1346 (9th Cir. 1987); *see also* CCFF 2960-61.[55] Third, the DRAM manufacturing industry has become locked in to the use of those patents as a result of, among other things, the high cost switching to alternative standards not covered by Rambus patents.

a. JEDEC's Standards Are the Dominant Standards for Commodity DRAMs

JEDEC's SDRAM and DDR SDRAM standards are the dominant worldwide standards for commodity DRAMs. CCFF 259, 263, 267, 2904. Indeed, over 90 percent of worldwide DRAM output complies with the JEDEC specifications. *See* CCFF 259, 267; *see also* CCFF 87. This percentage of the market has remained stable in recent years, and is projected to remain at this level, if not higher, in future years. CCFF 2904; *see* DX0141.

b. Rambus's Patented Technologies Are Included in JEDEC's SDRAM and DDR SDRAM Standards

Rambus now holds patents, and continues to pursue patent applications, covering features specified in JEDEC's SDRAM and DDR SDRAM standards, including the four "Rambus" technologies. *See* CCFF 2905-2911. Indeed, Rambus has obtained license agreements from numerous manufacturers of SDRAM and DDR SDRAM, accounting collectively for over half of the DRAM market. *See* CCFF 2012.

c. The DRAM Industry Is "Locked-In" to JEDEC's Standards

The DRAM industry is locked in to using Rambus's patented technologies and cannot feasibly switch to alterative technologies. Once JEDEC adopted its standards, and the industry

[55] Indeed, the assertion of patents alone (even if not ultimately found valid and infringed) is sufficient to create market power. *See Blonder-Tongue Laboratories, Inc. v. University of Illinois Foundation*, 402 U.S. 313, 346-47 (1971) (mere threat of a patent infringement lawsuit "permit[s] invalid patents to serve almost as effectively as would valid patents as barriers to the entry of new firms").

began to develop memory chips and other components to work with DRAMs meeting that standard, the industry became locked in to the use of those standards, and thus to Rambus's patented technology.

Record evidence shows that the DRAM industry, including customers and suppliers of complementary components, are committed to both the SDRAM and DDR SDRAM standards, and have been for quite some time. CCFF 2501-26. DRAM manufacturers and other firms have been preparing to manufacture and to draR SDievidtO manu109 u 19972ht299 u 199 have

standards had been established. CCFF 2505. Likewise, firms such as Intel and AMD dedicate substantial resources to ensuring that DRAM and the other components develop such that compatible components are available when the PC-OEMs are assembling their computers and it can take a number of years and substantial expense to support the development of complementary components. CCFF 2556.

The need for compatibility between the DRAM and other components also prevents the industry from switching. DRAM has value only if it is compatible with the other components in

would not be able to sell those DRAMs unless they were supported by other components. CCFF 2547-49. Industry acceptance of a new DRAM standard requires the existence of compatible components, including particularly memory controllers. CCFF 2550. Likewise, sales of a memory controller depend on the existence of compatible DRAMs. In both cases, unless one is available, the firms making the other will be hesitant to produce their component. CCFF 2551. Changing either the SDRAM standard or the DDR SDRAM standard in 2000 would have required manufacturers of components such as controllers, motherboards and modules to redesign, test and reissue their products. CCFF 2552. By 2000, the entire industry had implemented the JEDEC standards to such a degree that it would have been extremely difficult and costly for all industry members to change their respective designs to avoid Rambus's patents. CCFF 2553. *See also* CCFF 2558 (it took AMD approximately two years to develop the infrastructure or "virtual system" to support the K-7 microprocessor.).

Before manufacturers could even begin the redesign or coordination process, the industry would have to agree on a new standard, which implicates both the factors of time expenditures and industry coordination. The industry would need to agree on a single standard, given the preference for a multiple supply base (CCFF 116-118, 2547-49), the need for interoperability and compatibility (CCFF 25-28, 2541), and the economies of scale, which provide strong incentives for a single standard (CCFF 2608-09).

History suggests that it is unlikely that the new DRAM standard could be created outside of JEDEC. Each new generation of commodity DRAM, from page mode through fast page mode, EDO, SDRAM and DDR SDRAM, has been a JEDEC standard. CCFF 2563. Reaching consensus within JEDEC as to how to change the standards would have been extremely difficult and time-consuming. CCFF 2576-78; *see also* CCFF 2576 (*citing* Peisl, Tr. 4453 ("JEDEC is traditionally a very slowly moving consortium, and there's a reason for that, because there's so

many companies involved, it's basically the whole industry that produces parts for the PC and the laptop and the server business, so to try to reach consensus at JEDEC, based on my experience, have been incredibly hard and tough.")). The standard-setting process alone can take two to three years. CCFF 2565-68. Reaching consensus to change the standard would have been more difficult in 2000 or later than it was in 1993, because the interests of the members of JEDEC are not as well aligned now as they were *ex ante*. CCFF 2744. Given that certain JEDEC members have licenses from Rambus and others do not, they have different incentives. CCFF 2745-46.

There is little incentive to embark on a change to the JEDEC DRAM standard, given that there is no guarantee that the new standard would be able to displace the current standard. Changing the standard to avoid Rambus's intellectual property would not necessarily result in new standard with cost or performance advantages. Without those advantages, DRAM customers would not likely support the change. CCFF 2575. Likewise, suppliers of components that constitute the DRAM infrastructure are willing to develop products compatible with a new standard only if they are able to obtain an economic benefit from that change. *Id.* Indeed, attempts by DRAM manufacturers to consider changing the standards were rejected by the industry. CCFF 2579-84.

In short, the industry was locked in to JEDEC's standards in 2000 when it first became aware that Rambus's patents covered the SDRAM and DDR SDRAM technologies, and it remains locked in today.

d. Alternatives to Rambus's Patented Technologies That Were Previously Available Are No Longer Commercially Viable

At the time that the relevant standards were being developed, there were a variety of commercially available alternatives to the "Rambus" technologies. CCFF 2792-96, 2801-04,

2809-12, 2817-20. Yet the technologies that in the past were commercially viable alternatives to Rambus's technology, are no longer commercially viable as a result of the lock-in effects described above, which preclude the DRAM industry from shifting to alternatives to the existing SDRAM standards, and hence preclude substitution away from use of the "Rambus" technologies as incorporated in the JEDEC standards. CCFF 2899-04, 2915-22.

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engaged in anticompetitive conduct that 'reasonably appear[s] capable of making a significant contribution to … monopoly power.'" *Microsoft*, 253 F.3d at 79, *citing* 3 Areeda & Hovenkamp, *Antitrust Law* ¶ 651 c, at 78. Complaint Counsel is not required to demonstrate that had Respondent disclosed, they would not have monopoly power because "[t]o require that § 2 liability turn on a plaintiff's ability or inability to reconstruct the hypothetical marketplace absent a defendant's anti-competitive conduct would only encourage monopolists to take more and earlier anti-competitive action." *Id.*[56]

In *Microsoft*, the district court had found that both Netscape Navigator and Java were potential competitors to Microsoft's operating systems. The question was "whether the exclusion of nascent threats is the type of conduct that is reasonably capable of contributing significantly to a defendant's monopoly power." *Id.* at 79. Microsoft had claimed that its market power was the result of its superior innovation and business acumen. The court rejected that argument. "[S]uffice it to say that it would be inimical to the purpose of the Sherman Act to allow monopolists free reign to squash nascent, albeit unproven, competitors at will – particularly in industries marked by rapid technological advance and frequent paradigm shifts." *Id.*

2. Rambus's Exclusionary Conduct Altered the Outcome of JEDEC's Standardization Process, and Was a Material Cause to Rambus Obtaining Monopoly Power

Proof of causation in this case requires two showings: first, that Rambus's failure to disclose "is the type of conduct that is reasonably capable of" causing JEDEC to include the

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[56] Similarly, in the damages context, the Supreme Court has long held that a defendant cannot benefit from the uncertainties created by its own violative conduct. "Any other rule would enable the wrongdoer to profit by his wrongdoing at the expense of his victim. . . . The most elementary conceptions of justice and public policy require that the wrongdoer shall bear the risk of the uncertainty which his own wrong has created." *Bigelow v. RKO Radio Pictures, Inc.*, 327 U.S. 251, 264-65 (1946).

undisclosed intellectual property in the DRAM standards; and second, that the JEDEC standards reasonably appear capable of making a significant contribution to Respondent's monopoly power. The second point has already been established. As described above, the DRAM industry, including customers and suppliers of complementary components, are committed to both the JEDEC SDRAM and DDR SDRAM standards, and have been for quite some time. As a result of the fact that the industry is locked in to the JEDEC standards, there are no current substitute technologies that could constrain Rambus's pricing power. *Id.* All that remains is to

would have – worked around Rambus's patent technology had they known about Rambus's intellectual property claims at the time JEDEC was developing its SDRAM and DDR SDRAM standards. CCFF 2101 (*citing, e.g.*, LaM0 Tw (citinTr. 66F0 (If2s) Tj knowndisclo20.28;Tf -0.0D/orig0 TD 0

using a mode register. CCFF 2164. Indeed, this technology was proposed for incorporation in the JEDEC SDRAM standard during the 1991-1992 period. CCFF 2131, 2166-2167. Fuses have been in use since at least the early 1990's, and are still in use today. CCFF 2159.

In 1991-92, JEDEC also considered using either an existing or dedicated pin(s) to set CAS latency. CCFF 2131, 2186. This alternative offered advantages in terms of cost (CCFF 2187, 2190), simplicity (CCFF 2187), and functionality (CCFF 2188). This alternative would not necessarily have required the addition of new pins to DRAMs (CCFF 2192-2201). JEDEC could have decided that they needed only two options for CAS latency (CCFF 2214-2218), which could have been accomplished with one pin (CCFF 2213).

In addition, JEDEC could have: (1) scaled CAS latency with clock frequency. (CCFF 2178-2183); (2) identified CAS latency in the command (CCFF 2219-2227); or, (3) opted to stay with an asynchronous style DRAM. CCFF 2228-2233; *see also* CCFF 2231-2232 (discussing potential advantages associated with this approach).

b. Alternative to Programmable Burst Length

In the 1991-1996 time frame, JEDEC had at least six technically feasible alternatives to the use of programmable burst length in SDRAM and DDR SDRAM: (1) using fixed burst length, (2) using fuses to program the burst length, (3) using a dedicated pin(s) to determine the burst length, (4) identifying the burst length in the read command, (5) using a burst terminate mechanism to determine burst length, and (6) toggling the CAS pulse to determine burst length. CCFF 2234. A number of these alternatives were shown to be commercially viable at the hearing. CCFF 2801-2804. Five of these alternatives – fixed burst length, use of fuses to set burst length, use of pins to set burst length, burst terminate, and identifying burst length in the command – were proposed for incorporation in the JEDEC SDRAM standard in the 1991-1992

time period. CCFF 2235. At that time the manufacturing costs associated with these four alternatives were comparable to those associated with programmable burst length. CCFF 2236.

In 1991-92 and again in 1995-96, JEDEC considered fixing the burst length by hardwiring either a single burst length value or two different burst length values. CCFF 2235, 2243, 2250. This alternative was acceptable from both a cost and technical perspective. *See* CCFF 2240-2241, 2246, 2257-2258, 2260. At most, JEDEC would have needed to standardize two different burst lengths. CCFF 2254. On multiple occasions in the 1990'sze

Finally, JEDEC could have toggled the CAS pulse to control data output (CCFF 2319), which would have made the part simpler, smaller, and easier to test (CCFF 2320), and would have involved no significant disadvantages (CCFF 2321).

c. Alternatives to Dual-Edged Clocking Technology

With respect to the dual-edged clocking technology, JEDEC had at least seven technically feasible alternatives in the 1991-1996 time period: (1) doubling the clock frequency, (2) interleaving on-chip banks, (3) interleaving banks at the module level, (4) increasing the data width of the DRAM chip to double the data rate, (5) increasing the data width at the module level, (6) using simultaneous bidirectional I/O, and (7) using toggle mode DRAM. CCFF 2322. A number of these alternatives were shown to be commercially viable at the hearing. CCFF 2810-2812.

JEDEC considered doubling the clock frequency of SDRAM to double the date rate in 1996-2000. CCFF 2324. Doubling the clock frequency would require keeping the single-edged clocking scheme that SDRAM uses but with a faster clock that would output data on the positive edges fast enough to achieve the desired data rate. CCFF 2325. This clocking scheme has advantages over dual-edge clocking to terms of design and testing (CCFF 2327-2328) and was viewed as technically feasible, CCFF 2334, 2338, and also feasible from a cost perspective, CCFF 2335, 2337-2343.

A second alternative to dual-edged clocking is to interleave on-chip banks by one of two possible methods: sending two read commands that are delayed from each other by half a clock cycle, or sending a clock and a delayed clock where the first clock would control bank 1 and the delayed clock would control bank 2. CCFF 2344. This alternative has the advantage of not requiring symmetric duty cycles or slew rates, CCFF 2345, without any significant disadvantages, CCFF 2346. *See also* CCFF 2348-2349.

JEDEC also considered interleaving on-module banks in the 1996-1997 time frame,

In the 1995-1998 time period, JEDEC considered read clocks – also called echo clocks – as a yet another alternative. CCFF 2411-2412. Compared to using DLL circuits, using read clocks would have required less lock time, addressed more components of skew than on-chip,

participants in order to persuade them that use of Rambus's proprietary technologies was well-justified in light of the value of such technologies vis-a-vis various competing alternatives. *See* CCFF 2433-2464. By contrast, Rambus concealed its intellectual property until after the DRAM industry became locked in to JEDEC's standards and then demanded royalties from all major DRAM makers, knowing that such companies would have no realistic choice but to agree to Rambus's licensing demands or litigate.

As the evidence shows, in the wake of industry lock-in to the SDRAM standards, Rambus has been successful in securing licenses from many of the major producers of SDRAM and DDR SDRAM, collectively accounting for over half of all worldwide DRAM production. *See* CCFF 2012. Typically, the licensees are required to pay ????? percent royalties to Rambus for use of its patented technology in producing SDRAM and ????? percent royalties for use of Rambus's patented technologies in DDR SDRAM. ??? ???? ????? ????? ????? ????? ????? ????? ????. These royalty rates are anticompetitive and reflect the exercise of Rambus's monopoly power in the relevant technology markets. Had Rambus not engaged in such conduct, it would not be in a position to demand royalties at such high levels, if indeed it could charge any royalties at all for use of its technology in the production of JEDEC-compliant SDRAMs. *See* CCFF 2963-2975. Moreover, it appears that Rambus intends to "ratchet[] up royalty rates over time." CCFF 2035. The accumulated market impact of Rambus's anticompetitive royalties is massive, and could easily, over the life of the patents, range into the billions of dollars. *See* CCFF 2043.

Rambus's SDRAM and DDR SDRAM royalties are anticompetitive not only in the sense that they are substantially higher than any royalty amount Rambus might have been able to charge in the absence of its conduct, but also in that Rambus has exploited its monopoly power to discriminate in the royalties it charges to different licensees, in a manner that suits Rambus's

strategic objectives. To begin with, Rambus has strategically elected to demand higher royalties on licenses to its patents for use in producing DDR SDRAM than it charges for use of its patents in producing RDRAM. *See* CCFF 1999, 2001, 2004-09, 2011.[57] In the words of Rambus's former Vice-President of Intellectual Property, Joel Karp, the objective of charging such higher royalties was "to prevent a competitive device." *See* CCFF 1712.

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Finally, Rambus has threatened to deny any license to companies that choose to litigate against it and lose. *See* CCFF 1981-94. Needless to say, this is a serious threat to the three companies that are presently involved in patent litigation with Rambus – Infineon, Micron, and Hynix – which together produce nearly half of the world's supply of commodity DRAMs. *See* CCFF 2012.[58] Such discriminatory licensing practices are anticompetitive and reflect the exercise of Rambus's monopoly power. In the absence of the conduct at issue here, Rambus not only would lack the power to engage in such discrimination,

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[58] These three companies have been adversely impacted by Rambus's conduct already, in terms of the substantial costs and disruptions associated with litigating against Rambus. CCFF 2021. However, the costs and disruptions of litigation pale in comparison to the risks that these companies' DRAM business could literally be shut down in the event Rambus were to succeed in enforcing its patents through litigation. CCFF 2028

[59] The substantial evidence of Rambus's anticompetitive and discriminatory licensing practices summarized above and in Complaint Counsel proposed findings (*see* CCFF 1975-2032) serves as further proof that Rambus in fact does possess monopoly power. *See, e.g.*, *Rebel Oil*, 51 F.3d at 1434 (monopoly power may be proven though "direct evidence of the injurious exercise of monopoly power."); *FTC v. Indiana Federation of Dentists*, 476 U.S. 447, 460-61 (1986) ("Since the purpose of the inquiries into market definition and market power is to determine whether an arrangement has the potential for genuine adverse effects on competition, 'proof of actual detrimental effects, such as a reduction of output,' can obviate the need for an inquiry into market power, which is but a 'surrogate for detrimental effects.'" (citations omitted)). *See also* ROBERT BORK, THE A

Rambus's conduct, these resources would be devoted to other productive uses, such as further innovation to bring the next standard to market. *Id.* Hence, Rambus's conduct threatens harm to consumers through delayed standards and decreased innovation and output.

3. Failure to Remedy Rambus's Misconduct Will Have a Chilling Effect on Participation in Standard-Setting Organizations

Rambus's conduct, if left unpunished, threatens an even more troubling consequence – to undermine confidence in standard-setting organizations, thereby depriving consumers of their procompetitive benefits.

Rambus's ability to capitalize on its exclusionary conduct by garnering billions of dollars in royalty payments – to the detriment of other members of the DRAM industry who participate in JEDEC in good faith, and ultimately of consumers – serves as a potent disincentive for firms to participate in open-standards organizations. CCFF 2050-54. The open standard-setting process requires trust that participants are not exploiting the process to gain competitive advantage. CCFF 2051-52. Rambus's conduct makes it impossible to foster an environment of trust, and provides incentives for other firms to game the system. *Id.* The overall result, if Rambus's conduct is not punished, will be to retard innovation in the semiconductor industry and other industries that rely heavily on industry standards. *Id.*

The DRAM industry derives substantial benefits from standard-setting activities. *See Amicus* Brief of Advanced Micro Devices, Inc., et al., at 5-8, *Infineon v. Rambus* [Tab3]; *Amicus* Brief of JEDEC Solid State Technology Ass'n at 5-7, *Infineon v. Rambus* [Tab 2]. Formal standards provide assurance of quality and reliability, interoperability and multiple suppliers, assurance of adequate supply for customers, and assurance of demand to justify the massive specific investments required of manufacturers. CCFF 112-21. Rambus's conduct, absent appropriate relief, jeopardizes these benefits, and threatens to chill participation the standard-

setting process. *See Amicus* Brief of Consumer Electronics Ass'n, et al., at 17-18, *Infineon v. Rambus* [Tab 4]; *Amicus* Brief of JEDEC Solid State Technology Ass'n at 5-7, *Infineon v. Rambus* [Tab 2]. Lack of broad participation tends to result in inferior solutions and reduced market acceptance. CCFF 2051, 3050-52.

Another likely consequence is a significant delay in the creation and adoption of new standards. CCFF 3052-55. *See Amicus* Brief of Consumer Electronics Ass'n, et al., at 17-18, *Infineon v. Rambus* [Tab 4]. In industries in which patents play a significant role, the uncertainty of the patent status of a proposed standard is likely to delay the approval of the standard and impede the widespread adoption of the standard. *Id.*, CX3089 at 20. Moreover, efficient, timely development of standards would be impossible because participants would be required to reevaluate the patent and the standard each time that either the patent or the standard changes.

IV. THE RECORD EVIDENCE OF RAMBUS'S EXCLUSIONARY, ANTICOMPETITIVE CONDUCT WARRANTS IMPOSITION OF THE COMMISSION'S PROPOSED REMEDY

Complaint Counsel seeks an order prohibiting Rambus from enforcing any U.S. patent that claims priority back to Rambus's U.S. Patent Application 07/510,898 (filed Apr. 18, 1990) or to any other U.S. patent application filed before June 17, 1996 (the date Rambus formally resigned from JEDEC) against anyone manufacturing, using, or selling JEDEC-compliant DRAMs or products that use or interface with JEDEC-compliant DRAMs (including future versions of the JEDEC standards). The requested order would also prohibit Rambus from enforcing any foreign patent that claims priority back to any U.S. patent application filed before June 17, 1996, with respect to any products that are intended for import into or export from the

United States, that conform to the JEDEC standards. The prohibition would extend to any future-issued patents that claim a priority date before June 17, 1996.[60]

Such an order is necessary to restore market conditions as closely as possible to those that would have prevailed in the absence of Rambus's conduct, to prevent future harm to the markets at issue and related markets, and to prevent harm to the standard-setting process. The proposed order goes no further than reasonably necessary to correct the harm. It permits Rambus to enforce any of its patents against any products other than those that comply with, interface with, or use JEDEC-compliant DRAMs. It also permits Rambus to enforce all of its patents with a priority date after it withdrew from JEDEC against any and all products, including those that comply with the JEDEC SDRAM standards. Such an order therefore falls well within the Commission's broad discretion in fashioning remedies.

A. The Proposed Remedy, Designed to Stop Rambus's Unlawful Practices and Restore Competition to Relevant Markets, Falls Well Within the Commission's Broad Remedial Power

The Commission has broad discretion to fashion relief to restore competition. Such relief may include practices or products not implicated directly in the original violations. Not only has the Commission's authority to place substantial constraints on the use or licensing of patents been upheld, but the Commission has explicitly stated that it has authority to order compulsory licensing with no royalties. Moreover, it has recognized that an order barring enforcement of patent rights is appropriate when warranted to restore competition. Accordingly, barring Rambus from enforcing patents whose sole value derives from its misconduct while at JEDEC against JEDEC-compliant technologies is properly subject to a Commission order, because such

[60] *See* Notice of Contemplated Relief (issued June 18, 2002).

a remedy is necessary to restore the relevant markets as nearly as possible to the condition they would be in absent Rambus's misconduct, and because it is directly related to such misconduct.

The principal objective in framing antitrust relief is to restore competition. *See, e.g.*, *Ford Motor Co. v. U.S.*, 405 U.S. 562, 573 (1972); *International Salt Co. v. U.S.*, 332 U.S. 392, 401 (1947) (relief should "pry open to competition a market that has been closed by defendants' illegal restraints"). Thus, relief in an antitrust case should, "so far as practicable, cure the ill effects of the illegal conduct, and assure the public freedom from its continuance." *U.S. v. U.S. Gypsum Co.*, 340 U.S. 76, 88 (1950). Likewise, a Commission order endeavours to restore the markets at issue to the condition they would be in "but for the unlawful conduct." *Ekco Prods. Co.*, 65 F.T.C. 1163, 1216 (1964), *aff'd sub nom. Ecko Prods. Co. v. FTC*, 347 F.2d 745 (7th Cir. 1965). As discussed above, remedying Rambus's misconduct requires restoring the relevant markets to the condition they would be in had Rambus disclosed its relevant intellectual property while it was at JEDEC, as well as attempting to "cure the ill effects" associated with participation in standard-setting organizations.

The Commission has broad discretion in fashioning relief to restore competition to the affected markets. *See Jacob Siegel Co. v. FTC*, 327 U.S. 608, 611 (1946); *accord Firestone Tire & Rubber Co.*, 81 F.T.C. 398, 467 (1972), *aff'd*, 481 F.2d 246 (6th Cir.), *cert. denied*, 414 U.S. 1112 (1973); *see also FTC v. Cement Inst.*, 333 U.S. 683, 726 (1948). Its remedial authority extends beyond the exact practices, exact products, or exact geographic area involved in the violation. Indeed, the Commission may order relief applicable to all geographic areas in which a respondent does business, even if the violation occurred only in a limited area. *See, e.g.*, *National Dairy Prods. Corp. v. FTC*, 395 F.2d 517, 529 (7th Cir.), *cert. denied*, 393 U.S. 977

(1968). Similarly, Commission orders are not limited to either the products or practices involved

[61] Indeed, courts routinely preclude patent holders from future enforcement of patents when they failed properly to disclose the existence of the patents or when the patent holders engaged in misleading conduct suggesting that patent rights would not be enforced. *See, e.g.*, *Scholle Corp., v. Blackhawk Molding Co.*, 133 F.3d 1469, 1471 (Fed. Cir. 1998) (recognizing patent holder's claim for infringement damages may be barred entirely by equitable estoppel); *Stambler v.*

Rambus's anticompetitive conduct while at JEDEC is tantamount to ordering compulsory licensing of such patents on a reasonable royalty basis.

As discussed below, the evidence demonstrates that the scope of the proposed order is necessary to restore the competitive marketplace to what it would have been absent Rambus's misconduct, and that the proposed order is linked directly to such misconduct. It is also necessary to prevent harm to open standard-setting. The proposed order would not invalidate any of Rambus's patents, nor would it interfere with Rambus's ability to derive income from such patents to the extent such income would not constitute the fruit of Rambus's unlawful conduct.

B. Barring Rambus from Enforcing Specified Patents Is Reasonably Related to its Unlawful Conduct and Is an Appropriate Exercise of the Commission's Wide Latitude to Implement Remedies to Restore Competition

The proposed relief directly relates to Rambus's violation of Section 5 and is designed to restore the competitive landscape that would have prevailed but for Rambus's anticompetitive conduct. Had Rambus disclosed to JEDEC the appropriate patent-related information when it was obligated to do so, the DRAM industry today likely would be able to manufacture, sell, and use JEDEC-compliant memory free of Rambus's patents claims. As the evidence demonstrates, had Rambus complied in good faith with its obligations while a member of JEDEC, JEDEC most likely would have adopted standards using alternate technologies that would have been free of Rambus's patents. CCFF 2415, 2433, 2440. Rambus therefore would not have been in a position to exclude DRAM manufacturers from, or demand supracompetitive royalties for, the.0073 Tc 0.0p wo

The remedy should prohibit Rambus from enforcing any U.S. patent claiming a priority

[62] Because of the assertion of attorney-client privilege, Complaint Counsel is not in a position to evaluate the extent of such patent claims. CCFF 1675.

[63] Rambus Press Release (5/4/01) [CX1888] (In addition to the patents at issue in the Infineon, Micron and Hynix litigations, "Rambus holds newly issued U.S. and European patents covering Rambus inventions used by SDRAMs and DDR SDRAMs that have not yet been asserted in any litigation . . ."). Rambus also has a number of pending patent applications covering these technologies and that it intends to assert them. CCFF 3166.

statements are accurate, Rambus is positioned to continue its monopolistic practices through the enforcement of any of a number of different issued patents.

Second, Rambus has patents covering a number of additional technologies that were the subject of JEDEC work while Rambus was a JEDEC member.[64] CCFF 3113-82. Evidence indicates that Rambus sought to add patent claims covering as many of the technologies used in SDRAMs and DDR SDRAMs as possible. *See, e.g.*, CCFF 856-57, 964, 967, 981, 1000-03, 1040, 1045. Evidence further shows that Rambus (1) observed JEDEC work involving at least five additional technologies while a JEDEC member, (2) believed that it had pending patent applications containing claims covering, or could amend pending patent applications to add claims covering, the technologies at issue, (3) did not disclose to JEDEC relevant patent-related information with respect to the technologies in question, and (4) may be able today to assert patents against DRAM manufacturers and others that use these technologies in SDRAMs, DDR SDRAMs or products that interface with SDRAMs or DDR SDRAMs. *See* CCFF 3113-82. Thus, Rambus may be in a position to monopolize, based on its conduct while a JEDEC member, by means of asserting patents relating to other technologies used in JEDEC-compliant SDRAMs and DDR SDRAMs. An order that is limited to specific technologies risks permitting Rambus to achieve the identical result, through identical conduct, by means of different patents.

Third, the proposed relief should not be limited to DRAMs that comply with JEDEC's existing SDRAM and DDR SDRAM standards, but should incorporate any future generations of

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[64] In addition to the four technologies identified in the complaint, evidence in the record indicates that Rambus may have patents containing claims relating to the following technologies that are or may be used in JEDEC-compliant SDRAMs and DDR SDRAMs: externally supplied reference voltage, low voltage swing signaling, dual bank design, auto-precharge and source synchronous clocking. CCFF 3113-3182.

the JEDEC SDRAM and DDR SDRAM standards, such as the DDR-2 SDRAM standard. The evidence demonstrates in detail that JEDEC does not start from scratch to create independent, free-standing standards each time it standardizes a new generation of memory. Rather, JEDEC's standards are evolutionary, and incorporate as much as possible from previous generations. CCFF 127-28, 653, 2569-73. Indeed, in most instances, the new standard *is* the old standard with a very small number of added features.

This is particularly true of the DDR-2 SDRAM standard. JEDEC began work on the DDR-2 SDRAM standard in April 1998, long before JEDEC or its members learned of Rambus's patents. CCFF 2569, 3230 (work on DDR-2 began in 1998), 1241, 1950, 1953 (industry was unaware of Rambus' patents until late 1999 or early 2000). JEDEC used the DDR SDRAM standard as the baseline, thus incorporating many of the technologies of the DDR SDRAM standard into the DDR-2 SDRAM standard, including the four technologies at issue. CCFF 2573, 3236-27, 3250. Almost two years later, when industry members learned of Rambus's patents, they faced a dilemma: whether to continue to use the technologies at issue in the DDR-2 SDRAM standard and face the possibility that DRAM manufacturers, their customers or ultimately consumers might have to pay the cost of royalties to Rambus, or to switch technologies. Switching would entail: (1) significant lost work on the part of firms preparing to produce, or currently producing to the new standard; (2) delay in the completion of the standard; (3) delay in the completion of products designed to the standard; (4) a less evolutionary change to the new standard than is currently contemplated (and thus additional work and engineering costs to implement the new standard); and (5) the loss of the ability to transition smoothly to the new standard by means of controllers and other products that would

support both the DDR SDRAM and the DDR-2 SDRAM standards, as controllers and DRAM chips that would support both standards would face the same threat they would violate the Rambus patents as do the current products. CCFF 2506-84. Faced with this unpleasant choice, industry members chose the latter option, even at the risk of having to pay, or pass on to consumers, the cost of Rambus royalties. CCFF 3229-61.

Although industry members saw potential payment of royalties to Rambus as the lesser evil (CCFF 2003-12), it is nevertheless an evil resulting from Rambus's conduct. JEDEC would have avoided this whole dilemma with regard to the DDR-2 SDRAM standard had it adopted alternative technologies in the SDRAM and DDR SDRAM standards in response to a timely

1968-74, 2024, 2026-27, 3209-12, 3214-19. By failing to disclose its U.S. patent rights to JEDEC, Rambus denied JEDEC the opportunity to consider alternatives that would have avoided infringement of Rambus's foreign patents.[65]

Because the markets for the technologies at issue are worldwide in nature, Rambus's enforcement of its foreign patents could have a significant effect in the United States. DRAM,

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[65] Although JEDEC's rules do not expressly require members to disclose foreign patents, its disclosure policy is based on the assumption that any member with significant foreign patent rights will at least have filed a patent application in the United States to protect those rights. Accordingly, disclosure of U.S. patent rights would effectively disclose rights (if claimed at all) in other countries. Thus, if Rambus had disclosed its U.S. patent rights, JEDEC members would have been made aware of potential foreign rights as well, and, in adopting different technologies that avoided U.S. patents, would also have avoided Rambus's foreign patent claims.

their belief that success in patent infringement litigation in one major jurisdiction is sufficient. (CCFF 2032, 3226 [citing Rambus CFO, Bob Eulau], CX1890 at 35 ("We've said that the litigation requires success in a major jurisdiction, but not in every jurisdiction.").

Restoring competitive conditions throughout the world is, of course, beyond the jurisdiction of the Commission. 15 U.S.C. § 45(a)(3) (limiting jurisdiction to U.S. commerce, import commerce, and export commerce, inter alia, of persons in the United States). To ensure restoration of competitive conditions in U.S., import and export commerce, however, relief must apply to Rambus's foreign patents to the extent Rambus seeks to enforce them against products exported from, or intended to be imported into, the United States. Specifically, Rambus should be barred from enforcing any foreign patents claiming priority to the '898 patent application or any other U.S. patent application filed before June 17, 1996, against anyone exporting from, or importing into, the United States a product that utilizes technology covered by current or future versions of the JEDEC SDRAM or DDR SDRAM standards.

C. The Remedy Is Necessary to Prevent Harm to the Standard-Setting Process

Extending the remedy to all patents, including foreign patents, claiming priority back to when Rambus participated in JEDEC is also necessary to preserve the procompetitive benefits of the standard-setting process. Participants in this process need to have confidence that their co-participants have no incentive to subvert the process for anticompetitive gain. Allowing Rambus to derive benefits that are possible only because of its misconduct while at JEDEC monopolized, from lock-in, or from the worldwide scope of the technology marketplace – sends a dangerous message. It provides an incentive to similarly inclined companies to subvert the standard-setting

process, because they still stand to benefit. This incentive, in turn, undermines the environment of trust necessary for effective and efficient standard-setting.

D. Less Restrictive Remedies Are Not Sufficient to Cure the Effects of Rambus's Violations

A remedy more limited than the one proposed here will not accomplish the dual objectives of restoring competition and preserving the procompetitive benefits of open standard-setting. *See* CCFF 3100-3260. As set forth above, to accomplish these goals, the remedy must extend to all patents arising from Rambus's misconduct while at JEDEC, to prevent Rambus from asserting additional patents on the relevant technologies or monopolizing additional technology markets based on the identical practices challenged in this case. It must incorporate future generations of the SDRAM and DDR SDRAM standard, given that the JEDEC's standards are evolutionary and the industry has already been locked in the use of Rambus technology. Moreover, the remedy must be worldwide, to the extent allowable under the Commission's jurisdiction, given the worldwide scope of the relevant markets. Without each of these components, Rambus will be allowed to derive anticompetitive benefits from its misconduct. Accordingly, the affected markets will remained distorted and participation in open standard-setting will be chilled.

The proposed remedy goes "no further than is reasonably necessary to correct the evil and preserve the rights of competitors and public." *See FTC v. Royal Milling Co.*, 288 U.S. 212, 217 (1933). Like the order in *Dell*, the proposed remedy would not restrain Rambus's enforcement of its patents against any products other than those made in conformity with the JEDEC standards. It therefore does not interfere with Rambus's ability to enforce any of its patents regarding

Rambus architecture memory (*e.g.*, RDRAM) or any other technology. It does not apply to any Rambus patents with a priority date after it withdrew from JEDEC, and thus serves to exclude all Rambus patents that are independent of its conduct at JEDEC. The remedy would leave Rambus completely free to collect royalties for technologies that have been accepted in the marketplace through legitimate competition.

V. CONCLUSION

For the reasons stated above, Complaint Counsel respectfully submits that the enormous body of record evidence compels a finding of liability against Rambus on each count alleged in the Commission's Complaint. To restore market conditions as closely as possible to those that would have prevailed absent Rambus's conduct, to prevent future harm to the markets at issue and related markets, and to prevent harm to the standard-setting process, we respectfully request Your Honor to issue the accompanying order.

Respectfully submitted,

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