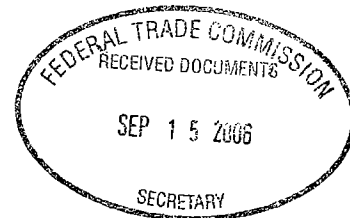


UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION



In the matter of)
)

RAMBUS INC.,)
)

a corporation.)
)

Docket No. 9302

BRIEF OF AMICI CURIAE NVIDIA CORPORATION, MICRON TECHNOLOGY, INC., SAMSUNG ELECTRONICS CORPORATION, LTD., AND HYNIX SEMICONDUCTOR, INC. ON THE ISSUE OF THE APPROPRIATE REMEDY FOR RAMBUS'S VIOLATIONS OF THE FTC ACT

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IDENTITY AND INTEREST OF AMICI CURIAE

Amici Curiae NVIDIA Corporation, Micron Technology, Inc., Samsung Electronics Corporation, Ltd., and Hynix Semiconductor, Inc. (collectively “Amici”) are global technology leaders. One Amicus, NVIDIA, manufactures and sells products (graphics processing units) that are designed to use, or interface with, JEDEC-compliant dynamic random access memory (“DRAM”), including single data rate synchronous DRAMs (“SDRAMs”) and double data rate synchronous DRAMs (“DDR SDRAMs”). Other Amici design, manufacture, and sell JEDEC-compliant DRAMs. Amici contribute billions of dollars in annual sales to the U.S. and world economy, invest hundreds of millions of dollars in research and development, hold thousands of United States patents, employ thousands of people both in the United States and overseas, and maintain membership in a variety of standard setting organizations (“SSOs”).

SSOs, the standard setting process, and JEDEC standards in particular are of great importance to Amici. The goal of many SSOs, including JEDEC, is to set “open” standards that are broadly available, low cost, and free from restrictive patent rights. Such open standards are beneficial to manufacturers and consumers alike, because they ensure interoperability of standardized products supplied by different firms. This, in turn, promotes competition, increases market acceptance, and helps achieve economies of scale.

These benefits of open standards can be achieved, however, only when the members of an SSO act in good faith and refrain from deceptive and exclusionary conduct. When an SSO member engages in such anticompetitive conduct with respect to its patent rights, those patent rights improperly may allow one member of an SSO to hold-up the standard and charge monopolistic rates to use the standard, all to the detriment of direct participants in the standard, others in the industry, and consumers.

After a lengthy hearing and a detailed review of the evidence, the Commission determined that Rambus Inc. (“Rambus”) engaged in bad faith and deceptive conduct in violation of the antitrust laws. Contrary to JEDEC’s policy and practice, contrary to the expectations of JEDEC members and those who rely upon open JEDEC standards, and in breach of its duty of good faith, Rambus undermined the JEDEC standard setting process by concealing its patent rights from JEDEC, misleading JEDEC members into believing that Rambus was not seeking patents over JEDEC-compliant SDRAMs and DDR SDRAMs, and secretly tailoring its patent rights in an effort to cover the JEDEC standards.

In 2000, after the JEDEC standards had been adopted, and after the industry was locked-in to those standards, Rambus exercised the monopoly power it had acquired through its subversion of the standard setting process. It was only then that Rambus attempted to enforce its patent rights against the JEDEC standards through patent infringement lawsuits, through U.S. International Trade Commission enforcement proceedings, and through a licensing campaign. At least one Amicus was forced to pay royalties to Rambus in response to its licensing and litigation campaign.

Amici submit this brief to express their views on the appropriate remedy to redress Rambus’s exclusionary conduct.

ARGUMENT

I. THE COMMISSION SHOULD BAR RAMBUS FROM ENFORCING ITS RELEVANT PATENT RIGHTS AGAINST THE JEDEC STANDARDS.

By failing to disclose its patent rights, and by other misleading conduct, Rambus led JEDEC and its members to adopt and implement technologies in the JEDEC standards that Rambus contends violate its patents. This, in turn, has given Rambus monopoly power. To remedy Rambus’s antitrust violations, the Commission should bar Rambus from enforcing its

patent rights against the SDRAM standard, the DDR SDRAM standard, and successors of these JEDEC SDRAM standards.¹

A. Under Its Remedial Authority, The Commission Has The Power To Bar Rambus From Enforcing Its Patents Against The JEDEC Standards.

The Commission enjoys broad authority to remedy antitrust violations. This authority is not confined to prohibiting the specific conduct that the Commission has found to be illegal. As the Supreme Court explained in *Ford Motor Co. v. United States*, 405 U.S. 562 (1972):

[t]he relief which can be afforded under [the Sherman and Clayton Acts] is not limited to the restoration of the *status quo ante*. There is no power to turn back the clock. Rather, the relief must be directed to that which is “*necessary and appropriate* in the public interest *to eliminate the effects* of the acquisition offensive to the statute,” or which will “*cure the ill effects* of the illegal conduct, and *assure the public freedom* from its continuance.”

Id. at 573 n.8 (citations omitted).

The Supreme Court also has made clear that the public interest is the paramount guiding principle in the Commission’s development of a remedy: “The public welfare demands that the agencies of public justice be not so impotent that they must always be mute and helpless victims of deception and fraud.” *Hazel-Atlas Glass Co. v. Hartford-Empire Co.*, 322 U.S. 238, 246 (1944). In recognizing in one case that an injunction against future violations was “not adequate to protect the public interest,” the Supreme Court instructed:

If all that was done was to forbid a repetition of illegal conduct, those who had unlawfully built their empires could preserve them intact. They could retain the full dividends of their monopolistic

¹ In this brief, when Amici refer to a remedy that limits enforcement of Rambus’s “patent rights,” Amici are referring to those patent rights, domestic and foreign, that claim priority to or through a patent application that was filed on or before June 17, 1996, the date that Rambus withdrew from JEDEC. The remedy proposed herein would not impact the dozens of Rambus patents (many of which Rambus has licensed) that claim priority to applications after June 17, 1996.

practices and profit from the unlawful restraints of trade which they had inflicted on competitors.

Schine Chain Theatres v. United States, 334 U.S. 110, 128 (1948).

For these reasons, forward-looking remedies, such as “fencing in” violators, frequently are appropriate, especially when the anticompetitive conduct could be hidden. *FTC v. Ruberoid Co.*, 343 U.S. 470, 473 (1952) (explaining that fencing-in provisions serve to “close all roads to the prohibited goal, so that [the Commission’s] order may not be by-passed with impunity”).

Consistent with these authorities, the Commission has recognized that, when a patent owner subverts an SSO and misuses patent rights to hold-up a standard, the appropriate remedy is to bar the patent owner from enforcing its patent rights against the affected standard.

In *Dell*, for example, the respondent belonged to an SSO that considered, and ultimately adopted, a “VL-bus standard.” The respondent had patent rights that covered the VL-bus standard, but the Commission found that respondent had failed to disclose those rights and misled the SSO into adopting the standard. To remedy the respondent’s deceptive and exclusionary conduct, the Commission insisted on an order barring the respondent from enforcing its patents against the standard. *In re Dell Computer Corp.*, 121 F.T.C. 616, 624-25 (1996).

Similarly, in *Unocal*, the respondent presented technology to the California Air Resources Board and industry groups for a cleaner burning gasoline. The respondent represented to those bodies that its technology was non-proprietary. The respondent also influenced those bodies to incorporate its technology into industry regulations that established a statewide standard. At the same time, the respondent secretly prosecuted a patent that covered the technology. After the regulations were adopted, the respondent enforced its patent rights against

companies that complied with the standards, both through licensing and litigation. To remedy the respondent's deceptive and exclusionary conduct, the Commission again insisted on an order barring the respondent from enforcing its patent rights against gasoline that was made in compliance with the regulations. *In re Union Oil Co.*, no. 9305, 2005 WL 2003365 (F.T.C. Aug. 2, 2005).

Here, in the wake of a fully-litigated finding that Rambus violated the antitrust laws, there is even stronger reason to follow *Dell* and *Unocal* and bar Rambus from enforcing its patent rights against the JEDEC standards. Any lesser remedy would represent a step backward from the clear and consistent precedent the Commission already has established.

B. Barring Rambus From Enforcing Its Patents Against JEDEC Standards Is Consistent With The Commission's Liability Findings And The Evidence.

The Commission already has found that, had Rambus timely disclosed its patent rights, JEDEC would have adopted alternative technologies or, at the very least, would have demanded RAND assurances pursuant to JEDEC policy that bars the use of patented technologies without RAND assurances (Opinion at 74, 97).² Under either scenario, Rambus should be barred from enforcing its patent rights against the JEDEC standards. On the one hand, if JEDEC had adopted alternatives, Rambus would not be in a position today to enforce its patent rights against the standards. On the other hand, if JEDEC had demanded RAND assurances, JEDEC still would not have adopted Rambus's technologies, because the evidence makes clear that Rambus never would have offered RAND assurances to JEDEC. Because Rambus would not be in a position now to enforce its patent rights against the JEDEC standards had it acted in

² As used herein, "RAND assurances" means assurances that relevant patents would be licensed to all on reasonable and nondiscriminatory terms.

good faith and consistent with JEDEC's policies, practices, and expectations, the remedy should bar such enforcement.

1. JEDEC Would Have Adopted Alternatives To Rambus's Patented Technologies.

To begin with, the record evidence strongly shows that JEDEC would have adopted alternative non-infringing technologies had Rambus disclosed its patent rights. This is fully consistent with JEDEC's policies and historical practice.

The goal of JEDEC was to adopt open standards that were not encumbered by patent rights. CCFF 300, 301.³ JEDEC policy provided that JEDEC should avoid using patented technologies. CCFF 303. Even Richard Crisp, Rambus's JEDEC representative, understood that "[t]he job of JEDEC is to create standards which steer clear of patents which must be used to be in compliance with the standard whenever possible." CCFF 301. JEDEC insists on open standards because everyone can use them, because they are not subject to hijack or the exercise of market power, and because they cost less to use (as royalties are generally avoided). CCFF 300, 302, 303.

Consistent with this policy, and as the Commission has recognized, when JEDEC knew of Rambus's patent rights and thought they might be relevant to a JEDEC standard, JEDEC "took deliberate steps to avoid standardizing the Rambus technology." Opinion at 74 & n.403 (describing JEDEC's immediate steps to avoid Rambus's "loop-back clock" technology in its '703 patent when NEC made a "loop-back clock" proposal in 1997). *See also* CCFF 2436-2439. Similarly, when JEDEC learned that patent rights might cover the Quad CAS standard

³ Citations to "CCFF" are to Complaint Counsel's Proposed Findings of Fact, Conclusions of Law, and Order, dated September 5, 2003.

and the silicon signature standard, JEDEC took affirmative steps to avoid the patented technologies. CCFF 422, 424-432 (Quad CAS); CCFF 433 (silicon signature).

Numerous industry members testified that they would have adopted alternative technologies at JEDEC had Rambus timely disclosed its patents rights. CCFF 2101. *See also* Opinion at n.407. Given JEDEC's policies and history, there is no reason to doubt this testimony.

Incorporating alternative technologies into the JEDEC standards not only would have been consistent with JEDEC policy and practice, but it also would have been feasible. The Commission already has determined 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.” Opinion at 76. The Commission also has found that “the evidence does not establish that Rambus’s technologies were superior to all alternatives on a cost/performance basis.” Opinion at 82.

2. Rambus Would Not Have Offered The Required RAND Assurances.

Even assuming *arguendo* that JEDEC's first response would have been to demand RAND assurances, JEDEC ultimately would not have incorporated Rambus's claimed technologies into the JEDEC standards, because Rambus never would have provided JEDEC with the required RAND assurances. The evidence in the record on this point is conclusive.

To understand why Rambus would not have offered RAND assurances, it is important to understand Rambus's business model. This model involved developing proprietary technology, patenting the technology, and then securing royalties and fees by licensing the technology and enforcing its patents (through licensing or litigation). This was Rambus's sole source of revenue. Rambus did not manufacture or sell any products. As Rambus's contemporaneous documents make clear, RAND terms were inconsistent with Rambus's

business model and its business practices of charging the highest royalty rates it could and of refusing to license those it did not wish to license. CCFF 2419, 2427, 2432.

Consistent with its business model, Rambus manifested its disdain for RAND assurances on at least two relevant occasions. First, in response to a request from IEEE – another standard-setting organization – that Rambus provide RAND assurances, Rambus refused to do so. CCFF 2421-2426. Second, when Rambus withdrew from JEDEC, it stated that it was doing so because JEDEC’s rules were not consistent with Rambus’s business plan. CCFF 2428-2431. Given this evidence, there is no reason to believe that Rambus would have offered RAND terms to JEDEC.

Moreover, even assuming *arguendo* that Rambus had offered RAND terms, given Rambus’s business model as described above, there is no reason to believe that JEDEC members would have believed or accepted Rambus’s assurances. In fact, because Rambus was actively promoting its own RDRAM architecture, JEDEC would have been especially reluctant to adopt any standard that was allegedly covered by Rambus’s patents.

C. The Enforcement Bar Should Be Broad Enough To Further The Aims Of The Antitrust Laws.

1. The Remedy Should Extend To The DDR2 SDRAM Standard And Other Successor Standards.

The Commission found that Rambus’s exclusionary conduct is linked to JEDEC’s adoption of SDRAM and DDR SDRAM standards that incorporate four technologies over which Rambus claims rights – namely, programmable CAS latency, programmable burst length, dual-edge clocking, and on-chip PLL/DLL. Opinion at 77. The Commission also found that JEDEC’s adoption of standards that incorporate these technologies is linked to Rambus’s monopoly power. *Id.*

NOTICE OF APPEARANCE
BEFORE THE FEDERAL TRADE COMMISSION



DOCKET No. 9302

In the Matter of RAMBUS INCORPORATED.

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Given these findings, and given that JEDEC would not have included the four patented technologies in the SDRAM or DDR SDRAM standards, the Commission's remedy certainly should bar Rambus from enforcing its patent rights against the SDRAM and DDR SDRAM standards. Allowing Rambus to enforce its patents against these standards would not restore competition and would allow Rambus to continue to exercise monopoly power.

The bar, however, should not be limited to the specific SDRAM and DDR SDRAM standards. Rather, the bar should extend to all JEDEC standards that are successors to the SDRAM and DDR SDRAM standards, including the DDR2 SDRAM standard. This remedy is needed to restore competitive conditions and protect the legitimate and pro-competitive expectations of JEDEC participants and others in the industry who rely on JEDEC standards. Because the four technologies as to which the Commission found a violation would not have been included in the SDRAM or DDR SDRAM standards had Rambus timely disclosed its patent rights, and because JEDEC standards evolve from one another, successor JEDEC DRAM standards (such as DDR2 SDRAM) also would not have included the four claimed features. There is no evidence that JEDEC would have *added* the four claimed features to the DDR2 SDRAM standard had they not already been included in the SDRAM and DDR SDRAM standards. Allowing Rambus to enforce its patent rights against successor JEDEC DRAM standards would unfairly allow Rambus to profit from its deceptive and exclusionary conduct, to the detriment of the industry and consumers.

The record demonstrates clearly that JEDEC's inclusion of the four patented technologies in the DDR2 SDRAM standard stems directly from the fact that those technologies were included in the first DDR SDRAM standard. The evidence uniformly shows that JEDEC standards are evolutionary. That is, each JEDEC standard is built on, and incorporates, as much

of the prior standards as possible. CCFF 127. JEDEC does this because evolutionary change reduces costs and eases the introduction of new standards. CCFF 128. This is true for DRAM manufacturers, logic chip makers, and OEMs. CCFF 128.

Here, the evidence shows that the DDR2 SDRAM standard evolved directly from the initial DDR SDRAM standard. CCFF 2573. The JEDEC committee that began working on DDR2 SDRAM in 1998 voted to use DDR SDRAM as the “baseline” for DDR 2 SDRAM. CCFF 3236-3237.⁴ As a result, the four purported Rambus technologies in DDR SDRAM were incorporated into the DDR2 SDRAM standard. CCFF 3250-3261.

Given the evolutionary nature of JEDEC standard development, and given JEDEC’s strong desire to ensure backward compatibility, if JEDEC’s SDRAM and DDR SDRAM standards had not included Rambus’s claimed features, then JEDEC’s DDR2 SDRAM standard also would not have included those patented features.⁵ Because Commission remedies endeavor to restore markets to the competitive conditions that would have existed but for the unlawful conduct, and because JEDEC would not have included those four features in the DDR2 SDRAM standard but for their inclusion in the original SDRAM and DDR SDRAM standards, the remedy should bar Rambus from enforcing its patent rights against DDR2 SDRAM and

⁴ One of the benefits of having the initial DDR SDRAM standard serve as the baseline for DDR2 SDRAM was “backward compatibility.” CCFF 3244. Because the primary features of DDR2 SDRAM would be the same as DDR SDRAM, DRAM manufacturers could make and sell DDR2 SDRAMs that would be compatible with many of the same components and systems that had been designed and built to be compatible with the DDR SDRAM standard, thereby reducing the manufacturers’ risk in the event that the new standard is not adopted quickly. CCFF 3247-3248. Similarly, backward compatibility reduced the risk to memory controller manufacturers, because they could design a controller that could work with both standards. CCFF 3246, 3249.

⁵ This conclusion is fully consistent with the Commission’s finding that, on the current record, it is unclear whether Rambus possessed durable monopoly power over DDR2. Even if JEDEC could in principle have switched *away* from Rambus technologies in DDR2 after those technologies had been incorporated in SDRAM and DDR, there is (as discussed) no reason why JEDEC members would have chosen to *add* those technologies to DDR2 had they not been present in prior standards in the first place.

similar successor JEDEC DRAM standards as well. *Ecko 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). If Rambus were allowed to enforce its patent rights against DDR2 SDRAM or other successor JEDEC DRAM standards, Rambus would receive an unjust windfall – the opportunity to use its monopoly power to recover supracompetitive profits against a standard that would not include Rambus's patented features but for Rambus's misconduct.⁶

2. The Remedy Should Protect The JEDEC Standards As A Whole, Not Just The Four Technologies That Rambus Monopolized.

In remedying exclusionary conduct, the Commission need not limit its remedy solely to the misconduct at issue. *FTC v. Ruberoid Co.*, 343 U.S. 470, 472-74 (1952) ("If the Commission is to attain the objectives Congress envisioned, it cannot be required to confine its road block to the narrow lane the transgressor has traveled; it must be allowed effectively to close all roads to the prohibited goal, so that its order may not be by-passed with impunity.").

JEDEC members and others anticipated that the technologies it adopted for its SDRAM and DDR SDRAM standards would be available for future versions of the synchronous DRAM standard: Indeed, both economic efficiency in design and production, as well as backward compatibility for computer system designers, require as much. Accordingly, the Commission should not simply preclude Rambus from enforcing its patent rights against the four technologies that Rambus monopolized through its deceptive conduct. Rather, Rambus should be barred from enforcing its patent rights against the JEDEC SDRAM and DDR SDRAM standards and successor JEDEC SDRAM standards, such as DDR2 SDRAM. If the standards as a whole are not protected from attack, and if Rambus is allowed to enforce its patents against

⁶ The magnitude of potential harm to the market is clear. DDR2 SDRAM is expected to represent over 50% of all DRAM sales in 3Q2006 and grow to over 70% in 2007. See iSuppli Q2 2006 report attached hereto as Exhibit 1.

technologies other than the four it already has monopolized, then there will be a very real risk that Rambus will once again achieve monopoly power over the JEDEC standards through virtually identical misconduct that was directed towards additional standardized technologies.

The record shows that while Rambus was a JEDEC member, JEDEC discussed many features for inclusion or possible inclusion in a JEDEC standard, including features called low-swing voltage, external reference voltage, auto precharge, multi-bank design, and source-synchronous clocking. CCF 545-557, 645-648, 856, 3118, 3121-3182. The record also shows that while Rambus was a JEDEC member, Rambus had, or believed it could file, patent applications covering the same five features. CCF 857, 886, 888, 964-967, 967, 981, 1000-1003, 1045, 3119, 3121-3182. Yet, Rambus never disclosed to JEDEC that it had, or believed it could file, patent applications covering these features. CCF 3120, 3121-3182. Rambus is now obtaining patents that are directed to these same undisclosed features. *See, e.g.*, CCF 3117 (patent issued with claim relating to auto precharge).

Clearly, if the Commission's order is limited to the four technologies over which Rambus has asserted patent rights in litigations, and ignores additional technologies on which Rambus had not yet brought suit when this investigation began, there is a significant risk that Rambus will be permitted to achieve its monopolistic aims and secure the very result (monopoly power over JEDEC standards) through the very same conduct (deceptively failing to disclose its patent rights to JEDEC during the standard-setting process) that led the Commission to conclude that Rambus had violated the antitrust laws.

3. The Remedy Should Extend To JEDEC-Compliant DRAMs Manufactured Or Sold Overseas.

To ensure that the remedy it chooses fully restores competition in U.S. commerce, including U.S. import and export commerce, the Commission should bar Rambus from enforcing

its foreign patent rights against the SDRAM and DDR SDRAM standards, including successor JEDEC DRAM standards such as DDR2 SDRAM, to the extent that such overseas enforcement would reach imports from, or exports to, the United States.

Rambus has obtained foreign patent rights that it claims cover the same four technologies as to which the Commission has found a violation. CCFF 1968-1974, 3214-3215. Rambus has asserted those foreign patent rights against JEDEC-compliant SDRAMs and DDR SDRAMs in foreign lawsuits, including in the United Kingdom, Germany, France, and Italy. CCFF 2026-2027, 3212, 3216-3219. Those foreign patents claim priority to or through patents and applications that Rambus filed on or before its withdrawal from JEDEC on June 17, 1996. CCFF 2024, 3184.

To restore competition in U.S. commerce, and in the U.S. import and export markets, any remedy should prevent Rambus from enforcing its foreign patent rights against the JEDEC standards. This is so for at least two reasons.

First, the JEDEC standards are worldwide standards. CCFF 3188. The same JEDEC standards that govern the manufacture and sale of JEDEC-compliant DRAMs in the United States also govern the manufacture and sale of JEDEC-compliant DRAMs overseas. CCFF 3188. Thus, by failing to disclose its U.S. patent rights to JEDEC, and by engaging in misleading conduct about its patents, Rambus denied JEDEC the opportunity to adopt standards that would have avoided Rambus's foreign patent rights.

Second, permitting Rambus to enforce its foreign patents against the JEDEC standards will injure competition in the United States. The Commission has found that the technology markets that Rambus monopolized are worldwide. Opinion at 5 n.3. Consistent with this finding, the record shows that JEDEC standard parts are freely exported from, and imported

into, the United States in large volumes. CCFF 3190. Indeed, the United States is a net importer of DRAM. CCFF 3183. Moreover, SDRAM and DDR SDRAM are manufactured by companies that have operations in the United States and overseas. CCFF 3189-3198. Thus, if JEDEC members, for example, are enjoined under Rambus's foreign patents from making SDRAM in Europe and exporting those SDRAMs to the United States, the supply of SDRAMs in the United States will be disrupted, resulting in price increases and harm to U.S. consumers. *See* CCFF 3183, 3221-3224. Rambus itself has suggested that if it can succeed in enforcing its patent rights against JEDEC SDRAM in one major jurisdiction, it will disrupt markets for SDRAM in other jurisdictions. CCFF 3226. To ensure that competition in the United States is restored, the Commission must ensure that Rambus cannot capture the JEDEC standards by enforcing foreign patents against them.⁷

D. An Enforcement Bar Is Consistent With Remedies Available In Patent Cases.

A patent enforcement bar of the sort discussed above is fully consistent with the relief that courts award when a patent owner is equitably estopped from enforcing its patents. *A.C. Aukerman Co. v. R.I. Chaides Constr. Co.*, 960 F.2d 1020, 1028 (Fed. Cir. 1992). The elements of equitable estoppel are: (1) misleading conduct by the patentee, (2) reliance by the alleged infringer, and (3) prejudice if the patent were to be enforced against the relying alleged infringer. *Id.* at 1028. Equitable estoppel need only be proven by a preponderance of the

⁷ The Commission has the authority to order a company to cease and desist from enforcing foreign patents when necessary to remedy a violation of the antitrust laws. In the past, the Commission has obtained consent orders which bind the parties to refrain from enforcing non-U.S. patent rights. *See, e.g., In re Xerox Corp.*, 86 F.T.C. 364 (1975); *In re Dell Computer Corp.*, 121 F.T.C. 616, 621 (1996). In the Clayton Act §7 context, *see In re Glaxo Wellcome, plc*, 2001 WL 147161 (F.T.C. Jan. 26, 2001); *In re Roche Holdings, Ltd.*, 113 F.T.C. 1086 (1990).

evidence. *Id.* at 1040-41. When equitable estoppel is established, a court will bar the patent owner from enforcing its patent rights.⁸

Here, the Commission's findings clearly satisfy all of the elements of equitable estoppel. The Commission expressly found that "Rambus engaged in representations, omissions, and practices that were likely to mislead JEDEC members acting reasonably under the circumstances, to their substantial detriment, and . . . that Rambus willfully engaged in deceptive conduct." Opinion at 68. These misrepresentations included Rambus's representation that it did not have patents or applications that would cover implementations of the JEDEC standards under discussion. *Id.* at 4. The Commission further found reliance by JEDEC's members on Rambus's misleading conduct when they unknowingly adopted the standards that Rambus now contends are covered by its patents, and thereafter when they designed and produced products conforming to those standards. *Id.* at 78. Prejudice to JEDEC's members from Rambus's enforcement of its patents against products that consist of, or interface with, JEDEC standard products, and collection of royalties on those products, is particularly evident in light of the Commission's finding of Rambus's durable monopoly power. *Id.* at 77-78, 110.⁹

Barring Rambus from enforcing its patent rights also is consistent with the doctrine of patent misuse. Patent misuse is an "extension of the equitable doctrine of unclean hands, whereby a court of equity will not lend its support to enforcement of a patent that has been misused." *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1427 (Fed. Cir. 1997).

⁸ See, e.g., *Potter Instrument Co., Inc. v. Storage Technology Corp.*, 641 F.2d 190 (4th Cir.), cert. denied, 454 U.S. 832 (1981); *Wang Laboratories Inc. v. Mitsubishi Electronics America Inc.*, 29 U.S.P.Q.2d 1481 (C.D. Cal. 1993); *Stambler v. Diebold, Inc.*, 11 U.S.P.Q.2d 1709, 1715 (E.D.N.Y. 1988), *aff'd*, 878 F.2d 1445 (Fed. Cir. 1989).

⁹ Rambus itself understood that its deceptive conduct could create issues of equitable estoppel. For example, Lester Vincent (Rambus's outside patent counsel) admitted in documents that "there could be an equitable estoppel problem if Rambus creates impression on JEDEC that it would not enforce its patent or patent [applications]." CCF 422.

While a patentee's conduct may constitute patent misuse without rising to the level of an antitrust violation, a "finding of an antitrust violation requires a finding of patent misuse" when a patent is used as the instrument of competitive harm. *See Rosenthal Collins Group, LLC v. Trading Tech. Int'l*, Case No. 05 C 4088, 2005 WL 3557947, at *7 (N.D. Ill.). Here, the Commission determined that Rambus's deceptive and exclusionary conduct in connection with its patent rights violated the antitrust laws. Under these circumstances, the doctrine of patent misuse would dictate that Rambus should be barred from enforcing its patent rights against the relevant JEDEC DRAM standards in order to purge the misuse. *Morton Salt Co. v. G.S. Suppiger Co.*, 314 U.S. 488, 494 (1942).

II. IN THE ALTERNATIVE, THE COMMISSION SHOULD FORCE RAMBUS TO GRANT A ROYALTY-FREE LICENSE UNDER ITS PATENT RIGHTS TO USE THE JEDEC STANDARDS.

Instead of barring Rambus from enforcing its patent rights, the Commission also could attempt to remedy Rambus's exclusionary conduct by ordering Rambus to grant users of the JEDEC standards a license under its patent rights to practice the standards. *In re American Cyanamid Co.*, 72 F.T.C. 623 (1967), 1967 FTC LEXIS 43, 151-52, *aff'd*, *Charles Pfizer & Co. v. FTC*, 401 F.2d 574 (6th Cir. 1968). This remedy, although similar to an enforcement bar, is more complex, because the Commission generally must consider whether the compulsory license will be royalty-free or whether, instead, users of the JEDEC standards must pay a royalty to Rambus under the license.

Here, should the Commission decide to pursue the compulsory license remedy rather than the enforcement bar remedy, Amici urge the Commission to require that Rambus grant royalty-free licenses under its patent rights to practice the JEDEC DRAM standards. A royalty-free license is consistent with the evidence that JEDEC would not have adopted a royalty-bearing standard for main memory, is not prejudicial to Rambus, and would benefit

consumers. In contrast, allowing Rambus to collect such a royalty would give Rambus an undeserved windfall, would not deter others from subverting SSOs in the future, and would unfairly impose a risk of loss on the victims of Rambus's monopolistic conduct.

A. A Royalty-Free Compulsory License To Practice The JEDEC Standards Is Warranted.

1. JEDEC Would Not Have Agreed To Pay Royalties For Main Memory Standards And, Instead, Would Have Adopted Alternative Technologies.

A principal goal of a Commission remedy is to restore competition to affected markets. Thus, if JEDEC would not have agreed to pay Rambus a royalty *ex ante*, and would have opted instead for alternative technologies, then the Commission should not award Rambus a royalty today for the use of the JEDEC standards. Put simply, if JEDEC would have adopted alternatives rather than pay royalties, then Rambus's patented technologies would not be in the JEDEC standards today and Rambus would not be in a position to extract royalties for the use of the JEDEC standards.

Here, the evidence demonstrates convincingly that JEDEC would not have agreed to pay royalties for the use of Rambus's patented technologies. Indeed, JEDEC consistently has tried to avoid the adoption of royalty-bearing main memory standards and has adopted royalty-free open standards whenever possible.

To begin with, JEDEC has avoided royalty-bearing main memory standards because the industry insists that main memory be low cost. In any product that uses DRAM, the cost budget for main memory is limited. When main memory is costly, it is difficult for OEMs to meet pricing targets and supply their products at prices that consumers will accept. Royalties on DRAMs increase the cost of main memory and, as a result, increase product cost and reduce OEM profits and sales. CCF 93, 99, 100, 107-109, 261.

Thus, ensuring that standards were low cost was a driving force at JEDEC. Indeed, the FTC has found that “JEDEC members – DRAM manufacturers and customers – were highly sensitive to costs, and that keeping costs down was a major concern within JEDEC.” Opinion at 74 & n.404; *id.* at 75 & nn.405, 408; CCFF 2442-2447.

The record contains strong evidence that JEDEC would have objected to a royalty-bearing standard for main memory. Andy Bechtolsheim of Sun testified that Sun “would have strongly opposed the use of royalty-bearing elements in an interface patent – in an interface specification.” Opinion at 75 & n.408. Richard Heye of AMD testified that AMD had not paid royalties on memory interfaces to anyone other than Rambus. Opinion at n.539. This led the Commission to find that “Payment of royalties on memory interfaces has been very much the exception, rather than the rule, in the computer industry.” Opinion at 96-97.

Put simply, the evidence shows that JEDEC would not have adopted the existing SDRAM and DDR SDRAM standards had JEDEC known that there were royalties associated with those standards. CCFF 2448. Rambus should not be awarded a royalty today when it would not have received a royalty *ex ante*.

2. A Royalty-Free License Would Not Prejudice Rambus.

Should the Commission order Rambus to offer a royalty-free license, Rambus will not be prejudiced.

First, the royalty-free license would extend only to JEDEC standard parts. It would not apply to Rambus’s proprietary RDRAM family (Base, Concurrent, or Direct RDRAM), to Rambus’s other proprietary memory interfaces (e.g., XDR), or to any other of Rambus’s various interface technologies (such as Rambus’s Serial Link technology, its FlexIO Processor technology, PCI Express technology, and ABP Link technology). Thus, Rambus would be free to seek royalties on any parts that are not JEDEC-compliant parts or that do not

interface with or use JEDEC-compliant parts. In fact, Rambus licenses its technologies to numerous licensees for such other uses.¹⁰

Second, Rambus would be free to assert any patent rights that do not claim priority to or through patent applications filed on or before June 17, 1996 – the date that Rambus withdrew from JEDEC. Rambus holds numerous patents that do not claim priority to such applications. Under the proposed remedy, Rambus would be free to assert many other patents and seek to recover royalties for infringement of those patents, even as against JEDEC standard parts.

Third, many of Rambus's patents that claim priority to or through an application filed on or before June 17, 1996 will be expiring soon. For example, the Rambus patents that claim the benefit of Rambus's 1990 patent application generally will be expiring in 2010, that is, 20 years after their effective filing date. 35 U.S.C. § 154. Thus, the duration of the remedy is not unreasonable.

3. A Royalty-Free License Would Provide Maximum Benefit To Consumers.

The victims of Rambus's misconduct, including OEMs and consumers, should not have to bear any costs that result from that misconduct. Short of a complete bar on enforcement, a zero royalty rate is the best way to assure that no such costs are passed on to them. On the other hand, a royalty bearing license would unfairly impose costs on OEMs, consumers and other victims of Rambus's misconduct.

¹⁰ See www.rambus.com/us/patents/licensing/licensees.html.

B. The Commission Should Not Reward Rambus With A Royalty-Bearing License.

1. A Royalty-Bearing License Would Provide A Windfall To Rambus And Encourage Deceptive Conduct At SSOs.

Rambus has been collecting royalties on JEDEC SDRAMs and DDR SDRAMs for over six years. Rambus already has enjoyed the benefits of extracting monopoly rents on those patents and collected tens or hundreds of millions of dollars in ill-gotten gains. To allow Rambus to continue to collect royalties over the remaining life of these patents will only further encourage such deceptive conduct at SSOs.

As set forth above, the evidence shows that had Rambus not engaged in exclusionary conduct, JEDEC would not have included the features over which Rambus claims patent rights in the SDRAM and DDR SDRAM standards. As such, allowing Rambus to collect a royalty today would place Rambus in a much better position than it would have been in if it had done the right thing and disclosed its patent rights to JEDEC. Put simply, a royalty-bearing license would provide a windfall to Rambus and, contrary to public policy, would reward Rambus for its deceptive conduct rather than deter it.

Such a result would send precisely the wrong message to potential wrongdoers in Rambus's situation. The message from the Commission would be that taking a chance at deceiving an SSO is a "no lose" proposition, because even if you are caught red-handed, you nonetheless will receive supracompetitive royalties.

In contrast, if Rambus were required to license its patents royalty-free, the message would be entirely different. Potential wrongdoers in Rambus's position would understand that deceiving an SSO may impair their patent rights and will not result in any financial gain. Such a remedy may well deter potential wrongdoers from engaging in the kind of conduct that gave Rambus its monopoly power.

2. A Royalty-Bearing License Would Hurt Consumers.

Forcing the industry to pay a royalty to Rambus would hurt consumers. As the Commission has indicated, and as Complaint Counsel's economic expert (Preston McAfee) testified, royalty costs will be passed on to consumers in the long run, with the effect of lowering output in the downstream DRAM market and increasing prices. Opinion at 114 & n.622; CCF 3050-3051. As the Commission has found, the cost of a running royalty (at least on Rambus's monopolistic terms) to the industry – and the size of the windfall to Rambus – could be enormous (hundreds of millions or billions of dollars per year). Opinion at 75-76 & nn.409-410. The fact that royalty costs on these high volume products would be so high is one of the reasons why JEDEC would have adopted alternatives to Rambus's technology in the first place had Rambus disclosed its patent rights.

3. The Victims Of Rambus's Misconduct Should Not Be Required To Bear The Risks Involved In Calculating The Correct Ex Ante Royalty.

Attempting to determine today what royalty rate industry members would have paid *ex ante* had Rambus disclosed its patent rights and offered RAND terms would impose an enormous and unfair risk of loss on the victims of Rambus's misconduct and should not be undertaken.

Here, reconstructing an *ex ante* royalty negotiation after more than a decade has passed, after Rambus has shredded documents on a massive scale¹¹, and after Rambus's misconduct has led to dislocation in the technology markets will be risky and uncertain. Because Rambus engaged in misconduct, and because Rambus's misconduct has made any royalty

¹¹ *Samsung Elecs. Co. v. Rambus Inc.*, No. 3:05cv406, *slip op.* at 80 (E.D. Va. July 18, 2006) (“The record proves that Rambus engaged in pervasive document destruction in 1998 and 1999 while it anticipated litigation, or reasonably should have anticipated litigation, and in 2000 while it was actually engaged in litigation.”).

evaluation more difficult, the victims of Rambus's monopolistic behavior – OEMs, consumers, DRAM manufacturers, and JEDEC – should not have to bear the risk that the Commission will err in calculating an *ex ante* rate. Rather, the risk should be borne by Rambus. As the Commission explained (Opinion at 81) when it cited *United States v. Microsoft Corp.*, 253 F.3d 34, 79 (D.C. Cir.), *cert. denied*, 534 U.S. 952 (2001), with approval:

Rather than requiring plaintiff “to reconstruct the hypothetical marketplace absent a defendant’s anticompetitive conduct,” the court explained, “To some degree the defendant is made to suffer the uncertain consequences of its own undesirable conduct.”

Given the irreducible uncertainties and complexities, there is a substantial risk that any royalty determined today would be higher or lower than what actually would have resulted from an *ex ante* negotiation. While it is appropriate for Rambus to bear the risk of a too-low royalty, it is not appropriate for the victims of Rambus's exclusionary conduct, including consumers, to bear the risk of an excessively high royalty.

C. If The Commission Allows A Non-Zero Royalty, The Royalty Should Reflect JEDEC's Policies, The Low Cost Expectations Of Its Members, And The Feasibility Of “Designing Around” Rambus's Patents *Ex Ante*.

If the Commission determines that JEDEC would have paid a royalty *ex ante*, and that a royalty therefore should be paid to Rambus for a compulsory license under Rambus's patents to use the JEDEC standards, the Commission should set a royalty that reflects the Commission's findings that feasible alternative technologies were available.¹²

In determining what royalty Rambus and industry members would have agreed to *ex ante*, an important factor is the cost of designing around Rambus's patents. If feasible alternatives were available, a rational licensee generally would not have agreed to pay more for a

¹² A compulsory license also would have to include provisions that restricted Rambus's exercise of monopoly power through the imposition of non-royalty terms, such as “patent pooling” and “grant back” provisions.

license than it would have cost to design around the patents and implement the alternatives. Here, the negotiations with Rambus would have taken place before the industry had launched SDRAM and DDR SDRAM in large quantities. At that stage, designing around Rambus's patents would have been virtually without cost. Moreover, the Commission already has found that unpatented alternative technologies were available (Opinion at 97), that Rambus's claimed technologies were not superior to all alternatives (Opinion at 83), and that Rambus failed to demonstrate that alternatives would have been more expensive than its claimed technologies (Opinion at 94). Given these findings, nothing more than a nominal royalty, if any, would be warranted.

The royalty rates that Rambus extracted from DRAM manufacturers for licenses to sell DRDRAM do not reflect what JEDEC would have paid *ex ante*. To begin with, DRDRAM is Rambus's proprietary DRAM design. It is not an "open" memory standard, which is what JEDEC was attempting to develop. Moreover, the evidence shows that there was broad dissatisfaction -- both among DRAM manufacturers and OEMs -- with the royalty rates that Rambus charged for DRDRAM. CCFF 1815-1822. In early 1997, in the context of discussions over SyncLink/SLDRAM for main memory, Siemens stated that a 0.1% royalty for DRDRAM would be "okay" but that a 1-2% royalty would be "ridiculous." CCFF 1819. As Micron's Terry Lee explained, the 2% royalty for DRDRAM "was larger than anything we'd ever heard of for an interface technology and certainly the largest thing we ever heard of for some sort of fee we'd have to pay to produce main memory." CCFF 1817. Nonetheless, Micron was forced to pay the 2% because of Intel's 1996 announcement of exclusive support for DRDRAM as the memory standard for future generations of main memory. CCFF 1614 (Tr. at 6870:7-18 (in explaining Micron's decision to take a license from Rambus for DRDRAM, Mr. Lee explained

that Micron was under “economic pressure We had no choice but to provide products in support of the Intel platforms. That would have been not economically good for us.”)). In effect, the DRAM manufacturers agreed to pay 1-2% royalties on DRDRAM because they had no alternative, given Intel’s share of the chipset business worldwide. CCFF 1609, 1611-1615. Here, in contrast, the Commission already has found that JEDEC had alternatives available to the features over which Rambus claims patent rights.

Of course, JEDEC rules prohibit JEDEC from including patented or patentable material in a JEDEC standard without written assurance from the patent owner that it will grant a license for free or on reasonable and non-discriminatory terms. CCFF 347. Any license must be non-discriminatory to ensure that any competitor that uses a JEDEC standard is not disadvantaged compared to any other competitor that uses the standard. Consistent with the requirement of non-discrimination, the Commission should ensure that any royalty it sets does not disadvantage one DRAM manufacturer compared to the others.

Accordingly, the Commission should take notice of the Settlement and License Agreement between Rambus and Infineon Technologies AG, a major DRAM manufacturer.¹³ Effective March 18, 2005, Infineon obtained a license under *all* Rambus patents to sell *any* semiconductor memory device (including SDRAM, DDR SDRAM, DDR2 SDRAM, but also including Rambus’s proprietary RDRAM and XDR DRAM devices and including devices other than DRAM, such as SRAM, Flash, EPROM, and the like). Under the Agreement, Infineon’s payments to Rambus will range between \$50 million and \$150 million. These payments cover not only Infineon’s DRAM sales going forward, but also its sales prior to the Effective Date.

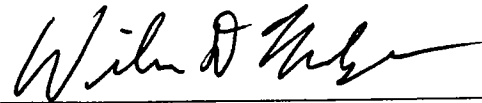
¹³ A redacted version of the Rambus/Infineon Agreement, available from Rambus’s SEC filings, is attached hereto as Exhibit 2.

The Rambus/Infineon Agreement sets a very high outer boundary for the Commission, because Infineon received much more from Rambus under its Agreement than other JEDEC members, industry participants, or the public will receive in the event that the Commission orders a compulsory license. For example, in consideration of Infineon's payments to Rambus, Rambus agreed to dismiss an antitrust suit against Infineon that Rambus had filed in California. In addition, Infineon has rights under all of Rambus's patents, whereas the remedy requested by Amici would extend only to those patent rights that claim priority to or through an application filed on or before June 17, 1996. And Infineon has rights to make and sell virtually any memory device, including Rambus's proprietary RDRAMs and XDR DRAMs, whereas the remedy requested by Amici would merely extend to SDRAM, DDR SDRAM, and successor JEDEC DRAM standards (such as DDR2 SDRAM). For these reasons, any royalty set by the Commission should be substantially less than the Rambus/Infineon Agreement.

CONCLUSION

Amici curiae NVIDIA Corporation, Micron Technology, Inc., Samsung Electronics Corporation, Ltd., and Hynix Semiconductor, Inc. respectfully request that the Commission impose the following remedies: (a) an order barring Rambus from enforcing its patent rights that claim priority to or through any application filed on or before June 17, 1996 against JEDEC-compliant SDRAM and DDR SDRAM devices (or against DRAMs that are compliant with successors of those DRAM standards such as DDR2 SDRAMs) and against any devices that use or interface with such DRAMs; (b) an order barring such enforcement in the United States and overseas to the extent that such overseas enforcement would reach imports from, or exports to, the United States.

Respectfully submitted,



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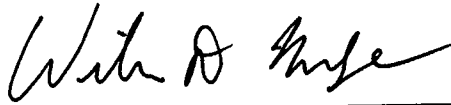
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CERTIFICATE OF SERVICE

I, Wilson D. Mudge, hereby certify that, on this the 15th day of September, 2006, I caused copies of the foregoing BRIEF OF AMICI CURIAE NVIDIA CORPORATION, MICRON TECHNOLOGY, INC., SAMSUNG ELECTRONICS CORPORATION, LTD., AND HYNIX SEMICONDUCTOR, INC. ON THE ISSUE OF THE APPROPRIATE REMEDY FOR RAMBUS'S VIOLATIONS OF THE FTC ACT to be served by the method indicated below upon the following:



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Exhibit 1

Exhibit 2

SETTLEMENT AND LICENSE AGREEMENT

THIS SETTLEMENT AND LICENSE AGREEMENT (the "Agreement") is made by and among Rambus Inc. ("Rambus"), on the one hand, and Infineon Technologies AG, Infineon Technologies North America Corp. and Infineon Technologies Holding North America Inc. (collectively, "Infineon"), on the other hand, effective as of March 18, 2005 ("Effective Date").

WHEREAS, Rambus and Infineon have rights under certain U.S. and foreign patents and patent applications including the right to license such patents;

WHEREAS, Rambus and Infineon are currently parties to a number of disputes and court actions relating to certain memory products and memory interface technology;

WHEREAS, Rambus and Infineon wish to settle such disputes and court actions and all claims between them related thereto;

WHEREAS, Rambus wishes to grant Infineon a license to U.S. and foreign patents and patent applications relating to memory products, as hereinafter defined, under which Rambus now has, or may hereafter, acquire any rights, and Infineon wishes to grant Rambus a license to U.S. and foreign patents and patent applications relating to memory interfaces, as hereinafter defined, under which Infineon now has, or may hereafter, acquire any rights

WHEREAS, Rambus and Infineon have agreed to the conditions, releases, and other obligations set forth herein as full, final and complete resolution of the claims asserted in such disputes and court actions; and

WHEREAS, this Agreement is entered into for the purpose of settlement and compromise only.

NOW, THEREFORE, in consideration of the promises and the mutual covenants herein contained and for other good and valuable consideration, the adequacy and receipt of which are hereby acknowledged, Rambus and Infineon agree as follows.

ARTICLE I

Definitions

The following terms used herein with initial capital letters shall have the respective meanings specified in this Article I.

- 1.1 **Affiliate**. The term "Affiliate" means any entity controlling, under common control with, or controlled by, a party. The term "control" means the possession, directly or indirectly, of the power to direct or cause the direction of management or policies (whether through ownership of securities, partnership or other ownership interests, by contract or otherwise), provided that, in any event, any entity that owns or holds, directly or indirectly, more than fifty percent (50%) of

*** Confidential treatment has been requested for the bracketed portions. The confidential redacted portion has been omitted and filed separately with the Securities and Exchange Commission.

the voting securities, partnership or other equity interests of any other entity will be deemed to control such entity.

- 1.2 Disputes. The term "Disputes" means the court actions listed hereinafter and any and all disputes related thereto:
- (a) the Richmond patent litigation (*Rambus Inc. v. Infineon Technologies AG et al.*, No. 3:00cv524 (E.D. Va. Filed Aug. 8, 2000) ("The Richmond Patent Litigation")
 - (b) the California patent litigation (*Rambus Inc. v. Hynix Semiconductor Inc. et al.*, No. C05-00334 EDL (N.D. Cal. Filed Jan. 25, 2005) ("The California Patent Litigation")
 - (c) the California anti-trust litigation (*Rambus Inc. v. Micron Technology Inc. et al.*, No. 04-431105 (Supr. Ct. Cal., San Fran. Filed May 5, 2004) ("The California Anti-trust Litigation")
 - (d) the German Infringement litigations 7-O-317/00; 7-O-301/04
 - (e) the German and European patent office actions Gbm9117296 L6 I 183/00; 5W(pat)443/03; XZB28/04; opposition EP 0525068, T0081/03-351, opposition EP 1004956, opposition EP 1022642, opposition EP 1019911, opposition EP 0870241,
 - (f) the respective complaints against the other party filed with the European Commission.
- 1.3 Leading Suppliers. The term "Leading Suppliers" means, subject to Section 6.6, [***]
- 1.4 Licensed Rambus Patents. The term "Licensed Rambus Patents" means all patents, utility models, and patent applications, in all countries of the world having a first effective filing date, in any country in the world, prior to March 18, 2005 including, without limitation, all reissuances, continuations, continuations-in-part, revisions, extensions and reexaminations thereof, and any patents and patent applications related thereto, filed or issued in any country of the world, that are owned or controlled by Rambus or any of its Affiliates on March 18, 2005 (and patents that may issue thereon) to the extent Rambus or its Affiliates is entitled to grant licenses thereunder without the payment of fees to any third party.
- 1.5 Infineon Patents. The term "Infineon Patents" means (i) all patents, utility models, and patent applications, in all countries of the world having a first effective filing date, in any country in the world, prior to March 18, 2005, including, without limitation, all reissuances, continuations, continuations-in-part, revisions, extensions and reexaminations thereof, and any patents and patent applications related thereto, filed or issued in any country of the world, that are owned or controlled by Infineon or any of its Affiliates on March 18, 2005 (and patents that may issue thereon) to the extent Infineon or its Affiliates is entitled to grant licenses thereunder without the payment of fees to any third party. Infineon Patents shall not include any patents, utility models, and patent applications, in all countries of the world, pertaining to semiconductor manufacturing or testing technology.
- 1.6 Infineon Licensed Products. The term "Infineon Licensed Products" means any existing or future Infineon Memory ICs, Infineon Memory Portion, Infineon Memory Modules, or Infineon Module Component. Notwithstanding the foregoing sentence, the parties agree that Laundry

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Products and Distri Products are excluded from the definition of Infineon Licensed Products. The term Infineon includes Infineon Affiliates for the purpose of this Section.

1.7 Laundry Product. The term "Laundry Product" means any product:

- (a) made by or for Infineon or its Affiliates; and
- (b) the design for which product is provided by or on behalf of a third party ("Designing Party") or owned or controlled by the Designing Party; and
- (c) where such product is supplied by or for Infineon or its Affiliates to the Designing Party or to entities designated by the Designing Party.

"Distri Product" means any product:

- (a) made by a third party ("Manufacturer") and acquired by Infineon or its Affiliates; and
- (b) for which Infineon and its Affiliates perform only the packaging, or no, or only insubstantial manufacturing activity, such as (without limitation) only marking of such product or performing a minor process step on such product; and
- (c) is sold or otherwise transferred to a third party by Infineon or its Affiliates; and
- (d) is not a design owned or controlled by Infineon.

Notwithstanding the foregoing sentence, a product that meets the above definition of Distri Product shall be deemed not to be a Distri Product if such products are labeled with a part number and trademark of Infineon or its Affiliates (except such labeling requirement shall not apply for low quality, scrap, or other substandard products) and:

- (e) all or a substantial portion of the manufacturing technology the Manufacturer employs in manufacturing such product is provided by Infineon or its Affiliates; or

Infineon or its Affiliates owns or controls (as used in the definition as per Section 1.1) at least twenty percent (20%) of the Manufacturer, and Infineon or its Affiliates have participated substantially in the Manufacturer's acquisition of the manufacturing technology the Manufacturer employs in manufacturing such product.

1.8 Memory IC. The term "Memory IC" means any semiconductor memory device, or equivalent, having information storage as its primary function and that is not capable of performing any substantial data processing that is not related to information storage, retrieval, or error correction, including but not limited to SDR SDRAM, DDR SDRAM, DDR2 SDRAM, DDR3 SDRAM, GDDR2 DRAM, GDDR3 DRAM, RDRAM, RDRAM2, XDR DRAM, Cellular RAM, low power DRAM, SRAM, Flash, MRAM, FRAM, ROM, PROM, EPROM, EEPROM and any subsequent generation of any such products.

1.9 Memory Module. The term "Memory Module" means any unitary substrate (for example, silicon, ceramic or PC board) having at least two (2) Memory ICs or semiconductor devices each having a Memory Portion, physically connected, physically secured or physically stacked onto a unitary substrate device to provide a device having information storage as its primary function.

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where such device itself is not capable of performing any substantial data processing that is not related to information storage, retrieval, error correction or other functions typically performed by or on a Memory IC. For the avoidance of doubt, devices of the type known as fully buffered DIMMs as of the Effective Date are deemed not to be capable of performing any data processing function that is not related to memory storage or retrieval and thus are included within the definition of "Memory Modules."

- 1.10 Module Component. The term "Module Component" means any component of a Memory Module other than a Memory IC, provided that such component is marketed by Infineon or its Affiliates solely to facilitate the functions of a Memory Module.
- 1.11 Memory Portion. The term "Memory Portion" means, for any integrated circuit that is not a Memory IC, any portion(s) of such integrated circuit which performs the functions of a Memory IC, but no other portion of such device. Examples of such excluded portions include without limitation any portion of such device that provides memory controller functionality. An example of a Memory Portion is the memory and memory related circuitry in an embedded memory device, such as in embedded DRAM, embedded MRAM, and embedded Flash memory.
- 1.12 Memory Interface. The term "Memory Interface" means an interface, or portion thereof, between a logic integrated circuit and a memory integrated circuit, whereby interface shall mean an electrical bus or other similar information path between integrated circuits that is capable of transmitting and/or receiving information between two or more integrated circuits together with the set of protocols defining the electrical, physical, timing and/or functional characteristics, sequences and/or control procedures of such bus or information path.
- 1.13 Qualifying License Agreement. The term "Qualifying License Agreement" means a license agreement, with Rambus as licensor and a Leading Supplier as licensee, for a license covering [***] and (to the extent that [***] is not one of the aforementioned types of [***] (as defined herein below), where [***] are defined by their respective [***] For the purpose of this Section 1.13, the [***] means the type of [***] that, during the [***] preceding the date when Rambus and the [***] have both signed the license agreement [***] as published by Gartner-Dataquest (or its successor) [***] (or if not published [***], for the last period of at least [***] for which such statistic was so published by Gartner-Dataquest (or its successor). A license agreement shall be deemed a Qualifying License Agreement [***] as described herein.
- 1.14 Change of Control. The term "Change of Control" of Infineon means a transaction or a series of related transactions in which (i) Infineon, or "control" of Infineon (where control has the meaning set forth in the definition of the term "Affiliate"), is acquired by one or more third parties (including without limitation a merger in which Infineon is not the surviving entity), or (ii) Infineon or any of its Affiliates acquires, by merger, acquisition of assets or otherwise, all or substantially all business or assets of a Memory Unit (as defined herein below). For this purpose, a "Memory Unit" means (A) any entity that manufactures (or has manufactured) and sells Memory ICs, or (B) any division (or other business unit) of an entity, which division (or other business unit) manufactures (or has manufactured) and sells Memory ICs and is responsible for all or substantially all of such Memory IC manufacturing (or having manufactured) and sales of the entity.

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ARTICLE 2

Licenses

2.1 License Grant to Infineon. Rambus and its Affiliates hereby grant to Infineon and its Affiliates a nonexclusive, worldwide irrevocable license (without the right to grant sublicenses) under the Licensed Rambus Patents, for the life of such Licensed Rambus Patents, as set forth in Section 2.2.

2.2 Scope of License. The license granted pursuant to Section 2.1 is a license:

- (i) to make, have made, use, lease, sell, offer to sell, import or otherwise transfer Infineon Licensed Products; and
- (ii) to make, have made, use, lease, sell, offer to sell, import, or otherwise transfer machines, tools, materials, and other instrumentalities, insofar as such machines, tools, materials, and other instrumentalities are involved in, or incidental to, the development, manufacture, testing, use, or repair of Infineon Licensed Products, provided that the license granted under this Section 2.2 (ii) for lease, sale, offers for sale or other transfers shall apply only to those machines, tools, materials, and other instrumentalities which Infineon has or its Affiliates have actually used to develop, manufacture, test, use, or repair more than a de minimis quantity of Infineon Licensed Products.

For the avoidance of doubt, to the extent that Infineon or its Affiliates are exercising their have made rights granted in Section 2.2, the license shall include any Infineon Licensed Products made for Infineon by any of Infineon's existing and future foundry partners, including but not limited to [***], but only to the extent that such products are sold by Infineon and/or its Affiliates.

It is the intention of the parties that the principles of patent exhaustion under U.S. law apply to the licenses granted hereunder. Thus, the parties agree that, at the minimum, in the event a party sells or otherwise disposes of a product licensed hereunder, then to the extent a patent claim licensed hereunder is directly infringed by such product, such claim is exhausted and may not be asserted against such product regardless of its further use or distribution.

To the extent that any Rambus patent claim is licensed to Infineon under this Agreement for an Infineon Licensed Product, Rambus and its Affiliates covenant that they will not assert a claim of contributory infringement or inducing infringement against Infineon or its Affiliates based upon (a) Infineon or its Affiliates performing any of the activities licensed in Section 2.2; or (b) any activities undertaken by any direct or indirect customer or distributor of Infineon or its Affiliates with respect to such Infineon Licensed Product; or (c) any instructions, information, whitepapers, datasheets or the like that Infineon or its Affiliates may publish or supply with respect to such Infineon Licensed Product. The parties agree that the foregoing sentence shall not limit Rambus' or its Affiliates' rights with respect to any third party.

To the extent that [***] asserts against any [***] a claim for [***] under this Agreement, Rambus agrees that [***] any such claim [***] that claim against the [***] and any other entity

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- that may have any [***] for the [***] Rambus further agrees that upon any resolution [***] or other entity [***]
- 2.3 Most Favored Licensee. If Rambus after [***] enters into, or as soon as Rambus has in effect, an agreement entered into after [***] with any third party (other than an Affiliate of Infineon) that [***] and has [***] in any one of the prior [***] calendar years, and where such agreement grants to such third party a license for the then current [***] under [***] than those provided [***] for the previous [***] (where the respective [***] are determined by reports in Gartner Dataquest), then Rambus shall [***] and Infineon shall have the right, in its sole discretion, within [***] by written notice to Rambus, to [***] payments [***] for so long as such [***] are in effect. For the purpose of this Section 2.3, the [***] means the type of [***] at the effective date or during the term of this license agreement during any given [***] had the [***] (as measured in [***] as published by Gartner-Dataquest (or its successor) for the [***] preceding the effective date or any [***] during the [***] of the respective license agreement (or if not [***] for the last period of at least [***] for which such statistic was so published by Gartner-Dataquest (or its successor).
- 2.4 Limited License under other Rambus patents. Until Infineon has made the last of the quarterly payments specified under Article 6, but, in any event, at least for the period of [***], Rambus and its Affiliates hereby grant to Infineon and its Affiliates a nonexclusive, world-wide, irrevocable license (without the right to grant sublicenses), of the same scope as per Section 2.2, under all patents and patent applications, other than Licensed Rambus Patents, including, without limitation, all reissuances, continuations, continuations-in-part, revisions, extensions and reexaminations thereof, filed or issued in any country of the world, that are owned or controlled by Rambus or any of its Affiliates now or hereafter (and patents that may issue thereon) to the extent Rambus or its Affiliates is entitled to grant licenses thereunder without the payment of fees to any third party. At the expiration of the period set forth in this Section 2.4, and subject to Article 3, the licenses granted under this Section 2.4 shall terminate.
- 2.5 Infineon License to Rambus. Infineon hereby grants to Rambus and its Affiliates a non-exclusive, non-transferable, worldwide, irrevocable, fully paid license (without the right to grant sublicenses) under the Infineon Patents, for the life of such Infineon Patents, to make, have made, use, lease, sell, import, or otherwise transfer Memory Interfaces and designs for Memory Interfaces in any form.
- 2.6 No Implied Licenses. The parties agree that except as expressly granted in this Agreement, there are no patent or other intellectual property licenses or rights granted or arising hereunder to either party or to any third party, expressly, by implication, estoppel, or under any other legal theory.

ARTICLE 3

License Request

- 3.1 Upon request of Infineon, Infineon and its Affiliates shall be entitled to obtain and Rambus shall grant an additional license of the same scope as per Section 2.4, at the then applicable most favored licensee terms and conditions. During the period of [***] following the later of (i) Infineon's last quarterly payment under this Agreement or (ii) [***], the terms and conditions of this additional license may not exceed a quarterly payment of [***].

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