ORIGINAL

UNITED STATES OF AMERICA
BEFORE FEDERAL TRADE COMMISSION

Docket No. 9302

REVISED PUBLIC VERSION

In the Matter of

RAMBUS INCORPORATED

BRIEF OF COUNSEL SUPPORTING THE COMPLAINT ON THE ISSUE OF REMEDY

Jeffrey Schmidt
Director

Daniel P. Ducore
Assistant Director, Compliance Division

Rendell A. Davis, Jr.
Attorney, Compliance Division

Geoffrey D. Oliver
Richard B. Dagen
Robert P. Davis

Counsel Supporting the Complaint

Bureau of Competition
Federal Trade Commission
Washington, DC 20580

Dated: September 29, 2006

TABLE OF CONTENTS

TABLE OF AUTHORITIES

CASES

OTHER AUTHORITIES

REVISED PUBLIC VERSION

UNITED STATES OF AMERICA
BEFORE FEDERAL TRADE COMMISSION

In the Matter of

RAMBUS INCORPORATED,

a corporation.

Docket No. 9302

BRIEF OF COUNSEL SUPPORTING THE COMPLAINT ON THE ISSUE OF REMEDY

INTRODUCTION

> *The proper disposition of antitrust cases is obviously of great public importance, and their remedial phase, more often than not, is crucial. For the suit has been a futile exercise if the Government proves a violation but fails to secure a remedy adequate to redress it.*
>
> *E.I. DuPont de Nemours & Co. v. United States, 366 U.S. 316, 323 (1961).*

The Commission, having found that Rambus unlawfully acquired monopoly power by deceiving JEDEC, must now restore competition to the conditions that would have prevailed absent Rambus's anticompetitive conduct.

Specifically, the Commission should enjoin Rambus from enforcing its pre-1996 patents with respect to JEDEC-compliant products. This remedy is not only called for by antitrust law, the Commission's Decision, and other record evidence; it is also supported by patent law, economics, policy concerns, and principles of administrability.

This remedy – far from being extreme – merely restores, six years later, the competitive conditions that should have prevailed. Had it not engaged in deception, Rambus likely would have received no, or at most minimal, royalties from companies practicing the JEDEC standards. This remedy is not punitive: it would permit Rambus not only to enforce all its patents against any non-JEDEC-compliant products and its post-1996 patents against all products (including JEDEC-compliant products), but also to keep the unlawfully acquired monopoly profits it collected during the past six years.

Should the Commission wish to consider alternative remedies, Complaint Counsel set forth other possible methods to determine an *ex ante* royalty rate. As we discuss below, the evidence suggests a maximum reasonable royalty rate of 0.25% for SDRAM, DDR SDRAM and DDR2 SDRAM memory chips.[1] We believe such methods are inferior, however, to enjoining enforcement of Rambus's patents.

I. The Appropriate Remedy Is An Order Enjoining Enforcement of Relevant Patents Against JEDEC-Compliant Products

The remedy question rests on a fundamental conundrum: the appropriate remedy depends on what competitive conditions would have existed absent Rambus's unlawful conduct. Yet Rambus's unlawful conduct prevents us from knowing what competitive conditions would have existed. Thus, any uncertainties in resolving this question must be construed against Rambus

[1] Although the Commission did not find a violation with respect to DDR2, the Commission still has the authority to order relief with respect to DDR2 to restore competition and prevent further harm, as explained supra 16-18.

(*see infra* 9-11).

Contemporaneous documents, testimony of most relevant fact witnesses, and the "natural experiment" involving the loop-back clock proposal (all cited favorably in the Commission's Decision) and other record evidence establish that the most likely competitive result would have been a series of JEDEC standards containing technologies free of Rambus patents. To replicate this competitive world, the appropriate remedy is an order enjoining Rambus from enforcing its patents against devices complying with JEDEC standards and products incorporating such devices.

A. The Remedy Must Fully Restore Competitive Conditions That Would Have Prevailed Absent Rambus's Deception

The principal objective in framing antitrust relief is to restore competition. *See, e.g., Ford Motor Co. v. United States,* 405 U.S. 562, 573 (1972); *International Salt Co. v. United States*, 332 U.S. 392, 401 (1947) (relief should "pry open to competition a market that has been closed by defendants' illegal restraints"). Relief should, "so far as practicable, cure the ill effects of the illegal conduct, and assure the public freedom from its continuance." *United States v. U.S. Gypsum Co.*, 340 U.S. 76, 88 (1950). A Commission order should recreate market conditions that would have existed "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).

The Commission has broad discretion to deprive Rambus of any "fruits" of its wrongdoing, *United States v. United Shoe Mach. Corp.*, 391 U.S. 244, 250 (1968), and Rambus "should, so far as practicable, be denied future benefits from their forbidden conduct." *Gypsum,* 340 U.S. at 89; *FTC v. National Lead,* 352 U.S. 419, 430 (1957) (Commission must assure that a violator will "relinquish the fruits of his violation."). The Commission's ultimate objective must be to protect the public from the continuing effects of Rambus's unlawful conduct. *See, e.g., Hoffman-La Roche Ltd. v. Empagran S.A.*, 542 U.S. 155, 170 (2004) ("[a] government plaintiff, unlike a private plaintiff, must seek to obtain the relief necessary to protect the public from further anticompetitive conduct and to redress anticompetitive harm.").

To restore competitive conditions, protect the public and deprive Rambus of the future "fruits" of its unlawful conduct, the Commission must determine what competitive conditions likely would have prevailed absent Rambus's deception. *Massachusetts v. Microsoft Corp.*, 373 F.3d 1199, 1232 (D.C. Cir. 2004) ("the fruits of a violation must be identified before they may be denied"). The Commission's Decision goes a long way towards answering this question. Resolving the remaining issues will clarify the need for an order enjoining enforcement of Rambus's relevant patents.

B. The Commission's Decision Demonstrates That The Likely Competitive Result Would Have Been A Series Of Standards Free Of Rambus's Patents

1. JEDEC Likely Would Have Avoided Rambus Patents By Selecting Alternatives

Evidence cited in the Commission's Decision establishes that, had Rambus not deceived JEDEC members, they would have selected alternative technologies for the SDRAM and DDR SDRAM standards rather than pay Rambus royalties.[2] The Commission found that patents, and Rambus patents in particular, significantly influenced JEDEC's selection of technologies. The Commission found, for example, that "JEDEC members – DRAM manufacturers and customers – were highly sensitive to costs, and that keeping costs down was a major concern within

[2] DDR2 is treated separately in Section II.E.

JEDEC." Decision 74; *see also* fn. 404. The Commission credited evidence that JEDEC members would select alternatives with lesser performance in order to avoid cost. Decision 75 & fn. 406. The Commission also cited to JEDEC minutes recounting, "If it is known that a company has a patent on a proposal then the Committee will be reluctant to approve it as a standard." Decision 75 fn. 407. JEDEC members feared that Rambus, a non-manufacturing, IP-licensing company, would reject cross-licenses, and demand cash payments. Tellingly, the Commission found that "the one time that JEDEC members had advance knowledge that a Rambus patent was likely to cover a standard under consideration, the members took deliberate steps to avoid standardizing the Rambus technology." Decision 74 & fn. 403.

The Commission further found that "[a]lternative technologies were available when JEDEC chose the Rambus technologies, and could have been substituted for the Rambus technologies had Rambus disclosed its patent position." Decision 76. The Commission explained that JEDEC members "gave these alternatives serious, searching consideration; in fact, the technologies as to which Rambus subsequently revealed patent claims sometimes were chosen only after prolonged debate." *Id.* The Commission also quoted the testimony of multiple JEDEC members that they likely would have opposed using the technologies in question and instead selected alternatives had they known of Rambus's patent applications. Decision 75 (Bechtolsheim: "I personally and Sun [Microsystems] as a company would have strongly opposed the use of royalty-bearing elements . . . in an interface specification."), 75 fn. 407; *see also* 76 fn. 413. Indeed, Rambus representative Richard Crisp was among the JEDEC members who believed that JEDEC would have selected alternatives rather than patented Rambus technologies. *See* CX0711 at 73 (Crisp: "it makes no sense to alert them to a potential problem they can easily work around."). Thus, the Decision cites substantial evidence from multiple sources confirming that, had Rambus disclosed its patent position, JEDEC members would have selected alternatives, leaving Rambus with no claim to royalties.

The principal contrary evidence comes from Rambus's retained experts. They hypothesize, based on a string of unsupported assumptions, that had Rambus disclosed, JEDEC members would have calculated to a fraction of a percent the costs of using various alternatives, and concluded that use of Rambus technologies subject to some positive royalty was optimal. This is a nice theory. There is, however, absolutely no evidence that JEDEC members ever did this. *See* Tr. 7255-7256 (McAfee: JEDEC members selected technologies by satisficing – selecting satisfactory, non-objectionable technologies). Indeed, JEDEC's rejection of the loop-back clock technology involved no such calculations. CCFF 2436-2440. The Commission should base its remedy decision on the actual factual record, not unsupported theory. That record, as reflected in the Decision, establishes that JEDEC members would have adopted alternative technologies in its standards, and Rambus would not have had any royalty claims over those standards.

2. Alternatives Would Have Limited Rambus To Zero Or, At Most, De Minimis Royalties

Even if the Commission credited the Rambus experts' theories (adjusted for reasonable assumptions), *ex ante* negotiations likely would have resulted in zero or, at most, *de minimis* royalties. Economics indicates that the royalty for a particular technology depends on the cost of available alternatives and the additional value of the particular technology, if any, over that of the alternatives.[3] Evidence relied upon in the Decision strongly suggests that equally attractive alternatives cost no more than the technologies in question:

> – *Fixed CAS Latency* – The Commission found that at most two latencies were required, and cited evidence that some manufacturers' inventory systems supported multiple latency values without cost increase and yield problems were solved quickly. Decision 83-84, fn. 443. If the Commission were to find that yield improved quickly, and either that only one latency was required or that manufacturer inventory systems could support two latencies, this alternative would have cost less than programmable CAS latency. *See also* CCFF 572, 2139, 2142-44; CCRF 812.
>
> – *Setting CAS Latency with a Fuse* – The Commission cited evidence that OEMs could blow electric fuses themselves. Decision 84. Even assuming two latency values were needed, if the Commission were to find that yield problems can be solved quickly and OEMs could blow electric fuses, this alternative would have cost the same as programmable CAS latency. *See* CCRF 846, 852.
>
> – *Use of a Separate Pin to Set CAS Latency* – In addition to finding that, at most, two latency values would have been required, the Commission cited evidence that nearly all configurations had extra pins available and no additional wiring would have been necessary. Decision 85 fn. 456. If the Commission were to enter these as findings, the expected cost of this alternative would have been zero.
>
> – *Fixed Burst Length* – The Commission noted that, if JEDEC members required only two burst lengths, the "entire projected cost increase would have disappeared," and cited evidence that partial elimination of the mode register would have saved cost. Decision 87. If the Commission were to enter these as findings, CCRF 918, this alternative would have cost less, and if the Commission found that JEDEC required only a single burst length, CCRF 979, it would have cost substantially less, than programmable burst length.
>
> – *Burst Terminate Command to Set Burst Length* – The Commission found that this

---

3 A royalty is deemed reasonable only when it "is or approximates the outcome of an auction-like process appropriately designed to take lawful advantage of the state of competition existing ex ante . . . between and among available IP options." Swanson & Baumol, "Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power," 73 Antitrust L.J. 1, 57 (2005). Specifically:

> The greater the number of technologies that compete in advance of standard selection and the closer their IP solutions are to being perfect substitutes (so that the difference in value among alternatives approaches zero), the more likely a reasonable royalty will approach incremental cost.

alternative would not have cost any more than programmable burst length, and was "unconvinced" by Rambus's argument that it was not viable. Decision 87, 87 fn. 473. If the Commission were to so find, this alternative would have been no more expensive than programmable burst length.

– *Doubling the Clock Speed* – The Commission stated, "the record does not support" the contention that an on-DIMM clock was required to double the clock frequency, and that Rambus failed to consider design, construction, and testing cost savings. Decision 89-90. The Commission also cited testimony that doubling clock speed "would not have any additional cost." Decision 90 fn. 492. If the Commission were to so find, this alternative would have been no more expensive than dual edge clocking.[4]

– *DLL on the Controller* – The Commission found no evidence indicating that this alternative would have been more expensive than on-chip PLL/DLLs. Decision 91. The Commission credited evidence that this alternative was "workable and desirable." Decision 92. If the Commission were to enter these as findings, this alternative would have been no more expensive than on-chip PLL/DLL.[5]

– *Vernier* – The record indicates no extra cost for this alternative over the cost of on-chip PLL/DLL; indeed, it likely would have been cheaper.[6] The Commission cited to evidence that Vernier circuits perform well enough to be viable. Decision 92-93. If the Commission were to so find, this alternative would have been no more expensive than on-chip PLL/DLL.

– *DQS Strobe* – The record indicates no additional cost for this alternative; the Commission cited evidence that "most JEDEC members believed this technology offered adequate performance." Decision 94; CCFF 2403-2410. If the Commission were to so find, this alternative would have been no more expensive than on-chip PLL/DLL.

Thus, based on the evidence already cited in the Commission's Decision, there are at least 18

---

4 Elimination of the on-DIMM clock would leave only four cents of additional cost, Decision 89-90, which would be offset by the design, construction and testing cost savings.

5 In fact, record evidence suggests that DLL on the controller would be less expensive because DRAM manufacturing would be cheaper. *See, e.g.,* Geilhufe, Tr. 9612-13 (removing DLL from the DRAM would have reduced costs by 3 cents per unit); *see also* DX-301.

6 *See, e.g.,* Geilhufe, Tr. 9612-13 (removing DLL would have reduced costs); *see also* DX-301.

combinations of alternatives likely to have resulted in a zero royalty in a competitive environment.[7]

3. The Commission Must Resolve Any Reasonable Doubts Against Rambus

The record evidence establishes that competitive conditions, absent Rambus's conduct, would have involved no royalty payments to Rambus. If the Commission is uncertain, however, the Commission must resolve any reasonable doubts against Rambus.

The Supreme Court has emphasized that "once the Government has successfully borne the considerable burden of establishing a violation of law, all doubts as to the remedy are to be resolved in its favor." *DuPont*, 366 U.S. at 334; *New York v. Microsoft*, 224 F.Supp.2d 76, 148

---

7 Record evidence also indicates that additional alternatives, not discussed in the Commission Decision, likely would not have cost any more than the technologies at issue:

– *Identifying CAS Latency in the Command* – *See* Geilhufe, Tr. 9580-81; DX-298 (variable cost negligible unless extra pin needed); *see also* CCFF 2227 (no extra pin needed).

– *Setting Burst Length with a Fuse* – The discussion of fuses for CAS latency (*see supra*) also applies here. *See generally,* CCFF 2261-2269.

– *Use of a Separate Pin to Set Burst Length* – The discussion of pins for CAS latency (*see supra*) also applies here. *See generally,* CCFF 2270-2295.

– *Identifying Burst Length in the Command* – *See* Geilhufe, Tr. 9596; DX-299 (variable cost negligible unless extra pin needed); *see also* CCFF 2305; CCRF 980 (no extra pin needed).

– *Use an Asynchronous Architecture to Replace Programmable CAS Latency and Burst Length* – *See, e.g.,* CCFF 2228- 2233; CCRF 894; Tr. at 9592 (Geilhufe: lower test cost); *see also* DX-298 (1 cent decrease in cost per unit); DX-299 (same).

– *Interleave On-Chip Banks* – *See* CCFF 2345, 2349-50; *see also* CCRF 1003; Geilhufe, Tr. 9601-9606; DX-300 (assuming yield improves quickly over time, increased testing cost of only 2 cents).

(D.D.C. 2002) ("any doubts as to the extent of even this narrow remedy are to be resolved against the defendant"); *id.* at 163 ("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.") (quoting *Bigelow v. RKO Radio Pictures*, 327 U.S. 251, 265 (1946));[8] III Areeda & Hovenkamp, Antitrust Law ¶ 653f, at 104 (2002) ("the proper relief is to eradicate all the consequences of the act and provide deterrence against repetition; and any plausible doubts should be resolved against the monopolist.").

Under the facts of this case, in particular, doubts should be resolved against Rambus. The disclosure policy was specifically intended to permit *ex ante* discussion about the relative merits of alternatives. Rambus's conduct deprived JEDEC members of this discussion. The record evidence establishes that the Rambus-claimed technologies and the alternatives were essentially equivalent. Rambus, having "distort[ed] choices through deception" thereby "prevent[ing] the efficient selection of preferred technologies," Decision 29, is itself responsible for any uncertainty as to what JEDEC would have done and should be held to a finding that JEDEC "would have excluded Rambus's patented technologies from the JEDEC DRAM standards." Decision 74.

General legal principles apply with particular force here where Rambus has engaged in

---

8. *See also Sugar Industry Antitrust Litigation*, 73 F.R.D. 322, 354 (D. Pa. 1976):

> [I]f defendants are found to have precluded the existence of an actual competitive price in the market, the most elementary conceptions of justice and public policy require that they bear the risk of any uncertainty as to the actual damages that they created by their violations. No wrongdoer should be entitled to complain that damages cannot be measured with the precision that would have been possible had the situation it alone caused been otherwise.

massive, wholesale destruction of documents. Decision 116-117. Complaint Counsel respectfully submit that the Commission cannot adopt a remedy permitting Rambus to collect royalties on JEDEC-compliant products without first deciding the issue of spoliation of evidence.

C. Law, Economics and Policy All Support An Order Enjoining Enforcement of Rambus's Patents

The Commission's remedy must restore as fully as possible competitive conditions – a series of JEDEC standards free of Rambus's patent claims. This requires an order enjoining enforcement of Rambus's relevant patents against JEDEC-compliant products. This remedy is supported by antitrust precedent, principles of equity, economics, and policy considerations.

The Commission has used its broad remedial authority to restrict enforcement of patents for nearly forty years. *American Cyanamid Co.*, 72 F.T.C. 623, 690 (1967) ("We have no doubt that, where the circumstances justify such relief, the Commission has the authority to require royalty-free licensing."),[9] *aff'd, Charles Pfizer & Co. v. FTC*, 401 F.2d 574 (6th Cir. 1968); *Xerox Corp.*, 86 F.T.C. 364, 373-83 (1975) (consent order); *Eli Lilly & Co.*, 95 F.T.C. 538, 546-52 (1980) (consent order); *Bristol-Meyers Squibb Co.*, 2003 F.T.C. LEXIS 59, *66–67 (2003) (consent decree forbidding respondent from making certain patent infringement claims or receiving certain patent royalties); *see United States v. National Lead*, 332 U.S. 319, 349 (1947) ("it may well be that uniform, reasonable royalties computed on some patents will be found to be but nominal in value. Such royalties might be set at zero or at a nominal rate.").

The Commission has twice remedied Rambus-type conduct by precluding the wrongdoer

---

[9] The Commission majority explained that, but for the unique history in *American Cyanamid*, it might have prohibited collection of royalties. The dissent found "absolutely no basis [for permitting collection of royalties] either in logic, reason, equity, fact, or law." 72 F.T.C. at 691.

from enforcing patents against those practicing the standard. *Dell Computer Corp.*, 121 F.T.C. 616 , 620-622 (1996) (consent order); *Unocal Oil Company of California,* Docket No. 9305 (August 2, 2005) (consent order).[10] In *Dell,* the Commission recognized that equitable doctrines found in patent law also support an order enjoining a patent-holder from enforcing its relevant patents under even less egregious circumstances than here. *Dell* 121 F.T.C. at 624-25.[11]

Equitable estoppel, and the related equitable doctrine of laches, apply even where, unlike here, there is no intent to deceive. *A.C. Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020, 1043 (Fed. Cir. 1992). Rambus's intent to deceive only reinforces the authority for such relief.[12]

---

[10] The Commission regularly requires the divestiture or licensing of, or placed other limitations on, patent rights as a remedy for a Section 7 violation. *See, e.g., Cephalon, Inc., and Cima Labs Inc.*, 2004 F.T.C. LEXIS 162, *22 (2004) (consent decree ordering the respondent to "grant irrevocable, perpetual, fully paid-up and royalty-free license(s)" to intellectual property, including patents, to a third party).

[11] The Commission may utilize the "complete array of essentially equitable remedies" in fashioning relief. *Ekco*, 65 F.T.C. at 1213. Pursuant to equitable estoppel, courts routinely preclude enforcement of patents following conduct suggesting that patent rights would not be enforced. *See, e.g., Stambler v. Diebold, Inc.*, 11 U.S.P.Q.2d 1709 (E.D.N.Y. 1988), (intentionally misleading silence in standard-setting organization resulted in barring both past and future patent enforcement), *aff'd mem.*, 878 F.2d 1445 (Fed. Cir. 1989); *Potter Instr. Co. v. Storage Tech. Corp.*, 1980 U.S. Dist. LEXIS 14348 at *17-*18 (E.D. Va. 1980), *aff'd*, 641 F.2d 190 (4th Cir. 1981) (accord); *Stryker Corp. v. Zimmer, Inc.*, 741 F. Supp. 509, 512-15 (D.N.J. 1990) (patentee estopped where it had for years "mis[led] a purported infringer ... [and others] to believe that there was and is no problem, lying in wait until...it has become 'commercially and economically worthwhile' to do something ...."). *See also Wang Labs., Inc. v. Mitsubishi Elecs. Am., Inc.*, 103 F.3d 1571, 1575-76, 1581-82 (Fed. Cir. 1997) (implied license barred patentee's infringement action after patentee presented technology to JEDEC, encouraged its use, and did not disclose pending patent applications).

[12] The Supreme Court has indicated that the Commission can take such willfulness into account in crafting a remedy. *FTC v. National Lead Co.*, 352 U.S. 419, 429 (1957) ("Those in utter disregard of law, as here, 'call for repression by sterner measures than where the steps could reasonably have been thought permissible.'").

The proposed remedy is fully consistent with the remedy phase of *Microsoft.* There, the court identified "Microsoft's freedom from platform threats posed by makers of rival middleware" as the fruit of Microsoft's unlawful conduct. *Massachusetts v. Microsoft*, 373 F.3d at 1229. The court rejected, *inter alia*, Massachusetts' "open-source IE proposal" to grant others a royalty-free, perpetual right to use Microsoft's Internet Explorer as inappropriate because it "'ignores the theory of liability in this case'." *Id.* at 1228. The court rejected the idea that "IE was the fruit of Microsoft's anticompetitive conduct, finding, 'neither the evidentiary record from the liability phase, nor the record in this portion of the proceeding, establishes that the present success of IE is attributable entirely, or even in predominant part, to Microsoft's illegal conduct.'" *Id.* 1231-32 (quoting district court decision).

Here, we have precisely the opposite situation. Rambus's power over the JEDEC standards is attributable to its conduct. The Commission has already found that "Rambus engaged in exclusionary conduct that significantly contributed to its acquisition of monopoly power" in the relevant markets. Decision 118. Absent its deception, Rambus would not have power over the JEDEC standards.

Principles of economics also support enjoining the enforcement of Rambus's patents. Professor McAfee testified that it is impossible to restore completely the competitive conditions that likely would have prevailed in the absence of Rambus's conduct. McAfee, Tr. 7511-7516. From an economic perspective, a prohibition on enforcement of Rambus's pre-1996 patents against JEDEC-compliant products would not undo all of the harmful effects of Rambus's conduct, but it would restore competitive pricing to the markets in question. McAfee, Tr. 7178-7179, 7518-7522.

Policy considerations further support enjoining enforcement of a patent as a remedy for abuse of standard-setting. The Commission has already explained that standard-setting "potentially yields significant efficiencies," and requires assurances that "other participants will not exploit the process by acting deceptively," but that deceptive conduct "may cause considerable harm to competition" if it reduces the efficiencies gained through standard-setting. Decision 25-26, 33. To fully restore competitive conditions, the Commission's relief must be sufficiently comprehensive to restore confidence in the standard-setting process.

The relief will do so without creating any significant disincentives to procompetitive conduct. The remedy merely replicates the "but for" world, so will not create any cognizable disincentives to innovate. The Commission has acknowledged that deception does not have any efficiency-enhancing attributes (*Unocal*); thus, the remedy will not deter socially beneficial conduct. Finally, patent law already condemns far less egregious conduct, and IP holders in the SSO context must already consider the risk that deception will render their patents unenforceable.

Notably, the major standard-setting umbrella organization stated:

> ANSI agrees with the Dell consent agreement [prohibiting enforcement] to the extent it applies to situations when a participant in the standards development process intentionally and deliberately fails to disclose that his or her organization holds a patent relating to the standard in question in an attempt to gain an unfair competitive advantage.

Testimony of Amy Marasco before the FTC (December 1, 1995). If, contrary to *Dell* and *Unocal*, Rambus is permitted to continue to collect royalties, future companies may take their chances on non-disclosure, expecting to retain all monopoly profits gained during litigation and still benefit later from favorable inferences when a "reasonable" royalty is set (even after its own conduct created the uncertainties that made inferences necessary).

D. Principles of Administrability Favor An Order Enjoining Enforcement of Rambus's Royalties

A non-zero royalty would be difficult to administer. A royalty requires not only setting the royalty rate, but also defining the parameters of the products against which it can be assessed. Administering a rate for controllers integrated into other products (such as microprocessors) will be exceedingly complex and on-going. Although a stand-alone memory controller might cost at most a few dollars, integrated products often cost tens or even hundreds of dollars, yet only a small portion of the value may be attributable to controller functions. Nonetheless, Rambus has demanded royalties based on the selling price of the entire product. The Commission could not administer an effective cap on Rambus's royalty rates unless it also set a method to determine the portion of the value of such integrated products (some not yet developed) against which the royalty rate would apply. Because many such integrated controllers do not have a market price, such determination would be highly regulatory.

The problem is worse with respect to users. Rambus has begun asserting that OEMs are liable for infringement of Rambus's patents, even if they purchase both DRAMs and controllers from licensed manufacturers. The Commission could not effectively cap Rambus's royalties unless it determined how to apply that cap to computers, handheld devices, telephones and automobiles.

With any royalty, "ongoing supervision may be necessary to regulate the price and nonprice terms of the resulting licenses." III Areeda & Hovenkamp, Antitrust Law ¶ 653b, at 99-100 (2002). For example, compensation for patents may be extracted through cross-license or grant-back requirements. The Commission would have to ensure that not just the royalties, but the value of the total compensation, did not exceed the cap. The Commission might also become entwined in any future disputes between Rambus and prospective licensees.

E. The Remedy Should Include DDR2 SDRAM and Future JEDEC Standards

The Commission's remedy should include products that conform to JEDEC's DDR2 SDRAM standard and follow-on standards. Although the Commission found that the evidence failed (albeit narrowly) to support a finding of liability regarding DDR2, the Commission is obligated to fully correct for the effects of Rambus's unlawful conduct regarding SDRAM and DDR SDRAM.

The Commission has the authority to order relief broader than the specific violation if reasonably necessary to restore competition and prevent further harm. *See, e.g., United States v. Paramount Pictures, Inc.,* 334 U.S. 131, 148 (1948) ("uproot all parts of an illegal scheme – the valid as well as the invalid – in order to rid the trade or commerce of all taint"); *United States v. Bausch & Lomb,* 321 U.S. 707, 724 (1944) ("equity has power to eradicate the evils of a condemned scheme by prohibition of the use of admittedly valid parts of an invalid whole."); *New York v. Microsoft,* 224 F. Supp. 2d at 148 (citing "the need to 'undo the various effects of the act'"). Commission orders are not limited to either the specific products or the specific practices involved in the violation. *FTC v. Ruberoid Co.*, 343 U.S. 470, 473 (1952) ("the Commission is not limited to prohibiting the illegal practice in the precise form in which it is found to have existed in the past."); *see also FTC v. Cement Inst.*, 333 U.S. 683, 726 (1948).

Thus, although the Commission did not find a violation with respect to DDR2, it still has the authority to order relief with respect to DDR2 because it bears a "reasonable relation to the unlawful practices found to exist." *Toys "R" Us v. FTC*, 221 F.3d 928, 940 (7th Cir. 2000) (quoting *Jacob Siegel Co. v. FTC*, 327 U.S. 608, 612-13 (1946)); *Hosp. Corp. of Am. v. FTC*, 807 F.2d 1381, 1393 (7th Cir. 1986) (Posner, J.) ("Commission has a broad discretion, akin to that of a court of equity, in deciding what relief is necessary to cure a violation of law and to ensure against its repetition").[13]

Addressing JEDEC's later DRAM standards is necessary to restore competitive conditions. Had Rambus not deceived JEDEC, JEDEC most likely would have adopted non-Rambus technologies in its SDRAM and DDR SDRAM standards. *See supra* 4-11. Because DDR SDRAM served as the base for the DDR2 SDRAM standard, these non-Rambus technologies would have been carried over into the DDR2 and subsequent standards. With the possible exception of any new Rambus technology added to the DDR2 or DDR3 SDRAM standards, industry members would not have owed Rambus royalties for any technologies in any JEDEC standards.

Alternatively, under competitive conditions, JEDEC members would have had the opportunity to negotiate *ex ante* license agreements. JEDEC members most likely would have insisted on license protection for the duration of Rambus's patents. Thus, JEDEC members that negotiated license agreements, and most likely all others as well, would have had the benefits of competitive royalty rates not just for SDRAM and DDR SDRAM, but for all later standards for the life of Rambus's patents.

Even if the Commission were not to include all later generations of JEDEC SDRAM

---

[13] While *HCA* arose under Section 7 of the Clayton Act, the court relied on two Section 5 cases – *Jacob Siegel* and *Herzfeld v. FTC*, 140 F.2d 207 (2d Cir. 1944) – in concluding that the Commission's broad remedial powers are akin to those of a court of equity.

standards within the scope of its order, it should, at a minimum, include the DDR2 SDRAM standard. The Commission may create a remedy aimed at "creating a breathing spell during which independent pricing might be established without the hang-over of the long existing pattern of [anticompetitive conduct]." *Association of Conference Interpreters* ("AIIC"), 123 F.T.C. 465, 659-60 (1997) (quoting *FTC v. National Lead*, 352 U.S. at 425). Including DDR2 SDRAM within the order would eliminate the "hang-over" of Rambus's deception and give the market an opportunity to consider choosing alternative technologies (assuming that is still feasible) for the DDR3 SDRAM standard.

II. Alternative Means For Determining Remedies

Following the Commission's instructions, this section addresses potential alternative mechanisms for determining the remedy.

A. General Principles

To be effective, the remedy must restore competitive conditions to those absent Rambus's deception, prevent Rambus from collecting future fruits of its deceptive conduct, rely on factual evidence (rather than assumptions), be consistent with principles of law and economics, provide prompt relief to the marketplace, deter similar conduct in the future, and be easily administrable. The possible methodologies set forth below result in remedies that fail many, if not most, of these goals. Nevertheless, Complaint Counsel outline possible methodologies, should the Commission wish to consider them.

B. Specific Alternative Methodologies

1. Calculation of a Reasonable Royalty

a) Cap On Maximum Royalties Based On SDRAM License Rates

Most of Rambus's SDRAM/DDR SDRAM license agreements reflect Rambus's exercise of market power, and therefore fail to provide meaningful guidance. Two such agreements, however, are somewhat closer to *ex ante* conditions (even though they also reflect Rambus's market power). These agreements indicate that the highest possible royalty rate would be less than 0.25% on JEDEC-compliant DRAMs.

In October 2000, Samsung entered into a five-year world-wide SDRAM/DDR SDRAM license agreement with Rambus. (*See* Attachment 1) That agreement, of course, reflected Rambus's monopoly power. In July 2001, Samsung and Rambus negotiated an Amendment to the Agreement in light of Judge Payne's judgment against Rambus in its lawsuit alleging infringement by Infineon of four Rambus patents. *See Samsung Elecs. Co. v. Rambus, Inc.*, 398 F.Supp.2d 470, 473 (D. Va. 2005). Rambus appealed Judge Payne's judgment, and had additional patents it could assert against Samsung. Nevertheless, in July 2001, the negotiating positions of Rambus and Samsung were more balanced. Pursuant to the Amendment, Rambus accepted an initial payment of $3.8 million (retroactive to January 2001), followed by fixed-amount payments of $2 million per quarter, for Samsung's SDRAM/DDR SDRAM license. (*See* Attachment 2)

From January 2001 until June 2005 (when Rambus terminated the agreement), Samsung apparently paid Rambus $37.8 million in license fees. During that time, Samsung sold approximately $25.3 billion DRAMs.[14] Thus, the effective DRAM royalty rate was approximately 0.15%.

Separately, in March 2005, Rambus entered into an agreement with Infineon, pursuant to which Infineon will pay up to $147 million to: (a) settle world-wide claims of infringement on SDRAM and DDR SDRAM from 2000 to 2005; (b) obtain a world-wide license to Rambus technology for post-2005 sales of SDRAMs, DDR SDRAMs, DDR2 SDRAMs and other DRAMs; and (c) settle Rambus's claims against Infineon arising from Infineon's conspiracy with other DRAM manufacturers to fix prices. *See* Rambus Press Release (Attachment 5).[15] Based on assumptions generous to Rambus, this corresponds to a royalty rate of approximately 0.24% on all SDRAMs, DDR SDRAMs and DDR2 SDRAMs sold for the life of Rambus's patents in question.[16]

---

14 Actual 2001-mid-2005 DRAM revenues (Gartner, Regional DRAM Application, History and Forecast, 200-2010, Attachment 3) times Samsung's market share (Samsung 2001 Annual Report at 36; "DRAM Industry Rankings Change Little in 2003," Purchasing Magazine Online (5/20/04); Samsung 2004 Annual Report at 48; Samsung Business Overview, Summer 2006 at 7, Attachment 4).

15 The Rambus-Infineon agreement was reached under circumstances similar to those of the present case. Infineon was locked in to use of the Rambus technologies, but Judge Payne found that Rambus had engaged in spoliation of evidence.

16 We assume (1) Infineon will pay the full $147 million; (2) 1/3 of that amount settled Infineon's liability to Rambus for price-fixing; (3) none of that amount was for post-1996 priority-date patents; and (4) Infineon will sell approximately $40.3 billion of DRAMs (virtually all SDRAMs, DDR SDRAMs and DDR2 SDRAMs) from mid-2000 to mid-2010. (Actual 2000-2005 and projected 2006-2010 DRAM revenues (Gartner, *supra* note 15, Attachment 3) times Infineon's/Qimonda's actual 2000-2005 market share (Infineon Form 20-F (2002) at 51; Infineon Form 20-F (2004) at 47; Infineon Form 20-F (2005) at 55; Qimonda Form 424B1 (2005) at 95, Attachment 6) and projected 2006-2010 share (Qimonda Form 424B1 (2005) at 1). The $98 million in world-wide patent-settlement/license-fee payments, allocated over $40.3 billion in world-wide DRAM sales, yields a royalty rate of approximately 0.24%. (The calculation could

b) Cap On Maximum Royalties Based On RDRAM License Rates

Rambus's RDRAM license agreements, unlike the SDRAM licenses, do not reflect lock-in. Nevertheless, extrapolating an *ex ante* SDRAM royalty rate from RDRAM license agreements requires multiple assumptions and adjustments: (1) RDRAM rates (1%-2%, Decision 115 fn 624) reflected the belief that RDRAM would be a niche product, and must be adjusted downward for a commodity product like SDRAM;[17] (2) RDRAM rates are for full technology transfer agreements (*see generally* Tr. 8672-8735 (Hampel)), and must be adjusted downward for a bare-bones license; and (3) RDRAM rates, which covered the full range of Rambus technologies, would have to be adjusted downward to adjust for the much smaller set of technologies contained in SDRAMs.[18] This approach indicates that the appropriate royalty rate on JEDEC-compliant DRAMs would be in the range of 0.1%.[19]

---

be refined, but the result would be of similar magnitude.)

[17] Intel regarded a royalty less than 0.5% as appropriate for commodity RDRAM. CX0952; CX0961.

[18] RDRAMs include Rambus's multiplexed bus, packetized operations, loop-back clock, and many other technologies not found in JEDEC-compliant DRAMs. JEDEC-compliant DRAMs use only a small and relatively unimportant subset of Rambus technologies. The Commission could reasonably allocate 80% of the royalty to technologies not found in the JEDEC standards.

For example, an admittedly rough allocation compares the number of pages in Rambus's initial patent application describing technologies used in SDRAMs and DDR SDRAMs to the number of pages describing technologies unique to RDRAM. At most 9 (or 14.5%) of the 62 pages describe technologies in SDRAMs and DDR SDRAMs.

[19] Thus, taking the highest RDRAM royalty rate (2.0%), adjusting downward to create (a) a high-volume commodity DRAM rate, (b) a bare-bones license agreement, and (c) a license for a small subset of technologies only, yields:

$$2.0\% \times .5 \times .5 \times .2 = 0.1\%.$$

c) Cap On Maximum Royalties Based on Other Factors

Georgia-Pacific Corp. v. United States Plywood Corp., 318 F.Supp. 1116, 1121 (S.D.N.Y.1970), *modified and aff'd*, 446 F.2d 295 (2d Cir.1971), describes a methodology for calculating a reasonable royalty owed to a good-faith patent-holder following a finding of infringement. That methodology is not applicable to determine a remedy for a patent holder's deceptive conduct vis-a-vis industry members that, absent the deception, likely would have avoided using the patented technology. Indeed, *Georgia-Pacific* seeks to replicate negotiations that would have occurred had the parties chosen to negotiate *ex ante*; it has no applicability to the situation where the patent-holder's deceptive conduct prevented prior patent avoidance or negotiation. Unlike the typical *Georgia-Pacific* situation, here all reasonable inferences should be taken against the patent-holder. Additionally, this matter is distinguished by JEDEC members' strong interest in minimizing cost, including foregoing technical improvements in order to keep costs to a minimum. Decision 75 & fn. 406. Nevertheless, were it to be applied, this test reinforces the conclusions above from Rambus's SDRAM and RDRAM licenses.

Georgia-Pacific identifies fifteen factors for consideration. *Georgia-Pacific,* 318 F.Supp. at 1120.[20] Many *Georgia-Pacific* factors reflect considerations discussed above; others are of little use here. Relevant considerations include: the license would be bare-bones, with no

---

[20] In the standard-setting context, the *Georgia-Pacific* factors risk over-compensating the patent holder if the focus is on the time of infringement rather than pre-lock-in. Cowie & Lavelle, "Patents Covering Industry Standards: The Risks to Enforceability Due to Conduct Before Standard-Setting Organizations," 30 AIPLA Q.J. 95, 147-48 (2002); *see also* Daniel J. Gifford, "Developing Models for a Coherent Treatment of Standard-setting Issues under the Patent, Copyright, and Antitrust Laws," 43 Idea 331 (2003) ("Failure to disclose the existence of the patent or otherwise to obscure its existence and scope suggests that the technology involved is less valuable than the patentee is willing to admit.").

technical support, for a small number of minor technologies. Multiple viable alternatives were readily available. Industry members sought to minimize cost and were highly resistant to any cash royalties. JEDEC-compliant products are well-established, but because of the standards, not Rambus's technologies. The technologies have minimal impact on downstream products, which are commodity products with very thin profit margins. The licenses would generate royalties over multiple years (justifying low rates). Experts are of little assistance here; contemporaneous documents and actions and fact witness testimony are the primary evidence. *See supra* 4-6. The key factor, as discussed throughout, is what JEDEC members would have done absent Rambus's deception.

The *Georgia-Pacific* factors are too vague to permit calculation of a specific royalty in this context. They do, however, confirm that a royalty of 0.25% on JEDEC-compliant DRAMs is the highest that should be permitted. *See supra* 19-21.

2. Alternative Procedures for Determining Reasonable Royalties

The Commission also requested briefing on whether further proceedings would be useful. Complaint Counsel strongly oppose any alternative procedure for determining reasonable royalties for multiple reasons:

1. Alternative proceedings will add very little value. The fundamental question is what royalty rate, if any, JEDEC members would have agreed to pay for Rambus's technologies had Rambus disclosed its IP position. By definition, we will never know the answer to this question because Rambus's conduct prevented it from being answered. What we do know is already contained in the record. We know of nothing useful to add (other than the testimony of a couple of JEDEC members, to whose prior testimony Rambus successfully objected). Experts can

speculate no better than anyone else. Ultimately, the Commission must decide based on the record evidence what competitive conditions would have existed, resolving any doubts against Rambus.

2. An alternative procedure would add further delay to final resolution. Rambus has been enforcing and collecting royalties on its patents for six years now, and over four years have passed since the Commission issued its Complaint in this matter. Despite the enormous expenditure of resources at both the staff and the Commission level, there has been no relief for the public. Most Rambus patents will expire in 2010. Rambus would welcome additional proceedings, with all attendant possibilities for delay, followed by another appeal to the Commission, while it continues to collect royalties. The Commission is best-placed to bring rapid relief to the marketplace.

3. Depending on the terms set after remand, the Commission could lose control over the ultimate outcome of the case, in terms of timing and substance. The Commission could be in the awkward position of having to administer an order that it did not set.

a) Remand to the ALJ

Complaint Counsel believe there is little reason to remand to an ALJ.

The Commission is best-placed to enter a decision on the existing record. The Commission has the expertise and resources, and recently examined in detail the relevant evidence. *See supra* 4-9. Remanding to an ALJ could easily add 8-9 months to the process, for no apparent purpose.

Reopening the record would introduce substantial unnecessary delays, with little corresponding benefit. There likely would be demands for further document discovery and deposition of potential fact witnesses, all likely to confirm the absence of significant additional evidence. There likely would be additional expert reports and depositions, followed by a trial on remedy issues, briefing and proposed findings of fact. After the ALJ decision, the Commission would again receive briefing on appeal. This could add 14-18 months to the process. The "best" evidence is already in the record. The simple fact is, all this will not help the Commission decide the central question now facing it – what would JEDEC members have done had Rambus disclosed?

b) Arbitration

All of the disadvantages to remanding the matter to an ALJ also would apply to sending the matter to an arbitrator. Additionally, the Commission's authority to refer the matter to an arbitrator is unclear. *See* Mann, "Constitutional Challenges to Court-Ordered Arbitration," 24 Fla. St. U.L. Rev. 1055 (1997).

c) Mediation

Complaint Counsel understand that court-ordered mediation has already been attempted in both the Micron and Hynix litigations. It was unsuccessful on both occasions. Given the substantial difference between Complaint Counsel's and Rambus's positions, there is no reason to expect mediation to succeed here.

III. Qualitative Characteristics Descriptive Of Appropriate Relief

The qualitative characteristics descriptive of appropriate relief, against which specific royalty proposals should be evaluated, are set forth in the discussion of the appropriate remedy and alternative remedies in Sections I and II above.

IV. Appropriate Injunctive and Other Provisions

Complaint Counsel have explained previously why the Commission's order should include all of Rambus's U.S. patents claiming a priority date before June 17, 1996, and Rambus's corresponding foreign patents to the extent they are applied to products intended for import into or export from the United States. *See* Complaint Counsel's Post-Trial Brief at 121-134. In light of the space constraints in this brief, Complaint Counsel rest on this previous explanation.

Assuming the Commission's remedy is to enjoin enforcement of Rambus's relevant patents against JEDEC-compliant products, the appropriate order provisions are contained in the Proposed Order attached to Complaint Counsel's Appeal Brief. Section I of the Proposed Order contains definitions; Sections II-VI are the operative provisions to restore competitive conditions to the marketplace; Section VII provides for a compliance officer, who shall represent Rambus for purposes making appropriate patent disclosures to SSO's; and Sections VIII-XII are standard order provisions.

Respectfully submitted,

Geoffrey D. Oliver
Richard B. Dagen
Robert P. Davis

Counsel Supporting the Complaint

Jeffrey Schmidt
Director

Daniel P. Ducore
Assistant Director, Compliance Division

Rendell A. Davis, Jr.
Attorney, Compliance Division

Bureau of Competition
Federal Trade Commission
Washington, D.C. 20580

Dated: September 29, 2006

CERTIFICATE OF SERVICE

I, Beverly A. Dodson, hereby certify that on September 29, 2006, I caused a copy of the attached, revised public version of the *Brief of Counsel Supporting The Complaint On The Issue Of Remedy*, to be served upon the following persons:

by hand delivery to:

The Commissioners
U.S. Federal Trade Commission
Office of the Secretary, Room H-135
Federal Trade Commission
600 Pennsylvania Ave., N.W.
Washington, D.C. 20580

by electronic transmission and courier to:

A. Douglas Melamed, Esq.
Wilmer Cutler Pickering Hale and Dorr LLP
1875 Pennsylvania Avenue, N.W.
Washington, DC 20006

and by electronic transmission and overnight courier to:

Steven M. Perry, Esq.
Munger, Tolles & Olson LLP
355 South Grand Avenue
35th Floor
Los Angeles, CA 90071

Counsel for Rambus Incorporated

Beverly A. Dodson
Beverly A. Dodson