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UNITED STATES DISTRICT COURT

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,

vs.

RAMBUS INC.,

Defendant.

CASE NO. CV 00-20905 RMW

REPLY IN SUPPORT OF RAMBUS'S MOTION FOR SUMMARY JUDGMENT OF INFRINGEMENT

Date: **March 23, 2004**
Time: **9:00 a.m.**
Ctrm: **6 (Hon. Ronald M. Whyte)**

I. INTRODUCTION

Hynix does not dispute that the accused SDRAM and DDR SDRAM devices operate as described in Rambus's motion for summary judgment. Hynix's opposition to this motion instead rests entirely on the assertion that the accused devices do not satisfy four claim terms, namely, "device," "operation code," "block size information," and "read request." (Two or more of these terms appear in each of the claims at issue on this motion.)

"Device" and "Operation Code." Hynix's arguments as to these two terms are based entirely on Hynix's proposed constructions of those terms. Those constructions are untenable, for reasons set forth in Rambus's claim construction briefing and summarized briefly below. Specifically, Hynix's constructions of these terms improperly attempt to restrict Rambus's claims to preferred embodiments in the specification. Hynix's approach is contrary to patent principles generally; in the case of "device," Hynix's position directly contradicts the Federal Circuit's opinion in *Rambus v. Infineon*, and is unsustainable on that basis as well. Hynix has no additional noninfringement arguments with respect to the terms "device" and "operation code." In the case of the '020 patent, this ends the analysis, because the other two terms at issue ("block size information" and "read request") do *not* appear in the claims of the '020 patent. Accordingly, if the Court rejects Hynix's proposed constructions of "device" and "operation code," Rambus's motion for summary judgment of infringement with respect to claims 31, 32, 35, 36, 38 of the '020 patent can and should be granted without further inquiry.

"Block Size Information" and "Read Request." Hynix's noninfringement arguments regarding these two claim terms are not based on Hynix's proposed claim constructions but nevertheless are without merit. Regarding "block size information," Hynix relies primarily on the same arguments that it raises in its motion for summary judgment of noninfringement in connection with that term; Rambus has addressed those arguments in detail in its opposition to Hynix's summary judgment motion and has shown that Hynix's noninfringement arguments are meritless *regardless* of which party's proposed claim construction is accepted. Regarding "read request," Hynix interprets the Federal Circuit's construction of the term in a way which, if accepted, would result in excluding not only its own devices from coverage, but also a

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preferred embodiment disclosed in the specification. Such an interpretation is disfavored as a general rule, and it is doubly invalid here because the Federal Circuit expressly considered the example of a "read request" in that preferred embodiment in construing the claim term. The Federal Circuit's construction simply cannot be read in the way that Hynix would like in order to escape infringement. Because Hynix's arguments regarding "block size information" and "read request" have no merit, the Court should also grant summary judgment of infringement with respect to the claims of the '263, '195, '918, '120, '863 and '916 patents raised in Rambus's motion.

II. ARGUMENT

Hynix's noninfringement arguments relate to four terms that appear in various asserted claims. These four terms – "device," "operation code," "block size information," and "read request" – are addressed below.

A. Device

Hynix repeats its argument (from its noninfringement summary judgment motion) that the accused devices do not contain various limitations in Hynix's proposed construction of "device." As Rambus has explained previously, Hynix's products infringe, either literally or under the doctrine of equivalents, even under Hynix's proposed construction of "device." *See* Rambus's Opposition to Hynix's Motion for Summary Judgment Of Noninfringement Under Hynix's Proposed Construction of the Term "Device," at 3-5. That analysis applies equally here.

First and foremost, however, the Court should reject Hynix's proposed construction of device as a misguided attempt to restrict all of Rambus's claims in all of the patents-in-suit to a single preferred bus architecture described in the specification; this is directly contrary to the Federal Circuit's opinion in *Rambus v. Infineon*. As set forth in Rambus's claim construction briefing, the Federal Circuit not only made clear that Rambus's claims were not restricted to the preferred bus architecture in the specification, but actually construed the term "integrated circuit device" in a way that cannot be reconciled with Hynix's proposed construction of "device." Rambus's Opening Claim Construction Brief, at 12-14; Rambus's Reply Claim

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Construction Brief, at 2-4. Hynix has no noninfringement argument with respect to the term "device" if its proposed construction is not accepted.

B. Operation Code

As with its argument with respect to the term "device," Hynix's noninfringement argument with respect to the term "operation code" is based entirely on Hynix's proposed construction of that term. As set forth in Rambus's opposition to Hynix's motion of summary judgment with respect to the term "operation code," Hynix's devices infringe the asserted claims involving that term even under Hynix's proposed construction. Rambus's Opposition to Hynix's Motion for Summary Judgment of Noninfringement Under Hynix's Proposed Construction of "Operation Code," at 2-4. In any event, the Court should reject Hynix's baseless attempt to restrict the plain meaning of the term "operation code;" Hynix's proposed construction, an *ad hoc* combination of the particular means of transmitting an operation code in a preferred embodiment in the specification with a definition of the term in an unrelated context, is simply an (unsuccessful) attempt to avoid infringement. Rambus's Opening Claim Construction Brief, at 16-17; Rambus's Reply Claim Construction Brief, at 6-7. Hynix has no noninfringement argument based on "operation code" absent its proposed construction of that term.

C. Block Size Information

Hynix's arguments that the accused devices do not infringe asserted claims that include the term "block size information" largely track the arguments made in its summary judgment motion of noninfringement with respect to that term. As set forth in Rambus's opposition to Hynix's noninfringement motion, Hynix's arguments in that motion cannot succeed. Rambus's Opposition to Hynix's Motion for Summary Judgment of Noninfringement Under Proposed Constructions of "Block Size Information."

To supplement its earlier arguments, Hynix now cites to testimony from one of the inventors, Michael Farmwald, explaining that, in a preferred embodiment in the specification, block size information is contained in each request packet and specifies the amount of data to be output in response to the request. Opp. at 7-8. Hynix argues that, by contrast, in its devices, "'burst length' is fixed at initialization and is not specified on a request-by-request basis.

As an initial matter, Hynix overstates the difference between its devices and the preferred embodiment: even in Hynix's devices, burst length can be changed after initialization by simply writing a new value in the mode register. *See* Declaration of Peter A. Detre in Support of Rambus's Motion for Summary Judgment of Infringement ("Detre Decl."), Ex. C (DDR Data Sheet) at 20 (indicating that information can be written into the mode register using a Mode Register Set (MRS) command and can be "reset[] by another MRS command"). More importantly, while Hynix purports to have identified this asserted difference between the operation of its devices and a preferred embodiment in the patent specification, it has provided absolutely no explanation of what, if anything, this asserted difference, even if it existed, would have to do with infringement of the asserted claims involving "block size information." In fact, the alleged difference is entirely irrelevant – the asserted claims simply require that the memory device "receiv[e]" block size information representing an amount of data to be output by the memory device, *see, e.g.*, '120 patent, claim 1, which Hynix's devices undisputedly do, regardless of whether or not they receive the block size information on a request-by-request basis.

D. Read Request

It is undisputed that Hynix's accused products are memory devices that receive requests to provide data, requests that one would naturally call "read requests," and output data in response. Hynix's arguments that its products do not actually receive a "read request" as that term has been construed by the Federal Circuit – "a series of bits used to request a read of data from a memory device where the request identifies what type of read to perform" – rely on twisting the clear meaning of that construction in two ways, neither of which has any basis in, and each of which is actually at odds with, the Federal Circuit's opinion:

- First, although its data sheets clearly identify two types of reads, "read" and "read with autoprecharge," Hynix insists that these are not really different "types" within the meaning of the Federal Circuit's construction.
- Second, Hynix interprets "series of bits" as a *time* series and argues that its devices do not infringe because the series of bits that make up a read request in Hynix's devices are received simultaneously.

Hynix's two arguments regarding "read request" are meritless, as set forth below. In fact, both arguments would result in excluding from claim coverage the very preferred embodiment in the specification that the Federal Circuit relied on for guidance in construing the term.

1. Hynix's Devices Perform Two "Types" of Reads

a. The Federal Circuit made clear that read operations corresponding to the accused devices' "read" and "read with autoprecharge" are "types" of reads.

Hynix's argument that "read" and "read with autoprecharge" are not two types of reads begins by mischaracterizing the Federal Circuit's opinion. According to Hynix, "[i]n the inventions claimed by the Rambus patents, and as reflected in the Federal Circuit's opinion, the 'type of read' refers to either a page mode or normal mode read."[1] Opp. at 10. To the contrary, as a portion of the actual opinion quoted by Hynix shows, page mode and normal mode are simply *examples* that the court used to illustrate what it meant by a type of read: "The specification merely indicates that the 'read request' requests data from a memory device and specifies what type of read (***e.g.***, page mode, normal mode, ***etc.***) to perform." *Id.* (quoting *Infineon*, 318 F.3d at 1093 (emphases added)). As described in detail below, other "types" of reads disclosed in the specification and subsumed within the court's use of "e.g." and "etc." include reading with or without precharging and, therefore, correspond precisely to "read" and "read with autoprecharge" in the accused devices.

Thus, Hynix's interpretation of the Federal Circuit's construction of "read request" would have the effect of excluding the preferred embodiment in the patent specification. Such an interpretation is generally disfavored. *See, e.g., Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 ("a claim construction that would exclude the preferred embodiment is rarely, if ever, correct and would require highly persuasive evidentiary support") (internal quotation marks and citation omitted). Moreover, in this case, Hynix's interpretation *cannot* be correct because, as set

[1] To perform a read or write access in a DRAM, a row must be first be "activated;" data can then be read from, or written to, specific columns where they intersect the active row. A "page mode" access refers to an access to a row in a DRAM that is already active as a result of a previous access; a "normal mode" access refers to an access to a row that has not been activated.

forth below, the Federal Circuit expressly used the example of a read request in the preferred embodiment as guidance in construing the term. In its opinion, the court noted the parties' respective positions: Infineon asserted that a "read request" must include address and control information as shown in a "request packet" in the specification; Rambus asserted that, in a preferred embodiment, a "read request" corresponds only to the first four bits of such a request packet, designated as the "AccessType" field. *Rambus Inc. v. Infineon Technologies AG*, 318 F.3d 1081, 1091-1092 (Fed. Cir. 2003). The court ultimately sided with Rambus, holding that a "read request," as used in the specification, was not coextensive with a "request packet" and, therefore, need not include address and control information, such as block size, that is not included in the AccessType field. *Id.* at 1092-93. The court described the function of the four bits in the AccessType field corresponding to "read request" in a preferred embodiment as follows: "The first bit instructs the memory device to perform a read; the next three bits tell the device what type of read to perform (e.g., page read, normal access read, etc.)." *Id.* at 1092. Thus, the Federal Circuit meant to include in the category of "type[s] of read to perform" at least the types of reads specified by the referenced three bits of the AccessType field of that preferred embodiment. As described below, the patent specification makes clear that whether or not the sense amplifiers should be precharged, as in the "read" and "read with autoprecharge" commands of the accused devices, differentiates between two of the types of reads specified by the AccessType field.

In a preferred embodiment, the three bits of the "AccessType" field that the court identified with the "type of read to perform" specifies what the specification refers to as the "access mode" of the memory device. According to the specification, "[o]ne such access mode determines whether the access is page mode or normal RAS access" and "*[t]he access mode also determines whether the DRAM should precharge the sense amplifiers* or should save the contents of the sense amps for a subsequent page mode access." '263 patent, col. 10:6-8, 30-33 (emphasis added). Thus, the part of the "read request" in the preferred embodiment that identifies the "type of read to perform" includes information as to whether the access is a page mode or normal mode access, but *also* whether the sense amplifiers should be precharged as part of the operation. This

is what the A10 bit, which distinguishes between "read" and "read with autoprecharge" in the Hynix devices, accomplishes – informing the device whether to precharge the sense amplifiers as part of the read operation. *See* Reply Declaration of Robert J. Murphy in Support of Rambus's Motion for Summary Judgment ("Murphy Decl."), ¶¶ 11-13. Reading with and without precharge, as in the accused devices, are two "types" of reads expressly specified by the "AccessType" field in the specification, and it was that very field that the Federal Circuit referenced when identifying the "type[s] of read to perform."

b. Even apart from the Federal Circuit opinion, it is clear that "read" and "read with autoprecharge"' are two "types" of reads in the accused devices.

Hynix argues that its memory devices perform only one type of read because, in the case of a "read with autoprecharge" command, (1) precharging is performed "after" the read is complete and (2) "[t]he value of the A10 bit . . . does not alter or affect the manner in which the data was read from the memory chip." Opp. at 9-10. Even if Hynix's description of the operation of its devices were correct, Hynix's argument could not be squared with the Federal Circuit decision, as discussed above. However, in fact, Hynix's misrepresents the operation of its devices in at least two ways.

First, in the case of a read with autoprecharge command, precharging takes place *during* the read operation, not after as Hynix asserts. Murphy Decl. ¶ 13; Detre Decl., Ex. D (SDRAM Device Operation) at 7 (showing "AUTO PRECHRAGE [sic] START" while read data is still being output from device).

Second, the manner in which data is read from the memory chip *is* different in "read" and "read with autoprecharge" operations in the accused devices. One reason for this is precisely because, as noted above, the "reading" and "precharging" portions of a "read with autoprecharge" command overlap in time. Thus, during a "read" operation, the sense amplifiers are not precharged while data is read out of the device; during a "read with autoprecharge" operation, the sense amplifiers are precharged while data is read out of the device. Another reason that the manner in which data is read is different in the two operations is that a "read with

autoprecharge" operation, unlike a "read operation," cannot be terminated by another command. Murphy Decl. ¶ 13.

Hynix's attempts to suggest that the "read" and "precharge" portions of the "read with autoprecharge" command are easily separable in its accused devices is based on misrepresentations regarding the operation of those devices. In fact, "reading" and "precharging" are intertwined during a "read with autoprecharge" operation, making it clear that this is, indeed, a different "type" of read.

2. Hynix's Devices Receive a "Series of Bits" Used to Request a Read of Data

Hynix's argument that its devices do not receive a "series of bits used to request a read of data" because the bits corresponding to a read command are received simultaneously via a parallel interface suffers from two fatal flaws: First, the very bits corresponding to a "read request" in the preferred embodiment of the specification cited by the Federal Circuit are themselves received simultaneously via a parallel interface, exactly as in Hynix's devices; and, second, there is nothing in the meaning of the word "series" that excludes bits received simultaneously.

Hynix contrasts the operation of its device with the request packet in the preferred embodiment of the specification which is received over "multiple clock cycles." Opp. at 11. However, as noted above, the Federal Circuit has already held that the "request packet" contains much more than the "read request." *See* Section II.D.1.a, *supra*. The "read request" portion of the request packet in the preferred embodiment is the four-bit AccessType field in the request, and those bits are received simultaneously using a parallel interface, exactly as a request is received in the accused devices. *Id*; Murphy Decl. ¶ 6. Hynix's argument that its devices do not receive a "series of bits" would once again result in the exclusion of the very preferred embodiment that the Federal Circuit looked to in construing the term "read request."

Moreover, Hynix's premise that a "series" of bits must follow one another in time ignores the plain meaning of the word. The dictionary defines "series" as "a number of things or events of the same class coming one after another in spatial or temporal succession (a concert

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[series]) (the hall opened into a [series] of small rooms)." Merriam Webster's Collegiate Dictionary (10th ed., 1996), at 1069. Thus, while certain series do involve *temporal* succession, others are based on a *spatial* relationship. Hynix's devices involve the latter sort of "series" in connection with the read request: the bits corresponding to a read request arrive on specific pins in a fixed spatial relationship with one another. Murphy Decl. ¶ 7.

III. CONCLUSION

For the reasons set forth above, and in Rambus's opening memorandum, Rambus respectfully requests that the Court grant Rambus summary judgment of infringement with respect to the claims that are the subject of its motion.

DATED: March 3, 2004

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