IN THE UNITED STATES COURT FOR THE DISTRICT OF UTAH
NORTHERN DIVISION

PHILLIP M. ADAMS & ASSOCIATES, LLC, a Utah Limited Liability Company, Plaintiff, vs. DELL, INC., et al., Defendants.	MEMORANDUM DECISION AND ORDER ADOPTING SPECIAL MASTER'S REPORT AND RECOMMENDATION AND CLAIM CONSTRUCTION ORDER Case No. 1:05-CV-64 TS

I. INTRODUCTION

Before the Court are Defendants' objections to the Report and Recommendation of Special Master Regarding Claim Construction (R & R). Having reviewed those objections de novo, the Court adopts the claim construction recommended by the Special Master for the disputed claims of the three patents still at issue in this case.

II. PROCEDURAL BACKGROUND

In May 2005, the present case was filed by Plaintiff against Dell, Inc. (Dell), Sony Electronics (Sony),[1] and three other computer manufacturers and/or sellers alleging infringement of the following patents invented by Dr. Phillip Adams: U.S. Patent Nos. 5,379,414 ('414 patent), 5,983 002 ('002 patent) and 6,401,222 ('222 patent).

Defendants moved to appoint a special master for claims construction and Plaintiff opposed such an appointment. In September 2006, the Court granted the Defendants' request to appoint a special master for claim construction and directed the parties to attempt to agree on the individual to be appointed.[2] Dell, Fujitsu,[3] MPC,[4] and Sony were the Defendants at the time of the parties' October 26, 2006 Agreement that Robert L. Harmon should be appointed as special master.[5] In requesting his appointment, the parties set forth his stellar qualifications,[6] and the Court need not repeat them herein. The Court appointed Mr. Harmon on November 13, 2006.

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[1]The parties stipulated to substitute Sony Electronics for originally-named defendant Sony Corporation of American shortly after the Complaint was filed.

[2]Docket No. 158.

[3]Fujitsu Limited and Fujitsu Computer Systems Corp.

[4]MPC Computers, LLC.

[5]Plaintiff's stipulation to the selection of Mr. Harmon was without prejudice to its position that no special master was required.

[6]Docket Nos. 163 (Notice of parties' agreement to appoint Mr. Harmon as special master) and 164 (Mr. Harmon's resume, including lists of publications and recent special master assignments).

Shortly thereafter, on December 21, 2006, the case was significantly expanded by two simultaneous events.[7] First, Plaintiff was granted leave to allege infringement of two additional patents invented by Dr. Adams: U.S. Patent Nos. 6,195,767 ('767 patent) and 6,687,858 ('858 patent). Second, Sony was granted leave to implead as third-party defendants six parties,[8] including ITE,[9] ASUS[10] and Winbond,[11] who manufacture the allegedly infringing chips, components, mother boards and/or computers. In May 2007, Plaintiff counterclaimed against Winbond and filed a cross complaint against ASUS and ITE.[12]

[7] *See* Docket No. 219, Order Granting Plaintiff's Motion to Amend Complaint and Granting Sony's Motion to Implead third party defendants.

[8] *See* Docket No. 224, Sony's January 5, 2007 Third Party Complaint.

[9] ITE Tech, Inc.

[10] Asustek Computer and Asus Computer Intl.

[11] Winbond Electronics Corporation.

[12] Docket No. 227.

In June 2007, Plaintiff filed a new case against additional computer component suppliers: Quanta,[13] National,[14] and MSI[15] (the *Quanta* case)[16]. The *Quanta* case was consolidated into the present case in January 2008.[17]

Defendants joined forces for the purposes of their claim construction arguments. Sony filed the briefs on behalf of all of the Defendants.

The Special Master issued his Report and Recommendation (R & R) on September 29, 2008. By that time, several of the Defendants who had been included in the briefs were no longer parties. Thus, the "Defendants" that filed their Objections to the R & R were: ASUS, Dell, Fujitsu, MPC, MSI, Sony, and Winbond. At the present time, Dell, Fujitsu, and Sony are no longer involved in this case. The case is stayed as to MPC as a result of its bankruptcy filing.[18] Another Defendant, ITE, was twice defaulted[19] and has recently moved to set aside the last default.[20]

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[13]Quanta Computer, Inc., Quanta Computer U.S.A., Inc., and Quanta Manufacturing, Inc.

[14]National Semiconductor Corporation.

[15]MSI Computer Corporation and Micro-Star International Corporation, Ltd.

[16]*Adams v. Quanta*, 2:07-CV-422 TS.

[17]Docket No. 432 (consolidating cases on January 23, 2008).

[18]Docket No. 656.

[19]Docket Nos. 296 and 1217.

[20]Docket No. 1329.

Thus, the "Defendants" for purposes of their objections to the R & R are currently ASUS, MSI, and Winbond.

III. The R & R

A. Introduction

The five original patents in suit were invented by Dr. Adams and "disclose systems and methods for dealing with problems that arise due to a defect or design flaw in a floppy diskette controller (FDC). An FDC interfaces a computer's central processing unit (CPU) with a floppy diskette drive, and controls the flow of data between the CPU and the floppy diskette or other non-volatile storage medium."[21]

The patents were issued on the following dates: the '414 patent was issued on January 3, 1995, on an application filed July 10, 1992; the '002 patent was issued November 9, 1999, on an application filed October 11, 1996; the '222 patent issued June 4, 2002, on an application filed December 4, 1998 as a continuation-in-part (CIP) of the application that led to the '002 patent; the '767 patent issued February 27, 2001, on an application filed September 14, 1998; and the '858 patent issued February 3, 2004, on an application filed May 16, 2000.

The parties stipulated to the procedures for the Special Master's claim construction, including a hearing before the Special Master.[22] In the R & R, the Special Master

[21]R & R at 15.

[22]Docket No. 603.

construed 30 separate disputed terms, as well as several more terms that the Special Master identified as requiring analysis,[23] from the five original patents in suit.

However, since the briefing on their objections, Plaintiff has withdrawn all claims relating to the '414 and '767 patents.[24] Therefore, the R & R's claim construction for the claims in those patents are moot. Plaintiff's sole objection to the R & R involved the construction of the '414 patent and, therefore, it is moot.[25] Thus, the only issues before the Court are the Defendants' Objections to the Special Master's claim construction of the terms in the remaining three patents in suit.[26]

Although the '414 and '767 patents are no longer at issue in this case, some discussion of how the Special Master construed the claims of those patents is necessary to understand his claims analysis which addressed, among other things, the parties' arguments regarding construction of some of the same claims as they changed over the course of the patents.

B. Claims at Issue

There being no objection to the Special Master's summary of the patents, the Court adopts it in whole, and will partially quote it hereafter.

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[23]R & R, at 2.

[24]Docket No. 1313.

[25]*See also* Docket No. 1321, Notice of Pending Motions and Objections involving the '414 and '767 patents.

[26]Because Defendants' Objections are the only remaining Objections, for convenience they will be cited and referred to hereafter as "Objections."

As noted above, an understanding of the '414 patent remains important for context, even though it is no longer at issue in this case. Claim 1 of the '414 patent "is a method claim having both structural and functional limitations."[27] It has 7 claims to a method for detecting and preventing FDC data transfer errors in computer systems."[28]

'002 patent, claims 1-6 & 8-15

The '002 patent has "15 claims dealing variously with apparatus for detecting a defective FDC, and a device and method for detecting an underrrun error that is not detected by a FDC."[29]

1. An apparatus for detecting a defective floppy diskette controller, the apparatus comprising:

a processor executing detection executables effective to determine an underrun error undetected by a floppy diskette controller and effective to identify the floppy diskette controller as defective;

a memory device operably connected to the processor to store the detection executables and corresponding detection data;

a system clock operably connected to the processor to provide a time base;

a media drive comprising storage media for storing data;

the floppy diskette controller operably connected to the media drive to control formatting and storage of data on the storage media; and

a direct memory access controller operably connected to the floppy diskette controller and the memory device to control transfers of data between the memory device and the floppy diskette controller.

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[27]R & R at 15.

[28]*Id*. at 16.

[29]*Id*. at 16-17.

9. The apparatus of claim 8 wherein the application is effective to determine on demand whether the floppy diskette controller is susceptible to undetected underrun errors.

10. The apparatus of claim 1 wherein the detection executables include a shadowing executable effective to determine when a last byte is to be transferred from the direct memory access controller to the floppy diskette controller.

11. A memory device operably connected to a processor,

a direct memory access controller,

a floppy diskette controller controlled by the direct memory access controller,

and a media drive controlled by the floppy diskette controller, the memory device storing blocks of data comprising:

a test pattern;

detection executables effective to be run on the processor to force and detect an underrun error not detected by the floppy diskette controller;

and a readback buffer to store a copy of the test pattern read back from the media drive.

12. A method for detecting an underrun error undetected by a floppy diskette controller, the method comprising the steps of:

writing a source test pattern from a memory device to storage media in a media drive controlled by the floppy diskette controller;

interrupting the writing step;

delaying a transfer of a last byte of the source test pattern to the floppy diskette controller to create the underrun error;

completing the writing step;

verifying whether the floppy diskette controller detected the underrun error.

13. The method of claim 12 further comprising reading back to the memory device a written test pattern corresponding to the source test pattern written during the writing step.

14. The method of claim 13 further comprising verifying whether the underrun error occurred in the writing step by checking the last byte of the written test pattern.

15. An apparatus for detecting a defective floppy diskette controller, the apparatus comprising:

a processor executing detection executables effective to precipitate and detect an underrun error undetected by a floppy diskette controller and effective to identify the floppy diskette controller as a defective floppy diskette controller;

a memory device operably connected to the processor to store the detection executables and corresponding detection data;

a system clock operably connected to the processor to provide a time base;

a media drive comprising storage media for storing data;

the floppy diskette controller operably connected to the media drive to control formatting and storage of data on the storage media; and a direct memory access controller operably connected to the floppy diskette controller and the memory device to control transfers of data between the memory device and the floppy diskette controller.

'222 patent claims 1-7, 9-16 & 18-20

The '222 patent is a "continuation-in-part (CIP) of the application that led to the '002 patent. It contains 12 claims that are similar to the '002 patent claims (in that they focus on a defective FDC) and 8 claims that approach the problem somewhat more broadly, reciting a method for testing controllers that control input/output (I/O) to non-volatile memory devices. The apparatus claims contain essentially the same contested terms as those in the '002 patent. Method claim 13 recites:"[30]

13. A method for testing controllers for controlling I/O to non-volatile memory devices, the method comprising:

providing a detection executable configured to interrupt a writing step of a controller;

[30] *Id*. at 18.

delaying a transfer of a byte, corresponding to the writing step, for a time selected to cause an under run error in the transfer; and

verifying whether the controller detects an error in completing the writing step.

15. The method of claim 13, wherein the detection executable is configured to read a data count corresponding to the writing step.

16. The method of claim 15, further comprising reading a data count, corresponding to the writing step, from a direct memory access controller's data transfer count register.

19. The method of claim 13, further comprising increasing an interrupt rate corresponding to interrupting the writing step.

20. The method of claim 13, further comprising causing and detecting a transfer corresponding to a last byte of a sector.

The '767 patent, no longer at issue, has "26 claims directed to an apparatus and method for detecting data corruption resulting from defective operation of a FDC."[31]

The '858 patent "has 6 claims directed to an apparatus for extending the functionality of a defective FDC, and 20 more directed to a method for 'welding' a persistent software layer to a hardware layer in a computer system."[32] Only the "welding" claims are "in play" in the Special Master's report.

'858 patent claims 1, 3 & 4

1. An apparatus for extending the functionality of a defective floppy diskette controller, the apparatus comprising

a computer readable medium storing executable and operational data structures, the data structures comprising:

a determination module for identifying a hardware resource associated with a computer system;

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[31] *Id*. at 19.

[32] *Id*. at 20.

a welding module for inseparably connecting a persistent software layer to the hardware resource.

C. Applicable Law

A district court must conduct a de novo review of the parts of a special master's report and recommendation to which a party objects.[33] The district "court may accept, reject, or modify, in whole or in part the findings or recommendations" of a special master.[34]

> In acting on a master's . . . report, or recommendations, the court must give the parties notice and an opportunity to be heard; may receive evidence; and may adopt or affirm, modify, wholly or partly reject or reverse, or resubmit to the master with instructions.[35]

The parties have filed their objections, no party has requested a hearing, and the parties have submitted the matter on written submissions. An issue of Plaintiff's attempt to submit supplemental materials[36] and Defendants' objections thereto[37] has been mooted by the withdrawal of all claims relating to the '414 patent.

In a footnote, Defendants attempt to raise additional objections to the recommendations on grounds not included in their filed Objections by incorporation of

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[33]FED. R. CIV. P. 53 (f)(3) and (4). The court applies the version of the rule in effect at the time of the filing the Objections. However, other than a slight renumbering, there is no material difference between the versions. *See* FED. R. CIV. P. 53(f) (effective Dec. 1, 2009).

[34]*3D Systems, Inc. v. Envisiontec, Inc.*, 2010 WL 844586, at *2 (E.D. Mich. Mar. 9, 2010) (citing and quoting 28 U.S.C. § 636(b)(1)(B)).

[35]FED. R. CIV. P. 53 (f)(1).

[36]Docket No. 661.

[37]Docket No. 667.

three filings made before the Special Master's R&R was issued.[38] The Court finds that the attempt to add such non-specific objections on grounds not specified or argued in the Objections filed under Fed. R. Civ. P. 53(f), is ineffective. Rule 53(f) provides a precise and clear procedure for raising specific objections and the standard for the Court to apply to "all objections to" the findings of fact or conclusions of law "made or recommended by a master."[39] Defendants' attempt to avoid that procedure is simply unworkable. Nonspecific references to "arguments previously made" or "arguments and evidence" submitted for the claim construction hearing before the Special Master hearing are not objections to findings or conclusions made by the Special Master. Such inclusion by incorporation of unspecified grounds would render it impossible for the Court to identify or address all of the grounds upon which Defendants object to the Special Master's R & R. The Court finds that Defendants have waived any grounds and/or objections to the R & R that are not specifically identified and discussed in their filed Objections. However, the Court has reviewed and considered Defendants' specific citations in their Objections to exhibits and to matters listed in briefs filed for the briefing before the Special Master and any other specifically identified evidence.[40]

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[38]Docket No. 644, at 6, n.2.

[39]FED. R. CIV. P. 53(f)(3) and (4).

[40]*E.g.* Obj. at 9 and n.5-6.

The parties do not object to the Special Master's summary of the "basic guidelines for interpreting a patent claim"[41] beginning with the Supreme Court's "landmark decision in *Markman*."[42] The Court finds that the Special Master's section on the governing legal principles for claim construction, including the statutory principles, and the timing of the inquiry, is correctly, thoroughly, and succinctly set forth in the R & R.[43] Because the parties have no objection to the Special Master's explanation of the law to be applied to the present claim construction, the Court adopts it in full without restating it herein.

Similarly, no party objects to the Special Master's definition of the person of ordinary skill in the art. The Court agrees with and adopts the Special Master's finding that a person of ordinary skill in the art during the "relevant time periods would have had at least a first degree in computer science or electronics and several years experience with computer systems in general and with the design or analysis of computer components."[44]

Finally, no party objects to the Special Master's summary of the claims at issue, and the Court has adopted and quoted it above, omitting the withdrawn claims of the '414 and '767 patents.

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[41]R & R at 4 (citing *Phillips v. AWH Corp*., 415 F.3d 1303 (Fed. Cir. 2005) as reaffirming the Federal Circuit's "adherence to the fundamental principles of" *Markman v. Westview Instr., Inc*., 517 U.S. 370 (1996) and *Vitronics Corp. v. Conceptronic, Inc*., 90 F.3d 1576 (Fed. Cir. 1996)).

[42]*Id.* at 3.

[43]*Id.* at 3-15.

[44]*Id.* at 14.

The Special Master found that "three thorny issues" were "ubiquitous in Defendants' presentation of their proposed claims constructions" and efficiently grouped those three issues—construction of the terms "floppy diskette controller" and "processor" and Defendants' assertion of a "software-only" requirement—together to decide initially, followed by his construction of the remaining terms.[45] The Court will address the Objections in a similar order, turning first to the Objections relating to multiple patents.

D. Disputed Claim Constructions

1. "floppy diskette controller"

Defendants agree with the Special Master's construction of the term "floppy diskette controller" for the '414 patent, as limited to controlling the transfer of data to or from a floppy diskette, but disagree with his additional findings that, for the '002 and '222 patents, a "floppy diskette controller" can also control "other types of spinning storage media" and for the '858 patent that a "floppy diskette controller" can also control "some type of non-volatile memory storage medium."[46] In his Part A, the Special Master found that "where the term 'floppy diskette'[47] is used alone, it has a narrower meaning; but when it is used as a modifier, it may have a broader meaning."[48]

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[45] *Id.* at 20.

[46] Obj. at 6-7 (quoting R & R at 24-29).

[47] It is used as a stand-alone term in claim 1 of the '414 patent. Defendants do not object to the Special Magistrate's construction of the term "floppy diskette."

[48] R & R at 22.

Defendants argue that the Special Master's construction of the meaning of "floppy diskette controller" is improper because it gives no meaning to the modifier "floppy diskette" in the term and, therefore, reads "floppy diskette" out of the claim. In support, Defendants cite *Mangosoft v. Oracle Corp*.,[49] *Merck & Co., Inc. v. Teva Pharmaceuticals USA, Inc*.,[50] and *Apple Computer, Inc. v. Articulate Systems, Inc.*[51]

Those cases are distinguishable. In *Mangosoft*, there was "nothing in the intrinsic record [that] describe[d] or supporte[ed] [the requested] expansive meaning."[52] In *Teva Pharmaceuticals*, the patentee did not clearly redefine "about" in the specification,[53] and therefore, the Federal Circuit held that it "should be given its ordinary and accepted meaning of 'approximately.'"[54] In *Apple Computer*, the term "help access window" was defined broadly, but "interpreting the claim in light of the teachings of the written description

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[49]525 F.3d 1327, 1330-31 (Fed. Cir. 2008) (affirming trial court's claim construction because the requested claim construction would render superfluous the claim term "local" in "local persistent memory devices").

[50]395 F.3d 1364, 1372 (Fed. Cir. 2005) (reversing the district court's construction of the term "about" as meaning "exactly" because it rendered "other parts of the claim superfluous").

[51]234 F.3d 14, 24 (Fed. Cir. 2000) (reversing because "the district court's interpretation of 'help access window' was so broad as to read the 'help' limitation out of the claim").

[52]*Mangosoft*, 525 F.3d at 1330.

[53]*Teva*, 395 F.3d at 1372

[54]*Id.*

and purpose of the invention described therein"[55] revealed that it could not be given the broad interpretation adopted by the trial court.

In the present case, as discussed by the Special Master, the '222, '002 and '858 patents add disclosures and must be independently evaluated.[56] The Special Master supported his finding with examples from the '002 and '222 patents. His first example, the schematic found at Figure 1 of the '002 and '222 patents, perfectly illustrates his point. In those schematics, the "floppy diskette controller (FDC)" is shown as connected to a "Media Drive (*e.g.* Floppy Diskette drive) designated by reference numeral 16."[57] Because a "floppy diskette drive" is used in '002 and '222 patents as only an example of the broader category of "media drives" controlled by the FDC, the '002 and '222 patents "clearly contemplated—and, indeed, claimed—portable storage media that were not limited only to traditional floppy diskettes."[58] As noted by the Special Master, this disclosure was added by the '002 and '222 patents,[59] and distinguished the meaning as used in the earlier '414 patent. The Special Master also noted the addition in the '222 patent at C13L50-59.

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[55] *Apple*, 234 F.3d at 25 (citing *Strattec Sec. Corp. v. Gen. Auto. Specialty Co.*, *Inc.,* 126 F.3d 1411, 1417 (Fed. Cir. 1997)) (additional citations omitted)).

[56] R & R at 25.

[57] *Id.*

[58] *Id.*

[59] *See also*, the '222 patent: C2L12-14 ("Herein references to a floppy diskette may be read as 'any media' and a floppy diskette drive is but a specific example of a media drive controllable by an FDC.").

The Court is not persuaded by Defendants' argument that because the '222 patent uses the term "controller" in claim 13 and the term "floppy diskette controllers" in the other claims that Dr. Adams must have used "controller" when he meant "media controllers." Such a construction is not supported by reading the '222 patent as a whole. Further, as pointed out by Plaintiff, Defendants did not seek to have the term "controller" in claim 13 in the '222 patent construed, despite having submitted a total number of terms "far beyond anything" that the Special Master had previously encountered.[60]

Nor is the Court persuaded by Defendants' citation to matters in the prosecution history of an unasserted patent, U.S. Patent No. 7,409,601 (the '601 patent), issued as continuation of the '858 patent.[61] While there are circumstances "in which statements a patentee makes in a later-filed case can impact the interpretation of the claims in an earlier-filed patent,"[62] Defendants have not shown that the present case presents such circumstances.

Defendants cite two pages of the '601 patent's prosecution history, but not the exact language they rely on, for the proposition that the "patentee expressly represented that a 'defective I/O controller' has a different scope than 'defective floppy diskette controller' to

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[60]R & R at 2.

[61]Obj. at 4.

[62]Robert A. Matthews, Jr., Annotated Patent Digest § 6:54 (2010) (citing *Microsoft Corp. v. Multi-Tech Sys., Inc*., 357 F.3d 1340 (Fed. Cir. 2004) and *Verizon Serv. Corp. v. Vonage Holdings Corp*., 503 F.3d 1295 (Fed. Cir. 2007) as cases where "[s]hould a patent applicant make a statement in the prosecution history characterizing a specification that is identical to a specification of an earlier issued related patent, that statement can have relevance to construing the claim in the earlier issuing patent.").

overcome an obviousness-type double patenting rejection."[63] Plaintiff argues that the citation does not make that statement.

Reviewing the cited pages, it appears that Defendants are referring to the applicant's statements at the third and fourth paragraphs of page DEF 005704. However, as shown on those pages by the applicant's underlined emphasis of the words "correcting" and "detecting" in those paragraphs, the applicant's statement was focused on that difference in the patents. Thus, the Court is unable to locate any such express representation as is alleged by Defendants.

Defendants also argue that in the patent prosecution of '601, the cancellation of claims including the term "floppy diskette controller" and adding claims with the new term "I/O controller" shows the claims did not have the same meaning. However, that is far from the type of "clear disavowal or disclaimer made during prosecution" of the subsequent patent as would inform construction of the earlier patents.[64] In this case, as in *TIP Systems*, "the meaning of the term [floppy diskette controller in the '002, '222, and '858 patents] can be discerned from the language of the claims themselves, and is fully supported by the specification, drawings, and prosecution histor[ies]" of those patents. Further, a finding by the patent examiner that the claims of the subsequent patent

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[63] Obj. at 4 (citing Defs' Ex. B DEF 5704-05).

[64] *See e.g. TIP Sys., LLC v. Phillips & Brooks/Gladwin, Inc.*, 529 F.3d 1364, 1371 (Fed. Cir. 2008) (treating an amendment eliminating a term entirely from the claims of the subsequent patent as different from a clear disavowal or definition of the term in the subsequent patent).

application were obvious in view of the claim of the earlier '002 patent has bearing on the construction of the term in the earlier patent.

The parties disagree on whether the Court should consider a statement by the Special Master regarding the meaning that the electronics industry has settled on the term "floppy diskette controller." That statement was part of a larger examination of the following statement in the '414 patent: "Specifically, data loss and/or data corruption can occur during data transfers to diskettes (or even tape drives and other media which employ the FDC.)"[65]

The Special Master, reading the '414 patent as a whole, found that the above quoted "statement tends to establish two things: the inventor considered diskettes as distinct from 'tape drive and other media' and he also contemplated that an FDC might be used to control memory other than diskettes."[66] As the Special Master further explained in a footnote:

> This is an extremely important concept. Despite the name, a "floppy diskette controller" apparently can control data transfer to and from various types of storage media in addition to traditional "floppy diskettes." A better term might have been "storage media controller" but once the electronics industry settles on a name for a device it is difficult to pry them loose from it, even when it becomes misdescription.[67]

Plaintiff relies on the statement to support the position that not only did the terms "floppy diskette" and "floppy diskette controller" evolve during the prosecutions of the

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[65] *Id*. at 24 (quoting '414 patent C1L54-57).

[66] *Id*. at 24 (footnote omitted).

[67] *Id*. at n.47.

patents in suit, but also in the "relevant art during this twelve year period to the point where a 'floppy diskette' is now a metaphor for storage media."[68]

Tellingly, Defendants do not argue that the Special Master is incorrect on his understanding of how the term has evolved in the electronics industry to mean something more. Rather, they argue that his understanding should not be relied upon because he did not cite any evidence in support of this finding.

The Court need not decide the dispute over whether the statement should be considered because it finds that the Special Master's analysis of the added disclosures that claim portable storage media that are not limited to only traditional floppy diskettes is correct without the need to consider the additional support offered by the statement.

The Court adopts the Special Master's claim construction as follows: "The claims of the '002 and '222 patents are not limited to a system or method in which the FDC is controlling a 'floppy diskette' as that term was defined for '414 patent; other types of spinning storage media may be employed."[69] "[I]n the asserted claims of the '858 patent, the 'hardware resource' is a defective FDC which controls some type of non-volatile memory storage medium."[70]

2. "processor"

In his Part B, the Special Master found that "[n]one of the asserted claims of the patents in suit appear to require that the software that is part of the claimed inventions be

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[68]Pl.'s Response at 2.

[69]R & R at 26.

[70]*Id*. at 29.

executed 'outside of the FDC'"[71] as argued by Defendants. The Special Master held that there is a significant difference in the industry between the meaning of the terms "CPU" and "processor," with the Federal Circuit using an industry standard definition for CPU. He held that evaluating the '414 claim in light of its calling out a CPU meant it "should be construed to require a CPU that is separate from the FDC and that controls the interpretation of instructions and their execution" but that "no such limitation should be applied to the term 'processor' in the asserted claims of the remaining patents."[72]

A comparison of the Claim 1 of the '414 claim's calling out a CPU to the claims of the subsequent patents shows the difference. Claim 1 of the '414 patent reads in part as follows:

> 1. A method for detecting and preventing floppy diskette controller data transfer errors in computer systems having:
> *a central processing unit (CPU)*;
> a system interrupt timer;
> a floppy diskette, the floppy diskette having at least one sector for receiving multiple data bytes;
> a floppy diskette controller (FDC) for controlling the transfer of data to the floppy diskette;
> means associated with the FDC for providing a data request (DREQ) signal and a data acknowledge (DACK) signal, the DREQ signal being provided when data transfer is requested and the DACK signal being provided when data transfer is permitted; . . .[73]

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[71] *Id*. at 30.

[72] *Id*. at 31.

[73] '414 patent (emphasis added).

A comparison with the claims of the remaining patents, quoted above in section B, reveals they do not similarly call for a "CPU," but instead use the much broader term "processor." Thus, the Special Master found that the term "processor" in the '002 and '222, patents should not be construed as limited to a processor that is separate from the FDC. He also found that it was even more inappropriate to construe the '858 patent as containing the same restriction as the '414 patent because the '858 patent does not use the term "processor" in its claims.

The Special Master further explained that the Defendants' contention that the term "processor" should be construed to not be part of the FDC—dubbed the "outside the FDC" contention—was part of Defendants' broader contention that it would be improper to construe the claims to cover code that is contained within a properly functioning FDC. In other words, Defendants' position is that the patents should be construed to exclude a redesigned FDC that incorporates the claimed solutions.

Defendants agree with the Special Master's construction of "CPU" and of the '414 patent as requiring a CPU that is separate from the FDC. They make no objection to his interpretation of how a person ordinarily skilled in the art would have understood "CPU" at the time of the '414 patent. However, they argue that the key term "processor" in the '002 and '222 patents should be construed in the same manner as was the term "central processing unit (CPU)" for the '414 patent, as limited to a processor that is separate from and not part of the FDC; and that the '858 patent should also be so construed.

In making this argument, Defendants rely heavily on the specifications of the '002 and '222 patents. But the limitation they seek to impose, "outside of the FDC," appears

nowhere in the '002 or '222 specifications or claims. Having reviewed all of Defendants' arguments and the specification language they cite, including the figures cited, the Court finds that their argument is an example of Defendants "reading a limitation from the specification into the claim." As the Special Master explained, he was "well aware of the fine and tortured difference between construing a claim term in light of the specification and reading a limitation from the specification into the claim. The former is required; the latter forbidden."[74] Defendants' position on the construction of "processor" as requiring one "outside of the FDC" is one of those rejected by the Special Master as straying toward the forbidden ground of reading a limitation from the specification into the claim.[75]

The Special Master is correct that the Federal Circuit has warned against the risks of improperly reading a preferred embodiment into the claims, most recently in *Trading Technologies International, Inc. v. eSpeed, Inc.*:[76]

> [T]he claims "must be read in view of the specification, of which they are a part." A patent's specification "is always highly relevant to the claim construction analysis." When consulting the specification to clarify the meaning of claim terms, courts must not import limitations into the claims from the specification. Therefore, when the specification uses a single embodiment to enable the claims, courts should not limit the broader claim language to that embodiment "unless the patentee has demonstrated a clear intention to limit the claim scope using 'words or expressions of manifest

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[74]R & R at 21-22 (citing *Comark Comm. Inc. v. Harris Corp.*, 156 F.3d 1182, 48 USPQ2d 1001, 1005 (Fed. Cir. 1998)).

[75]*Id*.

[76]595 F.3d 1340 (Fed. Cir. 2010).

> execution or restriction.'" "In addition, other claims of the patent . . . can also be valuable sources of enlightenment as to the meaning of a claim term."[77]

As did the Special Master, the Court rejects Defendants' attempt to read a limitation from the specifications into the claim.

Defendants argue that in the claims of the '002 and '222 patents the element "processor" is identified as a separate claim element from "floppy disc controller" and, therefore, they are separate components. Defendants do not cite case law supporting this argument. More importantly, is not supported by a reading of the patents. Accordingly, it is not persuasive.

The Court adopts the Special Master's claim construction as follows: no limitation requiring a CPU that is separate from the FDC and that controls the interpretation of instructions and their execution should be applied to the term "processor" in the asserted claims of the '002 and '222 patents or in the '858 patent. Further, the Court agrees with and adopts the Special Master's finding that "[t]here is absolutely no warrant for construing the claims of these patents in a way that would exclude redesigned FDCs that nonetheless incorporate the claimed solutions."[78]

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[77] *Id.* at 1352 (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996); *Phillips*, 415 F.3d at 1315 (further citation omitted); *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 905 (Fed. Cir. 2004) (additional internal quotations and citations omitted)).

[78] R & R at 32-33.

3. "software only"

In his Part C, the Special Master found that none of the terms of the '002 and '222 patents should be limited to "software-only" solutions but that the preambles of some, but not others, of the asserted claims[79] should be construed in view of the inventor's limit on the scope of the invention as "a way to identify defective FDCs and prevent the errors they might cause *without having to replace, modify, or inspect them*."[80] However, he recommended placing such a limitation only on those claims containing a term or phrase in the claims with which to draw in such limitation.[81]

The parties disagree on whether the Special Master found a disclaimer. Defendants argue that (1) the Special Master correctly recognized that the patentee disclaimed subject matter; (2) but failed to include "software-only" language in that disclaimer; (3) the Special Master's finding that redesigned FDCs are covered by the claims contradicts his disclaimer recommendation; and (4) the Special Master did not apply the disclaimer consistently because he applied it to only certain claims. Plaintiff argues that (1) the patents do not support a "software-only" disclaimer; and (2) the Special Master did not find any disclaimer.

Defendants agree with the Special Master's conclusion that under Federal Circuit law, because several passages of specifications quoted by Defendants refer to "the invention" or "the present invention" that such a description "limits the scope of the

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[79]Claims 1 and 15 of the '002 patent; claim 12 of the'002 patent; and claim 13 of the '222 patent.

[80]R & R at 35 (emphasis in original).

[81]*Id*. at 36.

invention."[82] They also agree with his application of the limitation as including "without the need to replace, modify, or visually inspect the FDC." Beyond those agreements, they object to his findings as follows: First, they contend that the language "using a software-only solution" should be added to the disclaimer. Second, they seek to have the disclaimer applied to the claims themselves rather than to the preamble as the Special Master construed them. Third, they argue the software-only disclaimer should also be applied to the '858 patent to be consistent.

The R & R contains all of the specification quotations relied upon by Defendants. The Special Master acknowledged that the passages, at first glance, give some support to Defendants' position, but went on to explain:

> But it is important to read the passages carefully, in light of the patents as a whole, including particularly the claims. When this is done, it becomes apparent that the feature of the invention that was being touted was that detection of defective FDCs and prevention of FDC data transfer errors could now be accomplished without necessitating "hardware redesign and/or fabrication of new FDCs" or "internal modification to an existing FDC" or "visual inspection or identification of the FDCs" or "recalls" or "replacement." Those solutions were, at least in the view of the inventor, expensive and inconvenient and the goal was to avoid them by other means. The inventor was clearly using the terms "software-only" and "software (programmatic) solution" in contradistinction to solutions that required the recall, replacement, modification, or visual inspection or identification of an FDC already in place in a computer system. Whether or not those solutions are accomplished solely by software, or by a combination of software and hardware (as is the case with most computer functions) is immaterial and certainly cannot be interposed as a limitation on the various functional steps recited in the '414, '002, and '222 patents.[83]

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[82] *Id.* at 35-36 (quoting *Verizon Servs. Corp. v. Vonage Holdings Corp*., 503 F.3d 1295 (Fed. Cir. 2007)).

[83] *Id.* at 35 (footnote omitted).

The Special Master went on to find the limitation on the scope, described above and that "in keeping with the requirement for a term or phrase in the claims with which to draw in this limitation, we need look no further than the preambles of the asserted independent claims."[84]

Addressing the parties' disagreement over whether the Special Master found a disclaimer, the Court finds that the Special Master found just what he said: a "limitation" on the scope of the invention that could be drawn into only certain claims via the term or phrase in their preambles. The Special Master did not find in the quoted specification language the type of "broad and unequivocal" words that would present a "clear case of disclaimer of subject matter that, absent the disclaimer, could have been considered to be within the scope of the claim language" as was presented in the case *SciMed Life Systems, Inc. v. Advanced Cardiovascular Systems, Inc.*,[85] a case relied upon by Defendants. The Special Master did not use the terms "disclaimer" or "specification disclaimer" and did not cite *SciMed*. Instead, he used the term "limitation" and cited cases such as *Verizon Servs. Corp. v. Vonage Holdings Corp*.,[86] *TiVo Inc. v. Echostar Comm.*

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[84] *Id*. at 36.

[85] 242 F.3d 1337 (Fed. Cir. 2001) (finding specification statement describing a certain configuration as the basic structure for "all embodiments of the present invention contemplated and disclosed herein" to be so broad and unequivocal as to result in a "clear case of disclaimer of subject matter that, absent the disclaimer, could have been considered to within the scope of the claim language").

[86] 503 F.3d 1295, 84 USPQ2d 1609, 1618-19 (Fed. Cir. 2007) (affirming finding that specification's description of "present invention" that included statement that "[t]he gateway compresses and decompresses voice frequency communication signals and sends and receives the compressed signals in packet form via the network" meant that

Corp.,[87] *Honeywell Int'l Inc. v. ITT Indus. Inc.*,[88] and *Microsoft Corp. v. MultiTech Sys. Inc*.,[89] all cases that applied limitations found in the specification statements to certain claims based on a term in those claims.

Thus, the Court rejects Defendants' characterization of the limitation as a subject matter disclaimer. Instead, it is more accurately described, as it was by the Special Master, as a limitation. This avoids possible confusion with the doctrine of prosecution disclaimer.[90]

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the term "localized wireless gateway system" "must be limited to one performing compression and packetization functions at the gateway").

[87]85 USPQ2d 1801, 1808 (Fed. Cir. 2008) (finding that because the following specification statements "[t]he invention parses the . . . MPEG stream and separates it into its video and audio components . . . It then stores the components into temporary buffers" described the invention as a whole and not merely one embodiment of a broader invention, it limited the scope of the invention). In *TiVo*, that limitation was drawn into the claim term "separated into its video and audio components."

[88]452 F.3d 1312, 79 USPQ2d 1294, 1299-1300 (Fed. Cir. 2006) (finding that specification statements that repeatedly referred to "this invention" and the "present invention" as a "fuel filter" limited the claim term "fuel injection system component" to a fuel filter). In *Honeywell*, the limitation was applied to the term in one claim, however, since there was only one independent claim, it effectively covered the entire patent.

[89]357 F.3d 1340, 69 USPQ2d 1815, 1820-22 (Fed. Cir. 2004) (finding that "[i]n light of . . . clear statements in the specification[s in each of the three patents] that the invention ('the present system') is directed to communications 'over a standard telephone line,' [the Federal Circuit] cannot read the claims of the '627 patent, the '649 patent, or the '532 patent to encompass data transmission over a packet-switched network such as the Internet"). The specification statements were found to limit the claim terms "sending," "transmitting," and "receiving" data in specific claims in each of the three patents. *Id*. at 1820 (listing the specific claims where the terms appear in the three patents).

[90]*Compare* Obj. at 18, (citing *Verizon's* discussion, 503 F.3d at 1306, of when a statement made by the patentee *during the prosecution history* of a parent patent in the same family as the patent-in-suit can operate as a disclaimer that would be limiting on

Having rejected Defendants' argument that the Special Master found a disclaimer, the Court may quickly address Defendants' remaining arguments. First, the Court finds that the Special Master did not improperly leave out a "software-only" limitation—he found, as does this Court, that such a limitation is not supported. The Court need not address Defendants' argument regarding the Special Master's purported reliance on the case *Eolas Techs., Inc. v. Microsoft Corp*.,[91] wherein it was found that software and hardware are "practically interchangeable in the field of computer technology."[92] The Special Master's reference to *Eolas* in his discussion occurred in a footnote, omitted from the block quote above, of how the inventor used "the terms 'software-only' and 'software (programmatic) solution' in contradistinction to solutions that required the recall, replacement, modification, or visual inspection or identification of an FDC already in place in a computer system."[93] The Special Master's parenthetical remark, that most computer functions are accomplished with a combination of software and hardware, was merely a contextual aside that was, in his own words, "immaterial" to the issue of the limitation he was discussing.[94] In the footnote, he merely cited the reader to his discussion of *Eolas* later in the R & R for

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the later application of the same claim term in other patents in the same family) with R & R at 36 n. 56 (citing the portion of *Verizon*, 503 F.3d at 1308, that discusses limitations by patent specification).

[91]399 F.3d 1325 (Fed. Cir. 2005).

[92]*Id*. at 1339 (citation omitted).

[93]R & R at 35 (footnote omitted).

[94]*Id*.

background. That later discussion was more substantive,[95] but because it related to the construction of a term in the '414 patent, it is now moot.

Next, the Court finds nothing inconsistent in the Special Master's application of the limitation to some claims and not others. As the Special Master explained: "A party wishing to use statements in the written description to confine or otherwise affect a patent's scope must, at the very least, point to a term or terms in the claim with which to draw in those statements."[96] "Without a claim term (such as "defective FDC") that could be used to draw in that extraneous limitation, it would be improper to import the limitation into the claims."[97]

The Court agrees with the Special Master that there are no claim terms in the '858 patent that could be used to "draw in" the same limitations that were drawn in to certain of the claim preambles in the '002 and '222 patents as set forth below.

Finally, the Court finds no contradiction between the limitation and the Special Master's finding that redesigned FDCs are covered by the claims. Defendants attempt to show such a contradiction by, among other things, citing the Special Master's remarks during the hearing on the claim construction, a hearing held after he provided the parties with his draft R & R. However, reading the next two paragraphs of those remarks,[98] (not

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[95] *Id.* at 45

[96] *Id.* at 33 n.54 (citing *Johnson Worldwide Assoc. Inc. v. Zebco Corp*., 175 F.3d 985, 50 USPQ2d 1607, 1610–11 (Fed. Cir. 1999)). This footnote contains the Special Master's excellent explanation of the law explaining that there must be a "textual reference in the actual language of the claim with which to associate a proffered claim construction."

[97] *Id.* at 37.

[98] Defs.' Ex. C at 13, 1-15.

included in the portion quoted by Defendants) it is clear that he considered that a redesigned FDC that incorporated the solutions would not fall outside the patents.

The Court adopts the Special Master's claim construction as follows: The preamble of claims 1 and 15 of the '002 patent and claim 1 of the '222 patent are construed to require apparatus for detecting a defective FDC without the need to replace, modify, or visually inspect the FDC. The preamble of claim 12 of the '002 patent is construed to require that the method for detecting an underrun error be accomplished without the need to replace, modify, or visually inspect the FDC. The preamble of claim 13 of the '222 patent is construed to require that the method for testing controllers be accomplished without the need to replace, modify, or visually inspect the controller.

These constructions do not mean that a redesigned FDC that incorporates the claimed solutions of the asserted patent claims falls outside the scope of the claims.

4. Terms common to the '002 and '222 patents

- "writing" ('002 & 222 patents)
- "interrupting" ('002 patent)
- "delaying" ('002 & '222 patents)
- "completing" ('002 patent)
- "verifying" ('002 & '222 patents)
- "reading" ('002 & '222 patents)
- "increasing" ('222 patent)
- "causing" ('222 patent)
- "detecting" ('222 patent)

The Special Master found that, given the preamble constructions of claims 1 and 15 of the '002 patent and claims 1 and 13 of the '222 patent recommended in his Part C, these terms required no construction and their ordinary meanings are clear.[99]

Defendants object to that construction only to the extent that these terms are not limited by their requested software-only disclaimer discussed above. Plaintiff argues that the issue of the requested software-only disclaimer has been resolved.

The Court agrees. The Court adopts the Special Master's claim construction as follows. Given the preamble constructions of claims of claims 1 and 15 of the '002 patent and claims 1 and 13 of the '222 patent, the following terms require no construction and their ordinary meanings are clear: writing ('002 & 222 patents); interrupting ('002 patent); delaying ('002 & '222 patents); completing ('002 patent); verifying ('002 & '222 patents); reading ('002 & '222 patents); increasing ('222 patent); causing ('222 patent); and detecting ('222 patent).

5. "defective floppy diskette controller"

The Special Master found that this term "needs no construction, for its ordinary meaning is clear."[100] He pointed out that the term "floppy diskette controller" has already been construed and that, in light of the construction, a jury would have no difficulty understanding what is meant by "defective."[101]

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[99]R & R at 54.

[100]*Id*. at 58-59.

[101]*Id*. at 58.

He rejected Defendants' argument that the defect in the FDC must relate to an inability or failure to detect an error caused by "a delay in the transfer of the last byte of a sector" for two reasons: First, it would be "an egregious example of improperly reading limitations from the specifications into the claim."[102] Second, it would "violate the doctrine of claim differentiation, which creates a presumption that each claim in a patent has a different scope."[103]

> In the '002 patent, claim 4 is ultimately dependent upon claim 1, through dependence upon claims 2 and 3. But claim 4 adds this language: "wherein the underrun error comprises a delay in transferring a last byte in the transfer." Consequently, if one were to import into claim 1 the "last byte" limitation, it would be present as well in dependent claims 2 and 3, and dependent claim 4 would have the same scope as claim 3. The same correspondence holds true for claims 1, 3, 4, and 5 of the '222 patent; importation of that limitation into claim 1 would result in claim 5 having the same scope as claim 4.[104]

He reasoned that Defendants' proffered claim construction would be presumptively unreasonable because it would result in one claim having the same scope as another claim.[105]

Defendants now argue that the ordinary meaning does not reflect the proper scope of the patents. They assert that the last byte error is the sole problem the patents purport to identify and solve and, therefore, the presumption of claim differentiation is overcome.

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[102] *Id*. at 57.

[103] *Id.*

[104] *Id.*

[105] *Id.* (citing *Beachcombers v. Wildewood Creative Prods., Inc.*, 31 F.3d 1154 (Fed. Cir. 1994)).

They also object that the Special Master has not construed an FDC to require that it be a hardware device—again objecting to a passing footnote reference to *Eolas* and arguing that Defendant described FDCs in the '002 and '222 patents as hardware.

Plaintiff argues that the last byte error is not the sole problem of the patents and that a close reading of Defendants' cites reveals the inventor did not label FDCs as hardware devices.

Defendants' arguments do not convince the Court that the common meaning of the term does not reflect the scope of the patents. Plaintiff did not label the FDCs as hardware devices, and Defendants have not overcome the presumption of claim differentiation.

The Court adopts the following claim construction: The term "defective floppy diskette controller" needs no construction, for its ordinary meaning is clear.

6. "processor executing detection executables effective to determine an underrun error undetected by a floppy diskette controller" ('002 and '222 patents)

The Special Master noted that the Defendants' contentions regarding a processor being neither "outside the FDC" nor limited to a CPU. However, he found that the word "executable" might cause some puzzlement to jurors, and suggested a construction adopted from various online dictionaries as meaning "software" that can run on the processor. He went on to define "software" in its broadest sense of the term as including firmware (as somewhere between hardware and software).

Defendants reiterate their objections to the term "processor" not being limited to processors not part of the FDC and also argue without elaboration that "executables" should be limited to application programs executing on a processor not part of the FDC.

Plaintiff, also without elaboration, argues that the processor-not-part-of- the-FDC argument has been decided.

The Court adopts the following claim construction: The term "processor" means an element capable of controlling the interpretation of instructions and their execution; this element need not be the CPU nor need it be outside the FDC. The term "executables" means software that can run on the processor. The term "software" is used in its broadest sense, and includes high-level applications, portions or "modules" of programs, and so-called "firmware" (instructions or data that are embedded in a particular hardware device).

7. “system clock” (‘002 and ‘222 patents)

The Special Master found that “the familiar word ‘clock’ may have the potential to engender some confusion in the mind of a reasonable juror.”[106] Rejecting constructions offered by both sides he recommends that "system clock operably connected to the processor to provide a time base" be construed to mean an element, made up of hardware, software, or some combination of the two, that provides electrical signals at a precise frequency to the processor.”[107]

Defendants renew their argument that because in the ‘002 and ‘222 patents, every discussion of the clock is in the context of providing interrupts to the CPU, it should be so construed. Plaintiff relies on the Special Master’s discussion of how in the claim language

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[106]R & R at 61.

[107]*Id*.

itself it requires "a system clock operably connected to the processor *to provide a time base*"[108] and not merely to provide interrupts.

The Court agrees with the Special Master that the term should be construed for the ordinary juror and that by its plain language the claim requires that a "clock" provides more than interrupts. The Court adopts the claim construction as follows: the term "system clock operably connected to the processor to provide a time base" is construed to mean an element, made of up hardware, software, or some combination of the two, that provides electrical signals at a precise frequency to the processor.

8. "determine on demand" ('002 and '222 patents)

The Special Master rejected Defendants' argument that the term is ambiguous because it is not defined in the specifications and found that, by looking at the entirety of the claim itself and reading it in light of the specifications, it is clear "that the demand is being made by the *application* into which the 'detection executables are integrated' and which is 'directly loaded and executed on the processor.'"[109] He also found that it was not necessary to put a time reference on the step because "a person of ordinary skill in this art would have no difficulty whatever in understanding that the 'determine on demand' step, like every other software-controlled step in these patents, would be performed in a time

[108] *Id.*

[109] *Id.* at 62 (emphasis in original).

span that depends on a multitude of factors, such as the speed and computing power of the processor and the complexity of the 'application.'"[110]

Defendants argue that the Special Master's construction of "on demand" as a step controlled by the application reads the limitation out of the claim. They also renew their objections that the term is indefinite because it fails to give any indication of the time frame, which could lead to absurd results. Plaintiff does not agree and supports the Special Master's construction.

The Court finds the Special Master's reasoning and construction to be persuasive because it finds it highly unlikely that an ordinary person skilled in the art, would not be able to understand what "on demand" means in the context of these claims without a time reference.

The Court adopts the claim construction as follows: the "determine on demand" step is construed as a step that is controlled by the "application" of claims 8 ('002 patent) and 9 ('222 patent).

9. "shadowing executable" ('002 and '222 patents)

The Special Master noted that "[n]either patent uses the two-word combination [shadowing executable] in the specification, but both are replete with references to 'shadowing' and 'executable'" noted that the term "executable" had been previously defined; and incorporated the parties' agreed synonym for "shadowing" as "monitoring," but rejected Defendants' suggested language of what is being monitored as going "far

[110] *Id*. at 63.

beyond the plain words of the claim, which call for the executable 'to determine when a last byte is to be transferred' from the DMA to the FDC."[111]

Defendants object because they assert that it does not include what they say is the inventor's "special definition" in the specification:

> As used herein, "DMA shadowing" may be thought of as programmatic CPU monitoring of data (byte) transfers and timing the last byte of a sector's DREQ to DACK signals.[112]

Plaintiff argues Defendants have not shown a special definition in the specifications.

The Court agrees with the Special Master that the Defendants' requested definition would go far beyond the claim term itself. Further, the language they cite goes on for 13 more lines to amplify exactly what is meant, far too long and detailed to be a useful definition. The Court agrees that the suggested language goes far beyond the claim term itself.

The Court adopts the following claim construction: "This limitation should be construed to mean that the detection executables include software that can be run on a processor and that is effective to determine when a last byte is to be transferred from the DMA to the FDC."

10. "detection executables effective to be run on the processor to force and detect an underrun error not detected by the floppy diskette controller" ('002 and '222 patents)

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[111] *Id*. at 63-64.

[112] Obj. at 25 (referencing citation in earlier briefs to '002 C7L56-59 and '222 C8L3-6).

and “processor executing detection executables effective to precipitate and detect an underrun error undetected by a floppy diskette controller” (‘002 patent)

The Special Master found that these clauses should be construed as follows:

> The term "processor" means an element capable of controlling the interpretation of instructions and their execution; this element need not be the CPU nor need it be outside the FDC. The term "executables" means a software program that can run on the processor. The function of that software program is to cause and detect an underrun error undetected by an FDC.[113]

Defendants reiterate their previous arguments as follows:

> The term “processor” should be limited to “processors” not part of the FDC and “executables” should be limited to application programs executed on a processor not part of the FDC.[114]

Defendants’ prior arguments have been rejected. The Court adopts the following claim construction: The term "processor" means an element capable of controlling the interpretation of instructions and their execution; this element need not be the CPU nor need it be outside the FDC. The term "executables" means a software program that can run on the processor. The function of that software program is to cause and detect an underrun error undetected by an FDC.

11. “a determination module for identifying a hardware resource associated with a computer system” (‘858 patent) and “a welding module for inseparably connecting a persistent software layer to the hardware resource” (‘858 patent)

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[113]R & R at 65-66.

[114]Obj. at 25.

The Special Master found that "[t]hese terms appear to have been coined by the inventor for purposes of describing the invention of the '858 patent."[115] He found that they should be construed as "means-plus-function" (MPF) terms and that the elements must be construed in accordance with 35 U.S.C. §112 ¶ 6 and therefore limited to the software structure described at Col. 15, line 43 through Col. 16, line 17 and equivalents thereof, which he quoted. He also found, consistent with his findings in his Part B, that neither of the quoted passages requires that the module be executed outside the FDC.[116]

Defendants' only objection is to the last finding, which they argue is a jury issue. Plaintiff does not agree that it is a jury issue. The Court does not agree that it is a jury issue and finds it to be a claim construction issue.

The Court adopts the following claim construction, starting with "the '858 patent's pertinent statements" followed by "a fairly detailed description of the structure and operation of the software modules represented schematically in Fig. 8:"[117]

> In certain embodiments, an apparatus for detecting a defective floppy diskette controller may comprise a computer readable medium storing executable and operational data structures. The data structures may include a determination module for identifying a hardware resource associated with a computer system, a welding module for inseparably connecting a persistent software layer to the hardware resource, and a defense module for resisting attempts by other software to unweld the persistent software layer from the hardware resource. (C5L42-51)
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> FIG. 8 is a schematic block diagram of a method for welding a software layer to a hardware layer in accordance with the invention. (C7L40-42)

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[115]R & R at 46.

[116]R & R at 48.

[117]*Id.* at 47.

Referring to FIG. 8 specifically and FIGS. 8-15 generally, an overview at a high level of abstraction shows an overarching process for implementing a welding process. A process 150 may include a determination 151 of available 25 hardware and support in a computer system. Accordingly a welding process 153 may weld a software layer to a hardware layer such that other software cannot defeat the connection therebetween. (C15L22-29)

Referring to FIG. 8 to review in more detail a specific embodiment for implementing a software correction of a hardware state, a process 150 in accordance with the invention may address FDC controllers that are configured to operate with a first-in-first-out (FIFO) architecture. In such an embodiment, a process 152 for loading 152 a driver for a hardware resource (e.g. peripheral device) leads to identifying 154 the processor executing the instructions. Thereafter, a test 156 determines whether or not the processor is a Pentium (P5) type or equivalent, or not. If the device is not, then a do-not-install step 158 is initiated. The step 158 is one of two similar actions.

By contrast, if the test 156 results in a device that is at least as current, or more current than a P5 architecture, then identifying 160 the floppy diskette controller is useful. The identifying step 160 corresponds to a floppy diskette controller, which may control more than floppy diskette types of media. After identifying 160 the nature of the floppy diskette controller (FDC), a test 162 determines whether or not the FDC operates with FIFO enablement. If not, then a do-not-install step 164 follows.

Otherwise, for FIFO-enabled FDCs, a save step 166 saves the content from a control register no.4 (CR4). Next, the bit assigned to the CR4.DE location is set 168. By the setting 168, the save step 166 is effectively required. Otherwise, the setting step 168 destroys irretrievably the contents of the CR4, control register no. 4, contents.

A saving step 170 saves to another location the contents of the debug register no. 7 (DR7). The saving step 170 may also save debug register no. 3 (DR3). Saving 172 an original interrupt service routine, associated with a first interrupt, then provides installation 174 of a new or alternative interrupt service routine (ISR).

In the installing step 174, a setting step 176 may set the FIFO to an "on" state if executing a solution to the read/write defect of an FDC. The solution represents a curing of the hardware defect of the chip by operating the software solution as described above. Alternatively, setting 178 the FIFO to an "off" state is used for the detection process. The detection process is the determination of whether or not the subject chip has the hardware defect detected and solved by the instant invention. (C15L43-C16L17)

These two MPF clauses are construed to cover the software structure that is described in the passages quoted above, and equivalents thereof. Neither requires that the module be executed outside the FDC.

IV. ORDER

The following claims are construed as follows:

1. The claims of the ‘002 and ‘222 patents are not limited to a system or method in which the FDC is controlling a “floppy diskette” as that term was defined for the ‘414 patent; other types of spinning storage media may be employed.

2. No limitation requiring a CPU that is separate from the FDC and that controls the interpretation of instructions and their execution should be applied to the term “processor” in the asserted claims of the ‘002 and ‘222 patents or in the ‘858 patent.

3. The preamble of claims 1 and 15 of the ‘002 patent and claim 1 of the ‘222 patent are construed to require apparatus for detecting a defective FDC without the need to replace, modify, or visually inspect the FDC. The preamble of claim 12 of the '002 patent is construed to require that the method for detecting an underrun error be accomplished without the need to replace, modify, or visually inspect the FDC. The preamble of claim 13 of the ‘222 patent is construed to require that the method for testing controllers be accomplished without the need to replace, modify, or visually inspect the controller. These constructions do not mean that a redesigned FDC that

incorporates the claimed solutions of the asserted patent claims falls outside the scope of the claims.

4. Given the preamble constructions of claims of claims 1 and 15 of the ‘002 patent and claims 1 and 13 of the ‘222 patent, the following terms require no construction and their ordinary meanings are clear: writing (‘002 & 222 patents); interrupting (‘002 patent); delaying (‘002 & ‘222 patents); completing (‘002 patent); verifying (‘002 & ‘222 patents); reading (‘002 & ‘222 patents); increasing (‘222 patent); causing (‘222 patent); and detecting (‘222 patent).

5. The term "defective floppy diskette controller" needs no construction, for its ordinary meaning is clear.

6. The term "processor" means an element capable of controlling the interpretation of instructions and their execution; this element need not be the CPU nor need it be outside the FDC. The term "executables" means software that can run on the processor. The term "software" is used in its broadest sense and includes high-level applications, portions or "modules" of programs, and so-called "firmware" (instructions or data that are embedded in a particular hardware device).

7. The term “system clock operably connected to the processor to provide a time base” be construed to mean an element, made of up hardware, software, or some combination of the two, that provides electrical signals at a precise frequency to the processor.

8. The “determine on demand” step is construed as a step that is controlled by the “application” of claims 8 (‘002 patent) and 9 (‘222 patent).

9. The term "processor" means an element capable of controlling the interpretation of instructions and their execution; this element need not be the CPU nor need it be outside the FDC. The term "executables" means a software program that can run on the processor. The function of that software program is to cause and detect an underrun error undetected by an FDC.

10. “a determination module for identifying a hardware resource associated with a computer system” (‘858 patent)

“a welding module for inseparably connecting a persistent software layer to the hardware resource” (‘858 patent)

These two MPF clauses are construed to cover the software structure that is described in the passages quoted above, and equivalents thereof. Neither requires that the module be executed outside the FDC.

It is further

ORDERED that the Special Master’s September 29, 2008 Report and Recommendation (Docket No. 636) is adopted except for his specific claims constructions for claims in the ‘414 and ‘767 patents. It is further

ORDERED that Defendants' Objection (Sealed Docket No. 667) to Plaintiffs' Sealed Supplemental Submission in Support of Adams' Only Objection to the R & R (Docket No. 661), is DENIED AS MOOT.

DATED July 9, 2010.

BY THE COURT:

TED STEWART
United States District Judge