Marvell's Motion For Judgment As A Matter Of Law or, In the Alternative, New Trial on Non-Damages Issues [Dkt. 805]

May 2, 2013

United States District Court
Western District of Pennsylvania
Civ. No. 2:09-cv-00290-NBF

Marvell Technology Group, Ltd.
Marvell Semiconductor, Inc.

Legal Standard for JMOL

"To succeed on a renewed motion for JMOL following a jury trial and verdict, the movant must show that the jury's findings, presumed or express, are not supported by substantial evidence or, if they were, that the legal conclusion(s) implied by the jury's verdict cannot in law be supported by those findings."

Comaper Corp. v. Antec, Inc., 867 F. Supp. 2d 663, 667 (E.D. Pa. 2012 (quoting *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1348 (Fed. Cir. 1998)).

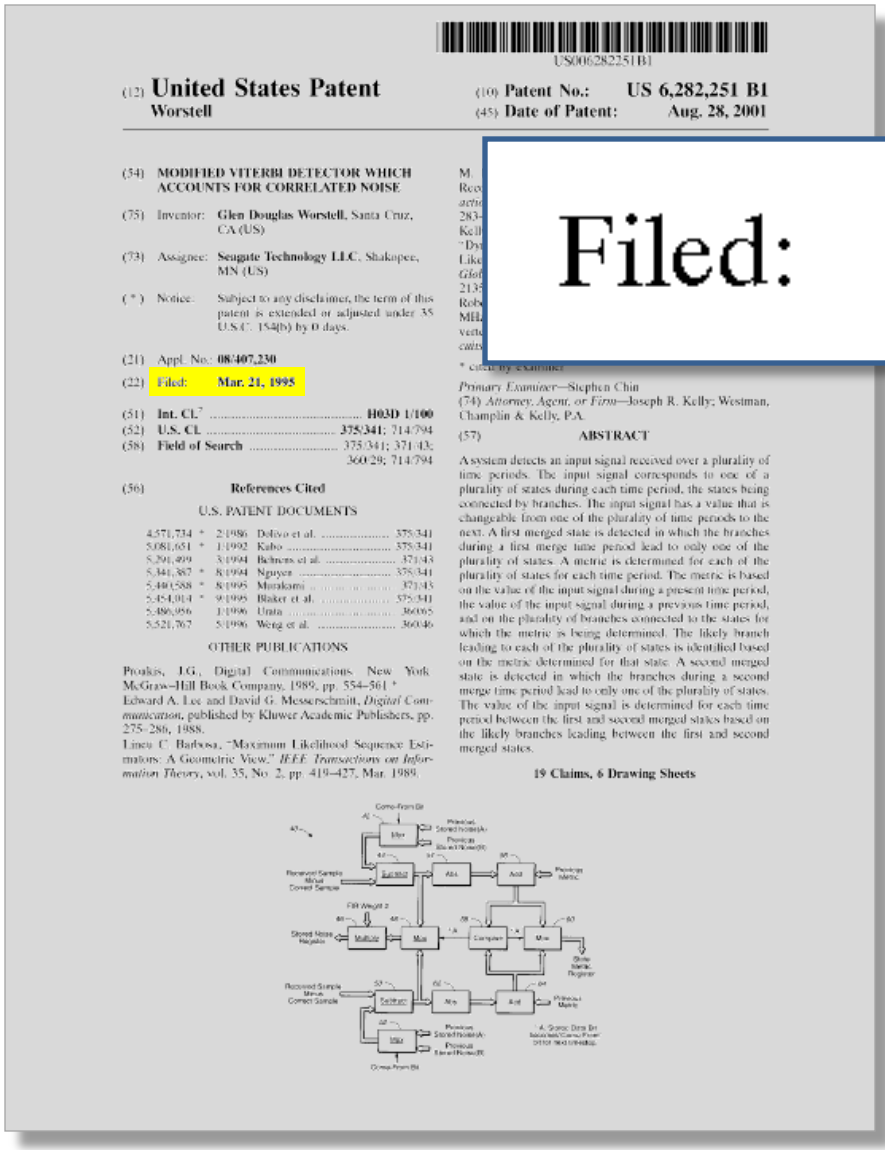
Legal Standard for New Trial

"A new trial may be granted when the verdict is contrary to the great weight of the evidence; that is, where a miscarriage of justice would result if the verdict were to stand."

Pryer v. C.O. 3 Slavic, 251 F. 3d 448 (3d Cir. 2001) (quoting *Olefins Trading, Inc. v. Han Yang Chem Corp.*, 9 F.3d 282, 289 (3d Cir.1993)).

Invalidity

Worstell ('251 Patent) Anticipates CMU Patents



US006282251B1

(12) **United States Patent**
Worstell

(10) **Patent No.: US 6,282,251 B1**
(45) **Date of Patent: Aug. 28, 2001**

(54) **MODIFIED VITERBI DETECTOR WHICH ACCOUNTS FOR CORRELATED NOISE**

(75) Inventor: **Glen Douglas Worstell**, Santa Cruz, CA (US)

(73) Assignee: **Seagate Technology LLC**, Shakopee, MN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **08/407,230**

(22) Filed: **Mar. 21, 1995**

(51) **Int. Cl.**[7] **H03D 1/100**
(52) **U.S. Cl.** **375/341**; 714/794
(58) **Field of Search** 375/341; 371/43; 360/29; 714/794

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,571,734	*	2/1986	DeFoy et al.	375/341
5,081,651	*	1/1992	Kubo	375/341
5,291,499	*	3/1994	Behrens et al.	371/43
5,341,387	*	8/1994	Nguyen	375/341
5,440,588	*	8/1995	Murakami	371/43
5,454,014	*	9/1995	Blaker et al.	375/341
5,486,956		1/1996	Urata	360/65
5,521,767		5/1996	Weng et al.	360/46

OTHER PUBLICATIONS

Proakis, J.G., Digital Communications, New York McGraw-Hill Book Company, 1989, pp. 554–561 *
Edward A. Lee and David G. Messerschmitt, *Digital Communication*, published by Kluwer Academic Publishers, pp. 275–286, 1988.
Lincy C. Barbosa, "Maximum Likelihood Sequence Estimators: A Geometric View," *IEEE Transactions on Information Theory*, vol. 35, No. 2, pp. 419–427, Mar. 1989.

Primary Examiner—Stephen Chin
(74) *Attorney, Agent, or Firm*—Joseph R. Kelly; Westman, Champlin & Kelly, P.A.

(57) **ABSTRACT**

A system detects an input signal received over a plurality of time periods. The input signal corresponds to one of a plurality of states during each time period, the states being connectable by branches. The input signal has a value that is changeable from one of the plurality of time periods to the next. A first merged state is detected in which the branches during a first merge time period lead to only one of the plurality of states. A metric is determined for each of the plurality of states for each time period. The metric is based on the value of the input signal during a present time period, the value of the input signal during a previous time period, and on the plurality of branches connected to the states for which the metric is being determined. The likely branch leading to each of the plurality of states is identified based on the metric determined for that state. A second merged state is detected in which the branches during a second merge time period lead to only one of the plurality of states. The value of the input signal is determined for each time period between the first and second merged states based on the likely branches leading between the first and second merged states.

19 Claims, 6 Drawing Sheets

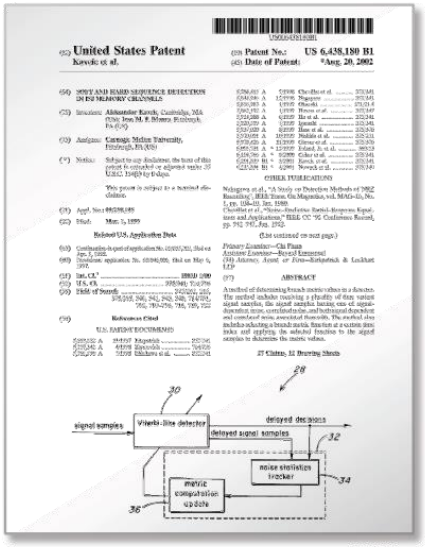
Filed: Mar. 21, 1995

- It is undisputed that Worstell is prior art
- The named inventors of the CMU patents did not conceive their alleged inventions until ***after the March 21, 1995 filing date of Worstell*.**

Worstell ('251 Patent) Anticipates CMU Patents

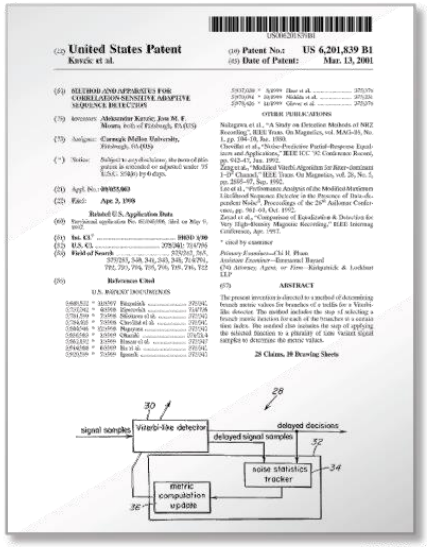
CMU Patents

United States Patent
6,438,180



P-0002

United States Patent
6,201,839



P-0001

D-Demo12-4

It is undisputed the ***Patent Office did not consider Worstell patent.***

Legal Standard for Invalidity

"[R]eliance upon [art not considered by the PTO] when that art is more pertinent than the art considered by the PTO may facilitate meeting the burden of proving invalidity."

Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1050 (Fed. Cir. 1988)

"[T]he Federal Circuit has stated that a challenger's burden of showing invalidity by clear and convincing evidence may be more easily carried when relying on prior art that was not considered during patent prosecution."

Roche Palo Alto LLC v. Ranbaxy Labs. Ltd., 2009 U.S. Dist. LEXIS 90804, at *140 (D.N.J. Sept. 30, 2009) (citing *Uniroyal*, 837 F.2d at 1050)

Dr. Kryder Could Not Identify A Distinction Between Worstell Patent and Claim 1 of the '839 Patent

Q Sitting here today can you identify any distinction between what's --

A Sitting --

Q Let me finish -- between Claim 1 of the '839 patent and what you are aware of as being disclosed in the Worstell patent?

A Sitting here today I cannot.

(Deposition excerpt concluded.)

BY MR. JOHNSON:

Q And that was your sworn testimony and was accurate when you gave your deposition in this case, right?

A That was my sworn testimony --

12/5/2012 Tr. (Kryder) at 72:2-13

Claim 4 of the '839 Patent Only Adds "from a set of signal-dependent branch metric functions"

'839 Patent | Claim 1	'839 Patent | Claim 4
1. A method of determining branch metric values for branches of a trellis for a Viterbi-like detector, comprising:	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; and	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.	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.

MK - 1

D-Demo 6

Worstell Anticipates Claim 4 of '839 and Claim 2 of '180

WORSTELL DISCLOSES:

"selecting a branch metric function for each of the branches at a certain time index from a set of ***signal-dependent*** branch metric functions."

'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.

Q Okay. And how about the notion of signal dependent noise, can you explain whether or not in your opinion the Worstell patent discloses the concept of signal dependent noise?

A Worstell does, in fact, take into account signal dependent noise. He describes this as a further modified branch metric function in Column 10 of this patent, and he says that in order to take signal dependent noise into consideration, you just simply take Equation 20 and you multiply it -- when you scale those, you scale those branch metrics that have signal dependent noise by a fraction, which depends on the transition noise standard deviation.

12/17/12 Tr. (Proakis) at 55:5-15

McLaughlin Admitted That Worstell Patent's "further modified" Metric Took Signal-Dependent Noise Into Account Using Multiple Functions

- McLaughlin testified that noise varied depending on whether there was transition or not.

Q The paragraph refers to a further modified metric at Line 49 and Column 10; right?
A Okay. Yes.
Q And you agree that the paragraph describes modifying a metric to take transition noise into account?
A That is what -- that is what the sentence says.
Q And you agree that the transition noise can depend on the type of the transition; is that correct?
MR. GREENSWAG: Objection. Asked and answered.
A The noise -- the value of the noise is going to be different -- is going to be different whether there is a transition or whether there is no transition.

Depo. Tr. 3/23/12 (McLaughlin) at 371:5-21

Worstell Anticipates Claim 4 of '839 and Claim 2 of '180

WORSTELL DISCLOSES:

"receiving a plurality of time variant signal samples, the signal samples having one of signal-dependent noise, ***correlated noise***, and both signal dependent and correlated noise associated therewith."

'180 Patent

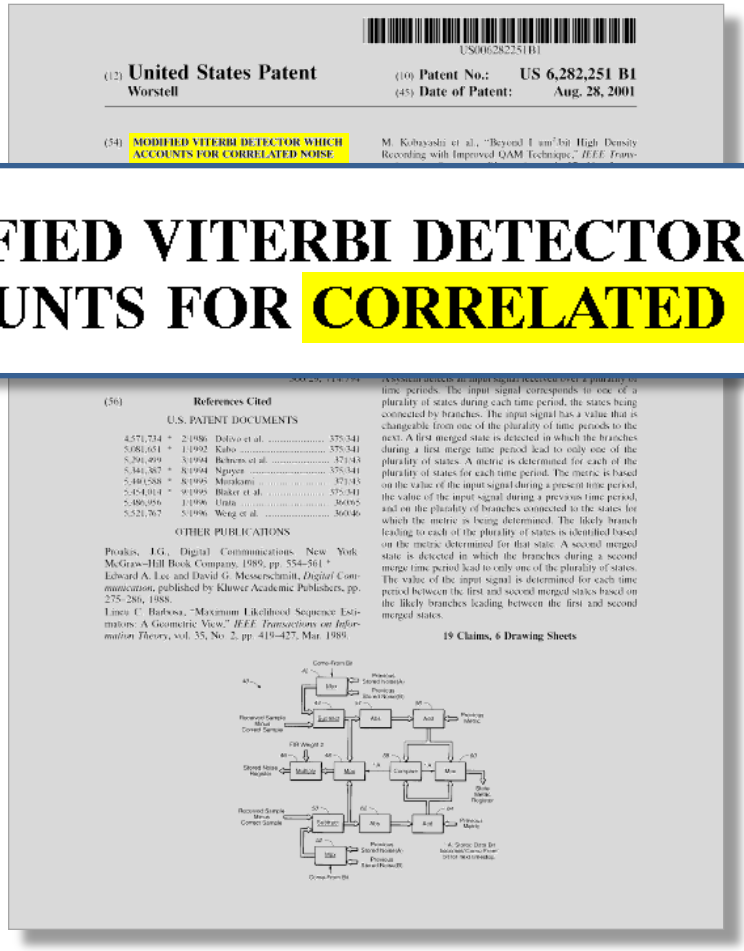
1. A method of determining branch metric values in a detector, comprising:

receiving a plurality of time variant signal samples, the signal samples having one of signal-dependent noise, ***correlated noise***, and both signal dependent and correlated noise associated therewith;

selecting a branch metric function at a certain time index; and

applying the selected function to the signal samples to determine the metric values.

2. The method of claim 1, wherein the branch metric function is selected from a set of signal-dependent branch metric functions.



McLaughlin Admits "Selecting" is Not New

LEE AND ZENG DISCLOSES:

*"**selecting a branch metric function for each of the branches at a certain time index** from a set of signal dependent branch metric functions."*

Zeng and Lee Disclose "Selecting a Branch Metric Function From a Set of Functions"

Steven W. McLaughlin, Ph.D.
Expert for Carnegie Mellon

CMU Expert McLaughlin admitting Zeng and Lee disclose a "set of functions"

Q. I did. And I'm just trying – again, I will repeat it. They disclose -- when I say "they," Lee and Zeng disclose selecting a branch metric function from a set of functions for each of the branches at a certain time index; is that correct?

A. Yeah. That is correct. That is correct.

3/22/12 McLaughlin Dep. Tr. at 267:20-268:3

D-Demo12-9

Worstell Email Does Not Address CMU Patent Claims At All

Pencoske, Edward

From: Casey Porto[SMTP:cp3t@cmu.edu]
Sent: Tuesday, April 29, 1997 11:24 AM
To: mark kryder
Cc: Pencoske, Edward
Subject: 97-072 Correlation Sensitive Adaptive Sequence Detector

Hi Ed,

I have reviewed the DSSC "Correlation Sensitive Adaptive Sequence Detector" patent proposal.
I would like to wade through the math before filling out the Invention Evaluation form, but so far
it looks very interesting.

A couple of years ago I did some work on a Viterbi detector modification to account for noise correlation. This
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,

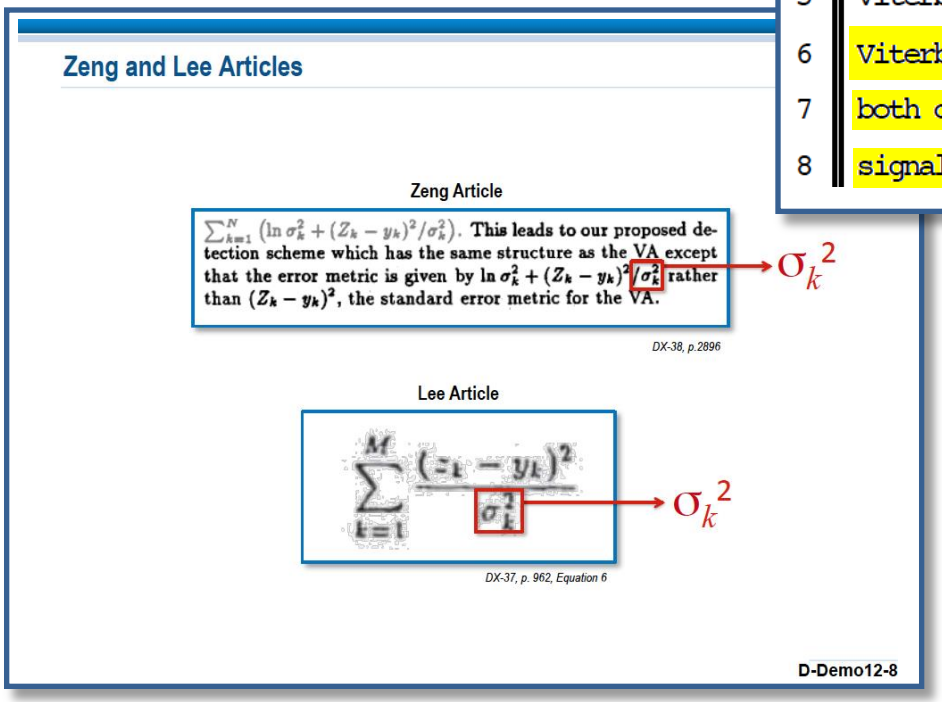
Glen.

If Not Anticipated, CMU's Patents Are Invalid for Obviousness

- Accounting for signal dependent noise using standard deviation of the noise, by multiplying by $1/\sigma^2$ as disclosed in Worstell, was well known.

1	Q All right. Well, let's just look at one other slide
2	on — those are the Zeng and Lee articles, is that correct?
3	A Yes. This is basically the way that Zeng and Lee
4	propose — I mean they are a modification to the conventional
5	Viterbi — see if this works at all, okay. These are the
6	Viterbi metrics, and these are now scaled by sigma square in
7	both cases, exactly the same scale factor, to account for
8	signal dependent.

12/17/12 Tr. (Proakis) at 56:1-8



If Not Anticipated, Claim 4 of '839 and Claim 2 of '180 Are Obvious

'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.

'839 Patent Claim 4 – "Selecting" Step – Signal Dependent

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.

CMU Expert McLaughlin Deposition Transcript

Q. Was Dr. Kavcic the first person to propose a Viterbi detector that took signal-dependent noise into account?

A. I don't believe so.

3/22/12 McLaughlin Dep. Tr. at 252:10-13

D-Demo12-

If Not Anticipated, Claim 4 of '839 and Claim 2 of '180 Are Obvious

'180 Patent

1. A method of determining branch metric values in a detector, comprising:

receiving a plurality of time variant signal samples, the signal samples having one of signal-dependent noise, ***correlated noise***, and both signal dependent and correlated noise associated therewith;

selecting a branch metric function at a certain time index; and

applying the selected function to the signal samples to determine the metric values.

2. The method of claim 1, wherein the branch metric function is selected from a set of signal-dependent branch metric functions.

14 Q Was Dr. Kavcic the first person to
15 propose a Viterbi detector that took correlated
16 noise into account?
17 A I don't believe so.

3/22/12 Tr. (McLaughlin) at 252:14-17

Dr. Proakis Explained A Particular Embodiment of Worstell

- CMU claims Dr. Proakis admitted that Worstell does not teach a set of branch metric functions but Dr. Proakis simply answered CMU's questions about an embodiment of Worstell. Dr. Proakis explained that the "sigmas" are different on "zero" branches and "one" branches, and therefore create different branch metric functions.

Q Worstell never says, does it, sir, that you put any kind of a multiplier on the zero branch; right?
A That is obvious, Mr. Greenswag. That is totally obvious to a person skilled in the art. There are 16 branches there, and a person skilled in the art would look at that and say, okay, I've got -- eight of these branches have to be scaled by a sigma one squared and the other eight have to be scaled by a sigma two squared.

12/17/12 Tr. (Proakis) at 94:5-12

Dr. Proakis Testified that the Worstell Patent and CMU Patent Contain Similar Disclosure of "Branch Metric Functions"

- CMU claims Dr. Proakis' trial testimony contradicted his earlier declaration, but in his declaration Dr. Proakis made clear that both Worstell and the CMU patents have similar disclosure with respect to a "set" of branch metric functions: either both contain disclosure of a "set" of branch metric functions, or neither one does.

> As discussed further below (¶¶ 48-49), each of these functions include target values and noise statistics that vary from branch to branch of a trellis, and are therefore "variables" for their respective functions. 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.

11/2/11 Decl of J. Proakis, ¶ 19

CMU Patents Were Not Commercially Successful

19 Q Has there been any company that has come to CMU to
20 specifically ask to license the '839 or the '180 patent?
21 A No.

11/29/12 Tr. (Moura) at 73:19-21

4 A No, I have not received a single dollar for any of
5 these patents in any of these inventions that are used.

11/29/12 Tr. (Kavcic) at 270:4-5

Other Factors Drove Customer Demand for the Accused Chips

Q. Who made the recommendation to select Marvell as the new supplier of read channel chips in 2001, 2002?

A. I was part of the team that went through the investigating process, and eventually I had to make the recommendation and justify my decision based on technical matters.

Q. And who was recommended?

A. Marvell was the selected supplier.

Q. Why?

A. Well, there were multiple reasons. You know, it's going to get a little bit technical, but there are several elements to what we were interested in, in our selection of our supplier; data rate capability, signal to noise ratio, and certain specific features that were very unique to Western Digital, based on our manufacturing processes, and then, there are smaller, less critical factors, like availability of the supplier to support us during integration process locally at our facility. So, all of these factors went into making that decision.

12/13/12 Tr. (Baqai) at 154:10-155:3

Western Digital Did Not Want Accused MNP Feature

Q. So what did you do when you learned, as we've seen, that there was little or no benefit from the MNP feature?
A. Well, I went back to Marvell and told them that this feature was no good, and it didn't do anything for me. And as far as I'm concerned, they can take it out.
Q. Now, had you had an understanding that you were paying extra for the MNP?
A. Well, you know, in read channel device or any chip, the size of the die, the silicon, material, translates into cost. So, there is a base design of the chip that's inherent. There is really not much option. But there are certain features that, after the die size, and they have to translate to some measurable gain and benefit to us. Otherwise, I'll be signing up to pay for a feature that was useless.
So, that was the nature of my response back to Marvell, that, you know, if this feature costs some die size, then, I don't want this, because it's not doing anything for me.

12/13/12 Tr. (Baqai) at 163:16-164:7

Non-Infringement

CMU Must Show All Limitations Are Met to Prove Infringement

"[F]ailure to meet a single limitation is sufficient to negate infringement of the claim…."

Nomos Corp. v. Brainlab USA, Inc., 357 F.3d 1364, 1367 n.1 (Fed. Cir. 2004).

Marvell's Expert Showed that Claim Limitations Were Not Met

Claim 2 of the '180 Patent

Claim 2 of the '180 Patent

1. A method of determining branch metric values in a detector, comprising:
receiving a plurality of time variant signal samples, the signal samples having one of signal-dependent noise, correlated noise, and both signal dependent and correlated noise associated therewith;
selecting a branch metric function at a certain time index; and
applying the selected function to the signal samples to determine the metric values.

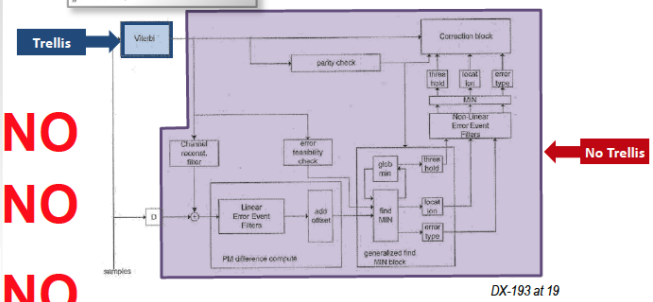
2. The method of claim 1, wherein the branch metric function is selected from a set of signal-dependent branch metric functions.

NO

NO

NO

Marvell:
Media Noise Detector Design Review



DX-193 at 19

- No **"selecting"** step for branches in the trellis
- No **"applying"** step for determining values of branches in the trellis

D-Demo13-30

17	Q. Is there anything else you wanted to add with respect
18	to why, in your opinion, the selecting step is not found in
19	the accused Marvell MNP-type chips?
20	A. In one sentence. I already described why it does not
21	appear in the Viterbi detector. And again, it does not appear
22	in the post processor, because there are no branches in the
23	post processor.

12/13/12 Tr. (Blahut) at 247:17-23

8	Q. So, let's turn now to Claim 2. Can you express for us
9	your opinion as to whether the limitations set forth in
10	Claim 2 of the '180 patent was found in the accused Marvell
11	MNP-type chips?
12	A. Yes. It -- Claim 2, it states the method of Claim 1,
13	wherein the branch metric function is selected from a set of
14	signal dependent branch metric functions. And again, it
15	requires selection. There is no selection in the Viterbi
16	detector, because there's only one branch metric equation.
17	There is no selection in the post-processor, because
18	there are no branches.

12/13/12 Tr. (Blahut) at 248:8-18

"Branch Metric Function" Must Be In Trellis

Agreed Constructions

Claim Term	Claim(s)	Parties' Agreed Construction
branch metric function	839 cls. 1, 3, 4 180 cl. 1, 2	"Branch metric function" means "a mathematical function for determining a 'branch metric value' for a 'branch.'"
branch	839 cls. 1, 3, 4, 11, 16, 19, 23 180 cls. 1, 2, 6	"Branch" means "a potential transition between two states (nodes) immediately adjacent in time in a 'trellis.'" Examples of branches are illustrated as the lines between the nodes in Figure 4 of the 839 patent.

Dkt. 120-1 (5/14/10) Ex. A

CMU Failed to Introduce Sufficient Evidence for Infringement

- Accused MNP is outside the trellis.

22 Q. Now, did is the NMP post processor that you designed
23 part of a Viterbi trellis?
24 A. No, it is not.
25 Q. Is there a trellis in the MNP post processor that you
1 designed?
2 A. No.

12/17/12 Tr. (Burd) at 140:22-141:2

Dr. Blahut's Statement Regarding A "Typographical Error" Is Not an Admission Regarding "Path Metrics"

- CMU points to Dr. Blahut's testimony:

Q. Right. What you wrote here in your report is, process up to 20 events per code word, and again compute the path metrics. That's what you wrote.
A. You're looking at a sentence with a grammatic or a typographical error. It says clearly, the difference between one and two.

12/13/12 Tr. (Blahut) at 274:6-11

- But overlooks his entire testimony where he referenced difference in path metrics:

And you wrote this, right, this Paragraph 106; correct? Did you write this, sir?
A. Yes. It's in my document. Yes, I wrote it. I'm just rereading it now.
Q. John, would you blow it up, please? Okay.
And you see where you wrote, sir, the nonlinear filters process up to two error vents per code word, and again compute the path metric based on the difference. Do you see that?
A. Yes.
Q. That's -- isn't that what you wrote, sir?
A. I already said that I wrote this paragraph.
Q. Right. But just, on your direct testimony, you said the MNP doesn't commute a path metric.
A. Its, so, so I have to be careful about the phrasing. The phrasing there is, is not precise, because it says, based on the difference between the Viterbi path plus error vent and the Viterbi path. It's referring to a difference in Viterbi -- in path metrics.

12/13/12 Tr. (Blahut) at 273:2-19

Dr. Blahut's Expert Report Does Not Opine That The MNP Computes a "Path Metric" As Defined By CMU

- Dr. Blahut's expert report makes clear that the MNP only calculates the difference between path metrics:

> 98. The trellis in the diagram below shows a path through the Viterbi detector (not the Post Processor, PP), which is described as a "Viterbi path." For each of the dominant error events, the PP then computes the difference between the path metrics of (1) Viterbi path + error event and (2) the Viterbi path:

Blahut Expert Report at ¶ 98

> 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 Expert Report at ¶ 106

- A clear and fair reading of Dr. Blahut's expert report shows that the reference to a "grammatic or a typographical error" in ¶ 106 was appropriate in light of CMU's suggestion that Dr. Blahut was referring to a path metric computation involving branch metric values

Dr. Blahut Did Not "Admit" In His Prior Testimony That The MNP Computed A "Path Metric" At The Same Place Identified By Dr. McLaughlin

- CMU alleges that Dr. Blahut "admitted" that Marvell's MNP "computes path metrics (which he and Dr. McLaughlin both agree are the sum of *branch metrics* . . . and [that] he even drew a circle on the MNP circuit diagram to show that the path metric is computed right after the summation block."

  – Reply, at 2-3

  - CMU Misstates and Misrepresents Dr. Blahut's Testimony – Dr. Blahut did not say he was circling a path metric. Rather, he referenced a difference metric.

Q. Okay. Can you, sir, point to me where the path metric is or where it would be shown on this diagram?
A. So without analyzing the circuit in detail or reading the entire -- my entire report, I'll try to save time by referring only to the diagram and looking at it. So the -- the -- the difference in the paths is -- is computed by the difference between the upper and the lower FIR filters that have been fed with information that has non-linear adjustments in it.
Q. Okay. Can you circle it on the exhibit, please?

Blahut (4/2/12) Dep. Tr. at 178:10-22

CMU Failed to Introduce Sufficient Evidence for Infringement

- Because MNP chips calculate a difference between two metrics, they do not calculate branch metric values.

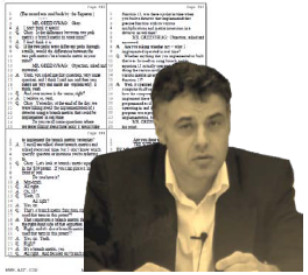
Q And then whatever is done, I said insert errors, you didn't like that, but whatever is done, alternate paths are evaluated; is that correct?
A Yeah, alter -- there's -- yeah, alternate paths are explored.
Q Two alternate paths in the MNP product, is that true, sir?
A Two alternates paths.
Q And then an evaluation is done to see if either one of those alternate paths is better than the best path that's labeled there. Is that true? Can we agree on that?
A That is correct.

12/3/12 Tr. (McLaughlin) at 269:9-20

CMU Failed to Introduce Sufficient Evidence for Infringement

- Inventor admitted the difference between two path metrics is NOT a branch metric.

Dr. Kavcic's Deposition Testimony



Q. Okay. Is the difference between two path metrics a branch metric in your mind?

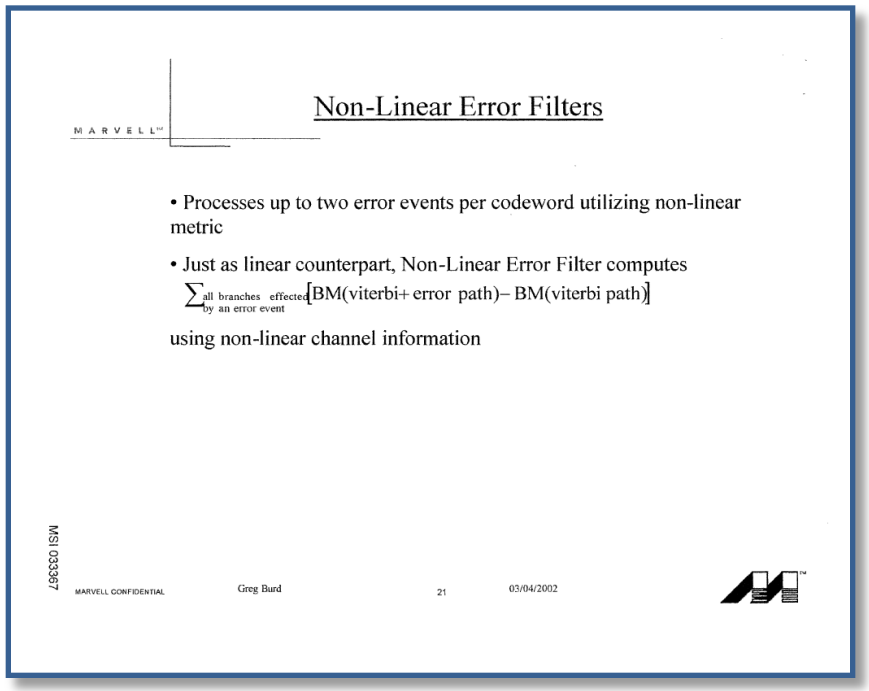
A. I don't think it is.

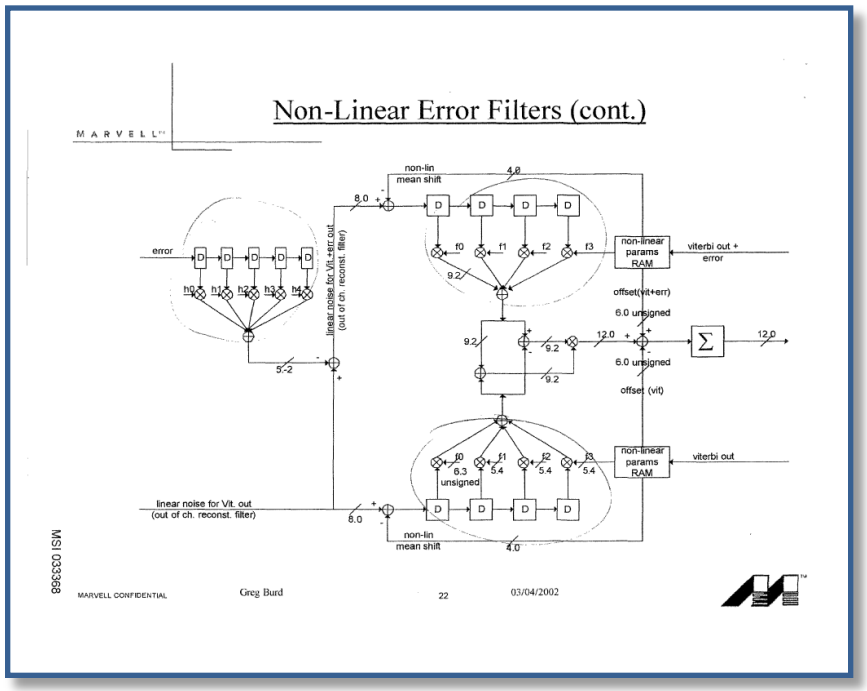
7/15/10 Kavcic Depo. Tr. at 643:5-7

D-Demo13-33

CMU's Attempts To Manufacture Contradictions Fail Because They Take Terms Out Of Context

- CMU conflates use of BM (stands for "branch metric") in Marvell's documents *in the post processor* with "branch metric values" as used in the CMU patent claims.
- CMU's witnesses Drs. Blahut and Wu have maintained the distinction between computations within a trellis (CMU patent claims) and outside the trellis (in Marvell's post-processor)





P-295 at 21-22

CMU Failed to Introduce Sufficient Evidence for Infringement

- Accused NLD is outside of the trellis.

Q. Can you describe for us, in a couple of sentences, your overall opinion about whether the selecting step is found in the NLD-type chips?

same. It doesn't vary. There is -- there is no selection of a branch metric, branch metric function in the trellis.

In the pre-filter, there are no branches. These are just filters. There is no trellis. There are no branches, accordingly, so there is no selection of a branch metric function in the pre-filter.

12/13/12 Tr. (Blahut) at 258:2-4, 14-19

CMU Failed to Introduce Sufficient Evidence for Infringement

- CMU expert McLaughlin admits NLD uses only a single signal sample $f_{y,}$ therefore no selecting of a branch metric.

6	Q So it's fair to say that the signal that's labeled
7	F-sub-Y that we're discussing, that is a single signal sample,
8	isn't it true, sir?
9	A It's a single signal sample that's -- that's the
10	output, the result of the application, the application step.

12/3/12 Tr. (McLaughlin) at 288:6-10

A Simulator is Not a Detector

"The only purported evidence of Ericsson's direct infringement that Harris cites in its brief is a flow chart describing a 'simulation program' that Ericsson uses for testing its algorithms. Harris has not shown that the claimed method is actually carried out, rather than simulated, when Ericsson runs this program."

Harris Corp. v. Ericsson Inc., 417 F.3d 1241, 1256 (Fed. Cir. 2005).

Inducement Requires Showing of Actual Knowledge of Infringement

"Accordingly, we now hold that induced infringement under § 271(b) requires knowledge that the induced acts constitute patent infringement."

Global-Tech Appliances, Inc. v. SEB SA, 131 S. Ct. 2060, 2068 (2011).

CMU's "copying" Evidence Does Not Prove Knowledge of Infringement

- None of "copying" evidence shows any knowledge of infringement of claims:
  - Use of "Kavcic" name is not evidence of infringement, and does not show knowledge of claims
  - Knowledge of Kavcic patent is not knowledge of infringement
  - Reading and following Kavcic's papers is not knowledge of infringement
  - Changing name of source code routine is not knowledge of infringement

See, e.g., Apple, Inc. v. Samsung Electronics Co., Ltd., 11-CV-01846-LHK, 2013 WL 412859 (N.D. Cal. Jan. 29, 2013) (citing *Allen Engineering Corp. v. Bartell Industries, Inc.,* 299 F.3d 1336, 1351 (Fed. Cir. 2002) ("While copying may be relevant to obviousness, it is of no import on the question of whether the claims of an issued patent are infringed.")); *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1336 (Fed. Cir. 2009) (citing *Allen Eng'g*); *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1366 (Fed. Cir. 2001) ("[E]vidence of copying [the patentee's product] is legally irrelevant unless the [product] is shown to be an embodiment of the claims."); *see Goss Int'l Ams., Inc. v. Graphic Mgmt. Assocs., Inc.*, 739 F. Supp. 2d 1089, 1126 (N.D. Ill. 2010) ("[A]ttempts to keep abreast of a competitor's technology and intellectual property is not objectively reckless behavior, but fair and reasonable commercial behavior.") (internal citations omitted); *see also* Dkt. 443 (Op. Re: Non- Infringement of Group II Claims) at 10 ("[T]he flaw with CMU's position is that admissions by Marvell . . . do not establish that a specific claim element, much less an entire claim, has been copied . . . . The clear reason is that each claim protects different technological territory, and some claims may be infringed while others are not.").