PUBLIC

UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION

COMMISSIONERS: Deborah Platt Majoras, Chairman
Pamela Jones Harbour
Jon Leibowitz
William E. Kovacic
J. Thomas Rosch

FEDERAL TRADE COMMISSION
RECEIVED DOCUMENTS
SEP 15 2006
SECRETARY

In the Matter of

RAMBUS, INC.,

a corporation.

Docket No. 9302

BRIEF OF RESPONDENT RAMBUS INC., ADDRESSING ISSUES RELATING TO REMEDY

MUNGER, TOLLES & OLSON LLP
355 South Grand Avenue, 35th Floor
Los Angeles, California 90071
(213) 683-9100

WILMER CUTLER PICKERING
HALE AND DORR LLP
1875 Pennsylvania Avenue, NW
Washington, D.C. 20006
(202) 663-6000

TABLE OF CONTENTS

TABLE OF AUTHORITIES

CASES

STATUTES

MISCELLANEOUS

I. INTRODUCTION

In its Opinion and Order of July 31, 2006, the Commission found that Rambus had violated Section 5 of the Federal Trade Commission Act, 15 U.S.C. § 45 ("FTC Act") and ordered Rambus and Complaint Counsel to file supplemental briefs addressing "appropriate issues relating to remedy," including four issues identified in the order. Rambus's positions on those four issues are summarized below, followed by a more complete discussion of remedy issues.[1]

II. SUMMARY OF RAMBUS'S POSITION ON REMEDY ISSUES

The FTC Act states that, when the Commission determines that a method of competition, act, or business practice is prohibited by that Act, the Commission shall order the offending party "to cease and desist from using such method of competition or such act or practice." 15 U.S.C. § 45(b). Accordingly, the Commission should enter an order forbidding Rambus from engaging in the kind of conduct that the Commission has found Rambus engaged in and has concluded was unlawful — namely, conduct that, under the Commission's analysis, would deceive a standard-setting organization of which Rambus is a member into unknowingly adopting a technology standard that would infringe claims in Rambus's patents or patent applications.

---

[1] Rambus believes that the Commission erred in finding that Rambus violated Section 5, but for purposes of this brief we accept as established the Commission's determination of liability. In making this reservation of rights, Rambus appreciates the gravity of the Commission's determination that Rambus engaged in deceptive conduct and that Rambus's conduct was linked to JEDEC's adoption of standards incorporating certain technologies as to which Rambus subsequently obtained patent rights. Comm'n Op. at 66, 74. While Rambus respectfully disagrees with these conclusions, we understand that the remedy phase is now at hand, and we look forward to engaging the Commission, either through formal briefing and hearing or otherwise, in the implementation of a remedy that will be both practical and appropriate.

The Commission's Order suggests that the Commission is considering further relief intended to address perceived effects of past conduct that the Commission has found unlawful — perhaps by setting maximum royalty rates in the relevant technology markets. Rambus does not believe, as discussed below, that the record in this case justifies a remedy that would affirmatively alter current market conditions, nor do we believe that the Commission has or should exercise the statutory authority to order such relief in the circumstances of this case.

If the Commission nevertheless concludes that a market-altering remedy is necessary, it should tailor that remedy to address only those anticompetitive effects that Complaint Counsel have proven were caused by the conduct that the Commission found to be unlawful. Thus, if the Commission chooses to restrict Rambus's royalty rates, it should restrict those rates only insofar as Complaint Counsel have proven that Rambus's assertedly unlawful conduct has caused licensees to pay higher rates than they otherwise would have paid. In addition, the Commission should restrict rates only in the markets that Rambus was found by the Commission to have unlawfully monopolized — described by the Commission as the markets for latency, burst length, data acceleration, and clock synchronization technology used in JEDEC-compliant SDRAM and DDR SDRAM products.[2]

---

[2] The Commission defined these markets in its July 31 Opinion ("Comm'n Op."). *See* Comm'n Op. at 9-12; *see also id.* at 74, 114 (finding a link between Rambus's conduct and JEDEC's adoption of the four technologies as used in the SDRAM and DDR SDRAM standards, but not in the DDR2 SDRAM standard). As used in this memorandum, the term "relevant technologies" or "relevant patents" refers to Rambus's technologies in these markets. The term "relevant markets" refers to the four markets as defined by the Commission, with respect to SDRAM and DDR SDRAM.

If the Commission concludes that current royalty rates in those markets are higher than those Rambus would have charged in the but-for world, i.e., the world in which Rambus did not engage in the conduct that the Commission found to be unlawful, an appropriate remedy would be to order Rambus to license its technologies on reasonable and nondiscriminatory (RAND) terms, as Rambus would have done in the but-for world. Alternatively, if the Commission decides to specify maximum royalty rates for the relevant technologies, ample evidence already in the record supports establishing a maximum rate for DDR SDRAM in excess of 2.5% worldwide.

Rambus summarizes its responses to the Commission's four questions as follows:

Appropriate injunctive and other provisions that should be incorporated in the Final Order in this proceeding.

The Commission should enter an order requiring that, so long as Rambus is a participant in any standard setting organization (SSO), it shall not knowingly deceive that SSO or its members about its patents or pending patent applications if that deception would likely lead the SSO unknowingly to develop a technology standard that would infringe claims in an existing Rambus patent or patent application. *See* Part III.A, below.

Qualitative characteristics descriptive of appropriate relief, against which specific royalty proposals might be evaluated.

If the Commission goes beyond issuing a cease and desist order, any relief should go no further than attempting to restore the but-for world. In that world, JEDEC would (at most) have sought and received from Rambus a commitment to license the relevant technologies at RAND rates, determined in negotiations with individual licensees. If the Commission goes further and specifies maximum royalty rates, Rambus should be allowed to charge rates at least equal to the maximum rates consistent with such a RAND commitment. The record shows that such rates would be in excess of 2.5% for DDR SDRAM. The Commission should confine any restrictions on Rambus's ability to license its patents to the four relevant markets. *See* Part III.B.3, below.

Means for the Commission to determine, based on the existing record, reasonable royalty rates for licensing all technologies applicable to JEDEC-compliant products and covered by relevant Rambus patents.

If the Commission decides to determine maximum royalty rates, it should do so using the existing record, which contains several useful points of comparison: (a) rates for DRAM technology agreed to by Rambus and another JEDEC member, Hyundai, in an *ex ante* timeframe; (b) other rates in the semiconductor industry; and (c) the costs of the next-best alternatives to Rambus's technologies. *See* Part IV, below.

Alternative mechanisms and procedures for determining reasonable royalty rates, such as an independent arbitrator, a special master, or an administrative law judge.

Rambus believes that the Commission can determine reasonable royalty rates based on the existing record. The Commission should not send the matter to an arbitrator or special master for resolution because doing so would circumvent the normal FTC adjudicative process and would cause further delay. *See* Part IV, below.

III. THE COMMISSION'S REMEDY SHOULD BE GUIDED BY THE LIMITS ON ITS AUTHORITY UNDER SECTION 5.

A. Preventing Unlawful Conduct

The core of the Commission's remedial authority under Section 5 is to bring an end to, and prevent the recurrence of, the practice or practices found by the Commission to be unlawful. *See FTC v. Colgate-Palmolive Co.*, 380 U.S. 374, 395 (1965); *FTC v. National*

Lead Co., 352 U.S. 419, 428-430 (1957).[3] Accordingly, the Commission should order Rambus not to repeat the type of conduct that the Commission found to be unlawful. In light of the Commission's findings, the order might provide as follows:

> Rambus shall not, while a member of or participant in any standard setting organization (SSO), knowingly take any action or make any material misrepresentation or omission to the SSO or its members concerning Rambus's patents or pending patent applications if such act, misrepresentation or omission would likely lead the SSO unknowingly to develop a technology standard that would infringe a claim in an existing Rambus patent or patent application.

The Commission might also order Rambus to employ an individual within the company in a compliance capacity to oversee the company's adherence to the terms of the remedy. Any such compliance provision should be crafted to protect Rambus's legal privileges and other legitimate business interests.

B. Limiting Rambus's Market Power

In prior submissions, Complaint Counsel have sought injunctive relief that would require Rambus to enter into compulsory, royalty-free licenses for a broad category of patents. Comm'n Op. at 119. The Commission's Order suggests that it views this position (and Rambus's position to date with respect to remedies) as "reflective of opposing extremes." *Id.* Rambus submits that a royalty-free licensing remedy would be both extreme and punitive and would exceed the allowable scope of a Section 5 remedy. *See* n.3.

[3] Section 5 does not authorize the Commission to order compensatory or punitive relief. *See FTC v. Ruberoid Co.*, 343 U.S. 470, 473 (1952). Complaint Counsel have acknowledged that the "Commission seeks only prospective relief" in this matter. Complaint Counsel's Opposition to Rambus's Motion to Stay, filed July 15, 2002, at 18.

The Commission's Order also suggests, however, that it is considering a remedy that includes compulsory licensing at "reasonable royalty rates for JEDEC-compliant products affected by Rambus's exclusionary conduct." Comm'n Op. at 119. Rambus respectfully submits that the Commission does not have authority to order such a remedy under Section 5, which authorizes the Commission only to order a respondent to "cease and desist" practices found to be unlawful.[4] Assuming, arguendo, that the Commission has authority to provide such a remedy, two basic principles would limit the scope of any such remedy. First, because the Commission cannot order punitive or compensatory relief, the remedy may not properly require Rambus to charge royalty rates that are lower than those it would have charged in the but-for world. As we explain below, in the but-for world, the record demonstrates that JEDEC would have chosen Rambus technologies for SDRAM and DDR SDRAM, and its members would have been willing to pay royalties to obtain the advantages those technologies conferred.[5]

---

[4] One court of appeals decision appears to hold that the Commission has broader authority. *See American Cyanamid v. FTC*, 363 F.2d 757, 772 (6th Cir. 1966) (affirming order setting royalty rates for patent licenses). That decision, however, is inconsistent with Section 5's language, which authorizes only "cease and desist" orders. 15 U.S.C. § 45(b). *Cf. United States v. Philip Morris USA Inc.*, 396 F.3d 1190, 1198 (D.C. Cir. 2005) (RICO provision authorizing court orders "to prevent or restrain" violations "is limited to forward-looking remedies that are aimed at future violations"), *cert. denied*, 126 S. Ct. 478 (2005). A broader reading of Section 5 would obviate Section 13(b), which Congress added in 1973 (after *American Cyanamid*) to enable the Commission to seek from *district courts* broad permanent injunctions to address the consequences of past antitrust violations. *See generally Baum v. Great Western Cities, Inc.*, 703 F.2d 1197, 1208-09 (10th Cir. 1983) (contrasting the remedies available under sections 13(b) and 5(a)).

[5] Accordingly, Rambus's assertedly illegal conduct did not change the structure of any relevant market. It is therefore not clear that that conduct caused any cognizable harm to competition, *cf. Brunswick v. Riegel Textile*, 752 F.2d 261, 266-267 (7th Cir. 1985), although we recognize that the Commission believes there to be a link between Rambus's conduct and JEDEC's standards.

Second, Complaint Counsel have the burden of proving how the but-for world would have differed from the real world, 16 C.F.R. § 3.43(a), and the burden to justify a remedy that would restrict Rambus's ability to license its patents is heavier than the burden to establish liability. Thus, whereas some commentators have suggested that "the causal connection between conduct and power can be relatively modest when the only remedy sought is an injunction against continuation of that conduct," they also agree that relief that seeks affirmatively to reduce the defendant's market power "raise[s] more serious questions and require[s] a clearer indication of causal connection between the conduct and creation or maintenance of the market power." 3 Phillip E. Areeda & Herbert Hovenkamp, *Antitrust Law* ¶ 650a(2)(A) at 67, ¶ 653b at 78 (2d ed. 2002); *see also United States v. Microsoft Corp.*, 253 F.3d 34, 80 (D.C. Cir. 2001) (such remedies require "a clearer indication of a significant causal connection" and are not appropriate "absent some measure of confidence that there has been actual loss to competition" resulting from the challenged conduct).[6]

These principles have several implications for the remedy in this case:

1. <u>There is no basis for the "zero" royalty rate proposed by Complaint Counsel</u>.

The Commission should reject any proposal that prohibits Rambus from deriving royalties from its patents in the relevant markets. The Commission lacks authority to order a *royalty-free* compulsory license, which would amount to a forfeiture of Rambus's

---

[6] The conceptual and practical difficulties inherent in setting "reasonable" prices make it particularly important that Complaint Counsel shoulder its burden of proof of causation. Such difficulties normally lead antitrust courts to "avoid direct price administration." *Town of Concord, Mass. v. Boston Edison Co.*, 915 F.2d 17, 25 (1st Cir. 1990) (Breyer, J.).

patents, *Hartford-Empire Co. v. United States*, 323 U.S. 570, 415 (1945), and would therefore be punitive. *See also* William E. Kovacic, *Designing Antitrust Remedies for Dominant Firm Misconduct*, 31 Conn. L. Rev. 1285, 1305 (1999) (noting commentary stating that "compulsory licensing, while increasing entry, has forced U.S. firms to surrender their competitive advantage to foreign firms and diminished the capability of domestic industry"). Moreover, compelled royalty-free licensing could not be justified on the record, which demonstrates that, the Rambus technologies incorporated into SDRAM and DDR SDRAM were the preferred alternatives. By choosing those technologies, JEDEC and its members demonstrated that they preferred them and that they would have paid royalties to satisfy those preferences. *See* Teece, Tr. 10365-10366.[7] Indeed, the record offers no support for the conclusion that in the but-for world, DRAM manufacturers would have been able to use *all* of the claims in all of Rambus's patents relating to the four technologies without paying anything for any of them.

A zero-royalty approach to Rambus's (presumptively valid) patents is also unwarranted given that the relevant legal authorities, and in particular the Commission's consent order in the *Dell* case, are of relatively recent vintage and largely post-date Rambus's conduct. As Chairman Pitofsky observed, for example, the *Dell* consent order involved "what may have been the first case of its kind." *November 1997 Prepared*

---

[7] Although the Commission found that *Rambus* had not proven that its technologies were superior "on a cost/performance basis" taking Rambus's royalties into account, Comm'n Op. at 82 & n.432, that finding does not support a conclusion now that JEDEC would have chosen alternative technologies. First, Complaint Counsel clearly have the burden of proof on causation in this stage. Second, the Commission did *not* find that the alternatives were superior on a cost/performance basis, without regard to Rambus's royalties. Third, according to Complaint Counsel, what matters is not the objective superiority of the technology but rather JEDEC's subjective preference, *id.* at 77, and that manifest preference was Rambus's technologies.

Statement of the Federal Trade Commission to the House Judiciary Committee Concerning An Overview of FTC Antitrust Enforcement, available at http://www.ftc.gov/os/1997/11/oversigh.htm. The lack of clarity in JEDEC's written rules, particularly when compared to the VESA rules at issue in the *Dell* case, also points away from a harsh remedy in this case. *See*, *e.g.*, Commissioner Sheila Anthony, Antitrust and Intellectual Property Law: From Adversaries to Partners, 28 AIPLA Quarterly Journal 1, 33 (Winter 2000) (noting that the standards body in the *Dell* case required a *written* certification from members regarding patents and observing that "if VESA did not have policies requiring its members to act in good faith to identify patent conflicts, FTC action also might have been unlikely."); RX 740 (July 10, 1996 letter from FTC Secretary Donald Clark to the EIA regarding *Dell* noting that unlike the VESA standards association in the *Dell* case, the EIA did "not require a certification by participating companies regarding potentially conflicting patent interests" and explaining that, as a result, "[t]he expectations of participants in the two standard-setting processes differ.").

2. Any remedy should be limited to the four relevant markets.

The Commission should limit its remedy to the four markets in which it found that Rambus unlawfully acquired monopoly power — latency, burst length, data acceleration, and clock synchronization technologies used in JEDEC-compliant SDRAM and DDR SDRAM devices. A broader remedy would distort markets unaffected by any unlawful conduct and violate the principle that antitrust relief must be "tailored to fit the wrong creating the occasion for the remedy." *Microsoft*, 253 F.3d at 107. There is, therefore, no basis to restrict Rambus's ability to collect royalties for the use of other patented technologies, even if they are used in products compliant with SDRAM or DDR SDRAM standards. *See* Complaint Counsel's Motion to Dismiss Complaint, *In the Matter of VISX, Inc.*, Dkt. No. 9286 (filed December 1, 1999), pp. 6-7 (requesting dismissal of complaint seeking to enjoin enforcement of patent allegedly procured by fraud because Respondent obtained new patent that would "give [Respondent] monopoly power in the technology market . . . to the same extent as the old one.").

3. <u>Any remedy should not interfere with Rambus's licensing of technologies for the manufacture of JEDEC-compliant DDR2 SDRAM.</u>

The Commission found no "causal link" between any exclusionary conduct and the adoption of DDR2 SDRAM even under the less stringent standards applicable to the liability issue. Comm'n Op. at 114. As a result, there is no basis for any remedy to be applied to licensing for products compliant with DDR2 SDRAM standards.

4. <u>Any royalty rate set by the Commission ought not be lower than the maximum rate Rambus would have charged in the but-for world.</u>

The record provides no basis for the Commission to require Rambus to charge royalties less than the rates that it could have charged in the but-for world. At the very least, any rates ordered by the Commission must compensate Rambus for the incremental value of its patented inventions over the alternatives.

a) *The remedy should reflect JEDEC's preference for Rambus's technologies over the alternatives.*

Any remedy chosen by the Commission should reflect the facts that, in the but-for world, (1) JEDEC would have chosen Rambus's technologies; (2) JEDEC members would have agreed to pay royalties for those technologies; and (3) JEDEC would (at most) have sought, and Rambus would have agreed to, a commitment to license those technologies on RAND terms. Teece, Tr. at 10341-10345. JEDEC members demonstrably preferred Rambus's technologies to the alternatives. They would not have chosen the Rambus technologies unless they believed that, royalties to Rambus aside, the alternatives would have entailed higher costs to achieve the same level of DRAM performance, higher costs in the form of decreased DRAM performance, or both. *See* Part IV.B., below.[8] The alternatives might have been patented and might therefore have required the payment of royalties, either explicitly or implicitly through a cross-license agreement. *See, e.g.*, RPFF 892 (citing RX 1308). The alternatives might also have required the use of complementary technologies that would have imposed additional royalty, design, or manufacturing costs of their own. *See, e.g.*, Geilhufe, Tr. 9564, 9565; Soderman, Tr. 9348-9349. In any event, JEDEC members *must have* preferred the Rambus technologies; otherwise, they would not have adopted them.

Accordingly, the Commission should select its remedy by assuming that, in the but-for world, JEDEC would have chosen Rambus technologies for the SDRAM and DDR SDRAM standards; and it should determine what license fees Rambus could have

[8] In its Opinion on liability, the Commission said that Rambus had not proven such costs. *See* Comm'n Op. at 96. But, for remedy purposes, such costs can be presumed given JEDEC's demonstrated preference for Rambus's technologies, and Complaint Counsel have the burden of proving the contrary. *See* Part II.B, above.

charged for the use of those technologies. At most, Rambus would have been asked to license its patents subject to a RAND commitment.[9]

At the very least, JEDEC members would rationally have been willing to pay Rambus a license fee equal to the additional costs of licensing and implementing the next-best alternative, plus the value of any performance losses incurred by using that alternative. As Complaint Counsel put it, "[t]he *ex ante* value of a technology is the amount that the industry participants would have been willing to pay to use a technology over its next best alternative prior to the incorporation of the technology into a standard." CCFF 2965.

Complaint Counsel may argue that, in the but-for world, JEDEC would have threatened to reject the Rambus technologies in order to obtain lower royalty rates. There is no evidence to support that conjecture, and as Complaint Counsel's own economist admitted, "JEDEC does not provide a vehicle for collective negotiation." McAfee, Tr. 7599. Moreover, JEDEC could not lawfully have threatened to reject what it regarded as superior Rambus technologies in order to obtain subcompetitive royalty rates. *See, e.g.*, *United States v. McKesson & Robbins, Inc.*, 351 U.S. 305, 309-310 (1956).

---

[9] There is no evidence that JEDEC ever rejected a patented technology *after* receiving a RAND commitment. Kelley, Tr. 2707-2709; McGrath, Tr. 9255; Rhoden, 628-629. And in the but-for world, Rambus would have had every incentive to, and would have, given a RAND commitment if necessary in order for JEDEC to incorporate its technologies into the standards. *E.g.*, Teece, Tr. 10341, 10343.

b) *The remedy should recognize that, in the but-for world, Rambus, consistent with RAND principles, would have offered different rates to infringers and litigators.*

In the but-for world, some DRAM manufacturers might have chosen not to take licenses, and some might have chosen to litigate the validity or enforceability of Rambus's patents. Even if Rambus had issued a RAND commitment, it would not have been obliged to license those manufacturers on the same terms as those it offered to manufacturers who took a license at the outset and did not litigate against Rambus. Teece, Tr. 10538-10543. Patent holders have rational and proper reasons for charging different rates to those who litigate or infringe, Teece, Tr. 10540-10543, and it is neither discriminatory nor improper (even under a RAND commitment) for licensors to charge higher rates to those who impose risks and costs on them by infringing or litigating. *Id.* at 10547-10548; Goodman, Tr. 6088 (charging different rates is not discriminatory if there is a reason for the different rates); *cf.* 15 U.S.C. § 13(a) (creating exception to Robinson-Patman Act prohibition on price discrimination for differences that reflect changed circumstances).

Accordingly, if the Commission requires Rambus to offer licenses at specified maximum rates, it should not require Rambus to offer those rates to those who *thereafter* choose to infringe or to litigate about the validity, enforceability, or infringement of the relevant patents. Otherwise, the Commission's order would reward infringers and create incentives for parties to litigate against Rambus, secure in knowing that, even if they lose, they will never have to pay more than the Commission's specified rates. *See Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1158-1159 (6th Cir. 1978) (setting reasonable royalty for infringers equal to royalty based on *ex ante* negotiations between truly willing parties "would constitute a pretense that the infringement never happened"); *see also Fromson v. Western Litho Plate & Supply Co.*, 853 F.2d 1568, 1575-1577 (Fed. Cir. 1988). Absent such a limitation, the Commission's order would make such parties better off than they would have been in the but-for world.

IV. MAXIMUM ROYALTY RATES

As explained above, the Commission's remedial authority is in any event limited to restoring market conditions to those that would have existed in the but-for world — that is, to the market conditions that would have resulted if Rambus had disclosed its patent interests to JEDEC during the development of the SDRAM and DDR SDRAM standards. If Rambus had made those disclosures, JEDEC would at most have requested, and Rambus would have offered, a commitment to license the relevant technologies on RAND terms. *See* Part III.B.4.a, above. Rambus and DRAM manufacturers would have negotiated licenses against the backdrop of the RAND commitment.

Accordingly, if the Commission wishes now to replicate the conditions that would have existed in the but-for world, it should enter an order requiring Rambus to license the four relevant technologies to manufacturers of SDRAM or DDR SDRAM-compliant devices on RAND terms — that is, the terms on which Rambus would have been obligated to license those technologies if it had given a RAND commitment when it was a member of JEDEC. *Cf. In re United Real Estate Brokers of Rockland, Ltd.*, 116 F.T.C. 972, 981 (1993) (FTC ordered service providers to make real estate listings available at a "reasonable and non-discriminatory" price). Under such an order, Rambus's royalty rates would be negotiated by private parties in the market under the constraint of a

RAND order from the Commission, just as they would have been negotiated in the market under the constraint of a RAND commitment to JEDEC in the but-for world.

Complaint Counsel will no doubt ask the Commission to specify a maximum royalty rate that Rambus can charge for the use of Rambus's technologies in SDRAM and DDR SDRAM compliant products. Complaint Counsel have not established that such a remedy would be warranted. While the Commission has found "links" between Rambus's unlawful conduct and its acquisition of monopoly power in the relevant markets, Comm'n Op. at 74, Complaint Counsel have not proven that Rambus's unlawful conduct caused its royalty rates actually to be higher than those that would have existed in the but-for world.[10] Moreover, courts and agencies in antitrust cases "normally avoid direct price administration," *Town of Concord, Mass. v. Boston Edison Co.*, 915 F.2d 17 (1st Cir. 1990), recognizing that markets are better equipped to set prices. *See United States v. Addyston Pipe & Steel Co.*, 85 F. 271, 283-284 (6th Cir. 1898) (Taft, J.) (to inquire into the reasonableness of prices is to "set sail on a sea of doubt").

If the Commission concludes that the proper remedy in this case would be to specify maximum royalty rates for SDRAM and DDR SDRAM, then the Commission should move expeditiously to determine those rates. Further delay should be avoided in light of

---

[10] Complaint Counsel's economist also conceded at trial, three years after Rambus began licensing its patents, that he did not believe "that there's been an impact on the DRAM prices as of today" as a result of Rambus's conduct. McAfee, Tr. 7565.

the limited remaining term of the patents at issue, the already protracted course of these proceedings, and the uncertainty these proceedings have created in the marketplace.[11]

The record already contains sufficient evidence to enable the Commission to specify maximum royalty rates.[12] The record establishes both that Rambus's current rates are reasonable and that, at a minimum, Rambus should be entitled to charge a 2.5% royalty for the use of the four technologies in SDRAM and DDR SDRAM-compliant products.

A. The Commission Could Set Maximum Royalty Rates Based on Comparisons to License Rates Discussed in the Existing Record

In the but-for world, as already explained, JEDEC would have selected Rambus's technologies for the SDRAM and DDR SDRAM standards subject to a RAND commitment. The Commission should thus determine the maximum rates that Rambus could have charged while complying with a RAND commitment.[13] The best way to determine these rates is by examining rates for other comparable licenses in the industry. This approach comports with several of the factors typically used by courts to fix the reasonable royalty rate due a patent holder upon a finding of infringement. *See Georgia-*

---

[11] In addition, sending the matter to an arbitrator or special master for rate-setting or related proceedings is not contemplated by the FTC Act and would circumvent the normal FTC adjudicative process. *See* 16 C.F.R. § 3.83(h) ("If review is taken, the Commission will issue a final decision on the application or remand the application to the Administrative Law Judge for further proceedings.").

[12] We assume that the Commission would in any event intend to specify only maximum rates. No antitrust purpose would be served by setting a particular rate and prohibiting Rambus from offering lower rates in light of market circumstances.

[13] As explained above, those rates should not be available to parties that choose subsequently to infringe any Rambus patents in the relevant markets, or to challenge the validity or enforceability of those patents or litigate over whether those patents are infringed by their devices.

Pacific Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116, 1120 (D.C.N.Y. 1970) (factors 2, 12, 14, 15).

1. Rambus should be allowed to charge a royalty in excess of 2.5% — the rate agreed to in the "other DRAM" clause of the 1995 Hyundai-Rambus license agreement.

The single best point of comparison in the record for determining royalty rates in the but-for world is the "other DRAM" rate in the 1995 Hyundai-Rambus license agreement. In 1995, JEDEC members were presented a "next generation" memory technology called SyncLink. JX 26 at 10-11. Rambus warned the SyncLink Consortium at the outset of the group's DRAM design efforts that the SyncLink DRAM device might infringe Rambus's patents. RX 663 at 2; CX 711 at 80-81; RX 576 at 2; RX 592 at 2. A major DRAM manufacturer, Hyundai (now Hynix), responded to these warnings by initiating *ex ante* negotiations with Rambus. CX2107 at 73 (Oh Depo.); CX2290 at 4. These negotiations resulted in Hyundai's agreeing to pay Rambus, pursuant to the Other DRAM clause in the parties' 1995 license agreement, a royalty of 2.5% on worldwide SyncLink product sales if those products infringed Rambus's patents. CX1599 at 3; CX1600 at 2, 11; CCFF 1544-1545; ALJ Op. ¶¶ 462-463.

Because Hyundai and the other SyncLink Consortium members intended to sell SyncLink DRAM devices in the same "main memory" marketplace as DDR SDRAM devices, *see* Tabrizi, Tr. 9126-9127; RX0591 at 2, the *ex ante* negotiations between Rambus and Hyundai provide the best "real-world" analogue for the but-for world. In fact, Complaint Counsel themselves pointed to the "Other DRAM" clause as an example of *ex ante* negotiations involving the intellectual property rights of JEDEC members. *See* Complaint Counsel's Response to RPFF 1206. The 2.5% rate represents the fruits of an *ex ante* negotiation between Rambus and Hyundai — a representative JEDEC-affiliated manufacturer — for an analogous technology intended for use in main memory, at a similar stage of its development, during the same timeframe as that in the but-for world.[14]

Therefore, the Commission should conclude that, in the but-for world, Rambus would have charged royalties for SDRAM and DDR SDRAM whose weighted average (of a likely lower rate for SDRAM and a higher rate for DDR SDRAM) would have been at least 2.5%. Accordingly, its remedy should allow Rambus to charge a rate in excess of 2.5% for DDR SDRAM.

2. <u>Evidence of licensing rates for other semiconductor technologies supports a royalty substantially higher than 2.5% for DDR SDRAM.</u>

Dr. Teece and other experts testified regarding royalty rates offered by other companies for various technologies in the semiconductor industry. *See also* ALJ Op. ¶¶ 1546-1558 (reviewing evidence). The Commission expressed skepticism about the relevance of these benchmarks on the ground that they applied to "other technologies," and it quoted testimony from a former Rambus CEO that there is an "apples and oranges" problem in comparing different technologies. Comm'n Op. at 114-115 & n.624. But even if none of the other technologies was precisely like the four technologies at issue in this case, those other royalty rates collectively demonstrate that royalty rates for a wide range of semiconductor technologies are consistently at or above the rates of 0.75% for SDRAM and 3.5% for DDR SDRAM that Rambus currently

---

14 Moreover, the Hyundai-Rambus agreement broadly defined "Other DRAM" as "each DRAM which incorporates part of the Rambus Interface Technology but is not Compatible with the Rambus Interface Specification" used in RDRAM. CX1600 at 2. The provision thus covered use of Rambus technology in all DRAMs other than RDRAM.

charges (Rapp, Tr. 9832, 9853) — and are well above the 2.5% figure from the "Other DRAM" clause of the Hyundai-Rambus license. At the very least, they should create a strong presumption that Rambus's existing rates would have satisfied any RAND commitment in the but-for world.

For example, IBM's "Worldwide Licensing Policy" — which was presented to JEDEC without objection, RPFF 1379-1380 (citing Kellogg, Tr. 5238-5239; Kelley, Tr. 2618-2620) — sets forth royalty rates from 1-5% based on the number of patented technologies licensed (basically 1% per patent).[15] Kentron charged DRAM manufacturers the equivalent of a 5% royalty for its FEMMA technology and the equivalent of a 9% royalty for its QBM technology. RPFF 1386 (citing Goodman, Tr. 6020-6022, 6078-6080, 6087). Hyundai entered into a semi-conductor cross-license with Texas Instruments and agreed to pay a royalty of 8% on all its sales of semiconductor products, including DRAM. RPFF 1388 (citing *Texas Instruments, Inc. v. Hyundai Elec. Indust. Co., Ltd.*, 42 F. Supp. 2d 660, 663-664, 671, 676-677 & n.39 (E.D.

---

[15] The Policy states:

> The royalty for use of IBM's patents may be based on the licensee's selling price of each product covered by one or more licensed patents or on the royalty portion selling price of such product, the choice being left to the licensee. . . . The royalty rates are 1% of the selling price if the product is covered by one Category 1 patent and 2% of the selling price if the product is covered by two or more Category I patents. . . . If the product is covered by one, two or three or more Category II patents, the royalty will be, respectively, 1%, 2%, or 3% of the selling price added to any royalty incurred for Category I patents.

RPFF 1378 (citing JX 9 at 24). IBM's website further notes that this same royalty rate range is granted to members of standard-setting organizations requiring that licenses be made available on RAND terms. RPFF 1382-1383 (citing RX 653 at IBM/2 153802, RX 2105-07 at 1).

Tex. 1999); *Texas Instruments, Inc. v. Hyundai Elec. Indust. Co., Ltd.*, 49 F. Supp. 2d 893, 897 (E.D. Tex. 1999).[16]

Dr. Teece also relied on two outside studies — based on surveys of 78 and 106 semiconductor licenses — showing that royalty rates in the industry averaged 4.6% and 4.54%, respectively.[17] RPFF 1390-1391 (citing Teece, Tr. 10444-10448, RX 2105-03, RX 2105-05). Notably, Dr. Teece testified that the data generally underestimate actual rates because the nominal royalty rates were often just balancing payments on cross-licenses that did not reflect the total consideration paid for the licensed technologies. RPFF 1395 (citing Teece, Tr. 10423-10424). Because Rambus does not manufacture products or otherwise require cross-licenses, its rates do not reflect any offsetting rights to a licensee's patents.

Taken collectively, the industry benchmarks demonstrate that royalty rates of 0.75% for SDRAM and 3.5% for DDR SDRAM would have been reasonable in the but-for world. *See* Teece, Tr. 10429-10451 (noting that industry royalty rates cluster around 4-5%); ALJ Op. ¶¶ 1546-1547 ("These rates are low compared to other licensing rates in the semiconductor industry.") (citing Teece, Tr. 10429-10451). There is no basis in the record to conclude that all or even any of these benchmark rates reflect lock-in or *ex post* hold-up of licensees.

---

16 Samsung entered into a similar cross-license with Texas Instruments in which it agreed to pay 9% on sales of DRAMs in the United States and 3% on sales of DRAMs in Japan. RPFF 1389 (citing *Texas Instruments,* 49 F. Supp.2d at 902). Texas Instruments offered Hyundai similar terms on DRAM sales. *Id.*

17 The first study, published in 2001, was conducted by the Licensing Economics Review. The second, published in January 2003, was conducted by PLX Systems Survey. RPFF 1390 (citing Teece, Tr. 10444-10445, RX 2105-05); RPFF 1391 (citing Teece, Tr. 10446-10447, RX 2105-03).

3. The RDRAM license rate is not a proper benchmark for SDRAM and DDR SDRAM licensing rates.

Complaint Counsel have argued that reasonable royalty rates for SDRAM and DDR SDRAM would be less than the rate at which Rambus licensed RDRAM. *See* Complaint Counsel's Reply Br. to Comm'n 88. But, as the ALJ found (ALJ Op. ¶¶ 1562-1566), RDRAM is not a proper benchmark for several reasons.

First, Rambus accepted lower royalty rates for RDRAM because it was trying to develop a market for its new technology. RPFF 1402 (citing Teece, Tr. 10535-10536); *see also* ALJ Op. ¶ 1565 ("In effect, the two percent RDRAM royalty rate is low because it reflects an investment in the future."). The 2% rate was, in other words, an introductory rate designed to penetrate the market.[18] This pricing strategy was consistent with Rambus's business model from the start. ALJ Op. ¶ 72 ("As a 1989 draft business plan explained, Farmwald and Horowitz hoped to establish a *de facto* standard 'by offering all interested DRAM and central processing unit ("CPU") vendors a sufficiently low licensee fee (2%) that it will not be worth their time and effort to attempt to circumvent or violate the patents.'") (quoting RX15 at 9).

[18] The Commission suggested in its Opinion that RDRAM royalty rates varied from 1-2%. The standard rate (with certain discounts for long-term and large-volume sales) for RDRAM was, however, 2%. *See* CX 1592 at 18; CX 1646 at 11; CX 1612 at 5. Complaint Counsel's economist, Professor McAfee, testified that the 2% rate for RDRAM "reflects monopoly in the sense that Rambus owns the patents and it has the right to exclude anyone. That is, it has a monopoly over that patented technology, and so even the 2 percent reflects a monopoly pricing." McAfee Tr. 7629-7630. Then, referring to the DDR SDRAM royalty rates, he said that "I would conclude that anything above 2 percent from this is a monopoly royalty . . . . The numbers above 2 percent reflect something above the *ex ante* monopoly value and so hence reflect exploitation of the lock-in of the industry." *Id.* Although Rambus disagrees with Professor McAfee's analysis, the analysis confirms that — even if RDRAM were a relevant benchmark — the appropriate rate for SDRAM and DDR SDRAM would be at least 2%.

Second, Intel encouraged a low royalty rate by negotiating an agreement whereby Rambus would give Intel any proceeds from RDRAM royalties in excess of 2%. RPFF 1400 (citing Teece, Tr. 10534-10535; MacWilliams, Tr. 4824-4825). The Intel agreement thus eliminated any incentive for Rambus to negotiate for a higher royalty rate with its licensees.

Third, the low RDRAM rates understate the consideration Rambus expected from its RDRAM licenses. Rambus expected, in addition to royalties, to benefit from co-development by its licensees. RPFF 1402-1403 (citing Teece, Tr. 10535-10536; Farmwald, Tr. 8241). More specifically, Rambus expected (correctly) to garner future technology design business from RDRAM manufacturers and to learn more about their needs as customers. *Id.* (citing Farmwald, Tr. 8179-8180). Complaint Counsel's economic expert admitted that RDRAM licenses provided benefits to Rambus that its DDR SDRAM licenses did not, although he did not quantify those benefits when comparing the DDR SDRAM and RDRAM royalty rates. RPFF 1404 (citing McAfee, Tr. 7835).

That Rambus always intended to charge lower royalty rates for RDRAM than for other DRAM technologies is demonstrated by its draft amendment to the 1995 Hyundai-Rambus license. The draft provides that "each Other DRAM Product royalty rate [is] to be *substantially higher* than Rambus's royalty rates for Compatible DRAMs [i.e. RDRAMs]." RX2275 at 2 (emphasis added). This is direct proof that Rambus — in an *ex ante* world — expected higher rates for other DRAM uses of its patents than for RDRAM.

B. Record Evidence on the Quality-Adjusted Cost of Next-Best Technologies Supports Royalty Rates in Excess of 2.5%.

The trial record includes an independent way to confirm that that Rambus's current rates would have been reasonable in the but-for world and that a rate higher than 2.5% for DDR SDRAM is warranted. Rambus's current royalty rates reflect the additional quality-adjusted costs that DRAM manufacturers would have incurred if JEDEC had adopted the next-best technologies for latency control, burst length control, data acceleration, and clock synchronization. Such additional costs equal the *ex ante* value of the Rambus technologies at issue (i.e. the amount that licensees would have been willing to pay Rambus in the but-for world). CCFF 2965.

The record contains expert testimony that would allow a rate determination based on a calculation of those additional costs. Dr. Rapp, one of Rambus's expert economists, determined that the least costly of the purported alternatives suggested by Complaint Counsel for three of the relevant markets were the use of fixed CAS latency, a burst-terminate command, and interleaving banks on a module. RPFF 985, 1136 (citing Rapp, Tr. 9831, 9850-9852).[19] Dr. Rapp assumed for purposes of his analysis that there would be no additional costs associated with an alternative to Rambus's technology (on-chip PLL/DLL) in the fourth relevant market, though he recognized that that led him to understate the total cost of alternatives to Rambus's technologies in DDR SDRAM. Rapp, Tr. 9848. Dr. Rapp estimated that the total additional cost of using these alternatives would have been 0.82% of the selling price for SDRAM and at least 5.65%

---

19 Complaint Counsel's expert did not investigate whether his proposed "alternatives" might also be covered by Rambus patents or by the patents of others. ALJ Op. ¶ 1133 (citing Jacob, Tr. 5601). Dr. Rapp excluded some of those alternatives on the ground that they were covered by Rambus' patents. RPFF 974, 980, 982.

of the selling price for DDR SDRAM. ALJ Op. ¶¶ 1276, 1399; RPFF 985 (citing Rapp, Tr. 9831-9832, 9853).

The Commission suggested, however, that Dr. Rapp's calculations were too uncertain to satisfy Rambus's burden of proof on whether JEDEC would have chosen its technologies even at current royalty rates. *See* Comm'n Order 94-95. The Commission noted in particular that Mr. Geilhufe had assigned a 25% margin of error to his cost estimates and reasoned that "a 25 percent reduction of Rapp's estimate of the least-costly alternative to SDRAM would bring that estimate well below the level of SDRAM royalties." *Id.* at 95. By the same token, however, a 25% increase in the estimated cost of the next-best alternative, which would be consistent with Mr. Geilhufe's margin of error, would have warranted higher royalties. For remedy purposes, where the Commission is trying to select a particular maximum royalty, it should select the best point estimate, which is the midpoint of a normal distribution.[20] That midpoint equals Dr. Rapp's estimates.

The Commission also recalculated Dr. Rapp's estimate of a least-cost alternative for SDRAM based on support of two, rather than three, latencies — yielding a figure of 0.62%. *Id.* The record does not support the Commission's premise. The original SDRAM standard required three latencies, with a fourth optional, and DRAM manufacturers in fact made SDRAMs allowing for all four possible values, ALJ Op. ¶ 1140 (citing JX 56 at 114; Lee, Tr. 11003-11004), 169 (citing Lee, Tr. 11063-11064). Moreover, JEDEC members expected that even more CAS latency values would be

---

[20] Indeed, Mr. Geilhufe explained that he had generally endeavored to be conservative and err on the low end for his cost increase estimates. ALJ Op. 167 (citing Geilhufe, Tr. 9673); Geilhufe, Tr. 9746. Thus, assuming a normal distribution and selecting the midpoint probably understates the additional cost of the alternatives.

required for future generations of SDRAM and thus allowed for eight possible values in the SDRAM standard in order to provide the necessary flexibility. *Id.* at ¶¶ 1137-1143 (citing CX 234 at 150; JX 31 at 64; Rhoden, Tr. 489-490); Lee, Tr. 11072-11073.[21]

Although the Commission expressed concern that Dr. Rapp's analysis might have overstated the costs of the alternatives, his figures actually understate the *quality-adjusted total* cost of the next-best technologies in at least four ways. First, as noted above, Dr. Rapp did not include the cost of an alternative to on-chip PLL/DLL, even though the record shows that such technology would be necessary. *See* Comm'n Op. 94 n.525 (on-chip DLLs "are needed for normal DDR operation"). Second, Dr. Rapp's analysis does not make cost adjustments to reflect the relative performance of alternatives. RPFF 987 (citing Rapp, Tr. 9833). Third, Dr. Rapp's analysis does not consider the fact that alternative technologies might have been patented by third parties and thus might have required license payments of their own. Fourth, Dr. Rapp's analysis does not consider the fact that, even if JEDEC had adopted the next-best technologies, its members might still have had to pay royalties for the rights to use Rambus technologies other than the four at issue in these proceedings — rights that are currently provided as part of Rambus's package licenses.

[21] The Commission also suggested that double-frequency clocks without additional circuitry could have replaced Rambus's dual-edge clocking technology. Comm'n Op. 95 n.533. The record shows, however, that such clocks were not available. *See* ALJ Op. 195 (citing Lee, Tr. 11039, 11087-11089). Indeed, the newer DDR2 SDRAM standard *still* uses Rambus' dual-edge clocking technology, even though JEDEC members would have preferred to use a double-frequency clock if such an alternative were practical. CX 426 at 4; *see* ALJ Op. 195.

V. CONCLUSION

Having found liability, the Commission should expeditiously enter a final order enjoining Rambus from engaging in the practices found to be unlawful. If the Commission intends to go further, it should require Rambus to offer a RAND commitment. Alternatively, if the Commission decides to specify maximum royalty rates, it should bar Rambus from charging royalty rates for use of the four relevant technologies in the manufacture or sale of JEDEC-compliant SDRAM and DDR SDRAM products in excess of the maximum rates Rambus could have charged in the but-for world, determined on the basis of the existing record. Those rates would have been in excess of 2.5% for DDR SDRAM.

DATED: September 15, 2006

Respectfully submitted,

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

A. Douglas Melamed
Paul R.Q. Wolfson
Sambhav N. Sankar
Pratik A. Shah
WILMER CUTLER PICKERING
HALE AND DORR LLP
1875 Pennsylvania Avenue, NW
Washington, D.C. 20006
(202) 663-6000

Attorneys for Respondent Rambus Inc.

UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION

COMMISSIONERS: Deborah Platt Majoras, Chairman
Pamela Jones Harbour
Jon Leibowitz
William E. Kovacic
J. Thomas Rosch

In the Matter of	)	
	)	
RAMBUS Inc.,	)	**Docket No. 9302**
	)	
a corporation.	)	
	)	

CERTIFICATE OF SERVICE

I, Sambhav Sankar, hereby certify that on September 15, 2006, I caused a true and correct copy of the *Brief Of Respondent Rambus Inc., Addressing Issues Relating To Remedy* to be served on the following persons by hand delivery:

Donald S. Clark, Secretary
Federal Trade Commission
Room H-159
600 Pennsylvania Avenue, NW
Washington, DC 20580

Geoffrey Oliver, Esq.
Assistant Director
Bureau of Competition
Federal Trade Commission
601 New Jersey Avenue, NW
Washington, DC 20001

Sambhav Sankar