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E-filed: 2/23/2009

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF CALIFORNIA  
SAN JOSE DIVISION

HYNIX SEMICONDUCTOR INC., HYNIX  
SEMICONDUCTOR AMERICA INC.,  
HYNIX SEMICONDUCTOR U.K. LTD., and  
HYNIX SEMICONDUCTOR  
DEUTSCHLAND GmbH,

Plaintiffs,

v.

RAMBUS INC.,

Defendant.

No. C-00-20905 RMW

**PUBLIC REDACTED** ORDER GRANTING  
IN PART AND DENYING IN PART  
RAMBUS'S MOTION FOR POST-VERDICT  
RELIEF

**[Re Docket Nos. 3663, 3719, 3721, 3723,  
3745, 3747]**

This patent/antitrust litigation involving dynamic random access memory ("DRAM") interface technology patented by Rambus and used by Hynix,<sup>1</sup> among others, was bifurcated into three phases, each of which had to be tried. The issue in the first phase was whether Rambus's patent infringement claims were barred by the doctrine of unclean hands. Hynix contended that Rambus spoiled evidence resulting in prejudice to Hynix. On January 5, 2006 the court issued its

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<sup>1</sup> By "Hynix," the court refers to the four entities sued by Rambus: Hynix Semiconductor Inc., Hynix Semiconductor America Inc., Hynix Semiconductor U.K. Ltd., and Hynix Semiconductor Deutschland GmbH. The latter three entities are all wholly-owned subsidiaries of Hynix Semiconductor, Inc. See Docket No. 1649, C-00-20905-RMW, at 5, ¶ 4 (N.D. Cal. Feb. 2, 2006). "Hynix" does *not* include Hynix Semiconductor Manufacturing America, whose relationship to this case is discussed later.

1 Findings of Fact and Conclusions of Law on Unclean Hands Defense in favor of Rambus. *Hynix*  
2 *Semiconductor Inc. v. Rambus Inc.*, --- F.Supp.2d ----, 2006 WL 565893 (N.D. Cal. 2006). The  
3 second phase concerned Rambus's allegations that Hynix infringed U.S. Patents 5,915,105,  
4 6,034,918, 6,324,120, 6,378,020, 6,426,916, and 6,452,863. On April 26, 2006 a jury returned a  
5 verdict that Rambus's patent claims were infringed and that Rambus was entitled to hundreds of  
6 millions in damages. Docket No. 2053 (Apr. 24, 2006). The court ordered a new trial on damages  
7 unless Rambus elected to remit the award to reflect the maximum reasonable royalty rates  
8 established at trial, which Rambus did. Docket Nos. 2197 (Jul. 14, 2006); 2229 (Jul. 27, 2006). The  
9 third and final phase involved allegations by Hynix that Rambus obtained its patents in violation of  
10 its disclosure obligation to members of a standards setting organization ("JEDEC") of which it was a  
11 member and committed antitrust and related violations by attempting to assert its patent claims  
12 against manufacturers of DRAMs that complied with the JEDEC standard. Hynix's allegations in  
13 this third phase were tried in a consolidated proceeding with similar claims made by other DRAM  
14 manufacturers. On March 26, 2008 a jury returned a verdict in favor of Rambus and against Hynix  
15 and the other manufacturers on their legal claims. The court will shortly issue its Findings of Fact  
16 and Conclusions of Law on the equitable claims and defenses in the third phase. Now, after over  
17 eight years of litigation, three discrete trials, and hundreds of motions, the court hereby issues its  
18 rulings on the last pending motions and seeks the parties' input on the form of the judgment to be  
19 entered.

20 Rambus moves for a permanent injunction against Hynix, an award of supplemental  
21 damages, and its attorney's fees. Unfortunately, Rambus did not include a proposed order with its  
22 initial moving papers as required by Civil Local Rule 7-2(c). The lack of a proposed order hindered  
23 Hynix's ability to oppose Rambus's request for injunctive relief, for example, because Hynix was not  
24 certain of the scope of Rambus's requested relief. Rambus filed its proposed order with its reply.

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1 See Docket No. 3735 (Jun. 6, 2008).<sup>2</sup>

2 Hynix opposes the request for an injunction and has also filed a motion to stay any injunction  
3 pending an appeal.<sup>3</sup> The court has reviewed the papers and considered the arguments of counsel.  
4 For the following reasons, the court denies Rambus's request for attorney's fees, grants in part  
5 Rambus's request for supplemental damages, and denies Rambus's request for an injunction. Hynix's  
6 motion for a stay of any injunction is denied as moot.

### 7 I. ATTORNEY'S FEES

8 Rambus asserts that this is an "exceptional case" and that it should therefore receive its  
9 attorney's fees. See 35 U.S.C. § 285. Whether a prevailing party is entitled to attorney's fees is a  
10 two-step inquiry. *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448, 1460 (Fed. Cir. 1998) (en  
11 banc). First, the district court must make factual findings as to whether the case is "exceptional."  
12 *Id.* Second, the court must exercise its discretion as to whether or not attorney's fees are appropriate.  
13 *Id.* Rambus bears the burden of establishing the exceptional nature of the case by clear and  
14 convincing evidence, *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 669 (Fed. Cir. 2000), and its argument  
15 falters at this first step.

16 In determining whether a case is "exceptional," the court may consider a number of factors,  
17 including, for example, whether the infringer engaged in litigation misconduct, advanced frivolous  
18 arguments, or willfully infringed the patent. *Epcon Gas Systems, Inc. v. Bauer Compressors, Inc.*,  
19 279 F.3d 1022, 1034 (Fed. Cir. 2002). Rambus does not argue that Hynix engaged in either of the  
20 former, and Rambus cannot prove the latter. Despite Rambus's contention in its brief that Hynix  
21 "knowingly and willfully infringed Rambus's patents" and that Hynix lacked a good faith belief in its  
22 non-infringement, Rambus did not attempt to prove willfulness because it dropped the issue to avoid

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24 <sup>2</sup> Because the court denies Rambus's request for injunctive relief, the court deems  
25 Rambus's failure harmless to Hynix and excuses Rambus's failure to file its proposed order. See Civil  
L.R. 7-2(c).

26 <sup>3</sup> The parties also filed a variety of objections and motions to strike. Where the court's  
27 order relies on material subject to these motions, the court has included a footnote overruling or  
28 sustaining the objection. The court otherwise denies and overrules the remaining motions and  
objections as moot, i.e., not on the merits of the evidentiary objection.

1 the possibility that the court would bifurcate the patent trial. Hrg. Tr. 15:2-10; 17:1-4; 29:4-6 (Feb.  
 2 23, 2006). In light of Rambus's decision not to try the issue of willfulness, Hynix cannot be faulted  
 3 for a failure to introduce evidence of its good faith belief in its non-infringement arguments. That  
 4 aside, given the many close issues this litigation has involved, the court cannot conclude that Hynix  
 5 lacked a good-faith basis for its positions on claim construction, non-infringement, invalidity and  
 6 unenforceability.

7 Nevertheless, Rambus argues that the "*Read* factors" used to determine whether or not to  
 8 enhance damages may also inform whether or not a case is exceptional. *See Liquid Dynamics Corp.*  
 9 *v. Vaughan Co., Inc.*, 449 F.3d 1209, 1225 (Fed. Cir. 2006) (listing the nine "*Read* factors" that may  
 10 establish whether an infringer acted in bad faith and whether damages should be enhanced); *Read*  
 11 *Corp. v. Portec, Inc.*, 976 F.2d 816 (Fed. Cir. 1992), *abrogated on other grounds as recognized in*  
 12 *Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575, 1578 (Fed. Cir. 1996). Implied in  
 13 Rambus's argument is the notion that a court may deem a case "exceptional" based on conduct that  
 14 informs willfulness and enhanced damages, even where a showing of willfulness is not made.

15 The court questions the correctness of Rambus's expansive approach to the "exceptional  
 16 case" inquiry is correct.<sup>4</sup> The Federal Circuit has held that where willful infringement is proven, a  
 17 case may, or may not, be deemed "exceptional" under section 285. *Golight, Inc. v. Wal-Mart Stores,*  
 18 *Inc.*, 355 F.3d 1327, 1340 (Fed. Cir. 2004) (explaining cases). This suggests that evidence  
 19 suggesting, but not proving, willfulness, is also insufficient to establish that a case is exceptional  
 20 absent litigation misconduct. Nonetheless, the court considers the conduct Rambus believes makes  
 21 this case "exceptional."

#### 22 **A. Copying**

23 \_\_\_\_\_  
 24 <sup>4</sup> Rambus argues that the Federal Circuit applied the *Read* factors to section 285's  
 25 exceptional case standard in *nCube Corp. v. Seachange International, Inc.*, 436 F.3d 1317, 1325 (Fed.  
 26 Cir. 2006). This overstates what the *nCube* court did. The court of appeals observed that "[t]he trial  
 27 court awarded enhanced damages on the basis of the jury's willfulness finding and the *Read* factors for  
 28 enhancing damages." *Id.* However, the Federal Circuit did not itself apply the *Read* factors but merely  
 affirmed the trial court's finding of an exceptional case and award of attorney's fees because "[t]his court  
 detects no clear error in any of the court's subsidiary factual findings leading to its conclusion that this  
 was an exceptional case." *Id.*

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1 Rambus first argues that there is "strong evidence" that Hynix copied Rambus's inventions.  
 2 Rambus does not specifically identify such evidence in its briefing. Presumably, Rambus refers to  
 3 Trial Exhibit 5020, an internal Hynix document describing its progress on its first DDR SDRAM.  
 4 Patent Trial Tr. 1433:11-20 (Mar. 28, 2006). The document refers to the need to "compete with  
 5 Rambus idea" to make a higher frequency DRAM. HTX 5020 at 5. Among the memo's many  
 6 proposals, the authors suggest two relevant ideas: using a DLL to improve data output and  
 7 employing dual-edge clocking to double the operating frequency, which would require a calibration  
 8 of the clock signal's duty ratio to make it 1:1. *Id.* at 37. The footnote to the duty-ratio discussion  
 9 says "Refer to Rambus DRAM. The DLL has duty-ratio adjustment with it." *Id.* at 40. This  
 10 suggests that Hynix's engineers looked to Rambus's DRAM to help them implement a circuit to  
 11 control the clock signal's duty ratio. But that is not one of the claimed inventions. Rambus did not  
 12 press Hynix's engineer, Jae-Jin Lee, to explain the exhibit, its reference to Rambus's DRAM, or the  
 13 role of Rambus's DRAM in Hynix's DDR SDRAM design process. *See* Patent Trial Tr. 1482:10-19.

14 Rambus also suggests that circumstantial evidence shows that Hynix deliberately used  
 15 Rambus's claimed inventions because, given the field of alternative technologies, the odds of Hynix  
 16 selecting Rambus's were "1 in 2000." *See* Conduct Trial Tr. 2571:2-2573:9 (Feb. 25, 2008).  
 17 Rambus's examination of Hynix's technical expert on this point was not convincing.<sup>5</sup> The cross-  
 18 examination turned on the assumption that various alternative technologies were "equally probable"  
 19 choices and ignored conditional probability. For example, Rambus's hypothetical required the  
 20 expert witness to treat the likelihood of selecting programmable burst length, programmable read  
 21 latency, and programmable write latency (a feature not at issue in the 00-20905 case) as independent  
 22 decisions. This is a dubious proposition, given that these three features use the mechanism of a  
 23 programmable mode register; in other words, if a DRAM designer chose to use a programmable  
 24 register for burst length, he would be more likely to also use a register for the read and write  
 25 latencies. Rambus's proposed inference also implies that Hynix "somehow" chose to always use the

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26  
 27 <sup>5</sup> Hynix's counsel did not object to this line of questioning. Given the sophistication of the  
 28 jury, this may have been a strategic choice to let Rambus discredit itself in the eyes of the jury.

1 Rambus technology when presented with a choice between alternatives, and that the odds of such an  
2 innocent selection were 1 in 2000. But Rambus ignores the large number of other DRAM  
3 technologies that Rambus has developed that Hynix did *not* use in making SDRAM and DDR  
4 SDRAMs. Rambus manufactures a faulty and misleading probability by excluding from its  
5 calculations these other decisions by Hynix's engineers. In short, Rambus's "1 in 2000" inference of  
6 copying rests on an improper application of the principles of probability, and therefore it is  
7 meaningless.

8 Overall, Rambus presented evidence that Hynix had access to Rambus's RDRAM product  
9 and that Hynix referred to it for an engineering idea not claimed by the patents-in-suit. This is some  
10 evidence from which Rambus could begin to build an argument that Hynix copied Rambus's  
11 inventions, but it is not clear and convincing evidence of copying.

#### 12 **B. Hynix's Size**

13 Rambus also points to Hynix's "massive size" as a reason for deeming this case exceptional.  
14 An infringer's size may be a valid consideration in whether to enhance damages. *Read*, 970 F.2d at  
15 827. But the cases cited in *Read* do not explain why the infringer's size should influence the court's  
16 decision to declare a case "exceptional." In *St. Regis Paper Co. v. Winchester Carton Corp.*, the  
17 sole explanation given was that "[t]his is an appropriate case to award double damages. If defendant  
18 were the giant and plaintiff the small independent, I would make it treble, and if the Court of  
19 Appeals should think my distinction inappropriate, then the award should be treble rather than  
20 single." 410 F. Supp. 1304, 1309 (D. Mass. 1976). Absent a use of size to impose abusive litigation  
21 costs, the size of the parties seems irrelevant. The other three cases cited in *Read* all considered the  
22 infringer's size in awarding enhanced damages so as to ensure that the infringer could pay such a  
23 large award without going bankrupt. Those cases did not suggest that the infringer's size was  
24 relevant to deciding whether or not the case was "exceptional" in the first place. In short, the court  
25 is dubious that an infringer's size has meaningful relevance to the question of whether a case is  
26 "exceptional" absent a showing of the abuse of that size in litigation. Even if it is, the court is not  
27 inclined to give the factor much weight.

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1 Hynix is a large company, to be sure, and Hynix does not deny it. It is not unusually large  
2 within the field of DRAM manufacturing though. While Rambus has established this consideration,  
3 the infringer's size alone cannot support a finding that a case is "exceptional" and the court does not  
4 read the case law to suggest that it may.

5 **C. "Closeness of the Case"**

6 Rambus next suggests that this case is exceptional because it "was not a close case." The  
7 court disagrees. This case was a very close case on obviousness, some claim constructions issues,  
8 and enforceability.

9 **D. Duration of Infringement**

10 Rambus turns to Hynix's "decade-long" infringement next. The duration of an infringer's  
11 misconduct bears on this inquiry. *Read*, 970 F.2d at 927. Critically, when considering the "duration  
12 of misconduct," the court must parse the infringement for significant milestones, like the entry of  
13 judgment or affirmance on appeal. *Id.* The jury's verdict on the patent phase was in 2006, but the  
14 court did not finish its review of Hynix's post-trial motions until 2008 and 2009 following the 2008  
15 jury verdict in the antitrust trial. Hynix has not yet had the opportunity to appeal the issues of claim  
16 construction, infringement, conduct, and enforceability. Accordingly, while Hynix's infringement  
17 has been ongoing, it is not as culpable as suggested by Rambus's "decade-long" argument.

18 **E. Remedial Action**

19 An infringer's remedial action may ameliorate its conduct. *See Read*, 970 F.2d at 927.  
20 Rambus is correct that Hynix has made little if any effort to cease its infringement. For reasons  
21 discussed in more detail below, the court is not persuaded that this factor should be given significant  
22 weight.

23 **F. "Avowed Desire to Harm Rambus"**

24 Rambus's final argument is that the evidence shows that Hynix possess an "avowed desire to  
25 harm Rambus." Rambus identifies only one piece of its evidence in its papers, conduct trial exhibit  
26 6524. Exhibit 6524 was an email written by Hynix's JEDEC representative, Farhad Tabrizi, in  
27 January 2000. It was used to refresh his recollection and triggered testimony about Mr. Tabrizi's

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1 conduct with respect to Rambus. Conduct Tr. 3968:2-3969:10; 4003:17-4008:11. In sum, Mr.  
2 Tabrizi admitted that he believed Hynix would "fight these disputes with Rambus to the end of  
3 Rambus company." *Id.* 4006:7-11.

4 The circumstantial evidence presented in the patent and conduct phases of the trial in this  
5 case suggests that Hynix would be much happier were "the end of Rambus company" to occur. Of  
6 course, it would be an unusual firm that would *not* be happy to see one of its competitors go out of  
7 business. Thus, it cannot be sufficient to establish that the infringer wished ill of the patentee to  
8 establish that a case is "exceptional." Instead, any finding that a case is "exceptional" due to the  
9 subjective mental state of the infringer must also involve some improper conduct by the infringer  
10 intended to harm the patentee beyond the infringer's objectively reasonable defense of the suit. *Cf.*  
11 *In re Seagate Technology, LLC*, 497 F.3d 1360, (Fed. Cir. 2007) (en banc) (holding that a finding of  
12 willfulness requires a finding that a defense to infringement was objectively reckless before  
13 inquiring into subjective intent). Rambus has accused Hynix of such conduct elsewhere, but it has  
14 not proven such conduct here.

#### 15 G. Conclusion

16 Reviewing the arguments advanced by Rambus, the court is not persuaded that it has proven  
17 by clear and convincing evidence that this was an "exceptional" case within the meaning of section  
18 285. Plainly, the word "exceptional" is open to interpretation, but it is useful to compare the  
19 behavior Rambus complains of to what else has been deemed to make a case "exceptional." Rambus  
20 has not proven that Hynix engaged in litigation misconduct by fabricating or destroying evidence or  
21 by advancing frivolous arguments. Rambus chose not to try to prove that Hynix's infringement was  
22 willful. All Rambus has shown is that Hynix is a large company, that the case was hard-fought and  
23 lengthy, and that Hynix did not alter its infringing conduct over the course of the litigation. After  
24 almost nine years of contentious litigation, there can be no doubt that this case has been exceptional  
25 – in the colloquial sense of the word. But it has not been "exceptional" under the standards of the  
26 patent law.

## 27 II. SUPPLEMENTAL DAMAGES

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1 Rambus also seeks supplemental damages for Hynix's infringement after December 31, 2005,  
 2 the last date for which Rambus was able to present evidence of Hynix's DRAM sales to the jury. In  
 3 the parties' joint pretrial statement regarding the issues to be tried, Rambus specifically requested an  
 4 accounting for damages based on sales after those disclosed in discovery and reflected in the experts'  
 5 reports. Docket No. 1649, at 7, 11 (Feb. 2, 2006).<sup>6</sup> The parties generally agree on the amount of  
 6 Hynix's post-verdict sales, but disagree as to how the law applies to various aspects of those sales.

7 **A. Legal Standard for Supplemental Damages**

8 Under the Patent Act's damages provision, "the court shall award the claimant damages  
 9 adequate to compensate for the infringement, but in no event less than a reasonable royalty for the  
 10 use made of the invention by the infringer, together with interest and costs as fixed by the court." 35  
 11 U.S.C. § 284. Furthermore, "[w]hen the damages are not found by a jury, the court shall assess  
 12 them." *Id.*

13 Little case law appears to exist regarding the award of supplemental damages for  
 14 infringement between a jury verdict and the entry of judgment,<sup>7</sup> but the authority there supports  
 15 the award of such supplemental damages. In *Stryker Corp. v. Davol, Inc.*, the district court awarded  
 16 supplemental damages for the period between the jury's verdict of willful infringement and the  
 17 court's grant of the patentee's motion for a permanent injunction. 75 F. Supp. 2d 746, 747 (W.D.  
 18 Mich. 1999), *aff'd* 234 F.3d 1252 (Fed. Cir. 2000). The trial court reasoned that "[u]nder 35 U.S.C.

19 \_\_\_\_\_  
 20 <sup>6</sup> Based on Rambus's clear pre-trial request, cases like *Lucent Technologies, Inc. v.*  
 21 *Newbridge Networks Corp.*, 168 F. Supp. 2d 269, 271-73 (D. Del. 2001) and *Braintree Laboratories,*  
*Inc. v. Nephro-Tech, Inc.*, 81 F. Supp. 2d 1122, 1140 (D. Kan. 2000) denying an accounting for post-  
 verdict damages on a theory of waiver do not apply here.

22 <sup>7</sup> The paucity of case law regarding "supplemental damages" perhaps stems from some  
 23 courts referring to the process as an "accounting." *E.g., Floe Int'l, Inc. v. Newmans' Mfg. Inc.*, 2006 WL  
 24 2472112, \*9 (D. Minn. Aug. 23 2006); *Itron, Inc. v. Benghiat*, 2003 WL 22037710, \* 15 (D. Minn. Aug.  
 25 29, 2003). The term has its roots in equitable restitution, and it may generate more confusion than  
 26 clarity. Joel Eichengrun, "Remedying the Remedy of Accounting," 60 Ind. L.J. 463 (1985) (discussing  
 27 an "accounting" as any of three distinct concepts). Congress removed the Patent Act's provision for an  
 equitable accounting in 1946. *Rite-Hite Corp. v. Kelley Co., Inc.*, 56 F.3d 1538, 1557, 1565-66 (Fed.  
 Cir. 1995) (opinion of Nies, J.). As currently used in the statutes related to patent law, an "accounting"  
 simply refers to calculating damages due under 35 U.S.C. § 284. *Special Devices, Inc. v. OEA, Inc.*, 269  
 F.3d 1340, 1343 fn.7 (Fed. Cir. 2000). To avoid confusion, the court refers to Rambus's request as  
 Rambus and Hynix do: a motion for supplemental damages.

1 § 284, the Court is required to award damages adequate to compensate for any infringement[.]" *Id.*  
 2 The Federal Circuit appears to have blessed this approach. *See* 234 F.3d at 1259-60. Davol  
 3 "argue[d] that the district court abused its discretion in enhancing damages and awarding  
 4 supplemental damages[.]" *Id.* at 1259. The Federal Circuit rejected the argument, explaining that  
 5 "[t]he court's measured approach in enhancing damages for pre-trial infringement by 50% and  
 6 doubling damages for infringement post-verdict until entry of the permanent injunction represented  
 7 a reasonable measurement of the culpability of Davol's conduct and was well within its discretion."  
 8 *Id.* at 1260. This discussion focuses mainly on the wisdom of the district court's incrementally  
 9 increasing approach to enhancing damages for willful infringement, but it also affirms the trial  
 10 court's decision to award damages for the period between the verdict and entry of an injunction. *Id.*

11 Rambus notes that two other courts recently have awarded post-verdict supplemental  
 12 damages. *Aero Products Intern., Inc. v. Intex Recreation Corp.*, 2005 WL 1498667 (N.D. Ill. Jun. 9,  
 13 2005) (awarding damages for sales after those considered by the jury and before entry of injunction);  
 14 *National Instruments Corp. v. The Mathworks, Inc.*, 2003 WL 24049230 (E.D. Tex. Jun. 23, 2003).  
 15 In *National Instruments*, Judge Ward explained that "[a] failure to award such damages would grant  
 16 an infringer a windfall by enabling it to infringe without compensating a patentee for the period of  
 17 time between the jury's verdict and the judgment." 2003 WL 24049230, \*4.<sup>8</sup>

18 The court agrees with this reading of section 284. Permitting recovery of such supplemental  
 19 damages serves section 284's expressed interest in providing damages "adequate to compensate for  
 20 the infringement." Failure to award such damages may not necessarily create a "windfall" for the  
 21 infringer because the patentee could file another complaint alleging infringement occurring after the  
 22 time period tried in the first case, but requiring such additional litigation would be inefficient and  
 23 unhelpful, serving only to delay the patentee's right to recover. Indeed, in an analogous situation  
 24 discussing a special master's ability to conduct an equitable accounting, the Court explained that a

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25  
 26 <sup>8</sup> The only case cited by Hynix, *Voda v. Cordis Corp.*, is inapposite; it deals with the  
 27 mechanism for awarding the patentee its damages following the district court's denial of a permanent  
 28 injunction. 2006 WL 2570614, \*6 (W.D. Okla. Sept. 5, 2006).

1 special master "was not limited to the date of the decree." *Providence Rubber Co. v. Goodyear*, 76  
 2 U.S. 788, 800 (1869). On the contrary, the special master could properly consider the infringer's  
 3 conduct and sales up to the time of the hearing. *Id.* at 800-01. The Court reasoned that such a  
 4 "practice saves a multiplicity of suits, time, and expense, and promotes the ends of justice. We see  
 5 no well-founded objection to it." *Id.* at 801. Though the context has changed due to the merger of  
 6 law and equity and revision to the patent laws, the Court's practical insight into easing the  
 7 administration of damages calculations remains sound, and that insight counsels in favor of  
 8 permitting a patentee to recover supplemental damages under section 284 for post-verdict-but-pre-  
 9 judgment infringement.

#### 10 **B. The Appropriate Royalty Base — DDR2+ SDRAM**

11 The parties' first dispute about the appropriate royalty base concerns what products were  
 12 found by the jury to infringe Rambus's patents.<sup>9</sup> This issue was supposed to be addressed by the  
 13 parties' joint pretrial statement, which included the following stipulation:

14 A single Hynix SDRAM part (HY57V28820A 128 M SDRAM) will be  
 15 representative of all Hynix SDRAM Accused Products (including all SDRAM,  
 16 SGRAM, and Handy SDRAM products) and a single Hynix DDR SDRAM part  
 17 (HY5DU28822T 128 M DDR SDRAM) will be representative of all Hynix DDR  
 18 SDRAM Accused Products (including all DDR SDRAM, DDR2 SDRAM, *DDR3*  
 19 *SDRAM*, GDDR SDRAM, GDDR2 SDRAM, GDDR3 SDRAM, and DDR SGRAM  
 20 products) made, used, offered for sale, or sold by Hynix, for purposes of showing  
 21 infringement or non-infringement.

22 Docket No. 1649, at 6 (Feb. 2, 2006) (emphasis added). Rambus defined the list of such accused  
 23 products that it was aware of as of December 15, 2004 in its Final Infringement Contentions; it  
 24 attached those contentions as Exhibit 2 to the joint pretrial statement. *Id.* The Exhibit lists dozens  
 25 of different types of DRAMs including DDR2 and GDDR3 SDRAMs, but it does not list any DDR3

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26 <sup>9</sup> To refresh, DRAM stands for "dynamic random access memory." Successive  
 27 improvements on the basic DRAM have led to more complex acronyms. "SDRAM" refers to a  
 28 "synchronous" DRAM, i.e., a DRAM whose operations are synchronized to a clock signal. A "DDR"  
 SDRAM is a "double data rate" SDRAM that uses both halves of a clock signal to double the effective  
 operating speed of the memory. DDR SDRAM represented the next generation of SDRAMs. Further  
 iterations – DDR2, DDR3, etc. – represent successive generations of improvements on the DDR  
 SDRAM. A "GDDR" SDRAM is a "graphics" DDR SDRAM, of which there have also been multiple  
 product generations (GDDR2, GDDR3, etc.).

1 SDRAMs. *See id.*, Ex. 2.

2 Earlier portions of the joint pretrial statement describe the scope of the case differently. In  
 3 Rambus's "supplemental statement regarding the substance of the action," Rambus defined an issue  
 4 to be decided as "whether Hynix's accused products – SDRAM, DDR SDRAM, DDR2 SDRAM,  
 5 GDDR SDRAM, GDDR2 SDRAM, GDDR3 SDRAM, SGRAM, DDR SGRAM, and Handy  
 6 SDRAM (collectively, "Accused Products") – infringe . . . the asserted claims[.]" *Id.* at 3. Absent is  
 7 any mention of DDR3 SDRAM. Similarly, Hynix's supplemental statement defined the same set of  
 8 products as the "Accused Products," again, not listing DDR3 SDRAM. *Id.* at 4.

9 Any confusion, however, is resolved by the a stipulation at trial. The parties stipulated to the  
 10 volume of Hynix's DRAM sales. *See* Docket Nos. 1838, 1839 (Mar. 15, 2006). The stipulation  
 11 included a table reflecting Hynix's sales revenue, and one column was labeled "DDR/DDR2  
 12 SDRAM." *Id.* at 2. A footnote to the column label stated that "'DDR/DDR SDRAM' includes all  
 13 DDR SDRAM, DDR2 SDRAM, *DDR3 SDRAM*, GDDR SDRAM, GDDR2 SDRAM, GDDR3  
 14 SDRAM, and DDR SGRAM products." *Id.* at 2, fn.2 (emphasis added).

15 Hynix does not argue that it did not agree to those stipulations, nor does it endeavor to  
 16 withdraw them. Hynix's sole argument is that because DDR2, DDR3, and GDDR3 SDRAM are  
 17 accused of infringing in another case (*Rambus Inc. v. Hynix Semiconductor, Inc.*, C-05-00334), the  
 18 court should not include them in the royalty base of this case because doing so might lead to a  
 19 double recovery. Hynix's concern about double recovery is valid, but it does not justify excluding  
 20 products which Hynix stipulated were included in this case (which is near judgment) so as to include  
 21 them in another case (which is currently stayed and for which infringement and validity have not  
 22 been tried). Thus, the royalty base for any supplemental damages award in this case properly  
 23 includes DDR2, DDR3, and GDDR3 SDRAM.

24 **C. The Appropriate Royalty Base — the Oregon Plant**

25 Rambus seeks to collect royalties on infringing DRAMs manufactured in Eugene, Oregon.  
 26 The DRAMs came off the production line in wafer form, i.e., they were not yet cut and packaged for  
 27 consumer use. The DRAMs were shipped overseas, where they were processed and sold to

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1 customers outside the United States. Hynix does not oppose Rambus's request for supplemental  
2 damages on the basis that accused DRAMs were not finished DRAMs. Nor does Hynix oppose the  
3 application of American patent law to these DRAMs since the DRAMs were made in America,  
4 though sold and used overseas. Hynix's sole opposition to permitting Rambus to recover damages  
5 for its manufacture of these DRAMs is its contention that the Oregon DRAMs were made by Hynix  
6 Semiconductor Manufacturing America ("HSMA"), and that HSMA is not a party to this case.

7 Rambus disputes this, arguing that the testimony at trial established that the parent Hynix  
8 corporation or its American subsidiary Hynix Semiconductor America, Inc. are responsible for the  
9 manufacturing activity in Oregon. Jae Park, the president of Hynix Semiconductor America, Inc.,  
10 Patent Trial Tr. 1357:5-12 (Mar. 27, 2006), testified as follows:

11 Q Now, there's already been some discussion in this case about a factory that's  
12 located in Oregon. Does Hynix have a factory located in Oregon?

13 A Yes, we do.

14 Q Okay.

15 A HSA is the -- is holding 99, more than 99 percent of ownership in that  
16 factory.

17 Q And I think we have a photograph of it. Mr. Marriott, could we bring up  
18 2413? There we go. What is it that we're looking at here on the screen, Mr.  
19 Park?

20 A This is our fab in Eugene, Oregon.

21 Q Okay. What's manufactured here?

22 A Currently, [5]12 megabit DDR1 and DDR2 one gigabit DDR1 and DDR2  
23 products.

24 Q Are those DRAMs?

25 A DRAMs.

26 Q When was this factory built, sir?

27 A I believe 1996.

28 Q How many people work there?

A 1100 people.

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1 Q And I think we've brought some things to share with the jury, if we might,  
2 your honor, when we get a chance, about some details of the production. But  
3 before we do that, do you have any understanding, Mr. Park, of the  
4 investment that Hynix made in this facility?

5 A We built this fab for \$1.7 billion U.S. dollars, and we constantly upgrade this  
6 facility.

7 Q What do you mean by that, "constantly upgrade"?

8 A The equipment is tear and wear, and new equipment comes out to make us  
9 more efficient in manufacturing. So that's what I mean by upgrade.

10 Q Do these factories run 24 hours a day?

11 A Yes.

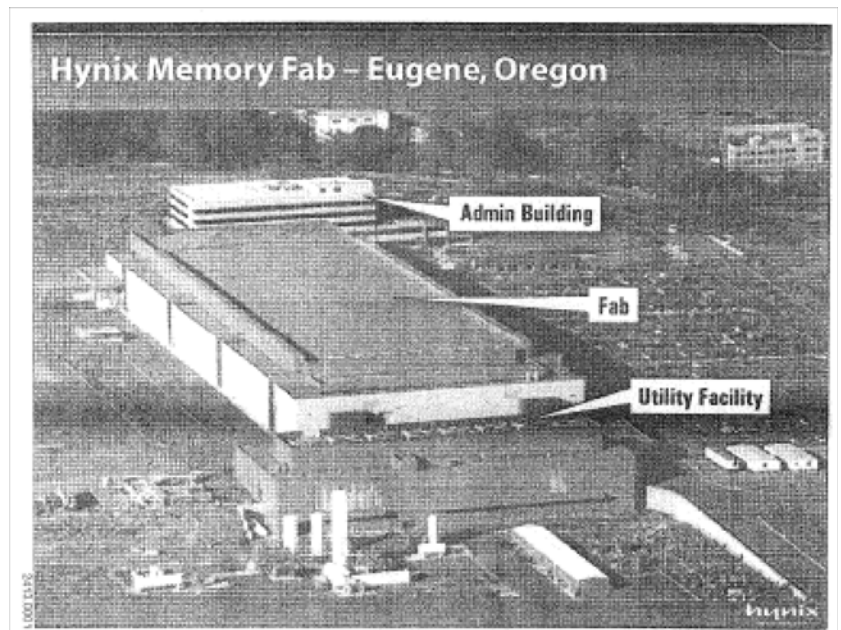
12 Q Seven days a week?

13 A Right.

14 *Id.* 1364:14-1366:1. Mr. Park then testified extensively about the manufacturing processes used at  
15 the Oregon fab. *Id.* 1366:2-1374:9. He also testified that "Hynix" received tax benefits for building  
16 its fab in Eugene, and Hynix

17 moved a picture of the fab into  
18 evidence as Exhibit 2413, shown  
19 at left. *Id.* 1384:3-15; 1384:18-23.

20 Hynix supplies no evidence  
21 in support of its assertion that the  
22 Hynix entities named in this case  
23 are not responsible for the  
24 manufacture of infringing DRAMs  
25 at the Oregon plant. Mr. Park's  
26 testimony at trial suggested



27 otherwise, consistently referring to the plant as "our fab" and that "we built this fab." Exhibit 2413  
28 describes the plant as a "Hynix Memory Fab;" it does not mention Hynix Semiconductor  
Manufacturing America or hint at the existence of such a subsidiary. In short, Hynix presented

1 substantial testimony at trial about its ownership and operation of the Oregon fab when that  
2 testimony might have impressed the jury. Hynix's attempt to disclaim this testimony now by  
3 pointing to an unnamed subsidiary is not persuasive. The court therefore concludes that Hynix's  
4 non-U.S. sales of DRAMs manufactured at the plant in Oregon should be included in the royalty  
5 base of Rambus's supplemental damages.

6 **D. The Appropriate Royalty Rate**

7 Rambus argues that the royalty rate for the supplemental damages should be the same rates  
8 applied in the court's remittitur order, effectively, 1% for the SDRAM products and 4.25% for the  
9 DDR products. Hynix advocates a uniform royalty rate of less than 1% based on the effective  
10 royalty rates it calculates from various licenses that Rambus entered into during the pendency of the  
11 litigation.

12 Although the existing case law on supplemental damages does not explain why, it  
13 recommends applying the royalty rates determined by the jury. *Aero Products*, 2005 WL 1498667,  
14 \*2; *Stryker*, 75 F. Supp. 2d at 747. Hynix disagrees with that approach, noting that some evidence  
15 following the start of infringement can be relevant to the determination of a reasonable royalty.  
16 *Studiengesellschaft Kohle, m.b.H. v. Dart Industries, Inc.*, 862 F.2d 1564, 1571-72 (Fed. Cir. 1988).  
17 Hynix urges the court to reexamine the reasonable royalty rates found by the jury, and to consider  
18 the effective royalty rates of the licenses Rambus negotiated against the backdrop of its nine-year  
19 struggle to enforce its patents.

20 The court does not believe Hynix's approach is proper. The only difference between Hynix's  
21 pre-verdict infringement and post-verdict infringement is the order in which the court tried the  
22 parties' claims in this case. Had the court inverted the patent and antitrust trials, a larger fraction of  
23 Hynix's infringing conduct would have been subject to the maximum royalty rates supported by the  
24 evidence at trial. The absence of any meaningful distinction between pre-verdict and post-verdict  
25 infringement justifies the case law's approach of applying the same royalty rate to both.

26 It is illustrative to compare this situation to that of a pre-judgment and post-judgment royalty  
27 rates. In *Amado v. Microsoft Corp.*, the Federal Circuit explained that "[p]rior to judgment, liability

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1 for infringement, as well as the validity of the patent, is uncertain, and damages are determined in  
2 the context of that uncertainty." 517 F.3d 1353, 1362 (Fed. Cir. 2008). Once judgment is entered,  
3 however, the court "should take into account the change in the parties' bargaining positions, and the  
4 resulting change in economic circumstances, resulting from the determination of liability[.]" *Id.*  
5 Accordingly, the court reasoned that any royalty rate for post-judgment infringement should be  
6 *higher* than the pre-judgment royalty rate to account for the increased certainty about the parties'  
7 rights and relationship. *Id.* at 1362 fn.2. The lesson from *Amado* is that a royalty rate should evolve  
8 to track the change in the relationship between the parties caused by the progress of the litigation.  
9 *See id.* at 1362. Thus, if *Amado* speaks to the context of supplemental damages, it would counsel in  
10 favor of *increasing* the royalty rate on the supplemental damages award, not decreasing it as Hynix  
11 urges, because the relationship between the parties has become more certain following the verdict of  
12 validity and infringement. Nonetheless, the court does not believe such an increase is wise here  
13 given the issues that remained to be tried and the pendency of post-trial motions. While the jury  
14 verdict brought increased certainty to the parties' relationship, it was much less than that conferred  
15 by a judgment. Accordingly, the court orders that the same royalty rates set in the remittitur order –  
16 1% for SDRAM and 4.25% for DDR SDRAMs – shall apply to the supplemental damages award.

#### 17 E. Prejudgment Interest

18 Rambus requests prejudgment interest on the supplemental damages award. Hynix does not  
19 oppose the request. The court previously ruled on Rambus's request for prejudgment interest on the  
20 damages established at trial. Docket No. 2402 (Aug. 30, 2006). The court adopts its prior ruling.  
21 The prejudgment interest rate shall be based on the five-year constant maturity Treasury yield. The  
22 parties shall submit a stipulated judgment correctly reflecting the prejudgment interest on the  
23 supplemental damages awarded.

### 24 III. INJUNCTIVE RELIEF

25 In addition to these supplemental damages, Rambus also requests that the court enjoin Hynix  
26 from infringing the patents-in-suit. The court begins its discussion of Rambus's request by  
27 reviewing the principles of equity that govern it. The court follows by examining the trial record

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1 and declarations submitted in support of this motion to lay out the court's understanding of the  
 2 DRAM industry and the parties' roles in it. The court then explains why equity does not support  
 3 enjoining Hynix and what remedies are appropriate following judgment.

4 **A. Equitable Principles**

5 A court *may* enjoin ongoing patent infringement after considering traditional principles of  
 6 equity. 35 U.S.C. § 283. To receive injunctive relief, Rambus must show: "(1) that it has suffered  
 7 an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate  
 8 to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and  
 9 defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by  
 10 a permanent injunction." *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006). This  
 11 equitable inquiry is not amenable to categorical rules. In *eBay*, the Supreme Court criticized the  
 12 district court for suggesting that injunctive relief is not available for patent holders that license but  
 13 do not practice their inventions because "equitable principles do not permit such broad  
 14 classifications." *See id.* at 393. The Court also rejected the Federal Circuit's jurisprudence holding  
 15 that patent holders are presumptively entitled to injunctions for the same reason. *Id.* at 393-94. On  
 16 the contrary, a court must structure injunctive relief based on each case's granular facts. *Cf.*  
 17 *Walgreen Co. v. Sara Creek Property Co., B.V.*, 966 F.2d 273, 275 (7th Cir. 1992) (Posner, J.)  
 18 (recognizing the "particularistic, judgmental, fact-bound character" of issuing injunctions in  
 19 commercial lease cases).

20 But "discretion is not whim." *eBay*, 547 U.S. at 395 (Roberts, C.J., concurring) (quoting  
 21 *Martin v. Franklin Capital Corp.*, 546 U.S. 132, 139 (2005)); *see also Winchester Repeating Arms*  
 22 *Co. v. Olmsted*, 203 F. 493, 494 (7th Cir. 1913) ("But discretion (which must be legal discretion, not  
 23 merely the individual view or will of the particular chancellor) does not extend to a refusal to apply  
 24 well-settled principles of law to a conceded or indisputable state of facts."). Like cases should be  
 25 decided alike, and centuries of equity practice shepherd this court's exercise of its power to enjoin  
 26 infringement. *eBay*, 547 at 396. These "pages of history" offer the following counsel.

27 **1. Injunctions Should Not Encourage Holdup**

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1 "Holdup" refers to using the threat of an injunction as "a bargaining tool to charge exorbitant  
2 fees." *eBay*, 547 U.S. at 396-97 (Kennedy, J., concurring). For example, a modern device can  
3 encompass thousands of useful technologies, each of which may be covered by a patent claim. *Id.*;  
4 *see also*, Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 Tex. L. Rev.  
5 1991, 1992 (2007) ("As a striking example, literally thousands of patents have been identified as  
6 essential to the proposed new standards for 3G cellular telephone systems."). A patent to a  
7 technological sliver enables its owner to threaten to enjoin the manufacture or use of the entire  
8 device, and in turn, receive a payoff far greater than the value of its invention. *eBay*, 547 U.S. at  
9 396-97; *cf. Walgreen Co.*, 966 F.2d at 278 (discussing how an injunction can hamper bargaining and  
10 citing *Boomer v. Atlantic Cement Co.*, 26 N.Y.2d 219 (1970)).

11 This dilemma has generated volumes of discussion in the past decade.<sup>10</sup> But there is nothing  
12 new under the sun. Patent law has long grappled with species of holdup. In *Hoe v. Boston Daily*  
13 *Advertiser Corp.*, the patent-in-suit covered "but part of a large machine, upon which the daily  
14 newspaper of the defendants is printed[.]" 14 F. 914, 915 (C.C. Mass. 1883). Changing the  
15 infringing part would have been difficult. *Id.* Meanwhile, an injunction against using the printer  
16 would "embarrass the usual course of business" and cause the newspaper "much expense." *Id.*  
17 Meanwhile, the patent holder manufactured its own printers and, according to the court, had suffered  
18 its "real damage" when its competitor sold the machine to the newspaper. *Id.* The court did not  
19 believe that the patent holder suffered any harm, however, from the newspaper's continuing use of  
20 the printer. *Id.* As the parties were already negotiating a royalty, the court surmised that "the only  
21 advantage which the plaintiffs could derive from an injunction, would be to put them in a better  
22 situation than they are now in, or than the defendants will then be in for the further conduct of the  
23 negotiation." *Id.* The court therefore denied the request for a preliminary injunction, and suggested

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24  
25 <sup>10</sup> Recent studies by the federal government summarize some of the economic research and  
26 industry perspectives on patent holdup. *See, e.g.*, U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N,  
27 ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND  
28 COMPETITION, Ch. 2 at 37-40 (2007); FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER  
BALANCE OF COMPETITION AND PATENT LAW AND POLICY, Ch. 2 at 28-30 (2003).

1 that the court would be unlikely to ever enjoin the use of the pre-existing printer. *Id.* at 916.

2 Extensive sunk costs present another opportunity for a patent holder to extract a  
3 disproportionate sum from an infringer because the infringer cannot recover its existing investment.  
4 In *Ballard v. City of Pittsburgh*, the patent holder claimed "wooden pavement as a structure" and  
5 "the method of preparing blocks to be used in such structure." 12 F. 783, 784 (C.C. Pa. 1882). The  
6 court held that the patents were valid and that the city of Pittsburgh had laid down two avenues  
7 worth of infringing wooden pavement. *Id.* at 785-86. The court balked at the prospect of entering  
8 an injunction requiring the city to tear up and repave the streets though. The court held that  
9 "[i]nasmuch as any interference with the use of the wooden pavements constructed in the city of  
10 Pittsburgh, in infringement of the complainant's rights, would only operate injuriously upon the  
11 public, without benefiting the complainants, an injunction will not be granted." *Id.* at 786. Instead,  
12 the court ordered a special master to determine the amount of profits and damages. *Id.*

13 The case of *Electric Smelting & Aluminum Co. v. Carborundum Co.* presents another "page  
14 of history," this time addressing the infringement of a patent to a new compound, carborundum  
15 (SiC). 189 F. 710 (C.C. Pa. 1900). The infringer had expended over \$400,000 in building a  
16 specialized factory for making carborundum and was the sole supplier of the compound because "the  
17 complainant never . . . embarked in that business." *Id.* at 712. The infringer had developed an  
18 extensive market for carborundum, however, selling it to "many of the large railroad systems, the  
19 two large air-brake companies, and [it] is almost exclusively used in the granite polishing of this  
20 country and Scotland." *Id.* An injunction would have shuttered the factory and cut off supply to  
21 each of these markets. *Id.*

22 The court considered this consequence important, but chose to deny an injunction following  
23 another line of reasoning. *Id.* Simply, an injunction would "bring no gain" to the patent holder. *Id.*  
24 An injunction would not give the patent holder the infringer's business, nor would it "relieve it from  
25 competition for . . . it is not engaged in its manufacture." *Id.* Indeed, the court mused that if it  
26 entered an injunction, it would destroy the infringer's business and ruin any hope of collecting  
27 royalties for the patent holder. *Id.* at 713. The court also rejected the patent holder's argument that

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1 the infringer's "refusal to come under license encouraged others to contest the Cowles patent and  
 2 made licensees unwilling to pay royalties." *Id.* But "the special form of relief applicable to the facts  
 3 of this particular case cannot affect the relations of other alleged infringers or licensees." *Id.* The  
 4 court also emphasized the existence of other licensees as tilting in favor of the infringer. *Id.*

5 These three examples nicely illustrate the general principle that the court in equity should be  
 6 mindful that an injunction can impose disproportionate costs on the infringer and on the general  
 7 public with no commensurate gain to the patentee.

## 8 2. Equity Does Not Require That Patents Be Practiced

9 On the other hand, it is also a bedrock principle that "the very essence of the right conferred  
 10 by the patent . . . is the privilege of any owner of property to use or not use it, without question of  
 11 motive." *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405, 429 (1908). Like the  
 12 facts of *Carborundum*, the facts of *Continental Paper Bag* shed light on the equitable resolution of  
 13 this case and deserve exploration. There, the patent holder never practiced its patent to a new  
 14 machine for making paper bags. *See id.* at 428-29. The Eastern Paper Bag Company was not a  
 15 "non-practicing entity," however. *See id.* at 429. On the contrary, it chose not to practice its patent  
 16 to "make more money" from its existing machines. *Id.* The Court doubted that such a non-use was  
 17 "unreasonable" given the expense of retrofitting the bag factory with the new machine. *Id.* The  
 18 reasoning of *Continental Paper Bag* suggests that it is entirely equitable for a patent holder to  
 19 suppress the use of an invention to maximize its profits from other endeavors.

20 To be sure, the Supreme Court in *Continental Paper Bag* emphasized that "[f]rom the  
 21 character of the right of the patentee may judge of his remedies." *Id.* at 430. An "exclusive" right  
 22 "can only retain its attribute of exclusiveness by a prevention of its violation." *Id.* Nevertheless, the  
 23 Court declined to hold that injunctions must issue for infringement, and the *eBay* Court recognized  
 24 that not every infringement merits an injunction. *Id.*; *eBay*, 547 U.S. 388.

## 25 3. Injunctions Prospectively Relieve Future Harm; They Do Not Punish

26 By its nature, injunctive relief is prospective. Injunctive relief requires "a showing of  
 27 irreparable injury, a requirement that cannot be met where there is no showing of any real or

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1 immediate threat that the plaintiff will be wronged again." *City of Los Angeles v. Lyons*, 461 U.S.  
2 95, 111 (1983). Where an infringer's conduct will *not* harm the patent holder, enjoining that conduct  
3 is an abuse of discretion. *Innogenetics, N.V. v. Abbott Laboratories*, 512 F.3d 1363, 1380-81 (Fed.  
4 Cir. 2008). *Innogenetics* illustrates how a case's facts can make injunctive relief improper. There,  
5 the patent holder argued to the jury that its damages included "a market entry fee of \$5.8 million and  
6 an ongoing royalty payment amount of \$1.2 million." *Id.* at 1380. The jury awarded both forms of  
7 damages, and the court then held that "when a patentee requests and receives such compensation, it  
8 cannot be heard to complain that it will be irreparably harmed by future sales." *Id.* Without any  
9 evidence of irreparable harm, the court vacated the permanent injunction and remanded for the trial  
10 court to determine an appropriate royalty rate going forward. *Id.* at 1381.

11 As discussed, a patent holder properly seeks an injunction to end the infringement of an  
12 exclusive right. But a patent holder has "no cognizable interest in putting [an infringer] out of  
13 business." *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1311 n.12 (Fed. Cir.  
14 2007). In other words, an injunction may deter future harm, but it may not punish. *Amstar Corp. v.*  
15 *Envirotech Corp.*, 823 F.2d 1538, 1549 (Fed. Cir. 1988); *Hecht Co. v. Bowles*, 321 U.S. 321, 329-30  
16 (1944) ("The qualities of mercy and practicality have made equity the instrument for nice adjustment  
17 and reconciliation between the public interest and private needs as well as between competing  
18 private claims."). The facts of *Amstar* resemble *Innogenetics*. In *Amstar*, the Federal Circuit  
19 rejected the argument that it should enjoin an infringer "to punish it for buying infringing devices  
20 and for participating in this litigation." 823 F.2d at 1549. The infringer possessed seven infringing  
21 devices and had been ordered to pay the patent holder's lost profits on the sales of the devices. *Id.*  
22 "Having been awarded full compensation for the making and using of [the existing infringing  
23 devices] therefore, Amstar is not entitled to enjoin their use." *Id.*; *accord Hoe*, 14 F. at 915.

#### 24 4. *Broadcom Corp. v. Qualcomm Inc.*

25 In addition to these "pages of history," the Federal Circuit's recent jurisprudence informs the  
26 court's exercise of discretion. The most significant case since *eBay*, and the case with the greatest  
27 contextual similarity to this case, is *Broadcom Corp. v. Qualcomm Inc.*, 543 F.3d 683 (Fed. Cir.

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1 2008). Broadcom and Qualcomm both made chipsets for use with cellphone networks. 543 F.3d at  
 2 686. Different network standards exist, with Broadcom supporting a standard compatible with one  
 3 while Qualcomm made CDMA2000 chipsets compatible with the other. *Id.* Qualcomm also  
 4 implemented push-to-talk software. *Id.* Broadcom does not sell CDMA2000 chipsets or sell  
 5 anything implementing push-to-talk technology. *Id.* Both the CDMA2000 chipset and push-to-talk  
 6 software were found to infringe Broadcom's valid patents. *Id.* at 686-87. Following the denial of  
 7 post-trial motions, the district court held a bench trial on the nature of any injunctive relief.<sup>11</sup> *Id.* at  
 8 687. The court entered an injunction with "sunset" provisions to permit Qualcomm to continue to  
 9 sell its products for approximately one year subject to an ongoing royalty. *Id.* at 687-88. On appeal,  
 10 the Federal Circuit affirmed the district court's injunction order (except as to one patent, which the  
 11 Federal Circuit held not infringed). *Id.* at 701-05.

12 A few arguments presented in *Broadcom* merit scrutiny here. First, Qualcomm argued that  
 13 because Broadcom did not manufacture CDMA2000 chipsets or products using push-to-talk  
 14 technology, Broadcom could not suffer irreparable harm. *See id.* at 702-03. The trial court  
 15 disagreed. *Id.* at 702. "Competition for sales is not on a unit-by-unit basis, but rather competition is  
 16 characterized by competing for 'design wins' for the development and production of cell phones  
 17 which will embody the proposed chip[.]" *Id.* (quoting the trial court order). Thus, Broadcom could  
 18 suffer irreparable harm from Qualcomm's infringing CDMA2000 marketing because those sales  
 19 detracted from its efforts to establish its technology (WCDMA) as the dominant network standard.  
 20 *Id.* at 703. Likewise, the district court found that no adequate remedy at law would compensate  
 21 Broadcom for the loss of "design wins" to Qualcomm's CDMA2000 chipset. *Id.*

22 Qualcomm also argued that Broadcom could not establish irreparable harm or lack of an  
 23 adequate remedy because Broadcom licensed Verizon, a major user of Qualcomm's CDMA2000

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24  
 25 <sup>11</sup> In complex network industries like that in *Broadcom* or this case, a bench trial to take  
 26 additional evidence relevant to the injunctive relief inquiry may be a best practice. Here, neither  
 27 Rambus nor Hynix requested an evidentiary hearing, though Rambus made its vice-president of  
 28 licensing available to testify at the hearing on the motion. Hrg. Tr. 3:23-4:7 (Jun. 24, 2008). Unlike a  
 normal patent case, this case involved a lengthy trial on Hynix's antitrust claims against Rambus that  
 generated a substantial body of evidence that informs the court's consideration of Rambus's motion.

1 chipsets. *Id.* at 702-03. Both the district court and Federal Circuit rejected this contention. *See id.*  
2 Broadcom licensed Verizon "to minimize the potential impact of an injunction to third parties or  
3 consumers while Qualcomm designs around Broadcom's patents." *Id.* at 702. The Federal Circuit  
4 considered the Verizon license to be of limited probative value because it created a possible business  
5 alliance for Broadcom. *Id.* at 703. Furthermore, the difference between Verizon (a possible  
6 business partner and user of chipsets) and Qualcomm (Broadcom's direct competitor and maker of  
7 competing chipsets) undermined any inference that Broadcom was willing to license others in the  
8 market and could thus be compensated by money.

9 Third, in fashioning its injunctive relief, the district court imposed a "sunset" period over  
10 which Qualcomm had to pay compulsory royalties. *See id.* at 704. The evidence showed that it took  
11 approximately 18 months to bring a new chipset to the consumer; hence, the court imposed a 20-  
12 month royalty period running from the jury's verdict. *Id.* The court noted that an immediate  
13 injunction would "adversely affect the public," i.e., the handset manufacturers who used the  
14 infringing CDMA2000 chipsets in their cellphones and the network carriers that serviced the  
15 infringing technologies. *Id.* The district court reasoned that the sunset period in the injunctive relief  
16 ameliorated the harm to the public such that the balance of equities weighed in favor of enjoining  
17 Qualcomm from infringing the patents following the expiration of the period. *Id.* The Federal  
18 Circuit approved of this balancing of interests. *Id.*

19 Finally, both the district court and Federal Circuit put stock in the principle that "[o]ne who  
20 elects to build a business on a product found to infringe cannot be heard to complain if an injunction  
21 against continuing infringement destroys the business so elected." *Id.* (quoting *Windsurfing Int'l, Inc.*  
22 *v. AMF, Inc.*, 782 F.2d 995, 1003 n. 12 (Fed. Cir. 1986)). This court agrees, up to a point. Surely no  
23 willful infringer can be heard to complain when its business is destroyed by an injunction against  
24 practicing the patented technology. But where infringement is not willful, perhaps because of  
25 serious questions as to the patent's validity or the patent arose long after the technology was first  
26 used, the potential destruction of an infringer's business should carry some weight in the balancing  
27 of harms under the four-factor test reaffirmed in *eBay*. To ignore the harm to the infringer because it

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1 "cannot be heard to complain" runs contrary to *eBay's* mandate to "consider[] the balance of  
2 hardships between the plaintiff and defendant[.]" 547 U.S. at 391.

### 3 **B. Factual Background**

4 To weigh Rambus's request for an injunction properly in a "well-reasoned and  
5 comprehensive" manner (*see Broadcom*, 543 F.3d at 701-02), a substantial amount of evidence must  
6 be explained. The court begins by examining the claimed technologies and their relationship to the  
7 accused products. The court then considers the development process that produced the accused  
8 products and its flexibility. *Cf. Broadcom*, 543 F.3d at 704 (discussing the time for new products to  
9 reach consumers). From there, the court considers Hynix's role in the industry, its business model,  
10 and what harms it would suffer from an injunction. Finally, the court then discusses Rambus's  
11 research-and-development-driven business model.

#### 12 **1. DRAMs and the Claimed Inventions**

13 This case is about DRAMs, the ubiquitous integrated circuits found in a wide range of digital  
14 devices. DRAMs store information and allow an electronic device to quickly access that  
15 information. To provide context for the word "quickly," the prior art memory devices Rambus's  
16 founders criticized operated in the low dozens of megahertz, i.e., the devices transmitted tens of  
17 millions of bits information per second. *See generally* Patent Trial Tr. 275:14-282:22. It goes  
18 without saying that coordinating the interaction between devices with dozens to hundreds of million  
19 operations per second is an immensely complex undertaking.

20 A brief glance at the specification of the patents-in-suit confirms this. In discussing prior art  
21 DRAMs, Drs. Michael Farmwald and Mark Horowitz refer to a prior art patent to Proebsting, et. al.,  
22 which claimed what was then the "state-of-the-art DRAM interface." U.S. Patent No. 6,034,918,  
23 col. 2, ll. 43-49 (citing U.S. Patent No. 3,969,706). This basic prior art DRAM has many  
24 components.<sup>12</sup> It stores information in a matrix of memory cells, where each bit of information is

---

25  
26 <sup>12</sup> This discussion only broaches the complexity of the internal working of a DRAM. *Cf.*  
27 Bruce Jacob, Spencer W. Ng & David T. Wang, *Memory Systems: Cache, DRAM, Disk* 313-596 (2008)  
28 (introductory graduate-level text on DRAM design and function). This discussion omits the tremendous  
complexity involved in actually manufacturing DRAMs. *Cf.* Patent Trial Tr. 1370:19-1371:24 (Mar.



1 stored as a charge in a capacitor. For context, a 256 MB DRAM, like many of the Hynix SDRAM  
2 and DDR SDRAMs accused by Rambus, possesses over 200 million capacitors and transistors. Row  
3 and column busses connect to every capacitor in each memory cell, and sense amplifiers discern  
4 whether the voltage levels inside the memory cells correspond to a "0" or a "1." With this  
5 infrastructure, the DRAM can store information and detect the value of the stored information. To  
6 be useful, however, the DRAM must be able to transmit this stored information and receive new  
7 information. This requires an interface between the DRAM and a device like a microprocessor. The  
8 interface comprises circuitry for transferring bits of information between the memory cells and the  
9 external device, and vice versa. This enables the DRAM to perform its two basic functions: reading  
10 out information to another device and writing new data from another device into its memory cells.  
11 Cf. Conduct Trial Tr. 2051:20-2052:21 (Feb. 20, 2008).

12 The inventions at issue in this case improve the efficiency of the DRAM's interface circuitry.  
13 But the inventions at issue comprise but a subset of the detail disclosed in the Farmwald/Horowitz  
14 specification (which is the same for each of the patents-in-suit). In addition to the claimed  
15 inventions, the specification also discusses a method for assigning a DRAM a unique address in a  
16 complex device environment, a new bus for connecting DRAMs to other devices, a protocol for  
17 coordinating the devices' use of the bus, a method for resending information that failed to be  
18 received, methods for configuring and resetting the device environment, a method for error detection  
19 and correction, a different packaging scheme for storing the physical DRAM chip, a scheme for  
20 clocking the various signals in the DRAM, and others. These other aspects of DRAM technology  
21 are not at issue, but they convey the staggering complexity of a DRAM and help to provide context  
22 for the inventions that are at stake.

23 The Farmwald/Horowitz specification has spawned dozens of patents as Rambus has drafted  
24 claims describing its inventions in a variety of ways. What is referred to as RDRAM is a proprietary  
25 Rambus DRAM interface disclosed in the specification that features a narrow, multiplexed bus. The

26 \_\_\_\_\_  
27 27, 2006) (processing ingots of silicon into DRAMs involves "several hundred" steps in the  
28 manufacturing process; the length of the process is an "industry secret").

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1 original RDRAM memory architecture and Rambus's current XDR memory architecture are not  
 2 presently the industry-standard DRAM interface. In this case, Rambus elected to try ten claims from  
 3 six patents. The claims are drawn to five aspects of industry standard DRAM interface technology,  
 4 which are described below.

5 **a. Programmable CAS Latency**

6 CAS or read latency is a parameter that dictates the timing of the DRAM's read operations.  
 7 Specifically, it is the delay time between a DRAM receiving a read request and outputting data in  
 8 response. *See* Conduct Trial Tr. 2100:21-25 (Feb. 20, 2008). The role of the CAS latency parameter  
 9 makes the most sense when viewed from a system perspective. Patent Trial Tr. 711:12-18. By  
 10 controlling when data will be available for other devices in the system, the system designer can rely  
 11 on the CAS latency value to know when other devices should check the bus to receive data from the  
 12 DRAM. *See id.*

13 A DRAM designer could use various methods for controlling a DRAM's CAS latency.  
 14 Conduct Trial Tr. 2102:8-2107:15. One alternative is simply to fix the value of the CAS latency in  
 15 the DRAM. *Id.* 2102:13-17. Another is to design the DRAM with latency options and to blow a  
 16 series of fuses (or anti-fuses) or bond a wire to select a particular CAS latency value during the  
 17 manufacturing process. *Id.* 2105:11-25; 4593:3-25. A third alternative is to add pins to the DRAM  
 18 interface dedicated to conveying read latency information with each read operation to the DRAM.  
 19 *See id.* 2106:23-2107:9.

20 Rambus's patents cover a fourth method of controlling the CAS latency period, namely  
 21 programming the latency value in a mode register, a storage element on the DRAM.<sup>13</sup> *Id.* at  
 22 2101:10-18. Permitting the latency value to be programmed allows different users to optimize the  
 23 delay time between the DRAM's receiving a read command and outputting data each time the user  
 24 initializes his or her system. *Id.* 4591:17-4592:15. Whether any particular method of controlling the  
 25 CAS latency period may be better or worse for some users, persuasive testimony at trial suggested

---

26  
 27 <sup>13</sup> The asserted claims that cover the use of programmable CAS latency are claim 24 of the  
 '918 patent and claims 9, 28, and 40 of the '916 patent.

1 that being able to program the CAS latency value at startup is ideal for DRAMs used in everyday  
 2 applications. *See id.* 4590:24-4597:7. All of the accused products feature a mode register that can  
 3 be programmed with a variety of CAS latency values, and the jury found that all of the accused  
 4 products infringe Rambus's claims covering this technology.

5 **b. Programmable Burst Length**

6 Burst length is another interface parameter that controls the DRAM's read and write  
 7 operations. The "burst length" of a memory operation is the number of bits of data that the DRAM  
 8 reads or writes in response to the operation, i.e., a read operation with a burst length of 8 will output  
 9 8 bits of data on each data pin. *See id.* 2100:16-20. The DRAM's burst length could be set in all of  
 10 the ways that its CAS latency could be set. *See id.* at 2101:8-13; 2102:13-21.

11 As with CAS latency, Rambus's patents claim the use of a programmable mode register to  
 12 store a burst length value.<sup>14</sup> The programmable mode register found in all of the accused products  
 13 also stores a burst length value, and thus all of Hynix's products infringe Rambus's claims covering  
 14 this technology.

15 **c. Autoprecharge**

16 The act of accessing the data stored in a memory cell, i.e., detecting the voltage stored in a  
 17 capacitor, discharges the capacitor into the sense amplifier and "destroys" or "corrupts" the data in  
 18 the memory cell. *Id.* 2122:10-2123:8. Following an operation, the DRAM can refresh the capacitor  
 19 by transferring the correct charge back into the memory cell from the sense amplifier, which is  
 20 referred to as "precharging." *Id.* Whether the DRAM should precharge the memory cell depends on  
 21 the DRAM's operating mode; when the same data is requested, it is more efficient to leave the data  
 22 on the sense amplifiers (and skip the "slow" process of transferring the data from the memory cell to  
 23 the sense amplifier). *See* '120 patent, col. 10, l.15 - col. 11, l.7 (discussing access modes and their  
 24 associated time penalties in nanoseconds).

25 \_\_\_\_\_  
 26 <sup>14</sup> Claims 24 and 33 of the '918 patent, claim 33 of the '120 patent, claims 9, 28, and 40 of  
 27 the '916 patent and claim 16 of the '863 patent contain limitations drawn toward the DRAM's receipt  
 28 of "block size" information, and these limitations are met by the Hynix DRAMs' receipt of a burst length  
 value at initialization.

1 Various alternatives for sending precharge commands to a DRAM exist. *See* Conduct Trial  
 2 Tr. 2124:6-20. One alternative, "hidden precharge," is *not* to send a precharge command to the  
 3 DRAM, but for the DRAM to automatically precharge itself following an operation. *Id.* 2124:21-  
 4 2126:1. Another, the "RAS level trigger," involves sending to the DRAM a separate strobe with  
 5 multiple possible voltages, each of which would indicate to the DRAM whether to precharge. *Id.*  
 6 2126:2-22.

7 Rambus invented a third method involving embedding the precharge command in the  
 8 "operation code," i.e., the read or write command received by the DRAM.<sup>15</sup> In other words, the  
 9 inventive DRAMs receive the precharge command with the command to conduct a memory  
 10 operation. The persuasive testimony at trial explained that this is more flexible than hidden  
 11 precharge and simpler than implementing the RAS level trigger. *Id.* 4599:18-4603:24. In all of  
 12 Hynix's devices, the precharge command is included with the read or write operation, and all of  
 13 Hynix's devices infringe Rambus's claims covering this technology.

#### 14 **d. Dual-Edged Clocking**

15 All of the accused products in this case are synchronous DRAMs (hence "SDRAM"). In a  
 16 synchronous device environment, operations occur at points in time, as opposed to occurring in  
 17 response to some trigger. For example, an SDRAM samples data from the bus at a point in time  
 18 dictated by a clock signal. *See id.* 2116:17-2117:8. The idealized clock signal is a square wave, and  
 19 the SDRAMs in a traditional system respond to the clock signal (for example, by outputting data or  
 20 sampling the bus) on the clock signal's leading edge transition from a low-voltage state to a high-  
 21 voltage state. *Id.* In such a system, the devices can conduct one operation per cycle of the clock  
 22 signal. *See id.* In other words, the clock signal's frequency is a system-wide constraint that implies  
 23 an upper limit on the amount of information that can be transferred in one second.

24 The simplest way to increase the maximum amount of data that can be transferred is to  
 25 increase the clock frequency. *See id.* 2117:18-2119:11. Three side-effects constrain the DRAM

---

26  
 27 <sup>15</sup> Rambus covered this feature with asserted claim 33 of the '120 patent and claim 9 of the  
 '916 patent.

1 designer's ability to dial up the clock frequency however. First, increasing the clock frequency  
 2 increases the DRAM's power consumption. *Id.* 4604:13-4605:2. Second, higher frequency signals  
 3 emit more interference or noise. *Id.* 4605:3-18. Third, as the frequency increases, it becomes more  
 4 difficult for the system to resolve the clock signal as an idealized square wave because of the  
 5 shrinking amount of time the clock signal has to transition from low to high and back. *Id.* 4605:19-  
 6 4607:1. A second potential solution to the constraint imposed by the clock signal frequency is to use  
 7 a separate "toggle" signal that indicates to the DRAM when to perform an operation. *Id.* 2120:20-  
 8 2121:23.

9 Rambus claimed a third solution that aims to wring more information out of the standard  
 10 clock signal.<sup>16</sup> "Dual-edged clocking" refers to the practice of using the clock signal's transition  
 11 from low to high *and* its transition from high to low as triggers for operations. *Id.* 2117:9-17;  
 12 4604:6-12. Dual-edged clocking enables devices to operate at twice the frequency of the clock  
 13 signal, easing one of the key constraints on the system's design. *Cf. id.* 4606:22-4607:1 (testimony  
 14 describing "higher frequencies floating around on the board" as "the toughest board design  
 15 problem"). Hynix first implemented dual-edged clocking in the DDR (hence the name) SDRAM  
 16 generation of products. Hynix's products represented by the DDR SDRAM infringe Rambus's  
 17 asserted claims on this technology.

#### 18 e. On-Chip DLL

19 The final technology at issue in this case is referred to as on-chip delay lock loop (or  
 20 "DLL"). It addresses the simple fact that the internal circuitry of a DRAM cannot respond  
 21 instantaneously to a clock signal. Thus, if the system designer wishes for the DRAM to make data  
 22 available at the falling or rising edge transitions of a clock signal, the DRAM ideally would begin  
 23 such processes slightly *before* the clock signal arrives. *See id.* 2110:9-16; 4610:20-4611:16. A DLL  
 24 circuit enables this by monitoring the external clock signal and using a delay line to transform the  
 25

---

26 <sup>16</sup> Asserted claims 32 and 36 of the '020 patent include limitations drawn to outputting data  
 27 in response to both a "rising edge transition of the external clock signal" and a "falling edge transition  
 28 of the external clock signal."

1 external clock signal into a shifted, internal clock signal, which the DRAM then responds to in  
 2 performing its operations. *Id.* 2110:9-16. This ensures smoother operation at high clock  
 3 frequencies. Though clock frequency is a significant constraint on DRAM design and function, a  
 4 DRAM's power consumption and physical size also limit a designer's flexibility. Operating a DLL  
 5 consumes a "tremendous" amount of power and increases the physical size of the DRAM,  
 6 *id.* 2110:17-2111:10, and thus placing a DLL on a DRAM represents a trade-off between increasing  
 7 the device's maximum speed in exchange for higher manufacturing costs and higher operating costs.

8 Not surprisingly, various alternatives to placing a DLL on the DRAM exist. *See id.* 2111:11-  
 9 2115:18. The first is to move the circuitry, i.e., to operate a DLL, but not place an individual DLL  
 10 circuit on each DRAM in a computer system. *Id.* 2114:3-8. Instead, the DLL can be placed on a  
 11 memory module (where one DLL can service multiple DRAMs) or on the memory controller (where  
 12 one DLL can service multiple memory modules). *Id.* 2114:9-25. The second is to use a different  
 13 kind of circuitry, the "Vernier circuit," on the DRAM. *Id.* 2113:5-14. The Vernier circuit provides  
 14 "more of a course refinement" to the DRAM's response to the clock signal because it operates  
 15 "periodically rather than continuously." *Id.* The third alternative is to omit the circuitry, i.e., to use  
 16 an "echo clock," though it appears to have some undesirable properties. *See id.* 2111:25-2112:16;  
 17 4611:17-4612:23 (testimony indicating that Micron designed a proprietary, non-JEDEC memory  
 18 device omitting a DLL in favor of an echo clock, but that it reintroduced the DLL in the product's  
 19 second generation).

20 Rambus's asserted patents cover the use of a DLL on the DRAM.<sup>17</sup> Hynix's products  
 21 represented by the DDR SDRAM include this technology and infringe Rambus's claims.

## 22 2. The Standardization Process and Adoption of Rambus's Technologies

23 How these technologies appeared in Hynix's DRAMs is irrelevant to whether the DRAMs  
 24 infringe, but it is very relevant to the merits of Rambus's request for injunctive relief. The process of  
 25 designing a DRAM illuminates how Hynix came to become an infringer and why Hynix cannot

---

26  
 27 <sup>17</sup> Rambus's asserted claims covering on-chip DLL include claim 34 of the '105 patent,  
 claim 33 of the '918 patent, claim 36 of the '020 patent, and claim 40 of the '916 patent.

1 "design around" Rambus's technologies or switch to the alternatives discussed above.

2 **a. JEDEC**

3 The bulk of the accused DRAMs sold by Hynix comply with industry standards. [need cite;  
4 also need that the accused features are part of the standard? Rhoden 542:15-546] The standards are  
5 promulgated by JEDEC, an organization that develops standards for semiconductor devices.  
6 Conduct Trial Tr. 444:9-13. JEDEC's membership includes both semiconductor manufacturers like  
7 Hynix, Micron and Samsung and users of such devices like HP, IBM, Intel and Sun. *Id.* 446:5-25.  
8 The overarching reason for standardization in the semiconductor industry is to ensure that parts are  
9 interchangeable. *See id.* 451:10-18.; 452:6-19. This allows users to rely on a steady supply of  
10 products, even if one supplier were to fail. *See id.* Users require such assurances because they use  
11 DRAMs as integral components of other complex devices like computers and cell phones. Without  
12 interchangeable supplies of components like DRAMs, the failure of a single supplier could scuttle  
13 the development or production of these end-products.

14 As a general rule, JEDEC's standards development process takes years. *See id.* 450:20-23.  
15 To ship compliant products as soon as the process is complete, companies design products while  
16 JEDEC is debating and designing the standard. *Id.* 450:24-451:9. Thus, while SDRAM did not  
17 begin shipping to users until the latter half of the nineties, JEDEC started working on the SDRAM  
18 standard in 1991. *See id.* 495:5-496:3; 525:15-21. Around 1992, JEDEC began debating the  
19 addition of three features to the SDRAM standard – programmable CAS latency, programmable  
20 burst length, and auto-precharge. *Id.* 497:4-17. For example, in December of 1991 NEC presented a  
21 proposal for including programmable CAS latency and programmable burst length in the next  
22 standard DRAM. *Id.* 531:21-522:4. Sun made another proposal regarding these three technologies  
23 in February, 1992. *Id.* 534:19-22. These three features were some of the "primary things" that  
24 distinguished the standardized SDRAM from prior DRAMs. *See id.* 526:10-22. The SDRAM  
25 standard was more or less complete in March of 1993 and published later that year. *Id.*  
26 525:15-526:9.

27 The standardization process is a "never ending pipeline." *Id.* 527:7-11. JEDEC began to

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1 standardize the next-generation memory device, DDR SDRAM, in 1995. *Id.* 527:12-14. The design  
 2 process started with the SDRAM standard as its foundation. *Id.* 528:4-13.<sup>18</sup> It completed the  
 3 process around 1998, though a final standard was not published until 1999 or 2000. *Id.* 527:15-21.  
 4 The DDR SDRAM standard added features like an internal DLL or PLL and the use of dual-edge  
 5 clocking. *Id.* 527:22-528:3. Although the DDR standard was not completed until the late nineties,  
 6 JEDEC first heard a presentation about dual-edged clocking in a proposal from IBM in December,  
 7 1991. *Id.* 532:22-533:3. JEDEC began to evaluate the on-chip DLL/PLL feature in March of 1996.  
 8 *See id.* 537:15-538:5. Thus, by the time Rambus's patents-in-suit began to issue, its patented  
 9 technologies had been "primary features" of the industry-standard DRAM interface for years,  
 10 bordering on a decade with programmable CAS latency, programmable burst length and  
 11 auto-precharge.

12 DDR2's standardization began before the DDR standard was officially finished. *See id.*  
 13 1960:23-1961:14. JEDEC completed the DDR2 standard around the 2000 time period. *See id.*  
 14 1982:2-14 (rejecting proposals to change draft DDR2 standard in 2000 because it was too late for  
 15 "radical" changes). Meanwhile, JEDEC began to standardize DDR3 in 2000, completed the  
 16 standard in 2006, and published it in 2007. *Id.* 528:3-8.

17 **b. Lock-In**

18 As mentioned, JEDEC tends to develop standards that build on the prior generation. This  
 19 "evolutionary" process results from the market's desire to provide "backward compatibility." *See id.*  
 20 547:16-548:13. In this context, "backward compatibility" does not mean that the second-generation  
 21 product could be used in the place of the first. *See id.* Instead, it refers to the second design being  
 22 similar enough to the first that the first's production line can be reused and the engineers responsible  
 23 for the first design will be inherently familiar with the second. *See id.; see also id.* 1974:15-1975:6.  
 24 This reduces costs and the time needed to bring the second product to market. *See id.; id.* 1554:23-  
 25

---

26 <sup>18</sup> Because the design process begins with the most recent standard, the process tends to add  
 27 features, but cannot muster enough support for altering or removing features from the last standard. *See*  
 28 *id.* 528:4-13; *infra* III-B-2-b ("Lock-In").



1 1555:5; 2200:20-2201:12.<sup>19</sup> These benefits explain the "extreme resistance" among JEDEC  
 2 members to remove or alter preexisting aspects of the DRAM architecture. *See id.* 547:4-15.

3 The trial testimony illuminated the user community's "extreme resistance." Ilan Krashinsky,  
 4 a former HP engineer involved with JEDEC, discussed HP's "Superdome" server that it began to  
 5 ship when litigation involving Rambus started in 2000. *Id.* 2187:12-18. Although Superdome used  
 6 JEDEC-standard SDRAM (which given the jury's findings in this case, likely infringed Rambus's  
 7 patents), Mr. Krashinsky testified that "there's no way at that time that [removing the infringing  
 8 DRAM] could have been done." *Id.* 2187:24-2188:5. It was "out of the question" because  
 9 Superdome was already on the market, "it's already been used, the software is already designed  
 10 based on the architecture that's there. It's way too expensive. Schedule wise, it's just impossible."  
 11 *Id.* 2188:11-14. While working for HP, Mr. Krashinsky estimated that replacing the infringing  
 12 DRAM with non-infringing DRAM would have cost "roughly about 10 to 20 million dollars" for  
 13 Superdome alone. *Id.* 2189:5-12. With respect to time, switching DRAMs would have taken HP  
 14 "about a year" to allow it to familiarize itself with the new DRAM and ensure that it functioned with  
 15 HP's products. *See id.* 2192:16-2193:3. Obviously, this excludes the time it would take for the  
 16 DRAM manufacturer to develop a non-infringing design, test it, and supply it to users like HP.  
 17 Similar testimony from Andreas Bechtolsheim, a founder of Sun Microsystems, confirmed that the  
 18 cost of switching to a new type of DRAM in all of Sun's products would be "enormous." *Id.* 1505:9-  
 19 1506:19.

20 Switching to a different DRAM interface also imposes costs on processor manufacturers like  
 21 AMD. *Id.* 3579:6-25. When AMD learned about Rambus's patents in the 2000 time period, it  
 22 declined to press for changes to the DRAM standard because "it would take a heck of a lot of work  
 23 to make those changes" and AMD "saw no customer benefit from making those changes[.]" *Id.*  
 24 3582:11-3583:4. Richard Heye, formerly of AMD, believed that such changes *could* be made, but  
 25

---

26 <sup>19</sup> For example, Hynix began designing its SDRAM in November of 1992 and finished a  
 27 prototype in 1996; Hynix began designing its DDR SDRAM in 1996. Conduct Trial Tr. 1866:25-  
 1867:19. Hynix began designing its DDR2 products in 1999. *Id.* 1868:17-22.

1 that doing so would take years of work and require substantial engineering changes to multiple  
2 computer components. *See generally id.* 3583:5-3587:7.

3 The most persuasive and colorful testimony about industry lock-in came from a witness  
4 called by Rambus named Carl Everett, formerly of Intel and Dell. In testifying about the need for  
5 faster memory, he explained that in the mid-nineties Intel sought a "long-term solution" because "if  
6 you think about this industry, it charges forward at a controlled creep." *Id.* 4163:4-10. "At every  
7 step, everything has to work together. . . . [T]his takes quite a bit of effort by a number of players  
8 across the industry to really deliver computer platforms that we all know and use today." *Id.*  
9 4162:11-19. Put another way:

10 The task we're talking about here is very complex and, you know, it's kind of like  
11 putting socks on a rooster. There's a lot of noise, there's feathers in the air, okay, and  
12 people working very hard and there's a lot of people with their hands on the rooster  
13 to get this done. So that would be my description of a platform transition.

14 *Id.* 4173:19-4174:1.

### 15 c. Design-Around Efforts

16 At various points in time, Hynix and others have unsuccessfully attempted to "design  
17 around" Rambus's patents and change the memory standard. For example, Micron in March of 2000  
18 proposed that JEDEC remove programmable CAS latency from the DDR2 SDRAM proposal under  
19 development. *See id.* 548:19-551:11.<sup>20</sup> The proposal failed with the user community voting in favor  
20 of retaining programmable CAS latency. *See id.* Micron also proposed eliminating the standard's  
21 on-chip DLL circuitry, which also failed. *Id.* 1983:20-23. JEDEC also considered going back to a  
22 single-edged clock signal and a fixed burst length in DDR2 SDRAM to avoid Rambus's patents, but  
23 those proposals failed as well. *Id.* 2211:8-15.<sup>21</sup> Joe Macri, a key player in the standardization of

---

24 <sup>20</sup> The timing of the proposal follows two months after Rambus sued Hitachi, and thus  
25 Micron's actions may have arisen from concerns about Rambus's patent portfolio. The record lacks  
26 evidence, however, regarding the motive behind Micron's proposal.

27 <sup>21</sup> The role of JEDEC in the adoption of technologies known to infringe Rambus's patents  
28 raises numerous issues of business ethics and patent policy. *See, e.g., id.* 2211:16-2220:14 (testimony  
suggesting that JEDEC adopted technologies into standards despite knowing that those technologies  
might be covered by Rambus's patents). The existence of a standard, and not the integrity of the  
standard-setting process, is all that is relevant to Rambus's request for injunctive relief against Hynix.

1 DDR2 SDRAM, explained that when he learned of litigation involving Rambus in 2000 he did not  
2 try to change the standard because:

3       At that point, we were, you know, we were well into the -- a lot of work had taken  
4 place within the standards, the standards body. You know, people had -- you know,  
5 we were basically past that, you know, the point of radically changing what we'd  
6 built. You know, according to that timeline you showed before, you know, there's  
7 a point where you're going to get silicon, and in order to get it, people had to start  
8 designing. And so at that point, the -- you know, we weren't actively trying to figure  
9 out how to get around the Rambus patents.

10 *Id.* 1982:2-14. According to Mr. Macri, "there's a point where you've got to go and continue to  
11 move forward with what you have. You just have to be pragmatic, otherwise nothing will ever  
12 happen in this world." *Id.* 1985:8-11.

13       When it came time to standardize DDR3 SDRAM, Mr. Macri again did not take any action  
14 to design the standard around Rambus's patents. *Id.* 1987:22-25. He wanted to limit DDR2 to  
15 "minor" changes and "to keep it as much alike as possible for that backward compatibility."  
16 *Id.* 1988:1-10. Similar considerations prevented Mr. Macri from seeking to make changes to  
17 GDDR3 and GDDR4 SDRAM. *See id.* 1988:11-1989:8.

18       Outside of JEDEC, a consortium of technology companies organized a group called ADT to  
19 develop a non-infringing memory standard. *See id.* 2228:21-2229:10. Hynix was a member of  
20 ADT. *See id.* 2235:16-18 (inference based on document showing that a Hynix employee sent the  
21 ADT proposal to Mr. Krashinsky). Based on the entirety of the record, it appears that ADT's efforts  
22 to develop a non-infringing alternative memory interface failed.

## 23                   2.       Hynix's Business

24       Hynix manufactures and sells DRAMs, most of which comply with JEDEC's standards. *See*  
25 *id.* 1868:11-16. In the United States, Hynix (through its subsidiary Hynix Semiconductor America,  
26 Inc.) maintains sales offices across the country and a fabrication plant in Eugene, Oregon.  
27 *See Patent Trial Tr.* 1363:18-1364:25; *see also* Park Decl. ¶ 3. Hynix's main manufacturing  
28 facilities, however, are located in Korea and China. *Id.* 1374:10-20.

      Sales of infringing products account for [REDACTED] of Hynix Semiconductor America's sales. Park  
Decl. ¶ 4. In the United States, Hynix supplies infringing DRAMs to [REDACTED]

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1 [REDACTED] *Id.* ¶¶ 7, 8.<sup>22</sup> [REDACTED]  
2 [REDACTED]  
3 [REDACTED]. *Id.* ¶ 7. [REDACTED]  
4 [REDACTED] *See id.* Hynix has persuasively  
5 shown that [REDACTED]

6 [REDACTED]  
7 [REDACTED]  
8 Hynix Semiconductor America [REDACTED]

9 [REDACTED]  
10 *Id.* ¶ 6. [REDACTED]  
11 [REDACTED]. *Id.* [REDACTED]  
12 [REDACTED] *See id.* ¶ 6. While Rambus argues  
13 vigorously that this is irrelevant, Rambus does not dispute the truth of Mr. Park's declaration.

14 **3. Rambus's Business Model**

15 Rambus supports its request for injunctive relief with a lengthy declaration from Sharon  
16 Holt, its Senior Vice President of Worldwide Sales, Licensing, and Marketing. Holt Decl. ¶ 1.  
17 Equally lengthy is Hynix's motion to strike substantial portions of the Ms. Holt's declaration. The  
18 court addresses the motion to strike where necessary in setting forth this factual background.

19 Rambus researches and develops chip interface technology. *See* Holt Decl. ¶ 4. To that end,  
20 as of May 2008, Rambus employed over 400 employees, nearly 2/3 of whom work in Rambus's  
21 engineering departments. *Id.* Rambus's core business and strategy is "to design, develop, and  
22 license high-speed memory and logic chip interface technologies and architectures[.]" *Id.* ¶ 3.

23 \_\_\_\_\_  
24 <sup>22</sup> Rambus filed cursory objections to many portions of Hynix's supporting declarations.  
25 With respect to Mr. Park's declaration, Rambus objects that the testimony relied on in this order lacks  
26 foundation and is improper opinion testimony. The court overrules these objections. Mr. Park's position  
27 within Hynix Semiconductor America is evidence sufficient to support a finding that he has personal  
28 knowledge of these specific aspects of Hynix's business. To the extent Mr. Park's declaration includes  
opinions about the possible effect of an injunction on Hynix, such opinions do not rely on "specialized  
knowledge" as contemplated by Rule 701. His opinions are based on his knowledge of his business and  
helpful to the court's understanding of how injunctive relief might harm Hynix.

1 Rambus licenses its technologies in two ways. *Id.* ¶ 5. First, Rambus licenses its  
 2 "leadership" products: Rambus-designed interfaces that customers may incorporate into their  
 3 electronic devices. *See id.* ¶ 5a.<sup>23</sup> These product licenses include a license to Rambus's patents and  
 4 "a wide range of engineering and technical services to help customers successfully integrate Rambus  
 5 chip interface products into their semiconductors and products." *Id.* Such products include  
 6 Rambus's original RDRAM memory architecture, its current memory architecture XDR, and its  
 7 "next-generation" architecture XDR2. *Id.* Second, Rambus licenses its patent portfolio to customers  
 8 that Rambus believes infringe its patents by manufacturing industry-standard memory devices. *Id.* ¶  
 9 5b.

10 Of these two approaches, Rambus prefers the former, i.e., to use its patent portfolio to license  
 11 complete interfaces and not just license its patents. *See id.* ¶¶ 5-7. In a product-license relationship,  
 12 Rambus "work[s] closely with [its] product customers across the entire life cycle of their products –  
 13 from system architecture development, to chip design, to system integration, to production ramp-up,  
 14 and through product maturation." *Id.* ¶ 6. Rambus believes that its relationships with product-  
 15 licensees endure longer. *Id.* These relationships also provide feed back into Rambus's business in  
 16 two significant ways. *Id.* First, working closely with product licensees keeps Rambus in the  
 17 "innovation loop." *Id.* This allows Rambus to stay abreast of its customers' technical problems and  
 18 direct its research activity to those areas. *Id.* Second, product-license relationships "foster an  
 19 environment in which [Rambus's] customers continue to look to [Rambus] to address their future  
 20 needs," which gives Rambus an edge in competing against other chip interface technologies. *Id.*  
 21 For example, Ms. Holt believes that Sony's experience working with Rambus and using Rambus's  
 22 RDRAM memory in its PlayStation 2 led (in part) to Sony's decision to select Rambus's XDR

23  
 24  
 25  
 26 <sup>23</sup> Hynix objects to Ms. Holt's reference to "leadership products" and "product licenses" as  
 27 vague, ambiguous, and misleading in that the terms suggest that Rambus is a "product competitor." The  
 28 court is not misled, and Hynix's objection no. 1 is overruled.

1 memory for the PlayStation 3. *Id.*<sup>24</sup>

2 Rambus's current memory interface product in volume production (by others) is the XDR  
3 DRAM. *Id.* ¶¶ 14-15.<sup>25</sup> The XDR DRAM design primarily competes with the JEDEC DDR2,  
4 DDR3, GDDR3, and GDDR4 SDRAM standards. *See id.* ¶ 18. In short, Rambus strives for "design  
5 wins" in favor of XDR and XDR2 over these (and future) JEDEC standards. *See id.* ¶ 25a. Rambus  
6 believes that over the remaining life of the asserted patents, it has the opportunity to secure "design  
7 wins" for XDR in a variety of fields, including devices requiring high-performance graphics, video  
8 game consoles, digital televisions, and high-end computing. *Id.* ¶¶ 18, 24.<sup>26</sup> Ms. Holt concedes,  
9 however, that many of Rambus's opportunities for "design wins" over the next year (i.e., the  
10 remaining life of the asserted Farmwald/Horowitz patents) are for products that will ship in between  
11 2010 and 2017 (i.e., after the expiration of the patents-in-suit). *See id.* ¶ 24.

12 To summarize, Rambus strives to license its chip interface technologies to the manufacturers  
13 (and users) of such chips. Those chips are included in a variety of consumer products. The demand  
14 for chips using a memory interface like XDR or DDR2 rises and falls with the decisions by  
15 manufacturers (or "original equipment manufacturers (OEMs)" in industry-parlance) to include such  
16 chips in their products. The relevance of these relationships to this motion is that Rambus believes

17  
18 <sup>24</sup> Hynix objects to this testimony as speculative because Ms. Holt cannot know why Sony  
19 selected Rambus's XDR memory for the PlayStation 3. The objection is overruled. Properly  
20 understood, Ms. Holt is declaring her belief about the motivation for Sony's actions. Ms. Holt's belief  
21 – as opposed to Sony's true motivation – is relevant to explain why Rambus believes that its preference  
22 for entering into product licenses furthers its business.

23 <sup>25</sup> Hynix objects to these paragraphs "in their entirety." Hynix's true objection is to Ms.  
24 Holt's characterizations of XDR's technical properties. The court does not rely on those portions of Ms.  
25 Holt's declaration and does not reach those objections. To the extent Hynix objects to Ms. Holt's  
26 competence to testify to Rambus's current leading product, the objection is overruled. As Rambus's  
27 Senior VP of Sales, Licensing, and Marketing, Ms. Holt is competent to testify to what Rambus is  
28 currently selling.

29 <sup>26</sup> Hynix objects that Ms. Holt is not competent to testify about the status of the memory  
30 design-selection process in these product industries. The objection is overruled; Ms. Holt's position  
31 requires her to know her potential customers' needs and supports the inference that she has personal  
32 knowledge about the status of her potential customers' product development. Nor is this expert  
33 testimony. As it is not expert testimony, Hynix's objection that Ms. Holt is wrong about the industry's  
34 willingness to adopt XDR is inapposite.

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1 that Hynix's contribution to the global supply of chips embodying the JEDEC standards encourages  
2 OEMs to adopt the JEDEC-standard memory in lieu of Rambus's proprietary memory designs.

3 **C. Weighing the Equities of This Case**

4 With this factual context in mind, the court turns to the application of the principles of equity  
5 discussed above.

6 **1. Rambus's Showing of Irreparable Harm and the Adequacy of Money**  
7 **Damages**

8 Rambus submits that it has suffered a litany of harms due to Hynix's infringement. Rambus  
9 asserts that it has lost sales and market share, received diminished royalty rates, and been forced to  
10 cut back on research and development. Rambus also asserts that Hynix's infringement has tarnished  
11 its "image as an innovator" and its goodwill with DRAM manufacturers and users. According to  
12 Rambus, each of these harms will continue to damage Rambus and warrants injunctive relief.

13 **a. Lost Sales and Market Share**

14 Rambus first points to the substantial lost sales and market share it suffered due to Hynix's  
15 infringement over the course of this decade. But these harms have been largely remedied by the  
16 award of damages, and they are irrelevant to the extent remedied because an injunction relieves  
17 *future* harm. Only the sales and market share that *will* be lost to Hynix between now and the  
18 expiration of the patents in April 2010 and the market share which could be regained are relevant to  
19 the injunctive relief inquiry. And with this proper focus, Rambus's argument loses its force.

20 To be clear, Rambus will not lose sales or market share of the different generations of  
21 accused memory devices because Rambus does not make or sell such products. Rambus's argument  
22 is more abstract, namely, that if Hynix is allowed to keep infringing, Hynix's supply of JEDEC-  
23 standard DRAMs will influence the decisions of OEMs, whose decision in turn will continue to  
24 erode the market share of devices using Rambus's proprietary memory interfaces. In other words,  
25 the proper focus of any inquiry into injunctive relief is at the level of "design wins," just as in  
26 *Broadcom*. See 543 F.3d at 702; see generally Carl Shapiro & Hal Varian, Information Rules: A  
27 Strategic Guide to the Network Economy (1998).

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1 With a focus toward design wins, the overwhelming evidence about lock-in and the  
2 enormous costs of switching the type of memory used in an OEM's products undermine Rambus's  
3 argument. Products that have already been designed and already use JEDEC-standard DRAMs  
4 cannot be switched to one of Rambus's proprietary memory architectures in any meaningful way.  
5 Thus, Rambus's proprietary RDRAM interface is not likely to lose any additional market share to  
6 SDRAM and DDR SDRAM – the design decisions to use SDRAM or DDR SDRAM in lieu of  
7 RDRAM were made years ago.

8 The primary competition for design wins relevant to this motion is that between XDR and  
9 the JEDEC standards embodied by Hynix's products that is occurring now, for example, with respect  
10 to the memory to be used in or with some digital televisions, servers, and graphics devices. The  
11 availability of JEDEC-standard DRAMs from Hynix has some non-speculative influence on the  
12 decision-making of OEMs currently studying which memory interface standard to adopt. To be  
13 clear, the future harm to Rambus is that it may lose design wins in the coming months on the margin  
14 where an OEM will select the applicable JEDEC-standard DRAM because Hynix will be able to  
15 supply that DRAM. It bears noting, however, that an injunction against Hynix will not eliminate the  
16 supply of DRAMs embodying the competing interface standard. On the contrary, such DRAMs will  
17 remain on the market from Rambus licensees like Qimonda and Infineon, Holt Decl. ¶¶ 5b, 8, and  
18 from suppliers who are not parties to this case like Samsung, Micron, and Nanya. Thus, an  
19 injunction against Hynix averts future harm only as to the marginal OEM who selects a JEDEC  
20 interface over XDR because Hynix could serve as a redundant source of supply. This is a real,  
21 future harm to Rambus in the battle over the next memory interface standard, but the weight of such  
22 harm is small.

23 The next question is whether this harm is compensable by money damages. It is not. When  
24 Rambus loses a design win to an infringing alternative, its realistic alternative is to license its patents  
25 to the users of the infringing standard. While Rambus may collect royalties from such licensing,  
26 Rambus is shut out of the "innovation loop." This prevents Rambus from working closely with the  
27 users of its technology and hampers Rambus's ability to identify technical problems and direct its

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1 research efforts to solve them. Though the phrase "innovation loop" may sound corny, Rambus's  
 2 exclusion from it is precisely the type of harm that money damages cannot remedy. Losing at the  
 3 design stage also harms Rambus's ability to cultivate the goodwill it might have garnered had its  
 4 design been adopted. This loss of potential goodwill caused by Rambus's loss of market share  
 5 unquantifiably impacts Rambus's business relationships going forward.<sup>27</sup>

6 **b. Diminished Royalty Rates**

7 Rambus also contends that its arduous struggle against Hynix forced it to grant licenses to  
 8 other companies to manufacture industry-standard DRAMs. Rambus notes that its licenses run for  
 9 the life of the patents, and that "this injury will affect the company's bottom line for years to come."  
 10 Rambus therefore argues that this forms an irreparable injury.

11 Rambus cannot sustain this theory of irreparable injury for at least three reasons. First, even  
 12 if Hynix's infringement caused Rambus to grant licenses and accept a depressed amount of royalties,  
 13 enjoining Hynix would not cure this harm because doing so would not swell Rambus's depressed  
 14 royalty streams. Indeed, to the extent that Hynix will be subject to a higher royalty rate going  
 15 forward than Rambus's past licensees, Rambus will recover more royalties from Hynix than Hynix's  
 16 competing manufacturers. Second, any such depressed royalty rates caused by Hynix's infringement  
 17 occurred in the past. Were Hynix to continue its operations subject to an ongoing royalty, its  
 18 licensed activities would not compel Rambus to grant any additional depressed-royalty licenses.  
 19 Under Rambus's theory, Hynix's infringement forced it to license at lower rates because other  
 20 manufacturers would not accept licenses at the rates Rambus desired because licensed manufacturers  
 21 could not compete against Hynix's "stream of infringing devices" while paying Rambus's desired  
 22

---

23 <sup>27</sup> Rambus devotes a separate portion of its briefing to argue that its goodwill will be  
 24 irreparably harmed if Hynix were to continue to infringe. Rambus's arguments repeat the same theory  
 25 of irreparable harm discussed here. Rambus does not argue that it would lose goodwill if Hynix sold  
 26 JEDEC-standard DRAMs that Rambus would have sold because Rambus does not make such DRAMs.  
 27 Nor does Rambus argue that Hynix's infringing sales cut into the authorized sales made by Rambus's  
 28 licensees. While this argument may have had some purchase, Rambus has not tried to assert its  
 licensees' harm as its own. *But cf. Voda v. Cordis Corp.*, 536 F.3d 1311, 1329 (Fed. Cir. 2008) ("[T]he  
 district court did not clearly err in finding that Voda failed to show that Cordis's infringement caused  
 him irreparable injury." (emphasis in original)).

1 royalty. The key to this theory is that Hynix's "stream of infringing devices" was not subject to a  
 2 royalty. Going forward, other prospective licensees would not have to fear that Hynix will undercut  
 3 them by the amount of Rambus's royalty because Hynix would be paying a royalty too.<sup>28</sup> Third,  
 4 viewing the evidence as a whole, the court is not persuaded that any diminished royalties were the  
 5 result of Hynix's infringement. On the contrary, the court finds that the overwhelming cause of such  
 6 diminished rates were Rambus's litigation setbacks in other cases, specifically its case against  
 7 Infineon in Virginia, its investigation by the Federal Trade Commission, and the disbelief by some  
 8 in the industry that Rambus had valid patents on industry-standard DRAM interface technology.

9 **c. Harm to Rambus's Research and Development**

10 Rambus's third alleged irreparable harm is a "secondary and tertiary harm to Rambus's  
 11 innovation-based business model." Rambus argues that Hynix's infringement reduced its income  
 12 and thus diminished Rambus's ability to invest in research and development. According to Rambus,  
 13 this lost opportunity to invest in research in the past will harm it in the future because Rambus will  
 14 not have solutions to technical problems that Hynix's infringement prevented it from studying.

15 Rambus's argument has initial appeal, and it was adopted to support an injunction in  
 16 *Commonwealth Scientific and Industrial Research Organisation v. Buffalo Technology, Inc.*, 492 F.  
 17 Supp. 2d 600, 603-04 (E.D. Tex. 2007) ("*CSIRO*"). What is alluring, and misleading, about this  
 18 argument is that Rambus will suffer the harm from Hynix's infringement in the form of a less-full  
 19 research pipeline in the near future. But fundamentally, the harm alleged by Rambus is a past harm  
 20 because Rambus *was* deprived of money that it would have invested in research. By the entry of  
 21 judgment, Rambus will be entitled to receive that money (plus interest). To the extent Rambus  
 22 receives ongoing royalties going forward, it will not continue to suffer lost research opportunities  
 23 due to Hynix's infringement. Indeed, to the extent Rambus receives more money from Hynix's

24 \_\_\_\_\_  
 25 <sup>28</sup> To the extent this alleged harm, i.e., that Rambus was forced to accept lower royalty rates  
 26 to permit its licensees to compete with a stream of infringing products, is cognizable, it is most easily  
 27 remedied by Rambus, not the courts. In negotiating its patent licenses, Rambus could include escalator  
 28 clauses that would increase the "diminished" royalty rate if and when Rambus prevailed over the alleged  
 infringers. Because the most precise remedy for this alleged harm has been in Rambus's possession all  
 along, the court is less inclined to wield a less precise remedy now.

1 infringing sales of JEDEC-standard DRAMs than it would from its existing licensees, an injunction  
2 would cause Rambus further harm to its research and development pipeline.<sup>29</sup>

3 The *CSIRO* court recognized the fundamentally retrospective nature of this harm, but  
4 concluded that "it is also harm by others *CSIRO* will suffer in the future, as discussed in the next  
5 section." *Id.* It is not clear where "in the next section" the *CSIRO* court explained away this flaw in  
6 the argument. *See id.* at 604-06. Perhaps the *CSIRO* court meant that if one infringer were not  
7 enjoined, others would infringe the patent until ordered not to and that the infringement of others  
8 would cause irreparable harm to the patentee's research and development efforts. While this  
9 scenario presents the prospect of future harm to the patentee, it would not be harm caused by the  
10 infringer, and it generally offends notions of equity to punish one for the misconduct of others.  
11 Moreover, the scenario suffers from the faulty assumption that because one infringer received a  
12 compulsory license, others would be free to infringe and entitled to a similar compulsory license.  
13 Thus, the court is not persuaded that the rationale in *CSIRO* supports Rambus's argument that  
14 Hynix's continuing infringement would irreparably harm its research and development efforts.

15 **d. Rambus's Image as an Innovator**

16 Ms. Holt also declares that Hynix's infringement has damaged Rambus's image as a  
17 technological innovator and "effectively stripped" Rambus of its reputation as an industry leader by  
18 "cast[ing] doubt" on the value of Rambus's technologies. Holt Decl. ¶ 25c. Rambus does not  
19 introduce any evidence from industry participants (other than Rambus) showing that Hynix's  
20 infringement has caused them to think less of Rambus. On the contrary, Rambus has submitted  
21 evidence that its XDR memory architecture recently received the International Engineering  
22 Consortium's 2008 DesignVision award in the field of semiconductors and integrated circuits. *Id.* ¶

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23  
24 <sup>29</sup> That Rambus would be forsaking revenue if Hynix's sales of infringing DRAMs were  
25 enjoined (because Hynix's sales could be made by competitors licensed by Rambus at lower royalty  
26 rates) suggests Rambus's motivation in seeking an injunction is less about preventing irreparable harm  
27 and more about extracting punishment or leverage in negotiating with Hynix. *Cf. Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585, 608-611 (1985) (affirming antitrust liability where no  
28 rational explanation supported the defendant's decision to forgo short-term profit). Neither of these  
motives, however, are cognizable reasons for granting an injunction.

1 13.

2 Putting aside the factual inconsistencies in Rambus's argument, Rambus fails to explain why  
3 an injunction is necessary to prevent further injury. The alleged injury is that Hynix's litigation "cast  
4 doubt" on the value of Rambus's intellectual property. The trials are now over and Rambus has  
5 prevailed over Hynix. There may continue to be questions as to whether Rambus was the innovator  
6 of industry-standard interface features but that doubt will primarily come from allegations in  
7 pending litigation by other parties, Micron's successful claim in *Micron Technology, Inc. v. Rambus*  
8 *Inc.*, Civ. No 00-792-SLR, in the United States District Court of Delaware wherein the court  
9 declared certain Rambus patents unenforceable, and the results of pending re-examination  
10 proceedings before the PTO.

11 Rambus relies on *CSIRO* for the proposition that litigating patent validity "impugns" an  
12 entity's reputation and merits injunctive relief. 492 F. Supp. 2d at 604. In *CSIRO*, the infringer  
13 pointed out that any "impugning" of CSIRO's reputation occurred in the past, and would not occur  
14 going forward. *Id.* The court appears to have acknowledged this argument, but was not persuaded  
15 *See id.* at 605. The court failed to explain what additional harm would befall CSIRO's reputation if  
16 it had to grant the infringer a license. Indeed, the court's only further analysis – "[CSIRO's]  
17 reputation as a research institution has been impugned just as another company's brand recognition  
18 or good will may be damaged" – is notable for its use of the past tense. *Id.*

19 Rambus has not shown that Hynix's infringement of Rambus's right to exclude would injure  
20 its "image as an innovator" if the court denied its request for an injunction and required Hynix to pay  
21 royalties. Nor could it. This theory of irreparable harm is inherently retrospective. The alleged  
22 injury stemmed from the doubt created by the ongoing litigation. Now that Rambus has prevailed  
23 against Hynix, no further irreparable harm of significance can be attributed to Hynix.

## 24 2. The Balance of Harms and the Public Interest

25 As discussed above, Rambus has established that ongoing infringement by Hynix threatens  
26 Rambus with a slight irreparable harm: the loss of a possible design win, and with it some exposure  
27 to the innovation loop and the possibility of ongoing goodwill, in the case of the marginal OEM who

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1 would have selected Rambus's proprietary XDR memory architecture over a JEDEC-design because  
2 of Hynix's ability to supply such DRAMs. To be clear, this irreparable harm applies only to Hynix's  
3 ongoing production of DDR2, DDR3, GDDR3, and GDDR4 SDRAM. Rambus has failed to  
4 demonstrate any irreparable harm that would result from Hynix continuing to manufacture and sell  
5 SDRAM and DDR SDRAM because those memories no longer compete for design wins.

6 Hynix, on the other hand, has demonstrated that an injunction would decimate its business.

7 An injunction would [REDACTED]

8 [REDACTED]. To be sure, "[o]ne who *elects* to build a business on a product found to infringe  
9 cannot be heard to complain if an injunction against continuing infringement destroys the business  
10 so elected." *Windsurfing*, 782 F.2d at 1003 n. 12 (emphasis added). But by the time Hynix became  
11 aware of Rambus's asserted patents, Rambus's technologies were entrenched in the industry standard  
12 DRAM interface. The lock-in testimony persuasively demonstrated that changing to a non-  
13 infringing technology would have cost the electronics industry hundreds of millions of dollars and  
14 many years for no reason but to avoid infringement of claims that had not yet been adjudicated valid  
15 and enforceable. The lock-in resulted in large part because Rambus did not disclose and, in fact, did  
16 not obtain the patents-in-suit until its efforts to establish RDRAM as the industry standard faltered  
17 and the JEDEC standards had enjoyed nearly five years of success. The lock-in testimony also  
18 established that no amount of unilateral effort by Hynix would have allowed it to swap out of its  
19 DRAMs Rambus's technologies for non-infringing alternatives.

20 Comparing the slight possibility that Rambus may suffer an irreparable harm to the  
21 immediate and devastating harm that an injunction would deal to Hynix, the balance clearly weighs  
22 in Hynix's favor. Informing this balance is the court's firm conviction that Rambus's motive in  
23 seeking an injunction is not to prevent irreparable harm but either (a) to increase its leverage in  
24 negotiating an ongoing license with Hynix or (b) to punish Hynix out of spite for its decision to  
25 contest Rambus's infringement allegations and over a variety of other grievances involving the  
26 industry's rejection of RDRAM.

27 In addition to the harms that would be visited on the parties, the court must also consider

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1 whether the public would be "disserved" by an injunction. The court does not believe the grant of  
 2 injunction would harm the public. To the extent that many OEMs and end users rely on the  
 3 availability of the infringing devices, similar devices are available from Rambus's licensed  
 4 manufacturers.

5 **3. Other Considerations**

6 **a. Rambus's Implied Acknowledgment that Monetary Relief is Adequate**

7 Hynix's opposition brief revolves around the theme that this case is about nothing more than  
 8 money. Hynix prominently quotes from three portions of Rambus's statements to the jury that heard  
 9 Hynix's antitrust claims:

10 Well, Rambus was feeling like it's our time now to finally stand up and be counted  
 11 and say, okay, we're not trying to stop you from making these products, we just think  
 12 you ought to pay us a fair price. . . .

13 And all Rambus seeks here, all it's ever been seeking for the past eight years, it  
 14 doesn't seek to exclude people. It just asks for fair and reasonable compensation  
 15 from those people who use its inventions, and that's not an antitrust violation. . . .

16 I do want to talk for just a moment -- we talk about exclude, and there's no effort here  
 17 by Rambus to exclude anybody. But there is an effort by Rambus to be paid a fair  
 18 royalty. And we put on a lot of evidence of fair royalties, and I want to take just a  
 19 moment to look at it.

20 Conduct Trial Tr. 426:14-16 (opening statement); 5964:24-5965:4 (closing argument); 5979:3-9  
 21 (closing argument). These passages may suggest that Rambus has not, in fact, suffered irreparable  
 22 harm because Rambus told a jury that "it doesn't seek to exclude people." Although these passages  
 23 may have some probative weight, the court is reluctant to give them much weight because of their  
 24 context and ambiguity.

25 **b. Rambus Historically Licensed Both Its Proprietary and JEDEC-Standard DRAMs**

26 Rambus bases its request for an injunction to prevent sale of Hynix's industry standard  
 27 DRAMs in large measure on its alleged historical preference to promote and license its proprietary  
 28 technology. However, Rambus's own licensing practices show that it enabled the competition it now  
 seeks to limit. It has marketed and licensed JEDEC-standard DRAMs and its own proprietary

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1 technology since it first claimed coverage of JEDEC-standard DRAMs. Conduct Trial Tr. 2982:6-  
2 16 (testimony by former Rambus CEO Geoff Tate that in 2000 Rambus licensed Hitachi, Toshiba,  
3 NEC, Samsung, Mitsubishi, Elpida, and Oki to make SDRAM and DDR SDRAM). This historical  
4 practice suggests that Rambus is primarily concerned with monetary compensation for use of its  
5 patented technology, whether in its proprietary architectures or otherwise.

#### 6 4. Conclusion

7 Weighing Rambus's showing of prospective harm, how that harm may be remedied, Hynix's  
8 showing of harm, and the public interest, the court denies Rambus's request for injunctive relief.

#### 9 D. Ongoing Royalties

10 Turning to the parties' relationship going forward, Hynix argues that Rambus should file  
11 supplemental complaints for damages based on quarterly statements that it would provide to  
12 Rambus. Rambus contends that the court should require Hynix to pay ongoing royalties.

13 Hynix cites only two cases discussing the mechanics of post-judgment relief. The first  
14 adopted a mechanism similar to the one proposed by Hynix, stating that such a mechanism would be  
15 "efficient." *z4 Techs., Inc. v. Microsoft Corp.*, 434 F. Supp. 2d 437, 444-45 (E.D. Tex. 2006). The  
16 second declined to adopt such an approach because the court "[saw] no reason for severance of a  
17 cause of action for the post-verdict damages as there would be no issues for decision except simple  
18 mathematical calculations based on defendant's sales." *Voda v. Cordis Corp.*, 2006 WL 2570614, \*6  
19 (W.D. Okla. Sept. 5, 2006). The court does not believe that requiring Rambus to file a supplemental  
20 complaint would serve any benefit. Nor does Hynix suggest one, other than that it "intends to appeal  
21 this case." Whether Hynix appeals does not counsel in favor of spawning another lawsuit between  
22 these parties.

23 The court acknowledges that there has been considerable delay between the infringement  
24 jury verdict and the entry of judgment, and that possibly the reasonable royalty rate has declined  
25 with the age of the technology and other market conditions. However, the delay resulted in large  
26 part because of the time needed for the complex conduct allegations made by the Manufacturers  
27 including Hynix. Therefore, delay occurred because of allegations Hynix made in the case which

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1 proved unsuccessful. To now require Rambus to file a supplemental complaint which would delay  
2 ultimate resolution even further seems unfair to Rambus.

3 Thus, the court agrees with Rambus that an ongoing royalty is the most appropriate form of  
4 relief following judgment. *Accord Paice LLC v. Toyota Motor Corp.*, 504 F.3d 1293, 1314-15 (Fed.  
5 Cir. 2007). In such situations, the best practice is to order the parties to negotiate the terms of an  
6 ongoing royalty for the court to impose. *Id.* at 1315 ("[T]he district court may wish to allow the  
7 parties to negotiate a license amongst themselves regarding future use of a patented invention before  
8 imposing an ongoing royalty."); 1316 ("[T]his court should *require* the district court to remand this  
9 issue to the parties, or to obtain the permission of both parties before setting the ongoing royalty rate  
10 itself.") (Rader, J., concurring) (emphasis in original). Because "ongoing royalty" is merely a nice  
11 way of saying "compulsory license," *see id.* at 1316, the parties are much better situated than the  
12 court to set such terms.<sup>30</sup>

13 But Rambus does not wish to negotiate with Hynix and requests that the court set the terms  
14 of any ongoing royalty now. Rambus argues that the court should set the ongoing royalty rate  
15 because its past settlement discussions with Hynix have been "spectacularly unsuccessful." Reply at  
16 19:6-9. That may be so, but the court need not accede to Rambus's demand that it set the terms of  
17 any compulsory license without first ordering the parties to negotiate. *Telcordia Techs., Inc. v.*  
18 *Cisco Systems, Inc.*, --- F. Supp. 2d ----, 2009 WL 32717, \*15 (D. Del. Jan. 6, 2009) (denying  
19 Telcordia's motion for a compulsory license and ordering the parties "to negotiate the terms of a  
20 reasonable royalty rate going forward"). And to be clear, the court "strongly encourages the parties  
21 to be *reasonable* in their negotiations." *Id.* at fn.12 (emphasis in original). Hynix's proposed  
22 ongoing royalty of less than 1% is irreconcilable with the remitted royalty rates and the Federal

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23  
24 <sup>30</sup> For example, Rambus notes that the dominant practice in the industry is to license on the  
25 basis of worldwide sales, in part to avoid the need to determine which products enter which countries.  
26 Contrary to Rambus's suggestion, however, the court may not impose a royalty on such a basis because  
27 the court's powers do not extend beyond the United States. Rambus's argument that the court may enter  
28 such an order based on Judge Rader's concurrence in *Paice* stating that a court should impose a  
compulsory license on "fair and efficient terms" is specious. The quoted section of *Paice* discusses how  
the *parties* are best able to arrive at "fair and efficient terms." 504 F.3d at 1317. The discussion in *Paice*  
does not purport to extend this court's powers beyond the nation's borders.



1 Circuit's guidance that post-verdict infringement should entail a *higher* royalty rate than the  
2 reasonable royalty found at trial. *Amado*, 517 F.3d at 1362, fn.2. On the other hand, the age of the  
3 technology and changes in market condition may justify a reduced royalty rate.

4 The court has scheduled a conference call with the parties to discuss the form of judgment  
5 following this order. On that conference call, the court intends to set a deadline for negotiations  
6 consistent with a schedule for filing an appeal that allows for consolidated appellate briefing with  
7 the Delaware case. *See* Docket No. 3898 (Feb. 10, 2009) (indicating that the Delaware court entered  
8 judgment on February 10, 2009). The court asks that the parties be prepared to address whether the  
9 court must impose an ongoing royalty (or adopt the parties' negotiated terms) prior to entering final  
10 judgment such that an appeal may be taken.

11 **IV. ORDER**

12 For the foregoing reasons, the court denies Rambus's request for attorney's fees. The court  
13 denies Rambus's request for injunctive relief. The court grants Rambus's request for supplemental  
14 damages for the period after December 31, 2005. The royalty rates and royalty base for such  
15 damages are described above. The court further orders the parties to begin negotiations regarding  
16 the terms of a compulsory license between Rambus and Hynix to permit Hynix to continue to make,  
17 use, and sell the infringing devices.

18  
19 DATED: 2/23/2009



\_\_\_\_\_  
RONALD M. WHYTE  
United States District Judge

1 This document has been electronically sent to: counsel in 00-20905.

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23 **Dated:** 2/23/2009 TSF  
 24 **Chambers of Judge Whyte**