IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF PENNSYLVANIA

CARNEGIE MELLON UNIVERSITY, Plaintiff, v. MARVELL TECHNOLOGY GROUP, LTD., and MARVELL SEMICONDUCTOR, INC., Defendants.	Civil Action No. 2:09-cv-00290-NBF Hon. Nora B. Fischer

MARVELL'S OPPOSITION TO CMU'S MOTION FOR A FINDING OF WILLFUL INFRINGEMENT AND ENHANCED DAMAGES

TABLE OF CONTENTS

Page

TABLE OF AUTHORITIES

Page

Cases

INTRODUCTION

Defendants Marvell Technology Group, Ltd. and Marvell Semiconductor, Inc. (collectively, "Marvell") hereby respectfully oppose Plaintiff Carnegie Mellon University's ("CMU") motion for a finding of willful infringement and enhanced damages.

CMU makes the remarkable request to this Court (Dkt. 793) that it impose a willfulness enhancement ***in an amount up to treble damages*** for a damages award that already exceeds ***$1 billion***—even though CMU never commercialized its technology and delayed years in asserting its rights, and even though Marvell openly disclosed its knowledge of the accused technology to the Patent Office and received a patent for a technology it reasonably believed patentably distinct based on real differences CMU's own inventors acknowledged. No case cited in CMU's brief supports enhanced damages for willfulness in remotely similar circumstances.

Under governing Federal Circuit standards, CMU's request is baseless and this Court should reject it. The record reflects numerous bases for finding objectively reasonable Marvell's defenses of invalidity and noninfringement in a case the Court itself described as close. Nor does the record support any finding of subjective willfulness, for the record amply evinces Marvell's good-faith belief that it was not recklessly infringing when it evaluated CMU's technology, found it too complex to commercialize, and openly sought to patent its own suboptimal but commercially practical invention over Dr. Kavcic's optimal detector as patented by CMU. Even if the Court were to find both objective and subjective willfulness (as the record cannot support), it should exercise its discretion not to enhance the damages award against Marvell, either in its present amount or in any amount the Court should reduce it to on JMOL or remittitur pursuant to Marvell's post-trial motions (*see* Dkt. 802-809). CMU's enhancement motion should be denied.

ARGUMENT

To find willfulness warranting enhanced damages for patent infringement, "a patentee must show by clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent. . . . The state of mind of the accused infringer is not relevant to this objective inquiry. If this threshold objective standard is satisfied, the patentee must also demonstrate that this objectively-defined risk . . . was either known or so obvious that it should have been known to the accused infringer." *In re Seagate Tech., LLC*, 497 F.3d 1360, 1371 (Fed. Cir. 2007). The objective willfulness inquiry is reserved to the Court; the subjective willfulness inquiry to a rational jury. *Bard Peripheral Vascular, Inc. v. W.L. Gore & Assocs., Inc.*, 682 F.3d 1003, 1007-08 (Fed. Cir. 2012).[1] "If the Court finds no objective willfulness, the inquiry is at an end, and the Court need not consider whether the jury's finding of subjective willfulness was supported by substantial evidence." *Apple, Inc. v. Samsung Elecs. Co., Ltd.*, No. 11-CV-01846-LHK, Slip Copy, 2013 WL 412861 at *18 (N.D. Cal. Jan. 29, 2013) (Koh, J.). Here, the record fails to support either the objective or subjective inquiry needed to find the willfulness predicate for enhancing damages.

I. THE RECORD DOES NOT SUPPORT A FINDING OF OBJECTIVE WILLFULNESS

For the same reasons Marvell has already set forth in its JMOL motions (*see* Dkt. 806, at 4-8; Dkt. 700, at 6-10; Dkt. 741, at 7-13), which it respectfully incorporates by reference, the record fails to support objective willfulness, and the Court should reject any such finding here. In making that determination, the Court should accord no weight to the jury's advisory finding of

[1] Even where defenses such as anticipation turn on questions of fact, the "judge remains the final arbiter of whether the defense was reasonable." *Id.* at 1007.

objective willfulness (Dkt. 762, at 7), for objective willfulness is exclusively a question for the Court, subject to de novo review. *Bard*, 682 F.3d at 1007-08.

"The 'objective' prong of *Seagate* tends not to be met where an accused infringer relies on a reasonable defense to a charge of infringement." *Spine Solutions, Inc. v. Medtronic Sofamor Danek USA, Inc.*, 620 F.3d 1305, 1319 (Fed. Cir. 2010). Tracking "the Supreme Court's precedent on 'sham' litigation," inquiry into objective willfulness "entails an objective assessment of potential defenses based on the risk presented by the patent." *Bard*, 682 F.2d at 1006-07. "If an objective litigant could conclude that the suit is reasonably calculated to elicit a favorable outcome, it is not objectively baseless." *Id*. at 1007 (citation and internal quotation marks omitted). Here, Marvell had objectively reasonable invalidity and non-infringement defenses, and CMU falls well short of showing that "no reasonable litigant could realistically expect success on the merits" of either defense, as required for a finding of objective willfulness. *Id*.

A. Marvell's Invalidity Defense Was Objectively Reasonable

The Court has already characterized invalidity as a "close call" on CMU's Group I claims. (Dkt. 306, at 1; *see also* Dkt. 337, at 4 ("Although it was a close case, the Court found that the '251 Patent did not anticipate the Group I claims.").) And in denying CMU's motion for JMOL at the close of evidence, the Court indicated that genuine issues remained for the jury on invalidity. (Dkt. 731, 732, 12/21/12 Minute Entry.) An invalidity defense that went to the jury, although ultimately unsuccessful, cannot fairly be deemed objectively baseless.[2]

[2] *See e.g., Astrazeneca AB v. Apotex Corp.*, Nos. 01 Civ. 9351, M-21-81 (BSJ), 2010 WL 2541180 at *5–*6 (S.D. N.Y. June 9, 2010) (dismissing claim of willful infringement where the court conducted full trial to decide the infringement question and the accused infringer's invalidity defenses were not baseless); *Saffran v. Johnson & Johnson*, No. 2:07–CV–451 (TJW), 2011 WL 1299607 at *8–*9 (E.D. Tex. March 31, 2011) (granting JMOL of no willful infringement in view of the close issues of claim construction, infringement and validity);

CMU argues (Brief at 10-12) that Marvell's defense of anticipation or obviousness based upon the Worstell prior art was objectively baseless, attacking the testimony of Marvell's expert Dr. Proakis. But Dr. Proakis's testimony that Worstell disclosed all the limitations of claim 4 was more than enough to support an inference that Marvell's invalidity defense was objectively reasonable, as a side-by-side chart setting out CMU's asserted claim alongside its admissions and Dr. Proakis' opinions shows:[3]

Claim 4	CMU admissions	Dr. Proakis' opinions
4. A method of determining branch metric values for branches of a trellis for a Viterbi-like detector, comprising:	There is no dispute that the Seagate patent discloses methods for determining branch metric values for branches of a trellis for a Viterbi-like detector	
selecting a branch metric function for each of the branches at a certain time index from a set of signal-dependent branch metric functions; and	Dr. Moura testified that Equation 10 in the CMU patents represents a set of functions because of the signal dependent variance – $1/\sigma^2$. (12/17/12 Tr. at 57:6-19; D-DEMO 12-10 (displaying Moura Dep. Tr. at 162:22-163:4).) CMU's expert, Dr. McLaughlin was asked whether the Zeng and Lee articles disclose selecting a branch metric function from a set of functions for each of the branches at a certain time index, and he confirmed that they do. (12/17/12 Tr. at 56:13-24;	Dr. Proakis testified that the Worstell patent discloses this limitation. Dr. Proakis testified that the "transition noise standard deviation" in the "further modified" portion of the Worstell patent is mathematically represented by $1/\sigma^2$. (12/17/12 Tr. at 60:1-61:19, 68:12-69:10.) Dr. Proakis then testified that one $1/\sigma^2$ is applied to branches that have no transition, and another $1/\sigma^2$ is applied to branches that have a transition. (*Id.* at 67:9-69:10, 94:5-23.) Dr. Proakis also testified that what is disclosed in the Worstell patent's "further modified" branch metric is "exactly"

Arlington Indus., Inc. v. Bridgeport Fittings, Inc., 692 F. Supp. 2d 487, 504 (M.D. Pa. 2010) (granting JMOL of no willful infringement in view of a finding in a prior action that had arrived at an opposing claim construction); *Solvay, S.A. v. Honeywell Specialty Materials LLC*, 827 F. Supp. 2d 358, 366-67 (D. Del. 2011) (granting summary judgment of no willful infringement where the accused infringer had presented a credible invalidity defense, with the district court granting summary judgment of invalidity that the Federal Circuit later reversed).

[3] The same evidence shows the invalidity of claim 2 of the '180 patent.

	D-DEMO 12-9 (displaying McLaughlin Dep. Tr. at 267:20 – 268:3).) Dr. McLaughlin admitted that the Worstell patent teaches that transition noise (*i.e.*, signal dependent noise) can depend on the type of transition, and therefore, the value of the noise is going to be different whether there is a transition or whether there is no transition. (12/17/12 Tr. at 69:4-22; D-DEMO 12-16 and 12-17 (displaying McLaughlin Dep. Tr. at 371:5-21, 373:15-25).)	what is disclosed in the Zeng and Lee articles referenced in the "Background of the Invention" to the CMU patents, as well as Equation 10 in the CMU patents. (*Id.* at 60:1-25.) Dr. Proakis pointed out that Dr. McLaughlin had even conceded that the "transition noise standard deviation" could differ accordingly. (*Id.* at 69:23-70:8.)
applying each of said selected functions to a plurality of signal samples to determine the metric value corresponding to the branch for which the applied branch metric function was selected, wherein each sample corresponds to a different sampling time instant.	CMU does not dispute that Worstell takes correlated noise into account – and that Drs. Kavcic and Moura were not the first to take correlated noise into account in a modified Viterbi branch metric (12/17/12 Tr. at 58:18-25; D-DEMO 12-11 (displaying McLaughlin Dep. Tr. at 252:10-13)); the title of Worstell is "Modified Viterbi Detector Which Accounts for Correlated Noise" (DX-187).	Dr. Proakis testified that the Worstell patent discloses this limitation as well. As explained by Dr. Proakis, Xb,nt is a sample at the current time instant while Xb,(n-i)t is at a previous time instant. (12/17/12 Tr. at 59:16-25.)

Moreover, CMU's specific attacks on Dr. Proakis's testimony are unavailing. *First*, CMU manufactures a supposed "contradiction" (Brief at 11) on the part of Dr. Proakis, stemming from Dr. Proakis' taking into account the Court's clarification that varying the parameters (as opposed to inputs) of a "function" results in multiple functions (Dkt. 337, 338).

CMU attacks Dr. Proakis' trial testimony for supposedly "flatly contradict[ing]" (Brief at 11) an earlier declaration in which Dr. Proakis opined that neither the Worstell patent nor the CMU patents disclosed multiple functions. In fact, Dr. Proakis has maintained throughout that the Worstell patent and the asserted claims "take correlated noise and signal dependent noise into account ***in exactly the same*** fashion." (12/17/12 Tr. at 120:14-24 (emphasis added).)[4] What changed following Dr. Proakis' declaration is simply that the Court clarified the construction of the term "function" and ruled that in order to determine if a function is a "single" function or a "set of functions," one needed to distinguish between "inputs," "outputs," "parameters," and "constants" (Dkt. 337), such that the CMU patents as well as the Worstell patent must be understood to disclose multiple functions (because they each disclose equations whose parameters necessarily vary). Accordingly, Dr. Proakis was simply accounting for this Court's claim construction when he testified as he did at trial.[5]

Second, CMU argues (Brief at 11-12) that Dr. Proakis "conceded on cross-examination that the Worstell patent did not, in fact, anticipate the asserted claims," because he "resort[ed] to an obviousness argument" in response to a question whether the Worstell patent discloses a $1/\sigma^2$ for the "zero" branches.[6] But CMU ignores the ensuing lines of transcript where counsel asked whether the zero-branch issue differentiates the Worstell patent from the Kavcic claims, and Dr. Proakis replied that he does not "consider that a difference." (12/17/12 Tr. (Proakis) at 95:10-

[4] Dr. Proakis' declaration states that his opinion was dependent on the interpretation of the term "function": "To the extent the Worstell patent does not disclose a 'set' of branch metric functions as the Court has already ruled, then neither do the CMU patents, if the term 'function' is construed consistently between the patents." (Dkt. 318-3, at 7.)

[5] When Dr. Proakis started to explain how he took into account the Court's subsequent claim construction, CMU objected to any mention of the claim construction order. (12/17/12 Tr. at 99:9-114:21.)

[6] CMU made the same argument in its JMOL on Marvell's invalidity defenses (Dkt. 731, 749), which the Court denied (12/21/12 Minute Entry).

17.) Dr. Proakis made equally clear that "every element of this claim [4 of the '839 patent] is disclosed in the Worstell patent" and that Claim 2 of the '180 patent is likewise "anticipated and invalid." (*Id.* at 68:7-11, 71:19-23.)

CMU's expert, Dr. McLaughlin, while parting ways on the ultimate question, corroborated the reasonableness of Marvell's invalidity defense based on Dr. Proakis's opinion concerning the Worstell patent. Dr. McLaughlin agreed that Worstell, which discloses taking into account correlated noise, also discloses taking into account transition noise, which Dr. McLaughlin has conceded is also known as signal-dependent noise (*id.* at 69:11-22). Thus CMU's own evidence confirms the closeness of the invalidity question.

Finally, CMU argues (Brief at 12) that Marvell's position on obviousness is unsubstantiated. CMU suggests that Worstell teaches away from a "set of signal dependent branch metric functions" when it uses the term "constant." But CMU ignores Dr. Proakis's testimony on this very question, which explained that CMU had "really misinterpreted this." (12/17/12 Tr. (Proakis) at 97:7-8.) CMU also claims that Marvell did not address secondary considerations of non-obviousness (Brief at 12), but again ignores important testimony that the invention was not commercially successful (11/29/12 Tr. (Moura) at 73:19-21; *id.* (Kavcic) at 270:4-5; 12/5/12 Tr. (Wooldridge) at 132:1-12, 149:10-150:15, 169:5-9, 170:3-5, 235:17-23).

B. Marvell's Noninfringement Defense Was Objectively Reasonable

"If the accused infringer's position is susceptible to a reasonable conclusion of no infringement, the first prong of *Seagate* cannot be met." *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1310 (Fed. Cir. 2011). Thus, even if Marvell's reasonable invalidity defense were not alone enough to foreclose objective willfulness (and it is), the reasonableness of Marvell's non-infringement defense independently bars any objective willfulness finding.

Both of CMU's asserted claims at trial require the detector to "select[] a branch metric function" for each of the branches "at a certain time index." (P-1, at 14:12-13; P-2, at 15:45-46.) The parties stipulated to the construction of several terms in this limitation, including the term "***branch***," which means "a potential transition between two states (nodes) immediately adjacent in time ***in a 'trellis***." (Dkt. No. 120-1, at 2 (emphasis added).) In light of the stipulated constructions, the claimed "selecting" step requires the selection of a mathematical function from a set of more than one function for determining the values of branches in a trellis**.**

With respect to the accused ***MNP feature***, Marvell asserted non-infringement because the MNP, unlike CMU's claims, uses a ***post-processor*** that does ***not*** determine branch metric values ***using a trellis***. The objective reasonableness of this non-infringement defense is confirmed by the inventors' own admissions regarding the scope of the CMU patents:

First, in his 2001 "Silvus email" (DX-189), which CMU fought hard to keep from the jury, Dr. Kavcic memorialized to Dr. Silvus his understanding that he did not think he had invented a media noise post-processor. (DX-189, at 1-2; DX-310; 11/30/12 Tr. (Kavcic) 84:5-89:4). Rather, he told Dr. Silvus that, in his patent claims, "[t]he data dependence is in the trellis and NOT in the post processor." (DX-189, at 1-2.) It cannot be objectively unreasonable for Marvell to agree with the inventor's own conclusion about the limited scope of his claims.

Second, in a 2008 article, Dr. Kavcic noted that his algorithm was too complex to implement in hardware, describing the complexity of a modeled Viterbi detector and stating that the "real complexity of the detector is greater." (DX-310, at 1766.) He added that, because each filter has a certain number of filter coefficients and because each coefficient depends on a pattern of symbols, "[e]ven for moderate lengths . . . the complexity is too high for implementation in hardware." (*Id*.) By contrast, Dr. Kavcic, citing to Marvell's '585 patent, expressly described

Marvell's approach as "strik[ing] a balance between complexity and performance . . . in a postprocessing fashion to further narrow down the choice to one sequence" and went so far as to describe Marvell's approach as "novel." (*Id*. at 1761, 1766.) Where the inventor himself sees the patented and accused technologies as so distinct, a non-infringement defense cannot be objectively unreasonable.

Third, Dr. Moura's May 2001 handwritten notes, like Dr. Kavcic's article, describe the CMU patent as the "optimal" solution, but one that is too "complex," thus leading others to develop "suboptimal" solutions. (DX-1522, at 2.) The inventors' own statements thus confirm Marvell's understanding of the Kavcic detector's complexity and support the objective reasonableness of the conclusion that Marvell's technology was different.

The real differences the inventors themselves conceded between the Kavcic and Marvell technologies were confirmed by other evidence as well: *First*, the Patent Office considered Marvell's approach sufficiently novel and distinct from Kavcic's approach to grant Marvell's patent application. (*See supra* at 1; DX-266, at 1; DX-287, at 1.)[7] And, *second*, the industry appeared to agree that Kavcic was too complex for commercial implementation, for Marvell sold its chips but not a single company ever approached CMU to discuss licensing its patents. (11/29/12 Tr. (Moura) at 73:19-21; *id.* (Kavcic) at 270:4-5; 12/5/12 Tr. (Wooldridge) at 132:1-12, 149:10-150:15, 169:5-9, 170:3-5, 235:17-23; 12/10 Tr. (Lawton) at 191:20-192:1.)

Against this overwhelming basis for finding Marvell's non-infringement defense objectively reasonable, CMU offers a list of evidentiary snippets (Brief at 7-9) to suggest that

[7] *Cf. King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 867 (Fed. Cir. 1985) (noting that evidence of the defendant's patent bears on willfulness because, "by relying on the issuance of its patent, which even cited the [plaintiff's] patent as prior art, [defendant's] management might reasonably have believed that its actions were protected as within its own patentably distinct claims, while falling outside the [plaintiff's] patent claims").

Marvell's technology cannot have reasonably been thought non-infringing because it supposedly does compute branch metrics using a trellis.[8] None of these snippets is persuasive:

First, CMU points to Marvell's specifications for its MNP (Brief at 7), but none of them describes the use of a trellis in the MNP.

Second, CMU tries (Brief at 8-9) to undermine Dr. Blahut's testimony, but its effort is unavailing. Dr. Blahut has always maintained that Marvell's MNP does not use a "trellis" and that it does not calculate any "branch metric values," as those terms have been construed by the Court. (12/13/12 Tr. (Blahut) at 251:21-252:8, 254:6-23, 287:21-288:23.) CMU points (Brief at 9) to Dr. Blahut's earlier testimony that MNP-type chips "do compute path metrics," but the asserted claims do not include any "path metric" limitation, and thus, even if Dr. Blahut's testimony on path metrics were conflicting (which it is not), that testimony would be irrelevant to infringement. In any event, Dr. Blahut's relevant testimony consistently described the MNP as performing a "path metric" computation based on the "***difference***" between two path metrics—entailing a "difference" metric that does not involve calculating "branch metric values." (12/13/12 Tr. (Blahut) at 256:25-257:12, 287:21-288:23.) Even Dr. Kavcic agreed that the difference of path metrics does not equate with a branch metric, which is what the asserted claims require. (*Id.* at 251:25-252:8, 254:2-23 (referring to 7/15/10 Dep. of Dr. Kavcic at 643:5-

[8] Although CMU also suggests (Brief at 7) that Marvell sometimes labels its MNP as a part of a "detector" – which, in CMU's view, supports infringement – this argument is a red herring. Marvell's non-infringement defense stands independent of the term "detector" and is based on (among other things) the fact that its MNP circuitry (which receives the output from a conventional linear detector) does not use a trellis nor does it determine branch metric values by applying a branch metric function to a plurality of signal samples, as the claims require.

7 ("Q. Is the difference between two path metrics a branch metric in your mind? A. I don't think it is.")).)[9]

With respect to the accused ***NLD feature***, Marvell asserted that there was no infringement because (among other reasons) Marvell's NLD design accounts for media noise using FIR filters ***before*** a conventional trellis and determines a branch metric value in a conventional Viterbi trellis using a ***single*** signal sample—not a ***plurality*** of signal samples as the claims require. As Dr. Blahut testified, the NLD pre-processing FIR filters operate on signal samples outside of the trellis, and there is no plurality of signal samples used in the conventional Viterbi trellis to determine a branch metric value. (*See* 12/13/12 Tr. (Blahut) at 259:4-8, 261:1-8.) CMU suggests (Brief at 9-10) that "Dr. McLaughlin's analysis debunked that position," but that is untrue. Dr. McLaughlin conceded that the FIR filters output only a ***single*** signal sample (12/3/12 Tr. (McLaughlin) at 288:6-10 ("Q. So it's fair to say that the signal that's labeled f_y that we're discussing, that is a single signal sample. . . . A. It's a single signal sample that's . . . the result of the application . . . step.")), but maintained that the claims are met nonetheless because the single signal sample is associated with a plurality of signal samples. But this is an equivalence argument, and CMU failed to assert infringement under the doctrine of equivalents. In any event, Dr. McLaughlin also conceded that Marvell's technical specifications show the non-linear (FIR) filtering occurring before any branch-metric calculation. (*Id.* at 285:14-21 ("Q.

[9] At trial, CMU questioned Dr. Blahut regarding a "path metric" calculation in the Viterbi trellis, which is separate from the MNP. (*Id.* at 268:7-269:10.) Dr. Blahut there agreed that the "path metric" in the Viterbi detector component is a sum of branch metrics. (*Id.* at 269:2-4.) Yet the path metric computation in a Viterbi detector differs from the "path metric" computation for the MNP. Whereas a "path metric" computation in a Viterbi detector determines the individual branch metric values and adds those values together, the path metric computation in the MNP does not determine the individual branch metric values but is based on the differences in path metrics. Dr. Blahut explained that distinction both before and at trial *(id.* at 254:11-19).

My question, sir, we didn't agree that the filtering step occurs before the branch metric calculation, right? A. And -- in this block diagram [Slide 76] NL filtering occurs before what's labeled as on the document BM calculation. Q. 'BM' is branch metric calculation? A. Correct.").)

For all these reasons, CMU's effort to portray Marvell's non-infringement defense as objectively unreasonable is unavailing.[10]

C. CMU Misplaces Reliance On Advice-Of-Counsel And Copying Evidence

CMU seeks to use (Brief at 16) Marvell's decision to preserve its privilege and not disclose its communications with counsel as the basis for an adverse inference that Marvell failed to obtain any opinion of counsel in violation of its own IP policy, and thus was objectively willful. This argument should be rejected as misleading and legally incorrect.

First, Marvell's actions with respect seeking advice of counsel have no bearing on the objective prong, which does not depend on the infringer's state of mind. *See Ricoh Co., Ltd. v. Quanta Computer Inc.*, No. 06–cv–462–bbc, 2009 WL 3925453 at *1 (W.D. Wis. Nov. 18, 2009) (noting that whether defendants consulted counsel is "irrelevant").

Second, Marvell's Dr. Zining Wu testified that he did consult with in-house counsel concerning CMU's patent. (12/11/12 Tr. (Wu) at 323:9-24.) In deference to privilege, the Court instructed Dr. Wu not to provide further details of the discussion. (*Id.* at 323:16-20.) There is nothing damning in that record, and in any event no warrant for finding willfulness as CMU wrongly suggests.

[10] The Court's dismissal of CMU's Group II claims in granting Marvell's motion for summary judgment of non-infringement (Dkt. 444) also reflects the reasonableness of Marvell's defenses. *Uniloc USA, Inc. v. Microsoft Corp.*, 640 F. Supp. 2d 150, 176-177 (D.R.I. 2009), *aff'd in relevant part*, 632 F.3d 1292, 1310-1311 (Fed. Cir. 2011).

Third, the Federal Circuit has instructed that no adverse inference can be drawn as to willfulness when an accused infringer chooses not to rely on advice of counsel. *See Knorr-Bremse Systeme Fuer Nutzfahrzeuge GMBH v. Dana Corp.*, 383 F.3d 1337, 1344-45 (Fed. Cir. 2004) (*en banc*); *see also, Mallinckrodt, Inc. v. Masimo Corp.*, 147 Fed. Appx. 158, 171 (Fed. Cir. 2005) ("Contrary to Masimo's contention, the lack of an opinion cannot be held against Nellcor."); *accord, Univ. of Pitt. v. Varian Med. Sys., Inc*., 877 F. Supp. 2d 294, 307 (W.D. Pa. 2012) (cited by CMU Brief, at 14) ("The Court followed the United States Court of Appeals for the Federal Circuit's precedent and refused to allow Pitt to reference the lack of an Opinion of Counsel letter."); *Abbott Diabetes Care Inc. v. Roche Diagnostics Corp.*, No. C05-03117 MJJ, 2007 WL 1241928 at *11 (N.D. Cal. April 27, 2007) ("Abbott, by premising its allegations of willful infringement on the fact that Roche and Bayer did not obtain and/or produce exculpatory opinions of counsel, asks this Court to draw exactly the sort of inference barred by *Knorr-Bremse*.").

Similarly misconceived is CMU's effort (Brief at 4-6, 16) to invoke evidence of Marvell's supposed copying as though it bore upon objective willfulness. Again, the Federal Circuit has spoken to the contrary, putting copying allegations to the side when examining objective willfulness. *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1336–37 (Fed. Cir. 2009) ("Because we hold that DePuy failed as a matter of law to satisfy *Seagate's* first prong, we need not address DePuy's arguments concerning 'copying' and Medtronic's rebuttal evidence concerning 'designing around,' both of which are relevant only to Medtronic's mental state regarding its direct infringement under *Seagate's* second prong.")

Finally, CMU improperly conflates the objective and subjective prongs by filtering the objective test through a subjective lens of what Marvell allegedly understood pre-suit. (*See* Brief

at 17 (Marvell was not "even aware of the Worstell patent before this suit was commenced"; "Marvell's conscious decision to ignore the CMU patents"; Marvell's "brazen disregard for CMU's patents").) Although CMU attempts to invoke *i4i Ltd. P'ship v. Microsoft Corp.*, 670 F. Supp. 2d 568 (E.D. Tex. 2009) to argue that the objective analysis focuses on a defendant's awareness of its defenses "at the time" alleged infringement began (Brief at 14), the Federal Circuit in *Bard* has since clarified—consistent with the weight of district court authority both before and after *Bard*—that the objective inquiry entails a retrospective assessment based ***on the record made in the infringement proceedings***, not actual state of mind. *Bard,* 682 F.3d at 1008. [11] Indeed, as the Federal Circuit confirmed in *iLOR, LLC v. Google, Inc.* (in addressing the objective baselessness of a plaintiff's claims), "[u]nder both *Brooks Furniture* and *Seagate*, objective baselessness 'does not depend on the plaintiff's state of mind at the time the action was commenced, but rather requires an objective assessment of the merits.' State of mind is irrelevant to the objective baselessness inquiry." 631 F.3d 1372, 1377 (Fed. Cir. 2011) (*quoting Brooks Furniture Mfg., Inc. v. Dutailier Int'l, Inc.*, 393 F.3d 1378, 1382 (Fed. Cir. 2005)).

[11] *See e.g., Trading Techs. Int'l, Inc. v. eSpeed, Inc.*, No. 04 C 5312, 2008 WL 63233, at *2 (N.D. Ill. Jan. 3, 2008) (rejecting plaintiff's argument regarding a lack of a reasonable invalidity defense "at the time of infringement," because a defendant's pre-suit view of its defenses "better rests with the consideration of [the] defendants' subjective intent."), *aff'd* 595 F.3d 1340, 1357-58 (Fed. Cir. 2010); *Henrob Ltd. v. Bollhoff Systemtechnick GmbH & Co.*, No. 05–CV–73214–DT, 2009 WL 4042627 at *4 (E.D. Mich. Nov. 19, 2009) ("Henrob's argument focuses too much on what defenses were available or known to Defendants at the time of the infringement, which is more properly considered at the subjective portion of *Seagate's* test."); *Arlington*, 692 F. Supp. 2d at 504 (granting JMOL of no willful infringement in view of a finding in a prior action that had arrived at an opposing claim construction).

II. THE RECORD DOES NOT SUPPORT A FINDING OF SUBJECTIVE WILLFULNESS

For the same reasons Marvell has already set forth in its JMOL motions (*see* Dkt. 806, at 8-10; Dkt. 700, at 2-3, 10-14; Dkt. 741, at 3-4, 13-19), which it respectfully incorporates by reference, the record fails to support the subjective willfulness required to support CMU's request for enhanced damages. If the Court reaches this second *Seagate* inquiry (which it need not do if it agrees that Marvell had an objectively reasonable defense), the Court should hold as a matter of law, contrary to CMU's arguments (Brief at 2-6, 18), that there is no ***clear and convincing*** evidence that Marvell acted with the subjective intent to infringe CMU's valid patents.

First, the record supports an inference that, rather than deliberately copying Kavcic in order to infringe, Marvell held a good-faith belief that it was using its own patentably distinct technology over CMU's technology, which was too complex to be commercialized. The evidence shows that Marvell openly acknowledged, in both internal and external communications concerning its design of the MNP, that it was evaluating Dr. Kavcic's algorithm and the patents covering it before arriving at what it believed to be its own suboptimal but commercially viable solution to the problem of media noise. (DX-266, at 1; DX-287, at 1; DX-1086, at 6.) Thus, in the provisional patent application to the PTO that ultimately led to Marvell's '585 patent, Marvell's Gregory Burd ***expressly*** acknowledged and distinguished the Kavcic technology (DX-1086, at 6-9), stating that, although a "Maximum A Posteriori detector . . . was ***developed by [Drs.] Kavcic*** and Moura . . . [and] ***though [Dr.] Kavcic's detector*** provides significant gains over conventional Viterbi detector in the presence of media noise, it is not very appealing due to implementation complexity" (*id*. at 6 (emphasis added)), and that the Marvell invention "presents ***a sub-optimal version of Kavcic's detector*** which provides [a] nice

trade-off between the performance and complexity of [the] original [Kavcic] algorithm" (*id*. (emphasis added)). Mr. Burd's notebook confirmed his subjective understanding at the time that he could "not implement" Dr. Kavcic's algorithm because it was "too large." (P-196, at 6.) That the Kavcic invention was specifically disclosed to the PTO in Marvell's initial submission negates an inference of subjective willfulness, and CMU fails to cite any decision finding willfulness where a defendant disclosed the accused technology in its own patent application.

Second, Marvell had *no motive* to willfully infringe the patents—and every reason to approach CMU for a license if had believed it infringed CMU's patents, as it is well known that universities tend to license their technology for reasonable flat fees; as the evidence shows CMU was willing to do here (DX-255, DX-262, DX-263, DX-264). Even crediting *arguendo* CMU's account whereby Marvell needed CMU's technology and would have gone out of business without it, it defies credulity that Marvell was willfully incurring this exposure, as opposed to proceeding in the good-faith belief that it was not infringing so as to require licensing.

Third, although CMU repeatedly emphasizes (Brief at 2, 3, 17) the duration of Marvell's infringement, the explanation for Marvell's alleged decade of infringement is simply Marvell's good faith belief that CMU's technology could not be commercialized and that Marvell was using its own patentably distinct technology obtained over CMU's. Having inexplicably delayed for years (*see* Dkt. 802-804), CMU should not be able to now turn its own delay *against Marvell* as though Marvell had been willfully infringing all that time.

Unable to point to any actual allegation of infringement by it, CMU points to a 2004 letter (Brief at 3-4, 16, 23) from Fujitsu to Marvell that inquired about CMU's patents, with CMU now claiming that "Marvell simply ignored Fujitsu's request" (Brief at 16), and "Marvell

did not respond to Fujitsu's 2004 letter . . . ensuring its infringement remained a secret in the industry" (Brief at 23). Because CMU raised no infringement allegation until five years later, however, it is unfair to presume that Marvell had made no response to Fujitsu years earlier. So far as the record indicates, Mr. Janofsky at Marvell could have reached out to his counter-part at Fujitsu by phone to advise that Marvell had considered the patents and deemed the technology too complex to commercially implement—or, for that matter, via an email that subsequently expired. In no event is it plausible or even sensible for CMU to submit, as it does (Brief at 23), that Marvell's actions "ensur[ed] its infringement remained a secret in the industry." As everyone knows, Marvell publicly disclosed its awareness of the CMU patents, the Kavcic publications, and its own suboptimal design called KavcicPP in its patent application made available through the PTO. (DX-266, at 1; DX-287, at 1; DX-1086, at 6.)

Against overwhelming evidence of Marvell's good faith belief it was not deliberately infringing, the record fragments on which CMU relies to paint a picture of subjective willfulness are unavailing. For example, CMU cites (Brief at 2, 6, 9) an email regarding Marvell's development of NLD in which Marvell says that the use of FIR filters ***in the trellis*** is what Kavcic disclosed in his paper. (P-366, at 1.) But CMU omits the very next sentence, in which Marvell announces that it had figured out how to move the filters ***out of the trellis*** to avoid the (complexity) bottleneck. (*Id.* ("We also found a way to move the noise whitening filter out of the Viterbi.").) During trial, Dr. McLaughlin similarly quoted from Mr. Burd's deposition testimony about Dr. Kavcic's paper serving as a "launching pad" for Marvell's research. (12/3/12 Tr. (McLaughlin) at 167:4-10; 12/4/12 Tr. (McLaughlin) at 25:7-26:20.) But, again, he cut off the next few sentences where Mr. Burd stated that "it turned out to be too complicated. Decision was made that this was is not feasible. You need to look for something else." (12/4/12

Tr. (McLaughlin) at 26:21-28:16 (referring to 8/17/10 Dep. of Dr. Kavcic at 921:21-922:7).) When he was confronted on cross examination with his decision to cut off the testimony, Dr. McLaughlin stated that he "was just trying to be efficient." (*Id.* at 27:24.)[12]

III. EVEN IF THE RECORD SUPPORTED A FINDING OF OBJECTIVE AND SUBJECTIVE WILLFULNESS, THIS COURT SHOULD EXERCISE ITS DISCRETION NOT TO ENHANCE DAMAGES

"[A] finding of willful infringement does not mandate that damages be enhanced, much less mandate treble damages." *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 826 (Fed Cir. 1992), *abrogated on other grounds*. Because Section 284 speaks in discretionary terms, a finding of willfulness is necessary but not sufficient to justify damages enhancement. *See Mentor H/S, Inc. v. Med. Device Alliance, Inc.*, 244 F.3d 1365, 1380 (Fed. Cir. 2001); *Modine Mfg. Co. v. Allen Group, Inc.*, 917 F.2d 538, 543 (Fed. Cir. 1990). Accordingly, courts frequently deny enhancement despite finding willfulness. *See, e.g., Funai Elec. Co., Ltd. v. Daewoo Elecs. Corp.*, 616 F.3d 1357, 1376-7 (Fed. Cir. 2010); *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1581-82 (Fed. Cir. 1992); *Modine Mfg.*, 917 F.2d at 543. This Court should not find willfulness here, but if it does, it should nonetheless exercise its discretion not to award enhanced damages.

The outsized dimensions of the more than $1 billion damages award in this case, resting on a conspicuously high royalty rate and royalty base, counsel against enhancement. *See Apple, Inc. v. Samsung Elecs. Co., Ltd.*, No. 11-CV-01846-LHK, Slip Copy, 2013 WL 412862 at *4

[12] CMU takes a similar approach in critiquing Dr. Wu's testimony, by suggesting that Dr. Wu's understanding that the MNP practices Marvell's '585 patent without calculating branch metrics is inconsistent with the language of the patent. But CMU manufactured the contradiction by interrupting Dr. Wu mid-sentence, before he could finish explaining that, whereas the patent provides a guide to understanding the technology in terms of branch metrics, the MNP's path metric computation of the difference of path metrics does not equate with determining a branch metric using a trellis, which is what the asserted claims require. (12/12/12 Tr. at 66:11-67:11.)

(N.D. Cal. Jan. 29, 2013) ("[T]he jury had ample opportunity to compensate Apple for Samsung's use of its product designs. Given that Apple has not clearly shown how it has in fact been undercompensated for the losses it has suffered due to Samsung's dilution of its trade dress, this Court, in its discretion, does not find a damages enhancement to be appropriate."). For the same reasons that this award should be substantially reduced, per Marvell's motion for JMOL and/or new trial and remittitur request (Dkt. 806-809), incorporated by reference here, it follows *a fortiori* that it should not be *enhanced*.

A. The *Read* Factors Weigh Against Enhancement

1. Marvell Did Not Deliberately Copy The Patented Inventions

Although CMU's copying narrative hinges on Gregory Burd's alleged "deliberate[] copy[ing]" of CMU's inventions (Brief at 19), CMU took the opposite tack at trial, accusing Mr. Burd of not even bothering to read the claims of CMU's patents. (12/17/12 Tr. (Burd) at 167:6-174:9.) The Court, in granting Marvell's motion for summary judgment on the Group II claims, highlighted this "flaw with CMU's position" insomuch as the alleged admissions of copying "do not establish that a specific claim element, much less an entire claim, has been copied." (Dkt. 443 at 9-10.)

Far from evidencing copying of the Kavcic invention, the record demonstrates that Marvell made use of the publicly available literature and developed its own technology to accomplish what the prior art could not. (12/11/12 Tr. (Wu) at 285:2-4; 12/17/12 Tr. (Burd) at 137:2-138:16.) Whereas CMU attempts to characterize Marvell's references to Dr. Kavcic's name as reflecting deliberate copying, those references were starting points en route to what Marvell believed to be its own suboptimal but commercially viable and patentably distinct solution. (DX-266, at 1; DX-287, at 1; DX-1086, at 6; 12/11/12 Tr. (Wu) at 285:2-4.) CMU similarly cites Mr. Burd's notebook (P-196) as "evidence" of Marvell's copying (Brief at 2, 5, 8)

without acknowledging that Mr. Burd dismissed Dr. Kavcic invention as "too large" and something he could "not implement." (P-196, at 6.)

CMU characterizes (Brief at 2, 5) Mr. Burd's emails of January 3, 2002 (P-280) and January 4, 2002 (P-283) stating that the Kavcic detector was patented by CMU as a "warning" to Marvell executives, but fails to mention that these emails came up in the context of filing a patent application on January 3, 2002, and patent applications always includes a consideration of prior-art patents. Moreover, Mr. Burd's January 4, 2002 email (P-283) refers at length to a prior-art Lucent patent on a post-processor implementation (similar to MNP), making only passing reference to the CMU prior art:

> Read Lucent's patent on media noise detector more carefully. It seems that Lucent did not patent list detector (since this was presented by K. Knudson, et at GLOBCOM'93), instead they patented the media noise PP as a whole. I.e. the system comprising of linear Viterbi and beefed-up PP which utilizes some extra information not used by Viterbi (*e.g.* non-linear noise, extended whitening filter, etc. And of course as I mentioned earlier, Kavcic detector is also patented.

CMU adduces no evidence that anyone at Marvell believed they were infringing CMU's patents. (P-196, at 6; 12/17/12 Tr. (Burd) at 137:8-139:22.)

2. Marvell Had A Good-Faith Belief It Was Not Infringing

Voluminous evidence, as detailed above, supports an inference of Marvell's good faith: (1) Dr. Kavcic's own comments in his personal email correspondence (DX-189, at 1-2 (stating that "[t]he data dependence [in his invention] is in the trellis and NOT in the post processor")) and in his publications (DX-310, at 1761, 1766 (stating his belief regarding the complexity of his invention and addressing the "novelty" of Marvell's)); (2) Dr. Moura's notes (DX-1522, at 2 (stating that the patent was an "optimal" solution and that the optimal implementation was too "complex")); (3) the PTO's grant of Marvell's patents, which disclosed the Kavcic patents and publications (DX-266, at 1; DX-287, at 1); and (4) the industry understanding regarding the

accused technology (11/29/12 Tr. (Moura) at 73:19-21 ("Q: Has there been any company that has come to CMU to specifically ask to license the '839 or the '180 patent? A: No."); *id* (Kavcic) at 270:4-5 ("No, I have not received a single dollar for any of these patents in any of these inventions that are used.").)

3. Marvell's Litigation Conduct Has Been Fair

The litigation has, to be sure, been hard fought, but Marvell conducted it fairly and professionally, as the Court noted both before and after trial. (3/31/11 Hearing Tr. at 118:16-18 ("Well, from my point of view, the arguments were very well done."); 12/26/12 Tr. at 22:17-19 ("This was a difficult case. As you know, it was very hard fought. It was well presented on both sides by both parties."); *id* at 32:4-7 ("Well, as I indicated, the case was well presented and hard fought on both sides, and I'll look forward to the briefing and the motions and additional argument, and we'll be prepared to proceed if need be.").) Marvell addresses CMU's allegations to the contrary in its opposition to CMU's Motion for Attorneys' Fees, and incorporates that opposition here by reference.

4. Marvell's Financial Condition Should Not Support Enhancement

While Marvell vigorously disputes CMU's characterization of Marvell as a collection risk to justify its request for a permanent injunction (Dkt. 787, at 2-3, 7-9), Marvell's sound financial condition is no reason for enhancement. Rather, a defendant's financial condition typically is used as a reason *not* to grant enhanced damages to the fullest extent. *See, e.g., Funai Elec. Co., Ltd. v. Daewoo Elecs. Corp.*, 593 F. Supp. 2d 1088, 1115 (N.D. Cal. 2009) ("The Court concludes that although Daewoo continues to have substantial net worth, its financial condition is relatively weak. This factor does not favor an award of enhanced damages."), *aff'd* 616 F.3d 1357, 1376–77 (Fed. Cir. 2010).

5. This Case Was Close On The Merits

This case was a close, hard-fought battle, as the Court repeatedly recognized. For example, the Court granted Marvell's motion for summary judgment of non-infringement of claims 11, 16, 19 and 23 of the '839 patent and claim 6 of the '180 patent. (Dkt. 443 at 1.) The Court also stated that its decision on Marvell's motion for summary judgment of invalidity was close. (Dkt. 306 at 1; *see also* Dkt. 337, at 4 ("Although it was a close case, the Court found that [the Seagate patent] did not anticipate the Group I claims.").) And it denied Marvell's pre-verdict motion for mistrial without prejudice, after expressing its own concerns about CMU's closing. (12/20/12 Tr. at 150:15-16 ("Mr. Greenswag, enough is enough. I'm going to pull the hook."), 162:3-4 ("[P]art of your argument is going to be stricken."), 169:15-17 ("I'm going to strike the argument."), 205:2-3 ("I think the argument went too far."), 207:25-208:1 ("So the question is now that we are here, is there any way we can, quote, unring this bell?"), 227:22 ("[H]e went overboard."); 12/21/12 Tr. at 4:15-5:6, 10:3-7 ("I was leaning to rebuttal and sur-rebuttal. Although rarely granted, this may be one case where, in fairness, it should be granted.").)

6. The Duration of Marvell's Alleged Infringement Is Attributable To CMU's Delay In Filing Suit

CMU's delay in filing suit should weigh against enhancement of any damages because CMU's decision to sit on its rights effectively enhanced the damages already awarded. *See i4i*, 670 F. Supp. 2d at 595 (finding that "i4i's delay in bringing suit . . . weighs against enhancement" of damages, where "the time i4i took to prepare for trial was unusually long, thus enhancing the amount of damages ultimately found by the jury"), *aff'd in relevant part*, 598 F.3d 831, 858 (Fed. Cir. 2010) (finding district court did not abuse discretion in holding that *Read* factors 1 and 9, "combined with i4i's delay in bringing suit . . . weigh[ed] against enhancement"

of damages); *see also Loral Corp. v. B.F. Goodrich Co.*, No. C–3–86–216, 1989 WL 206377 at *32-*33 (S.D. Ohio June 8, 1989) (finding "increased damages would not be appropriate" because "BFG's actions, though egregious, are sufficiently offset for purposes of increased damages by Goodyear's considerable delay in filing suit"), *judgment rev'd on other grounds*, 899 F.2d 1228 (Fed. Cir. 1990); *Mass Engineered Design, Inc. v. Ergotron, Inc.,* 633 F.Supp.2d 361, 391 (E.D. Tex. 2009) (denying enhancement of damages) ("A delay that is insufficient to prove laches, may weigh against a finding of an 'exceptional case'").

7. Marvell's Remedial Efforts Weigh Against Enhancements

Any absence of remedial action cannot support enhancement because it was attributable to CMU's delay. Marvell invested in developing its MNP and NLD components and built them into its chips, and its customers built their hard disk drive products based on Marvell's chips. (*See* Affidavit of Zining Wu in Support of Marvell's Opposition to CMU's Motion for Permanent Injunction, Post-Judgment Royalties, and Supplemental Damages ("Wu Decl.") ¶¶ 9, 10.) As with any component—however insignificant or minor—the component becomes a part of the larger products design. (*Id.*) It would be unfair to reward CMU with treble damages for a situation that resulted from CMU's own delay.

Even so, the MNP feature is now effectively removed from the market except for one legacy chip (*id.* ¶ 8), and in light of the jury's verdict, Marvell is taking steps to remove the NLD feature from its newest generation of chips that is currently under design (*id.* ¶ 11). Specifically, Marvell is altering the design of the C11000 read channel to have the NLD circuit permanently and irreversibly disabled. (*Id.* ¶ 11.) The C11000 chips without the NLD functionality are scheduled to be taped-out in October of this year and are slated for volume production toward the end of 2014. (*Id.* ¶ 12.)

8. Marvell Was Not Motivated To Harm CMU

Because CMU is a non-practicing university and not a business competitor, Marvell clearly was not motivated to secure unfair advantage against CMU, as is typically true in instances where willfulness is found. Evaluation of this *Read* factor focuses on marketplace conduct and is less significant where the parties are not competitors. *Odetics, Inc. v. Storage Tech. Corp.*, 14 F. Supp. 2d 800, 804 (E.D. Va. 1998), *aff'd* 185 F.3d 1259, 1274 (Fed. Cir. 1999). In *Odetics*, because plaintiff and defendant "did not compete," the court found "no evidence that [defendant] sought to harm [plaintiff]." *Id.* The same reasoning applies here.

9. Marvell Attempted No Concealment

Far from attempting to conceal any infringement, Marvell openly sought and obtained its own patents, disclosing the Kavcic prior art in its applications, publicly vetting the differences it perceived between its design and CMU's approach, and making plain that Marvell named its media noise post processor after Dr. Kavcic. Marvell's conduct is similar to that of the defendant in *MPT, Inc. v. Marathon Labels, Inc.*, which openly sought and obtained a patent on its own solution. 505 F. Supp. 2d 401, 416, 417 (N.D. Ohio 2007), *aff'd in relevant part*, 258 Fed. Appx. 318 (Fed. Cir. 2007). "[T]his is not the conduct of a party attempting to hide from a patent it believes to be infringed." *Id.* at 417 (addressing willfulness), 419 ("[T]he Court finds that enhanced damages are improper for the same reasons it granted Defendants' JMOL motion on willful infringement.").

B. Any Enhancement Should Not Exceed 20% Of The Damages Award

Should the Court find willfulness and exercise its discretion to award enhanced damages (which it should not), any enhancement should not exceed 20% of the damages award, as the amount of enhancement must be tied to the level of culpability. *See Read*, 970 F.2d at 828 ("where the maximum amount is imposed . . . the court's assessment of the level of culpability

must be high"); *Graco, Inc. v. Binks Mfg. Co.*, 60 F.3d 785, 794 n. 4 (Fed. Cir. 1995) ("amount of enhancement must bear some relationship to the level of culpability of the conduct"). The cases CMU cites for doubling or even trebling the damages awards include highly egregious conduct not present here, including admissions of willful infringement, deliberate copying and violations of an ITC order. *See, e.g., Joyal Products, Inc. v. Johnson Elec. N. Am., Inc.*, No. 04-5172 JAP, 2009 WL 512156, at *9 (D.N.J. Feb. 27, 2009) ("Johnson consented to entry of an Order of Judgment of Willful Infringement"); *AIA Eng'g Ltd. v. Magotteaux Int'l S/A*, No. 3:09-CV-00255, 2012 WL 4442665, at *7 -*8 (M.D. Tenn. Sept. 21, 2012) ("AIA deliberately copied" and "continued its infringement actions despite an order to cease from the International Trade Commission."). In *i4i Ltd. P'ship v. Microsoft Corp.,* 670 F. Supp. 2d 568, 594 (E.D. Tex. 2009), Microsoft was found to have "never formed a good-faith belief of non-infringement" and the majority of the *Read* factors favored enhancement. Weighing Microsoft's culpability, the district court enhanced by 20% of the damages award. That number should not be exceeded here where Marvell did have a good faith belief that CMU's technology was too complex for commercial implementation, which was corroborated by the inventors of the asserted patents (*see* DX-1522, at 2 ("patent is optimal sln; people are working on suboptimal, suggests ways around . . . optimal implementation is complex"); DX-63, at 14 ("the expression in (14) is too complicated for implementation in a detector")) and the Chief Technology Officer of one of Marvell's largest customers (*see* DX-214, at 1 ("We are not aware of anyone utilizing the claims in the Kavcic-Moura patent")). An enhancement by 20% of the damages award should particularly not be exceeded where CMU delayed until the last minute to file suit (*see* Dkt. 802-804; DX-306, at 6 ("clear CMU is not going to get more active about" filing suit)) and where Marvell's largest customer, Western Digital, "did not see any improvement" as a result of MNP

and "specifically requested Marvell to remove MNP feature" (12/13/12 Tr. (Baqai) at 160:3-13, 177:9-22; *see also id.* (Baqai) at 161:18-162:7, 163:3-20, 173:23-174:3, 176:18-25; 12/4/12 Tr. (Bajorek) at 205:5-19; DX-1559, DX-1560).

CONCLUSION

For the foregoing reasons, there should be no finding of willfulness, or, even if there is a finding of willfulness, no discretionary enhancement of the jury's damages award.

Dated: March 25, 2013

Respectfully submitted,

/s/ John E. Hall

John E. Hall
Timothy P. Ryan
ECKERT SEAMANS CHERIN & MELLOTT, LLC
U.S. Steel Tower
600 Grant Street, 44th Floor
Pittsburgh, PA 15219
Phone: (412) 566-6000
Fax: (412) 566-6099
jhall@eckertseamans.com
tryan@eckertseamans com

/s/ Edward J. DeFranco

Edward J. DeFranco (*pro hac vice*)
Kathleen M. Sullivan (*pro hac vice)*
Faith Gay (*pro hac vice*)
Raymond Nimrod (*pro hac vice*)
David Radulescu (*pro hac vice*)
Derek L. Shaffer (*pro hac vice*)
QUINN EMANUEL URQUHART & SULLIVAN, LLP
51 Madison Avenue, 22nd Floor
New York, New York 10010
Phone: (212) 849-7000
Fax: (212) 849-7100
eddefranco@quinnemanuel.com

Steven G. Madison (*pro hac vice*)
QUINN EMANUEL URQUHART & SULLIVAN, LLP
865 S. Figueroa St., 10th Floor
Los Angeles, California 90017
Phone: (213) 443-3000
Fax: (213) 443-3100
stevemadison@quinnemanuel.com

Kevin P.B. Johnson (*pro hac vice*)
Melissa Baily (*pro hac vice*)
QUINN EMANUEL URQUHART & SULLIVAN, LLP
555 Twin Dolphin Drive., 5th Floor
Redwood Shores, California 94065
Phone: (650) 801-5000
Fax: (650) 801-5100
kevinjohnson@quinnemanuel.com

Attorneys for Defendants, Marvell Technology Group, Ltd. and Marvell Semiconductor, Inc.

CERTIFICATE OF SERVICE

I hereby certify that on March 25, 2013, the foregoing was filed electronically on ECF. I also hereby certify that on March 25, 2013, this filing will also be served on counsel for CMU by electronic mail.

/s/ John E. Hall

John E. Hall
Timothy P. Ryan
ECKERT SEAMANS CHERIN & MELLOTT, LLC
U.S. Steel Tower
600 Grant Street, 44th Floor
Pittsburgh, PA 15219
Phone: (412) 566-6000
Fax: (412) 566-6099
jhall@eckertseamans.com
tryan@eckertseamans com

David C. Radulescu (*pro hac vice*)
QUINN EMANUEL URQUHART & SULLIVAN, LLP
51 Madison Avenue, 22nd Floor
New York, New York 10010
(212) 849-7000 Telephone
(212) 849-7100 Facsimile
davidradulescu@quinnemanuel.com

Attorneys for Defendants,
Marvell Technology Group, Ltd. and
Marvell Semiconductor, Inc.