EXHIBIT I Part 2

The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

Dr. McLaughlin's *infringement* testimony was compelling

NLD: Using Marvell's documents and testimony, Dr. McLaughlin showed that the NLD's FIR filters are part of the "branch metric" computation

A. Yes. It is possible. So basically we're using a branch metric function that is parameterized in terms of --

branch -- branch metric, branch -- sorry -- branch index, and so for different branches you would choose different set of parameters.

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.

P-Demo 7, at 86 and 89

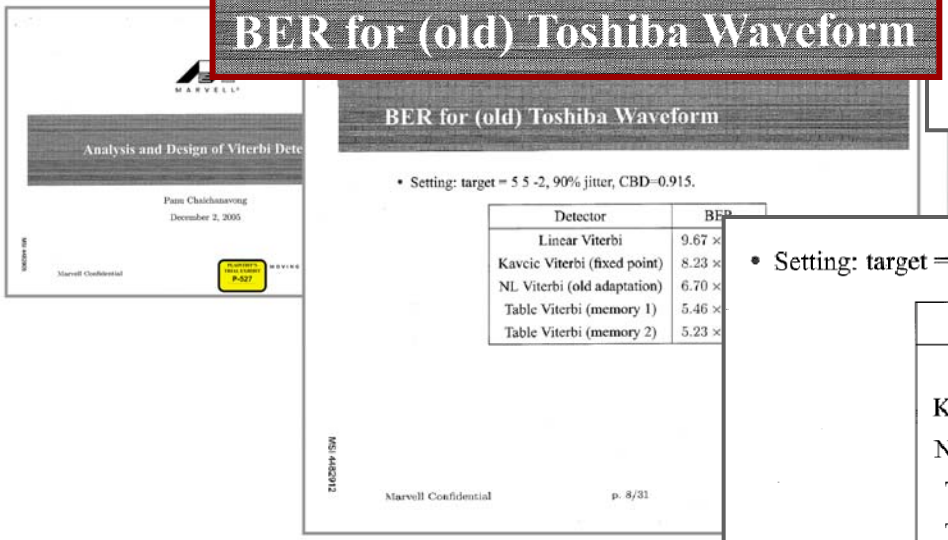
The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

Dr. McLaughlin's *infringement* testimony was compelling

Simulators: Using Marvell's documents and testimony, Dr. McLaughlin demonstrated that the simulators are "detectors" that operate on "signal samples"

Simulators Use Actual Waveforms

BER for (old) Toshiba Waveform



P-Demo 7 at 113

From:	Greg Burd
Sent:	Friday, December 28, 2001 2:37 PM
To:	Toai Doan; Ke Han
Subject:	weekly status report

developed sub-optimal media noise detector based on Kavcic model. Preliminary simulations show 1 dB gain over the linear uncoded system at UBD=2.2 with 50/50 media noise. The sub-optimality loss is about .3 dB (from the 128 state Kavcic Viterbi). Running more simulations.
greg

P-279

• Setting: target = 5 5 -2, 90% jitter, CBD=0.915.

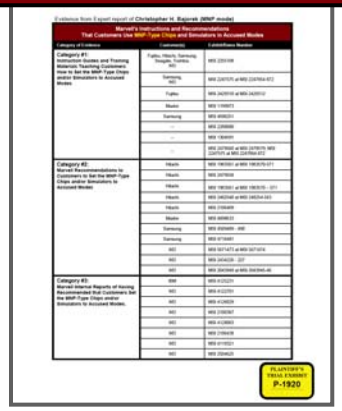
Detector	BER
Linear Viterbi	9.67×10^{-5}
Kavcic Viterbi (fixed point)	8.23×10^{-5}
NL Viterbi (old adaptation)	6.70×10^{-5}
Table Viterbi (memory 1)	5.46×10^{-5}
Table Viterbi (memory 2)	5.23×10^{-5}

The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

CMU's evidence of Marvell's intent was compelling

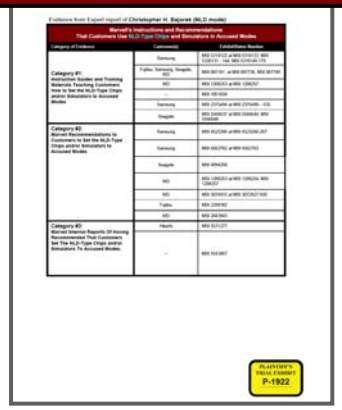
Even apart from copying, CMU presented ample evidence of Marvell's intent to induce or contribute to infringement

Marvell's Instructions and Recommendations That Customers Use MNP-Type Chips and Simulators in Accused Modes



P-1920

Marvell's Instructions and Recommendations That Customers Use NLD-Type Chips and Simulators in Accused Modes



P-1922

On JMOL, Marvell's claimed "good faith" does not overcome the ample evidence that Marvell had knowledge or was willfully blind to its own and its customers' infringing use

The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

Dr. McLaughlin's *infringement* testimony was compelling

Dr. McLaughlin's testimony alone dooms Marvell's JMOL and new trial motions on infringement

JMOL: *Expert testimony explaining how the accused technology meets the claim limitations* is substantial evidence that *precludes judgment as a matter of law*.

See ActiveVideo Networks, Inc. v. Verizon Communications, Inc., 694 F.3d 1312, 1321 (Fed. Cir. 2012)

New Trial: Under the *expert credibility instructions Marvell proposed*, the jury was entitled to believe Dr. McLaughlin's testimony, and the infringement verdict cannot be a miscarriage of justice.

See William A. Graham Co. v. Haughey, 646 F.3d 138, 143 (3d Cir. 2011) ("The 'shocks the conscience' or 'miscarriage of justice' standard for a grant of a new trial exists "to ensure that a district court does not substitute its judgment of the facts and the credibility of the witnesses for that of the jury'");
Jackson v. City of Pittsburgh, No. 07-111, 2011 WL 3443951, at *8 (W.D. Pa. Aug. 8, 2011)

The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

Dr. McLaughlin's *validity* testimony was compelling

Even though it was *Marvell's burden to prove invalidity by clear and convincing evidence*, Dr. McLaughlin demonstrated, for example:

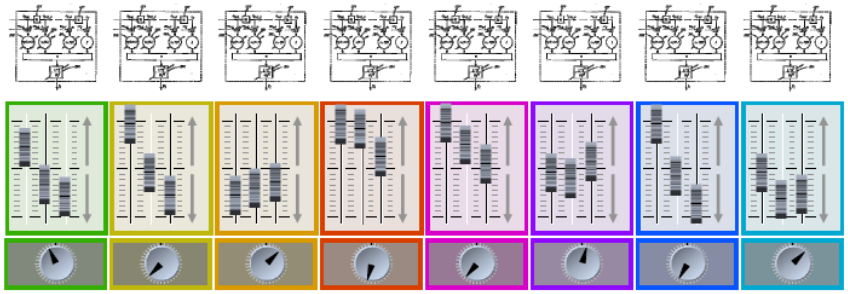
- **Worstell does not teach a "set of signal dependent branch metric functions"**
- **The asserted claims of the CMU patents are not obvious in view of Worstell**

The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

Dr. McLaughlin's *validity* testimony was compelling

Dr. McLaughlin made clear that the CMU invention requires a "set" of signal dependent branch metric functions

The Invention: Signal-Dependent Branch Metric Functions



Dr. McLaughlin, can you explain what this slide shows and its relevance to your invalidity analysis.

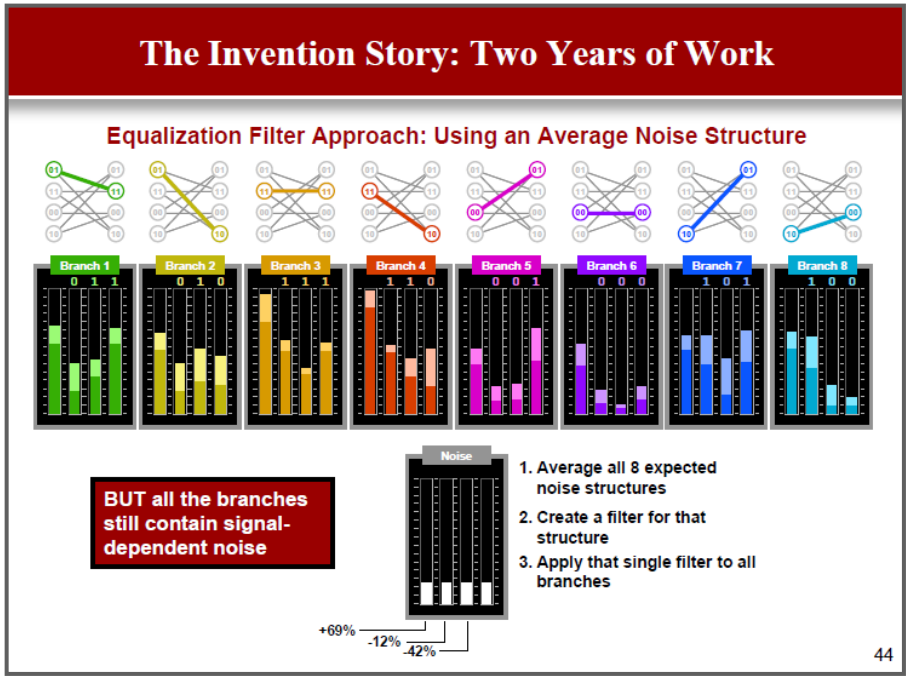
A Yes. Very briefly, this is the slide where Dr. Kavcic highlighted the fact that his invention has many different signal dependent branch metric functions, one for each one of the branches of the trellis. And this was his picture to demonstrate this with sliders and knobs. But on top it's Figure 3-B from the patent that indicated this is how it is he described it in the patent, so there are many FIR filters --

12/18/12 Tr. at 56:1-9, discussing P-Demo 3 at 59

The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

Dr. McLaughlin's *validity* testimony was compelling

Dr. McLaughlin made clear that Worstell does not teach a "set" of signal dependent branch metric functions



P-Demo 3 at 44

Q Can we show Slide 44 of P Demo 3?

Dr. McLaughlin, can you explain to the jury what you draw from Slide 44 regarding the Worstell patent.

A So, first of all, you notice this is about fifteen slides prior. This was during his discussion on failed attempts to solve the full media noise problem. And in this attempt he came up with one FIR filter, and this is really the same thing as the Worstell inventions. It was during his attempts to solve the problem; this was one of the things that he gave up on.

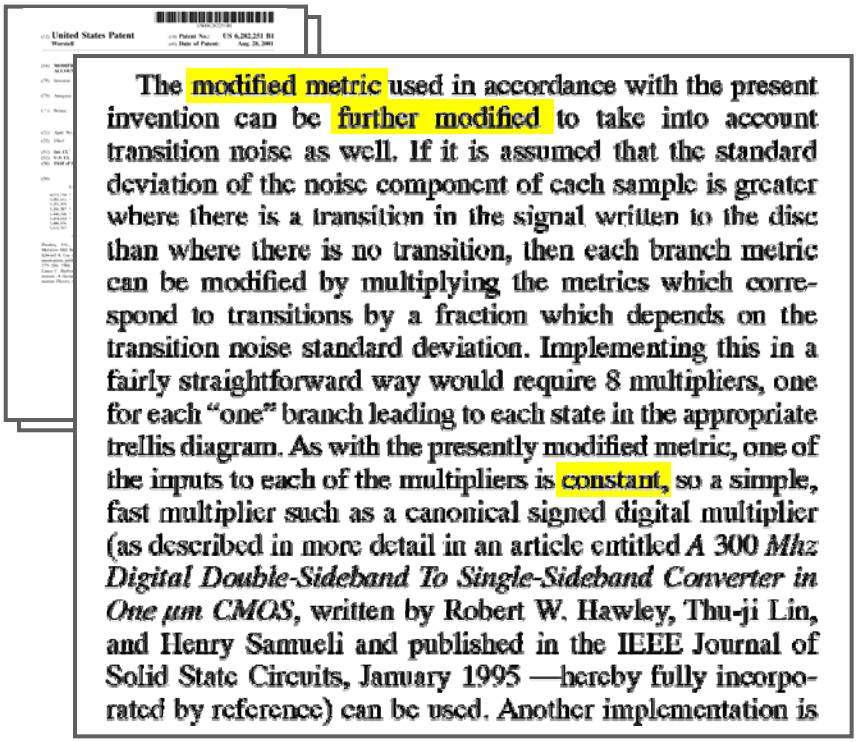
12/18/12 Tr. at 64:14-23

The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

Dr. McLaughlin's *validity* testimony was compelling

Dr. McLaughlin made clear that Worstell does not teach a "set" of "signal dependent branch metric functions"

Worstell '251 Patent



The modified metric used in accordance with the present invention can be further modified to take into account transition noise as well. If it is assumed that the standard deviation of the noise component of each sample is greater where there is a transition in the signal written to the disc than where there is no transition, then each branch metric can be modified by multiplying the metrics which correspond to transitions by a fraction which depends on the transition noise standard deviation. Implementing this in a fairly straightforward way would require 8 multipliers, one for each "one" branch leading to each state in the appropriate trellis diagram. As with the presently modified metric, one of the inputs to each of the multipliers is constant, so a simple, fast multiplier such as a canonical signed digital multiplier (as described in more detail in an article entitled *A 300 Mhz Digital Double-Sideband To Single-Sideband Converter in One μm CMOS*, written by Robert W. Hawley, Thu-ji Lin, and Henry Samueli and published in the IEEE Journal of Solid State Circuits, January 1995 —hereby fully incorporated by reference) can be used. Another implementation is

DX-187, col. 10:48-67

Q What about the constant piece, how does that play into your analysis, if it does?

A It says that the -- that the -- the fraction doesn't vary from branch to branch; it's constant for all the one branches.

Q And what does that -- what does that mean vis-a-vis your analysis?

A It means that this is different than what's discussed in the Kavcic patent, in the claims.

Q And is this description in Worstell, does that describe a set of signal dependent branch metric functions?

A No.

Q Why not?

A Because, as you remember, the signal dependent branch metric functions go towards a specific specified sequence of storage symbols, and so this doesn't do that.

12/18/12 Tr. at 67:19-68:9

The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

Dr. McLaughlin's *validity* testimony was compelling

Dr. McLaughlin made clear that Worstell does not teach a "set" of "signal dependent branch metric functions"

The Worstell Patent Invalidates Claim 4 of the '839 Patent

4. A method of determining branch metric values for branches of a trellis for a Viterbi-like detector, comprising:	✔
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	✔
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.	✔

MODIFIED VITERBI DETECTOR WHICH ACCOUNTS FOR CORRELATED NOISE

Further modified branch metric:

$$B_{b,nt} = [X^2_{b,nt} - 2X_{b,nt} \sum X_{b,(n-i)t} W_i] \times [1/\alpha^2_{b,nt}]$$

Worstell Patent, Eq. 20 + 10:48-67

D-Demo12-14

Q Well, when you say it's a made-up equation, what doesn't map to the use of the constant?

A Well -- so, first of all, he talks about a fraction. This is a fraction, but only one type of fraction. He describes standard deviation; this is not standard deviation, this is a variance. The other thing is the subscripts here, BNT, BNT, those correspond to different branches. What is -- what this is referring to is the branch metric value for a particular branch. This is implying that it's different for all the branches. And as we have already seen, there's no -- nothing applied for the zero branches. And for the one branches this is all constant, so I think this is very misleading.

12/18/12 Tr. at 68:25-69:12, discussing D-Demo 12-14

The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

Dr. McLaughlin's *validity* testimony was compelling

Worstell's view confirms Dr. McLaughlin's opinions

> > To: Ed Skalko, Dave W
> > cc:
> > From: Glen Worstell
> > Date: 04/15/97 04:09:
> > Subject: DSSC Patent P

From: Glen Worstell
Date: 04/15/97 04:09:54 PM

> > Hi Ed,
> >
> > I have reviewed the DSSC "Correlation Sensitive Adaptive Sequence Detector"

invention is related, but goes beyond my work and is probably more interesting. I also know of work at

> > account for
> > invention is related, but goes beyond my work and is probably more
> > interesting. I also know of work at
> > UCSD and IBM which is related, but again as far as I know the DSSC work is
> > different enough to warrant investigation.
> >
> > An important issue is the circuit complexity required. I'll try to look at
> > that, too.
> >
> > Expect a better evaluation next week.
> >
> > cheers,
> >
> > Glen.

Q And let's direct your attention to Page -- I think it's two or three -- do you recognize this piece of P-161?

A Yes.

Q What is it?

A It's an e-mail from Glen Worstell on April, 1997, to some other folks at Seagate.

Q And, sir, did this affect your opinion at all?

A Yes.

Q In what way?

A It confirms my opinion.

12/18/12 Tr. at 70:20-25; 71:25-72:3; discussing P-161

The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

Dr. McLaughlin's *validity* testimony was compelling

Secondary considerations also confirmed Dr. McLaughlin's opinions

Q Okay. Sir, one last point on our slide with the tests for -- that you applied. There was this phrase again, secondary considerations.
A Yes.
Q What does that mean?
A Well, that was with respect to obviousness. And the secondary considerations were in order to determine whether something is obvious, it's also possible to look at these secondary factors. Some of those factors are praise for the invention, solving a long-perceived problem, long-pursued problem.
Q Did you hear Dr. Proakis discuss any secondary considerations yesterday?
A No.
Q And did you consider secondary considerations?
A Yes, I did.
Q What did you -- can you describe for the jury what you considered in that regard.
A Yeah. I think, just in short, we've heard a lot of praise for the invention, both by Marvell testimony here and also in general. We've read things that said it solved a long-standing problem. So that praise would have been one of

THE WITNESS: Well, no, because like I said, he is kind of VIP which everybody tries to cite and everybody is citing, even in the papers. Right?

VIDEOTAPED CORPORATE DEPOSITION OF

So it's a natural thing to compare yourself to, you know, people whose work considered to be, you know, on a leading edge, or on the cutting edge of a field. Right?

become associated with those events? I don't know.
Ronald Reagan is credited with breaking down the wall. Well, I didn't see him break any bricks. Right? But yet, he is the one. So same thing.

themselves to that.
So it's a natural thing to compare yourself to, you know, people whose work considered to be, you know, on a leading edge, or on the cutting edge of a field. Right?

(934:24–136:8)

110

12/18/12 Tr. at 72:4-25; P-Demo 7 at 110

The Court Should Deny Marvell's JMOL and New Trial Motions on Infringement and Validity

In sum, Marvell's motions fail

- CMU carried its burden on infringement and presented compelling evidence of validity
  - Even aside from circumstantial evidence of infringement (e.g., copying, instructions, emails), CMU's "read-on" analysis was compelling
- Marvell's arguments are misplaced given the post-trial posture
  - The Court may not assess credibility of the witnesses or substitute its judgment of the facts
    Agrizap, Inc. v. Woodstream Corp., 520 F.3d 1337, 1342 (Fed. Cir. 2008) (JMOL); *Jackson v. City of Pittsburgh,* No. 07-111, 2011 WL 3443951, at *8 (W.D. Pa. Aug. 8, 2011) (New Trial)
  - The jury was entitled to credit Dr. McLaughlin's testimony over competing testimony from Drs. Proakis and Blahut
- Marvell's evidence (Drs. Wu, Blahut, Proakis' testimony) is irrelevant on JMOL
  - The Court must "disregard all evidence favorable to the moving party that the jury is not required to believe."
    Spectralytics, Inc. v. Cordis Corp., 649 F.3d 1336, 1341 (Fed. Cir. 2011)
- On new trial, Marvell cannot show that the infringement and validity verdicts "shock the conscience" or are a "miscarriage of justice"

Carnegie Mellon University's Presentation on Marvell's JMOL and Motion for New Trial (Non-Damages) – Dkt. 805

May 1 – 2, 2013

Carnegie Mellon