EXHIBIT F Part 1

Carnegie Mellon University's Presentation on Motion for Attorneys' Fees Pursuant to 35 U.S.C. § 285 – Dkt. 810

May 1 – 2, 2013

Carnegie Mellon

Issues Addressed

Willful Infringement Justifies a Fee Award

The *Read* Factors Confirm an Award of Attorneys' Fees Is Justified

Independently, Marvell's Pervasive Misconduct Justifies Award of Fees

The Court Should Determine the Fee Award Using the Procedure CMU Proposed

Willful Infringement Justifies a Fee Award

Willful Infringement Justifies a Fee Award

The Federal Circuit has repeatedly confirmed that willful infringement, by itself, justifies an award of fees.

Golight, Inc. v. Wal-Mart Stores, Inc., 355 F.3d 1327, 1340 (Fed. Cir. 2004); *Avia Group Int'l, Inc. v. L.A. Gear Cal., Inc.*, 853 F.2d 1557, 1567 (Fed. Cir. 1988) (rejecting the argument that "more egregious" conduct is required and citing six Federal Circuit cases in support); *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1461 (Fed. Cir. 1998) (en banc)

Willful infringement "is, without doubt, sufficient to" justify award of attorneys' fees.

Whitserve v. Computer Packages, Inc., 694 F.3d 10, 37 (Fed. Cir. 2012); *Jurgens v. CBK, Ltd.*, 80 F.3d 1566, 1573 n.4 (Fed. Cir. 1996)

Willful Infringement Justifies a Fee Award

There is a strong link between willful infringement and a fee award

There is a "*heavy weight of authority*" that "a finding of willful infringement and 'exceptional case' go hand in hand…."

S.C. Johnson & Son., Inc. v. Carter-Wallace, Inc., 781 F.2d 198, 200 (Fed. Cir. 1986)

"[W]hen a trial court denies attorney fees in spite of a finding of willful infringement, the court must explain why the case is *not* 'exceptional'…."

Modine Mfg. Co. v. Allen Group, Inc., 917 F.2d 538, 543 (Fed. Cir. 1990); *Spectralytics, Inc. v. Cordis Corp*., 649 F.3d 1336, 1349 (Fed. Cir. 2011)

The Court may not deny fees based on "facts or circumstances" "that the jury has rejected as a factual matter" when finding willful infringement.

Jurgens v. CBK, Ltd., 80 F.3d 1566, 1571-73 (Fed. Cir. 1996)

Willful Infringement Justifies a Fee Award

Attorneys' fees are compensatory and should be awarded if it would be "unfair" for the prevailing party to bear them

"Attorney fees are *compensatory*" rather than "punitive."

Knorr-Bremse Sys. Fuer Nutzfahrzeuge GmbH v. Dana Corp., 383 F.3d 1337, 1347 (Fed. Cir. 2004) (en banc)

"[I]n a case in which an infringer does not act 'prudently' and 'reasonably' before engaging in infringing action, it is only 'fair' to allocate to the infringer the costs" of the action.

nCube Corp. v. SeaChange Int'l, Inc., 313 F. Supp. 2d 351, 391-92 (D. Del. 2004), aff'd, 436 F.3d 1317, 1325 (Fed. Cir. 2006) (quoting *Gillette Co. v. S.C. Johnson & Son, Inc.,* 1990 WL 26143 (D. Mass. 1990), aff'd, 919 F.2d 720 (Fed. Cir. 1990)

In determining fees, the Court must consider the "fair allocation of the burdens of litigation as between the winner and loser."

S.C. Johnson & Son, Inc. v. Carter-Wallce, Inc., 781 F.2d 198, 201 (Fed. Cir. 1986)

Willful Infringement Justifies a Fee Award

The jury found Marvell's infringement was subjectively willful

E. QUESTIONS AS TO WILLFULNESS

19. Did Marvell have actual knowledge of the '180 Patent prior to commencement of this lawsuit (in other words, prior to March 6, 2009)?

YES ✓ NO _____

*If you answered NO, skip Questions #20 and #21 (leave them blank) and move to Question #22. Otherwise, proceed to Question #20.

20. If Marvell learned of the '180 Patent and prior to commencement of this lawsuit, did Marvell have an objectively reasonable defense to CMU's claim of infringement?

"Yes" finds for Marvell and "No" finds for CMU.

YES _____ NO ✓

*If you answered NO, proceed to Question #21. Otherwise, skip Question #21 (leave it blank) and move to Question #22.

21. If Marvell learned of the '180 Patent, do you find clear and convincing evidence that Marvell actually knew or should have known that its actions would infringe Claim 2 of the '180 Patent?

"Yes" finds for CMU and "No" finds for Marvell.

YES ✓ NO _____

Proceed to Question #22.

22. Did Marvell have actual knowledge of the '839 Patent prior to commencement of this lawsuit (in other words, prior to March 6, 2009)?

YES ✓ NO _____

*If you answered NO, skip the remaining questions (leave them blank) and move to the instructions on Page 9. Otherwise, proceed to Question #23.

23. If Marvell learned of the '839 Patent and prior to commencement of this lawsuit, did Marvell have an objectively reasonable defense to CMU's claim of infringement?

"Yes" finds for Marvell and "No" finds for CMU.

YES _____ NO ✓

*If you answered NO, proceed to Question #24. Otherwise, skip the remaining question (leave it blank) and move to the instructions on Page 9.

24. If Marvell learned of the '839 Patent, do you find clear and convincing evidence that Marvell actually knew or should have known that its actions would infringe Claim 4 of the '839 Patent?

"Yes" finds for CMU and "No" finds for Marvell.

YES ✓ NO _____

*Please proceed to the instructions on Page 9.

Dkt. 762 at 6-8

- **CMU has also demonstrated Marvell's infringement was objectively willful.**

The *Read* Factors Confirm an Award of Attorneys' Fees Is Justified

The *Read* Factors Confirm an Award of Attorneys' Fees Is Justified

The *Read* factors can establish a case is "exceptional"

The trial court may "declar[e] this an exceptional case under 35 U.S.C. §285 and award[ ] attorney fees" based on "the *Read* factors for enhancing damages."

nCube Corp. v. SeaChange Int'l, Inc., 436 F.3d 1317, 1325 (Fed. Cir. 2006)

"[T]he court's careful analysis of the *Read* factors regarding enhancement of damages suffices as grounds for affirming" the attorneys' fees ruling.

Spectralytics, Inc. v. Cordis Corp., 649 F.3d 1336, 1349 (Fed. Cir. 2011); *see also Aero Prods. Int'l, Inc. v. Intex Recreation Corp*., 2004 WL 1696749, at *5 (N.D. Ill. July 15, 2004) (holding that the conduct that justified enhanced damages under the *Read* factors likewise "mandate[d] an award of attorneys fees"), aff'd, 466 F.3d 1000 (Fed. Cir. 2006)

The *Read* Factors Confirm an Award of Attorneys' Fees Is Justified

The *Read* factors all support enhancement of damages and an award of fees here

The *Read* factors

- ☑ **Copying**
- ☑ **Investigation and good faith defense**
- ☑ **Litigation conduct**
- ☑ **Size and wherewithal of the infringer**
- ☑ **Closeness of the case**
- ☑ **Duration of misconduct/Remediation**
- ☑ **Motivation for harm**
- ☑ **Concealment**

Independently, Marvell's Pervasive Misconduct Justifies Award of Fees

Independently, Marvell's Pervasive Misconduct Justifies Award of Fees

Marvell Disregarded its Own Documents and Presented Incredible (and False) Testimony

Marvell's Tactics Delayed Resolution and Drove up Costs

Marvell Disregarded its Own Documents and Presented Incredible (and False) Testimony

Marvell Disregarded its Own Documents and Presented Incredible (and False) Testimony

1. **Marvell's technical documents and prior admissions refute its testimony regarding the MNP:**
   a) Marvell testified the MNP is not a detector, but Marvell technical documents say it is
   b) Marvell testified the MNP does not compute branch metrics, but Marvell's technical documents show it does
   c) Marvell testified the MNP did not compute a "path metric," but he swore the opposite was true and Marvell documents show that computation
   d) Marvell testified the MNP does not use a trellis, but Marvell's technical documents show it does
2. **Marvell's technical documents and prior admissions refute its testimony that the NLD operates apart from the branch metric calculation**
3. **Drs. Sutardja and Wu falsely testified that Marvell was the first in the world to build a SoC**
4. **Dr. Sutardja falsely testified: (a) he did not attend the E-Staff meetings that addressed the "must have" memo; and (b) at Marvell, "many things we say is must is not a must."**
5. **Mr. Hoffman falsely testified that Ms. Lawton ignored SoC integration**
6. **Marvell testified that the MNP had nothing to do with Marvell's success, even though the C7500 and C5575 sales went to zero after the C7500M and C5575M were introduced**
7. **Dr. Proakis testified that Worstell teaches a "set" of signal dependent branch metric functions when he swore the opposite was true in his report**
8. **Mr. Hoffman's valuation analysis ignored ALL of the documents showing Marvell's desperate need for the CMU invention**
9. **Dr. Proakis testified that Worstell's "constant" relates to Worstell's equation 20 - when the patent clearly says otherwise**
10. **Dr. Proakis testified that Worstell rendered the CMU patents obvious did not testify secondary considerations**
11. **Dr. Wu testified that the MNP is covered by claim 1 of the '585 patent and then tried to backpedal from that position when he saw that that claim required the computation of "path metrics" (which Marvell is still trying to avoid)**
12. **Dr. Proakis testified that Worstell anticipates the CMU patents but did not dispute that Worstell does not teach any circuit on the "zero branches"**
13. **Marvell asserts it believed, in good faith, it was not infringing when (a) it did not read the claims, (b) Doan testified that he did not care about CMU's patents, and (c) it did not get an opinion of counsel**

Marvell Disregarded its Own Documents and Presented Incredible (and False) Testimony

Marvell's non-infringement theory: believe our witnesses at trial and disregard our documents and admissions

Marvell's Testimony

***MNP is not* a detector**

Tr. 12/13/12 at 241-42 (Dr. Blahut)

Marvell's Documents

***MNP is* a detector**

Media Noise Processor

Greg Burd

1.0 Introduction

This paper provides description of Media Noise Processor (MNP) as implemented in Marvell's C7500M generation Read Channel. MNP is the advanced digital signal processing technology which utilizes the knowledge of non-linear noise characteristics to aid the detection process. With the increase in recording densities media noise components, such as peak and width jitter, become ever more dominant. In this noise environment, Linear Viterbi detector is no longer optimal. Subsequently, MNP is used to properly take media noise into account during the detection process.

P-408 at 1

11.3 Media Noise Processor (MNP)

The Media Noise Processor (MNP) is an advanced post-processing adaptive detector that derives its SNR gain by taking into account data dependent noise which exists in the channel.

P-472 at 11-6

Media noise post-processor is a partial nonlinear detector in data dependent noise channel. It can not generate the information necessary for iterative decoding.

P-770 at 32

Marvell Disregarded its Own Documents and Presented Incredible (and False) Testimony

MARVELL

Marvell's non-infringement theory: believe our witnesses at trial and disregard our documents and admissions

Marvell's Testimony

***MNP does not* compute branch metrics**

Tr. 12/13/12 at 250 (Dr. Blahut)

- Just as linear counterpart, Non-Linear Error Filter computes $\sum_{\text{all branches by an error event}}$ effected [BM(viterbi+ error path)– BM(viterbi path)]

using non-linear channel information

P-295 at 21

- Steps to calculate nonlinear branch metric
- For each of the above paths, calculate the nonlinear BMs and PMs

P-770 at 25, 29

Marvell's Documents

***MNP computes* branch metrics**

The EST block continuously tracks media noise characteristics for each of the 32 trellis branches of the Viterbi detector. It estimates the mean shift, the 3-tap noise whitening filter (f1, f2, and f3), and the residual noise variance. All adapted parameters are loaded into the non-linear filter on each RGATE. The NLF then uses these parameters to compute the non-linear penalty for each error event. This minimum penalty event is supplied to the CB,

P-472 at 11-6

at 21, MSI 033367; Marvell 88C7500M v. 2.0 Specifications at 11-8, MSI 030314. The MNP then uses non-linear branch metrics to calculate the total path cost of the identified alternative paths and the

Dkt. 793-1 at 11-12 (App. C at 7)

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Marvell's non-infringement theory: believe our witnesses at trial and disregard our documents and admissions

Marvell's Testimony

***MNP does not* compute path metrics**

Tr. 12/12/12 at 53 (Dr. Wu);
Tr. 12/13/12 at 254 (Dr. Blahut)

Marvell's Documents and Admissions

***MNP computes* path metrics**

• In non-linear mode linear PP outputs location and type of two most likely error events which are consistent with parity info (if any). These two error events are then ranked by non-linear PP utilizing *non-linear PM.*

P-295 at 20

non-linear penalty for each error event. This minimum penalty event is supplied to the CB, which performs corrections when the non-linear path metric is smaller than the path of the Viterbi or when a parity violation is detected. For each codeword, only one error event is corrected.

P-472 at 11-6

- Nonlinear path metric
  - Replace linear branch metric with nonlinear branch metric
  - Calculate path metric in the same way

P-770 at 25

106. The non-linear filters process up to two error events per codeword, and again compute the path metric based on the difference between: (1) Viterbi path + error event and (2) the Viterbi path. In the Marvell implementation, the two most likely error events are represented by 40-bit codewords.

Blahut Report ¶106; Tr. 12/13/12 at 274

Marvell Disregarded its Own Documents and Presented Incredible (and False) Testimony

Marvell's non-infringement theory: believe our witnesses at trial and disregard our documents and admissions

Marvell's Testimony

***MNP does not* use a trellis**

Tr. 12/13/12 at 244 (Dr. Blahut);
Tr. 12/11/12 at 301 (Dr. Wu);
Tr. 12/17/12 at 140 (Mr. Burd)

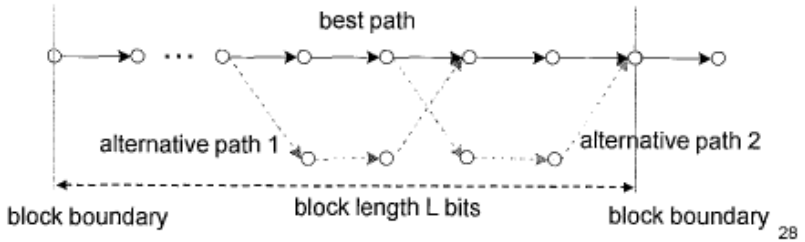
Marvell's Documents

***MNP uses* a trellis**

The EST block continuously tracks media noise characteristics for each of the 32 trellis branches of the Viterbi detector. It estimates the mean shift, the 3-tap noise whitening filter (f1, f2, and f3), and the residual noise variance. All adapted parameters are loaded into the

P-472 at 11-6

- Parity information is also used if available, for both best path and alternative paths.



P-770 at 28

Marvell Disregarded its Own Documents and Presented Incredible (and False) Testimony

Marvell's non-infringement theory: believe our witnesses at trial and disregard our documents and admissions

Marvell's Testimony

NLD noise whitening *occurs apart from* branch metric calculation

Tr. 12/13/12 at 255-56 (Dr. Blahut)

THE WITNESS: Well, it is a statement of the fact that now each whitening filter is associated with a branch metric. Right? And so in fact noise whitening filter is a parameter of branch metric function, okay, as opposed to previous architecture where we had a single noise whitening filter which was kind of built into the FIR filter or, in prior design, it was a standalone filter.

Burd Tr. at 491-492

Marvell's Documents and Admissions

NLD noise whitening *is part of* branch metric calculation

The nonlinear Viterbi detector (NLD) in C8830 R1.0 differs from the linear Viterbi detector (VTD) in that NLD has noise whitening built into the branch metric (BM) calculation. NLD effectively integrates previously media noise processor (MNP) into VTD. In addition, C8830 R1.0 supports large gain targets.

P-596

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Marvell's non-infringement theory: believe our witnesses at trial and disregard our documents and admissions

Marvell's Testimony	Marvell's Documents and Admissions
The simulators *do not operate* on actual wave forms Tr. 12/13/12 at 261-63 (Dr. Blahut)	**The simulators are used on actual wave form data to detect signals** P-527 at 8; P-279; P-341 at 2
The MNP simulation code *does not refer to branch metrics* Tr. 12/17/12 at 178 (Mr. Burd)	**The MNP simulation code refers to "bmVit" for Branch Metric Viterbi and "bmAlt" for Branch Metric Alternative**

```
287                 bmVit=noiseVit[memory+L+j];
288                 bmAlt=noiseAlt[memory+L+j];
289                 #if FIXED_POINT_PRECISION == FIXED_OFF
290                     bmVit=bmVit*sigmas[index1];
291                     bmAlt=bmAlt*sigmas[index2];
292                 #else
293                     bmVit=floor(bmVit*sigmas[index1]*pow(2, firMultResolution))/pow(2,
        firMultResolution);
294                     bmAlt=floor(bmAlt*sigmas[index2]*pow(2, firMultResolution))/pow(2,
        firMultResolution);
```

P-108 at 5

Marvell Disregarded its Own Documents and Presented Incredible (and False) Testimony

At trial, Marvell offered a new damages theory based on false testimony from Drs. Sutardja and Wu

Dr. Sutardja stated unequivocally that Marvell succeeded because "it was the first company to develop the SoC."

Q Dr. Sutardja, you said on your direct that the company's success was due to its first development, because it was the first company to develop the SOC; correct?

A Yes.

Q And its success was due to the SOC, correct?

A Yes.

Tr. 12/11/12 at 98:6-11

Marvell Disregarded its Own Documents and Presented Incredible (and False) Testimony

At trial, Marvell offered a new damages theory based on false testimony from Drs. Sutardja and Wu

Dr. Wu stated that Marvell was "the first to build the system on [a] chip."

Q. Now, who was the first to build the system on chip that combined all of these components into one chip?

A. It is us, Marvell.

Tr. 12/11/12 at 226:12-14