IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

POWER INTEGRATIONS, INC., a Delaware corporation, Plaintiff, v. BCD SEMICONDUCTOR CORPORATION, a California corporation, SHANGHAI SIM-BCD SEMICONDUCTOR MANUFACTURING, CO., LTD, a China corporation, Defendants.	C.A. No. 07-633-JJF **REDACTED**

SUPPLEMENTAL DECLARATION OF KYLE WAGNER COMPTON IN SUPPORT OF PLAINTIFF POWER INTEGRATIONS' MOTION FOR ENTRY OF PRELIMINARY INJUNCTION

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I, Kyle Wagner Compton, declare as follows:

1. I am an Associate with Fish & Richardson P.C., counsel for Plaintiff Power Integrations, Inc. ("Power Integrations"). I make the following statements based on personal knowledge, except where noted.

2. Attached to this Declaration as Exhibit P is a true and accurate copy of the transcript from the deposition of Thomas Habetler, taken May 5, 2008.

3. Attached to this Declaration as Exhibit Q is a true and accurate copy of excerpts from the October 5, 2006 trial transcript in the matter *Power Integrations v. Fairchild Semiconductor*, No. 04-1371 JJF (D. Del.).

4. Attached to this Declaration as Exhibit R is a true and accurate copy of excerpts from The New IEEE Standard Dictionary of Electrical and Electronics Terms (5th Ed., 1993) containing the definitions of the terms "counter" and "pseudo-random."

5. Attached to this Declaration as Exhibit S is a true and accurate copy of an excerpt from the schematics for BCD's AP3710 device, bearing production number BCDS0032479.

6. Attached to this Declaration as Exhibit T is a true and accurate copy of an excerpt from the schematics for BCD's AP3700 devices, bearing production number BCDS0000002.

7. Attached to this Declaration as Exhibit U is a true and accurate copy of excerpts from the September 19, 2007 trial transcript in the matter *Power Integrations v. Fairchild Semiconductor*, No. 04-1371 JJF (D. Del.).

8. Attached to this Declaration as Exhibit V is a true and accurate copy of excerpts from Robert Blauschild's testimony from the September 20, 2007 trial transcript in the matter *Power Integrations v. Fairchild Semiconductor*, No. 04-1371 JJF (D. Del.).

9. Attached to this Declaration as Exhibit W is a true and accurate copy of excerpts from The New IEEE Standard Dictionary of Electrical and Electronics Terms (3rd Ed., 1984) containing the definition of the term "counter."

10. Attached to this Declaration as Exhibit X is a true and accurate copy of excerpts from The Authoritative Dictionary of IEEE Standards Terms (7th Ed., 2000) containing the definition of the term "counter."

11. Attached to this Declaration as Exhibit Y is a true and accurate copy of a BCD production document bearing production numbers BCDS93544-55.

12. Attached to this Declaration as Exhibit Z is a true and accurate copy of excerpts from the deposition of BCD employee Kang Chan, taken April 15, 2008.

13. Attached to this Declaration as Exhibit AA is a true and accurate copy of a BCD production document bearing production numbers BCDS0000835-42.

14. Attached to this Declaration as Exhibit BB is a true and accurate copy of a BCD production document bearing production numbers BCDS1936-40.

15. Attached to this Declaration as Exhibit CC is a true and accurate copy of a BCD production document bearing production numbers BCDS28747-49.

16. Attached to this Declaration as Exhibit DD is a true and accurate copy of a BCD production document bearing production numbers BCDS28901-09.

17. Attached to this Declaration as Exhibit EE is a true and accurate copy of a BCD production document bearing production numbers BCDS28943-44.

18. Attached to this Declaration as Exhibit FF is a true and accurate copy of a BCD production document bearing production numbers BCDS29016-18.

19. Attached to this Declaration as Exhibit GG is a true and accurate copy of a BCD's Second Revised Answers and Objections to Power Integrations' First Set of Interrogatories, served on April 14, 2008.

20. Attached to this Declaration as Exhibit HH is a true and accurate copy of a BCD production document bearing production numbers BCDS0032718.

21. Attached to this Declaration as Exhibit II is a true and accurate copy of a BCD production document bearing production numbers BCDS0029704-56.

22. Attached to this Declaration as Exhibit JJ is a true and accurate copy of a BCD production document bearing production numbers BCDS6442, along with a certified translation of same.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 12th day of May, at Wilmington, Delaware.

/s/ Kyle Wagner Compton
Kyle Wagner Compton

CERTIFICATE OF SERVICE

I hereby certify that on May 12, 2008, I caused to be served the **SUPPLEMENTAL DECLARATION OF KYLE WAGNER COMPTON IN SUPPORT OF PLAINTIFF POWER INTEGRATIONS' MOTION FOR ENTRY OF PRELIMINARY INJUNCTION** on the following individuals, in the manner indicated:

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Exhibit P

REDACTED
IN ITS ENTIRETY

Exhibit Q

Power Integrations, Inc. v.
Fairchild Semiconductor International, Inc.

Trial Volume 4
October 5, 2006

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periodic manner. And here we've cleaned out the underbrush in the circuit. I think it's really much simpler to talk about this at this block diagram level.

Q: And so Dr. Horowitz, do you have something to show that operation that you've just described?

A: Well, yeah. Well, I'll be showing a nice circuit, but here we have — actually have an animation that demonstrates this. And I think it's called Animation II.

Is that — is the block diagram first? Okay.

Is that right? Actually I didn't have that in my sequence, but I thought we went to an animation at this point. Sorry.

Oh, yes. This is it.

Okay. Fine.

So this is a little movie, and this is what's going to happen here, when they start is that the oscillator is going to oscillate, and it's going to make pulses come out the right.

This also is going to go not only

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to the circuit that this is meant to support, but also back to the counter. And each time a pulse comes, the counter is going to increment now it went to zero to one, that new number goes into the DAC that now increases the voltage that this oscillator — that graph is showing the increasing current each time it gets a new number.

Perhaps what you could do at this point is run it in fast motion as what you see here as each number gets bigger, the pulses on the right are coming more rapidly, limited by speed of this computer.

So as it gets to its maximum value, they came most close together, now they're starting all over again and this cyclic adjustment of the oscillator frequency is the frequency jittering of the patent.

Q: And so how do Fairchild's products do the frequency variation?

A: They do it a different way and I think probably the easiest way to see is go to the schematics. And this is from one of the pages of the schematics of one of the Fairchild

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products, the FSD210. And I guess I should apologize in advance for these figures. They're spread over about 30 pages and they look like little chicken scratches like that, but a little hard to understand.

I'll try to organize this. This particular page has the D to A, all this stuff here forms the D to A. This stuff up here is the counter. I think you have seen this now already and over here and this is actually imported from a different page because it did not show on this same page of the schematics.

In order to close the loop, this signal is indeed connected to the oscillator block. The oscillator block output is related back to the counter. This is known as flip-flops. And here is the digital to analog converter. That is coupled to the oscillator, which however in the Fairchild product receives its signal not directly from the counter flip-flops themself, but through a layer of logic which if you can make that light up, all the stuff in between here is a block of logic circuits, that means gates and inverters and

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things like that. That turns one number into a different number. And I have called that a code conversion block. It takes a code that is a number like nine and converts it to another number like four.

Q: So we have looked at both the patent diagram and the Fairchild circuit. What is difference between Fairchild's circuit and the patent's circuit?

A: What's different? Again, remember before the patent has DAC to oscillator to counter to DAC. What's different is the inclusion of this additional lair of logic, the code transforming logic. Perhaps we can simplify that again cleaning out the circuitry that we nerds love, but it's not what you want to see here. We go to the next one.

Q: I think you have the animation.

A: It's an animation. Here we go. Another movie. Roll tape. Here we go.

So Claim 1 requires this coupling. It requires all three each to be coupled to the next. And in the Fairchild product as I have shown from the schematic diagram, what

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happens — can we make the movie move? There you go. It's the set of digits out of the counter is cut and something is stuck in between, they looked like firewood. Here we go. Here is the code conversion block, glows in the dark, drops down in, and it receives the five bit number from the counter and outputs after converting it to a four bit number to the D/A, that is the code conversion block.

Q: What actually is the code conversion block?

A: Well, it's a set of logic. It's a bunch of stuff that takes in a number and gives you out another number and it does it according to some rule.

Q: Do you have something that can help you explain to the jury just how that works?

A: Yes, I think here perhaps if I could use the circuit, would I be able —

MS. FEEMAN: Could he please approach the jury and demonstrate the circuit?

THE COURT: Sure.

THE WITNESS: Here, this is the

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only one in the world. This is a circuit that I have put together on a thing called a perp board or prototype board and it's a bunch of chips that does various things and I'll explain when I show you how it works. And I'm going to use it now to show you the code conversion.

This also has a counter on it. This receives its power from a separate power supply that has a lot of the kinds of circuits we talked about, but that's not what's important in this demonstration. This is where the power comes in to power my circuit.

One cute little trick here, it doesn't matter which way you put it on. I have wired it mirror image, so it's proof against fools like me. Turn the thing on. This thing likes to starts up at stage six.

What I have here, maybe I could just hold it like this. I have wired up here a thing called a counter. These two chips are a counter and each time I tell it to count, it will increase its count and this two digit display here shows you the state of the count. Right now it's at zero. This count is connected

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directly coupled through these wires to a second display here that would be where the D to A converter would be in one of these converters. I have not done that here.

Each time I clock it here, we call that clocking, it really means just pulsing it. Each time I clock it you see the counter increments, it does the directly couple. There is no code, this circuit counts to fifteen and then goes back to zero. And I made it divide by sixteen like that because that's what the Fairchild chip does. So there you go.

Now, what I want to show is what happens if we insert something that converts the code. And I just happen to have in my pocket here, I don't want to take that off. Why am I doing that? I need an instruction manual for this thing.

I can take this out because this is a zero insertion force socket. It's great for people who like to change their chips a lot. Here I have a chip, it's actually an EPROM, that stands for erasable programmable read only memory. I am going to drop this in here. I

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have programmed this EPROM to do the same code conversion that is done in the Fairchild products.

Make sure I have it in right here, or there will be hell to pay. Now I turn this thing on, and we start up on again and now the difference is the counter being displayed here is coupled to the ROM, an EPROM is just a flavor of ROM, there is ROM, there is PROM, there is EPROM, there is EEPROMs, this is one variety.

And now when I clock it, you'll see the particular transformation that's going on. I go to one, comes through, two comes through, three comes through, four, five, six, seven, so far it's what you call a boring code conversion. But watch what happens now. I go to eight, it stays seven. So when I change the counter, it actually decided not to change the output and it's now a different number now as I go up, it goes down, nine, ten, eleven, twelve, it's down to three, two, one, zero, so fifteen is now getting converted into zero and by the way, so is zero. So it stops at the bottom for two clocks and climbs halfway up, stops halfway

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up, goes back down. Show you that again.
Seven, there is where it started turning around.
And this is just the code
transformation that goes on in the Fairchild
part. So this is really just an illustration of
counter and code conversion.
I'm going to keep this here if I
can because I'm going to use this at one place
later to demonstrate another thing that's in the
Fairchild product.
Q: So we have just looked at how a
counter and a code conversion block operate. Do
you have something that will show how that works
in the entire Fairchild structure?
A: Yes. The next exhibit here.
Another movie. And here we go. The oscillator
is oscillating, the counter is counting, the
code conversion block is converting, it's
generating a new command to the oscillator if
you go faster. And at the beginning, all is as
before, because the code conversion block has
not yet produced an interesting change of code.
But as we go, three turns into three, this one
is actually four shortened to make it happen

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quicker, five to five, but six becomes five,
there it is stuck at the same quantity, seven
becomes four, eight becomes three, nine becomes
two, ten becomes one, eleven becomes zero and
zero becomes zero. So this is actually a cycle
of twelve, whereas I showed you a cycle of
sixteen.
What you can see is the oscillator
frequency gets faster and then steady and then
slower and then steady and then faster. In
following linearly that change of voltage that's
shown as a graph there, that sort of looks like
Mayan temples. We would call that thing a
staircase triangle wave because it's like
walking up a staircase, but it goes up and then
down like a triangle.
Q: So we have looked at both the
Fairchild product and the patent. Do you have
something that shows how to compare those two?
A: Yes. Having put both of these now
into a similar block diagram form, we can just
put them on one chart there. There you see in
the middle the representation of the Claim 1
structure and the figure one simplified

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structure from the patent itself, the '876
patent, and on the bottom we see the analogous
block diagram for the Fairchild part where the
counter does not directly couple to the D to A
but passes through this lair of logic that does
this messing around with the numbers.
Q: So why is that code conversion
block important to the claim language of the
'876 patent Claim 1?
A: It's important because the claim
spells out exactly what the claimed invention is
and for the purposes of infringement you have to
meet those limitations of the claim, you must do
everything that the claim requires.
And if you don't do everything,
then you do not fall within the bounds of that
claim, and therefore, you would not infringe,
for example.
And you'll see here that the
particularly relevant part of the claim is the
last element, the last paragraph there where it
says a counter coupled to the output of the
oscillator and to the digital to analog
converter, blah, blah, blah, requires that the

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counter be coupled to the D to A.
Q: And so why is it not coupled when
you put the code conversion block between the
counter and the digital to analog converter?
A: Whether it's coupled or not
depends really quite critically on what coupled
means. And in this case, the term coupled has
been interpreted by the Court in the so-called
Markman hearing with a particular definition
that must be adhered to in this case.
Q: And what is that definition?
A: Let me — do you have the Markman?
I'll read it from my copy if that's okay.
Q: That's fine.
A: This is the Court's Markman order
from March of 2006, and the ninth paragraph
defines coupled and it says the term coupled
means that, and then it has, "Two circuits are
coupled when they are connected such that
voltage current or control signals pass from one
to another."
Q: And so why is it not coupled when
you have the code conversion block?
A: The code conversion block

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basically breaks the control function between the counter and the D to A such that what comes out of the counter is not what goes into the D to A, something different that's been transformed through the code conversion block, it may be a one to one transformation or it may be a many to one as we saw when several different codes produced the same output code.
Q: You were here when Mr. Blauschild testified; right?
A: Yes.
Q: And did you hear him talk about a counter with up counts and down counts?
A: Yes, I did.
Q: What do you make of that?
A: Well, I think I was a little baffled because the counter in the Fairchild part, and in fact the counter that I demonstrated only counts in one direction. The counter in the Fairchild is officially called a multibit binary ripple counter. And when you kick it, when you clock it, it goes to the next state. So it only has at any time a particular state.

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To give an example, we have seen in these animations something that looks like an odometer of a car. When you have gone a certain number of miles, your odometer reads something like a thousand miles, let us say. I guess you could say if you get behind the dashboard and look at the numbers that you can't see it would be some other set of numbers. I think that's maybe what Mr. Blauschild was trying to say. But of course in the odometer and also in the counter, it's only in one state, the wheels in the odometer only have one position, and that is the state of the counter.
Q: Did you also hear Mr. Blauschild testify that Fairchild's code conversion block does not actually change the control function?
A: Yes, I think I heard that, yes.
Q: What do you think of that argument?
A: I think it does. As I said, the numbers do not get sent directly to the D to A, they get transformed. And, in fact, I believe there has been testimony in this case about the reading of that upon the term coupled. I think,

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this is the one here, so this actually comes from Mr. Blauschild's expert report in which he is speaking to the comparison between a circuit that is here labeled Martin, and the Fairchild circuit itself.
And he's saying here that Martin does not have the counter coupled to a digital to analog converter of Claim 1. Instead, he places an EPROM, you remember that's the programmable device like the one that I put in my apparatus there, he places an EPROM between his counter and digital to analog converter.
The EPROM purposely decouples the counter and the digital to analog converter, so that the counter output does not drive the digital to analog converter in the simple known and fixed way described in the '876 patent.
Let me just make a couple of comments here. The simple and known and fixed way is, of course, as the counter counts up, that's what the D to A converter sees, simple and known. You count until you reach your maximum count, then you pop to zero and start over again.

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And the EPROM in the Martin circuit like the EPROM that I showed you here and like the Fairchild code conversion block functions to change the counters output number to some other number according to some rule.
In the case of Martin, it was the — what was in the EPROM was the set of rules, in my case I put the rules of the Fairchild part. Fairchild doesn't use an EPROM officially, it uses a set of logic that carries out the same transformation that I showed with an EPROM.
Q: I think when we move ahead to the next slide, you had another board there, would you like to describe what this is please?
A: Sounds like your battery is about to fade again.
This I think came from some deposition testimony that Mr. Blauschild gave. And I think probably you were asking him this question. And you had been asking him what could you put between the counter and the D to A that would prevent it from being coupled according to his understanding of the meaning of

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coupled. And so you said can you think of any other specific components that you would rule out, by rule out you mean that would prevent it from being coupled, and I think the previous deposition testimony shows that that's what you were asking here.

And the answer is, "It's kind of — that's a tough one because you can put an infinite number of things in there that would change the control function. I would say anything that does that would be ruled out."

And again, the meaning of ruled out is would rule out the two circuits being coupled.

So the test here seems to be changing the control function and I agree with that.

Q: So are all the elements of Claim 1 of the '876 patent found in Fairchild's products?

A: No. I'm sorry, could you just ask that again?

Q: Sure. Are all of the elements of Claim 1 found in the Fairchild products you

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looked at?

A: No, I did hear you correctly. The last claim element that requires a counter coupled to the digital to analog converter among other things is not met in the Fairchild products because as I said, there is a block of logic that performs a code conversion transformation like an EPROM that we've — that the Power Integrations' expert has opined would decouple it.

Q: Were you looking at whether a device does not infringe, do you need to find that all elements of the claim are missing?

A: No. In fact, flip it around, in order to infringe, you must have every claim element in your accused product. If you miss — if you have any — if any are absent, you do not infringe. A miss is as good as a mile.

Q: So do the frequency variation circuit of Fairchild's products function in the same way as the frequency variation circuit that is claimed in Claim 1?

A: No, they do not, because they do this code transformation and fundamentally bring

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about a different kind of frequency variation with a different kind of waveform that results in a different form of frequency variation.

Q: And why is it important that the wave is different?

A: Because as I understand it, and I'm not a lawyer here, that you can infringe by having literally the elements required by the claim, or you can infringe under what is called the Doctrine of Equivalents in which you don't literally have all of the claim elements, but the ways in which your product differs is only insubstantial, performs — differs unsubstantially from the claim limitation.

Q: And is there another reason why you think that what's done by the Fairchild products is not an equivalent to what was done by the Claim 1 of the '876 patent?

A: I'm trying to think what else we need here. We're not coupled. Are structure is different. And we don't do it in a way that's unsubstantially different. The way — what we do, the way we do it, and the result all differ.

Q: So what does the graphic that's up

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there now show you?

A: Well, it's showing that we don't have the — we don't have the coupling as is required by the PI patent. In fact, if you look at these three block diagrams, what you see is that the Fairchild product with its code conversion block looks much more like the Martin circuit which is now labeled a patent with its code converting EPROM block.

In fact, it was this comparison that Mr. Blauschild was talking about in his testimony that we saw, or rather in your expert report.

Q: What is the Martin circuit that you have got there?

A: The Martin circuit actually comes from as it says here a patent that was issued, that is the patent was allowed by the patent office in 1987, there it is, and I can't quite read the title there. It's a frequency variation circuit for DC/DC converters. You can see now the full block diagram, we had showed before only the block diagram up to — let me use my lovely green pointer.

Exhibit R

IEEE Std 100-1992

The New IEEE Standard Dictionary of Electrical and Electronics Terms

[Including Abstracts of All Current IEEE Standards]

Fifth Edition

Gediminas P. Kurpis, Chair

Christopher J. Booth, Editor

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January 15, 1993

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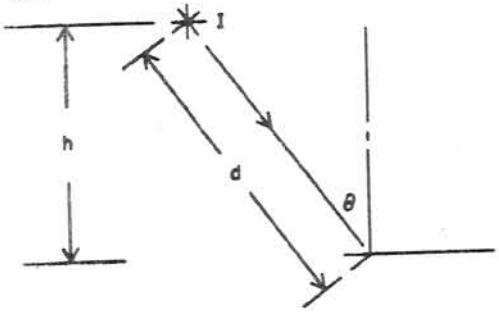
cosecant-squared pattern (radar). A vertical-plane antenna pattern in which the power varies as the square of the cosecant of the elevation angle. The unique property of this pattern is that it causes the echo strength of a target having constant radar cross section, moving at constant altitude, to be independent of range. 686-1982

cosine-cubed law (illuminating engineering). An extension of the cosine law in which the distance d between the source and surface is replaced by $h/\cos\theta$, where h is the perpendicular distance of the source from the plane in which the point is located. It is expressed by $E = (I\cos^3\theta)/h^2$. (See figure below.) *See:* **cosine law.** [126]



Cosine-Cubed Law

cosine emission law. *See:* **Lambert's cosine law.**

cosine law (illuminating engineering). A law stating that the illuminance on any surface varies as the cosine of the angle of incidence. The angle of incidence θ is the angle between the normal to the surface and the direction of the incident light. The inverse-square law and the cosine law can be combined as $E = (I\cos\theta)/d_2$. *See:* **inverse-square law.** [126]

cosmic noise. (radio-wave propagation). Noise-like radio waves originating from extragalactic sources. 211-1990

cosmic radio waves. *See:* **cosmic noise.**

costate (control system). The state of the adjoint system. *See:* **control system.** [120]

cost of incremental fuel (electric power systems) (usually expressed in cents per million British thermal units). The ultimate replacement cost of the fuel that would be consumed to supply an additional increment of generation. *See:* **power system, low-frequency and surge testing.** 94-1970w

costs (power operations). Monies associated with investment or use of electrical plant. *See:* **fixed investment costs; fixed opeation costs; variable operating costs.** 858-1987

coulomb. The unit of electric charge in SI units (International System of Units). The coulomb is the quantity of electric charge that passes any cross section of a conductor in one second when the current is maintained constant at one ampere. 270-1966w

Coulomb's law (electrostatic attraction). The force of repulsion between two like charges of electricity concentrated at two points in an isotropic medium is proportional to the product of their magnitudes and inversely proportional to the square of the distance between them and to the dielectric constant of the medium. *Note:* The force between unlike charges is an attraction. 270-1966w

coulometer (voltameter). An electrolytic cell arranged for the measurement of a quantity of electricity by the chemical action produced. *See:* **electricity meter (meter).** [119]

count (radiation counters). A single response of the counting system. *See:* **scintillation counter: tube count.** 161-1971w, 309-1970, 398-1972

count-down (transponder). The ratio of the number of interrogation pulses not answered to the total number of interrogation pulses received. 686-1982, [42]

counter (1) (test, measurement, and diagnostic equipment). (A) A device such as a register or storage location used to represent the number of occurrences of an event; and (B) an instrument for storing integers, permitting these integers to be increased or decreased sequentially by unity or by an arbitrary integer, and capable of being reset to zero or to an arbitrary integer. [2]

(2) (software). A variable used to record the number of occurrences of a given event during the execution of a computer program; for example, a variable that records the number of times a loop is executed. 610.12-1990

counter cells. *See:* **counter-electromotive-force cells.**

counterclockwise polarized wave (radio wave propagation). *See:* **left-handed polarized wave.**

counter electromotive force (any system). The effective electromotive force within the system that opposes the passage of current in a specified direction. [119]

counter-electromotive-force cells (counter cells). Cells of practically no ampere-hour capability used to oppose the battery voltage. *See:* **battery (primary or secondary).** [119]

counter-mounted cooking unit (National Electrical Code). A cooking appliance designed for mounting in or on a counter and consisting of one or more heating elements, internal wiring, and build-in or separately mountable controls. *See:* **wall-mounted oven.** [86]

counterpoise (1) (overhead lines) (lightning protection). A conductor or system of conduc-

assembler or compiler and is not translated into a target language instruction. For example, an instruction specifying the desired format of source code listings. *Syn:* **pragma; pseudo-op; pseudo operation.** 610.12-1990

pseudolatitude (navigation aid terms). A latitude in a coordinate system which has been arbitrarily displaced from the earth's conventional latitude system so as to move the meridian convergence zone (polar region) away from the place of intended operation. 172-1983

pseudolongitude (navigation aid terms). A longitude in a coordinate system which has been arbitrarily dosplace from the earth's conventional longitude system so as to move the meridian convergence zone (polar region) away from the place of intended operation. 172-1983

pseudonoise (PN) sequence (communication satellite). A binary sequence with a very desirable transorthogonal auto-correlation property. In space communications commonly used for synchronization and ranging. [19]

pseudo-op. *See:* **pseudo instruction.** 610.12-1990

pseudo operation. *See:* **pseudo instruction.** 610.12-1990

pseudo-random. Pertaining to the approximation of true, statistical randomness. 610.1

pseudo-random number. Any member of a sequence of numbers sufficiently close to a random number sequence to permit its use in calculations formally requiring random numbers. 610.1

pseudo-random number sequence (1). A sequence of numbers, determined by some defined arithmetic process, that is satisfactorily random for a given purpose, such as by satisfying one or more of the standard statistical tests for randomness. Such a sequence may approximate any one of several statistical distributions, such as uniform distribution or normal Gaussian distribution. [20], [85] **(2) (mathematics of computing).** A sequence of numbers, determined by some defined arithmetic process, that is sufficiently close to a random number sequence to permit its use in calculations formally requiring a random number sequence. 610.1

pseudo-random test signal. A signal consisting of a bit sequence that approximates a random signal. 1007-1991

PSK. *See:* **phase-shift keying.**

PSTN. *See:* **public switched telephone network (PSTN).** 823-1989

PSW. Acronym for **program status word.** 610.12-1990

psychometric chroma (illuminating engineering). A correlate of perceived chroma defined in terms of CIELUV or CIELAB. Equal scale intervals correspond approximately to equal differences in perceived chroma. [126]

psychometric hue-angle (illuminating engineering). A correlate of hue defined in terms of CIELUV or CIELAB. [126]

psychometric lightness (illuminating engineering). A correlate of lightness defined in terms of CIELUV or CIELAB. Equal scale intervals correspond approximately to equal differences in (perceived) lightness. [126]

psychometric saturation (illuminating engineering). A correlate of saturation defined in terms of CIELUV. Equal scale intervals correspond approximately to equal differences of (perceived) saturation. *Note:* Psychometric saturation cannot be calculated in terms of CIELAB. [126]

psychophysics. Study of correlations between stimulus parameters and detection or perception of stimuli. 539-1990

PTM. *See:* **pulse-time modulation.**

pto. Power takeoff. 957-1987

PTS. Public telephone service. 973-1990

p-type crystal rectifier. A crystal rectifier in which forward current flows when the semiconductor is positive with respect to the metal. *See:* **rectifier.** [119]

p-type semiconductor. *See:* **semiconductor, p-type.**

public. A design feature, documented in the component data sheet, that may be used by purchasers of the component. 1149.1-1990

public-address system. A system designed to pick up and amplify sounds for an assembly of people. [119]

public switched telephone network (PSTN). A telephone network in which connections are established as and when required and that is supplied, operated, and controlled by one or more telecommunications operating companies to provide telephone service that is available to the public. 823-1989

public telecommunications exchange (telephone switching systems). A telecommunications exchange that serves the public. 312-1977w

public telephone station (pay station). A station available for use by the public, generally on the payment of a fee that is deposited in a coin collector or is paid to an attendant. *See:* **telephone station.** [119]

puck (computer graphics). An input device, used as a locator, consisting of a hand-held control box with crosshairs that can be moved over a data tablet containing an image such that the user can identify a point in the image.

Note: This term i
mouse.

pull (data manage
stack. *Contrast* t

pull blade (cable
pull direct buria
means of a suita
the heel of the bl

pull box. A box
inserted in one
facilitate pulling
also serve the
conductors. *See:*

pulley (sheave) (r
mounted wheel
means of a belt,
(rotating machi

pull function (cor
ging.
*Deprecated.

pulling eye. A devi
conductor or co
by or fastened to
hook or rope ma
to pull the cable
ing eyes are sc
caps, with facili
treatment. *See:*
ground construc

pulling figure
between the max
the oscillator fre
of the load-imp
varies through 3
value of this coe
to a specified
standing-wave ra
cuit; waveguide.

pulling into sync
ery). The process
from asynchrono

pulling iron (Natic
An anchor secur
of a manhole or
pull cable.

pulling line (cond
A high strength
rope or wire rope
However, on re
conductor is bein
often serves as
conductor. In su
must be closely e
to the pulling op
line; light line; s

pulling out of s
chines). The proc
changing from s

Exhibit S

REDACTED
IN ITS ENTIRETY

Exhibit T

REDACTED
IN ITS ENTIRETY

Exhibit U

Fairchild Semiconductor International, et al. v.
Power Integrations, Inc.

Trial Volume 3
September 19, 2007

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[23] you can see it here on this picture.
[24] Now, in Figure 1, that particular

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[1] input which affects the frequency of the [2] oscillator is tied, and again you've taken [3] Figure 1 off, but you'll see that it's tied up [4] to a source of signal varying signal to produce [5] frequency variation.
[6] So in answer to your question, the [7] SMP211 allows frequency variation, and the [8] oscillator design as such that one can [9] implement, to a certain degree, frequency [10] variation. And that's illustrated in Figure 1 [11] of the patents as prior art.
[12] **Q:** Didn't you admit in deposition, [13] Dr. Horowitz, that you don't know if trying to [14] use the output of Martin's DAC, for example, [15] directly into the bias pin of a device like the [16] SMP211, that might cause other effects that you [17] might not want, because in fact, the bias [18] circuit controls a whole lot of other things in [19] the chip; correct?
[20] **A:** I'm not sure what I said then, but [21] I'll tell you what the facts are. The facts are [22] that Figure 1 establishes that a certain amount [23] of varying current into the RX pin is compatible [24] with the device's price. And that taking the

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[1] output of the Martin DAC and applying it with [2] sufficiently — at the sufficient level, let us [3] say the same level as in the patent's Figure 1 [4] will surely accomplish similarly adequate [5] performance.
[6] If you somehow talk me into [7] saying, well, it could have other effects; sure. [8] If you overdrive the RX pin, you'll be changing [9] the bias voltage and currents within the chip [10] and that could have other effects.
[11] But an engineer knows not to [12] overdo anything and to stay within the linear [13] region of such operation.
[14] **Q:** Dr. Horowitz, you have no [15] knowledge of anyone ever using an SMP211 in a [16] circuit that combines it with what's shown in [17] Martin; right?
[18] **A:** If you're asking me: Do I know [19] someone who's done this; the answer is no. If [20] you're asking me whether that is required for [21] invalidity; no.
[22] If I knew someone, it would be [23] anticipation. And I'm telling you obviousness.
[24] **Q:** Dr. Horowitz, you've never built

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[1] such a combination yourself?
[2] **A:** No, I have not. But that doesn't [3] mean — the fact that I haven't done it or [4] someone else that I know of — I know — no one [5] has done it doesn't mean it's not obvious.
[6] Just to give you an example, [7] talking about the Hum-V that Mr. Guy talked [8] about in his opening, imagine the military [9] Hum-V, which was the original form complete with [10] camouflage and machine guns. It's probably an [11] obvious idea to take the camouflage off.
[12] But it took ten or 15 years before [13] people did that. Still obvious. Something [14] obvious doesn't mean it's been done. It means [15] it would be obvious to do it.
[16] **Q:** And Dr. Horowitz, when I asked [17] about this in deposition, you said you had not [18] seen anything in the prior art literature that [19] suggests to take an SMP211 and vary the [20] frequency in a way that reduces EMI; correct?
[21] **A:** Well, if I said that, I misspoke [22] because Figure 1 says that directly.
[23] **Q:** Well —
[24] **A:** Figure 1 of the patent shows you

Page 828

[1] how to vary the frequency to reduce EMI.
[2] **Q:** Well, you understand the patent [3] itself isn't prior art?
[4] **A:** The patent's Figure 1 is labeled [5] prior art. I have to assume that that [6] representation was fair. And, in fact, in the [7] narrative, not just the figure, it's described [8] as prior art methods.
[9] **Q:** Other than the suggestion that you [10] believe you've confined in the patent itself, [11] you haven't seen anything in the literature, at [12] least when I took your deposition before and I [13] asked you: You can't point to any suggestion in [14] any literature to take an SMP211 and vary the [15] frequency in a way to reduce the EMI?
[16] **A:** The SMP211, no. I have not seen [17] that.
[18] But that doesn't mean that other [19] controller chips have not been used that way. [20] In fact, there are examples in the literature of [21] other controller chips with frequency variation.
[22] **Q:** Dr. Horowitz, let's turn to the [23] '876 patent. Here's the block diagram — turn [24] it around the other way — that we've been

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[1] looking at for the Martin patent.
[2] **A:** Did you say '876 or Martin? I'm [3] sorry.
[4] **Q:** '876, the digital frequency jitter [5] patent, Power Integrations' patent.
[6] Now, you will agree there was some [7] discussion during your direct testimony that the [8] Martin patent shows a circuit that includes a [9] memory device; correct?
[10] **A:** Yes. The EPROM is a memory [11] device.
[12] **Q:** All right. You'd also agree that [13] all of the specific descriptions in the Martin [14] patent describe that a ROM as part of the [15] circuit; correct?
[16] **A:** Well, let me be a little careful. [17] At one point it refers to a prescribed signal [18] pattern in the storage device, for instance, in [19] the claims. It's not always a ROM.
[20] But you're correct, there's no [21] explicit discussion of the ROMless version.
[22] **Q:** Okay. And all of the claims of [23] the Martin patent require in its terms a storage [24] means, which we agree is a memory; correct?

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[1] **A:** Let me just make sure. I don't [2] want to misstate here.
[3] Yes, that's correct. They all [4] depend on Claim 1. So, that's correct.
[5] **Q:** And there's nothing in the Martin [6] patent that says specifically that the ROM is [7] not necessary; right?
[8] **A:** Well, as I said in my direct [9] testimony, let me just say it again, that it's [10] clear from reading the Martin patent that one of [11] skill in the art would have been in 1987 and [12] certainly in 1998, that the primary purpose of [13] the EPROM is signature reduction.
[14] And that elimination of EPROM [15] would not — would produce effective EMI [16] reduction, whether it's exactly the same or not [17] quite as good. I'm not sure.
[18] I did measure the Martin patent, [19] and I confirmed that fact. And, therefore, one [20] of skill knows that you can remove it.
[21] And he does give you explicit [22] permission at the end of the patent of different [23] components of the overall circuit or different [24] arrangement. So I guess my answer is that.

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[1] **Q:** Okay. In your deposition I asked [2] you, There's nothing in the Martin patent that [3] says that the ROM is not necessary; right?
[4] And your answer was, no, there's [5] nothing here that says it's not necessary.
[6] **A:** And then I said, Ahh.
[7] **Q:** Right. And then you talk about [8] this portion; correct, those skilled in the art [9] may conceive of different components in an [10] overall circuit scheme or a different [11] arrangement of the components as shown?
[12] Right? That's what you point to?
[13] **A:** Correct.

[14] **Q:** Now, Martin says specifically what [15] he means by that general statement, doesn't he?

[16] **A:** I'm — I don't know what you're [17] referring to.

[18] **Q:** Okay. Well, here he is. It says [19] the output of counter.

[20] **A:** I'm sorry. Can you tell me where [21] you are, so I can follow?

[22] **Q:** It's Column 2.

[23] **A:** Yes.

[24] **Q:** Lines 2 to 27?

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[1] **A:** 2 to 27.

[2] **Q:** Mm-hmm.

[3] **A:** Twenty-five.

[4] **Q:** Sorry. Lines 22 to 27. Excuse [5] me.

[6] **A:** Okay.

[7] **Q:** And I'll read it for the record. [8] The output of the counter 10 is connected to the [9] input of EPROM 11, which can be any suitable [10] kind of storage device. In the preferred [11] embodiment, the EPROM is suggested as a [12] preferred method an apparatus of storing [13] information. However, any suitable kind of ROM [14] is believed to be appropriate.

[15] That's what Martin says; right?

[16] **A:** Yes. I don't — I don't think [17] that that's — I don't think that's particularly [18] connective with the part that I'm relying upon, [19] which is considerably more permissive, a [20] different component, or different arrangement.

[21] A different arrangement, for [22] instance, would be quite a bit different from [23] let's say using E squared, or mask ROM, or OTP [24] ROM, or something like that that he's describing

Page 833

[1] in this Column 2 excerpt.

[2] **Q:** Again, every one of the claims [3] talks about a memory; right?

[4] **A:** A storage device. Yes. [5] But I'm — I still refer back — [6] oh, let me say this to you: The claims are [7] certainly in the claimed invention, but the [8] prior art illustrated in Martin includes the [9] specification. And if something isn't claimed, [10] but is described in the specification, it is in [11] the prior art.

[12] That's my legal understanding. [13] Correct me if I'm wrong.

[14] **Q:** Now, as described in the text of [15] the Martin patent, the purpose of the ROM is to [16] store a pseudo random code for varying the [17] frequency; right?

[18] **A:** Well, pseudo random or the claim [19] only calls it prescribed. He certainly refers [20] to pseudo random as his preferred [21] implementation.

[22] **Q:** In fact, all the specific [23] descriptions describe pseudo ROM in the program?

[24] **A:** Yes.

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[1] **Q:** And, in fact, in a system that [2] includes a ROM like shown here in Martin, [3] hypothetically if the codes in that ROM were [4] erased, and in that case the counter would [5] count, but the output of the DA and the [6] frequency oscillator wouldn't change; right?

[7] **A:** That's correct. The ROM would be [8] set to all zeros or all ones depending upon the [9] technology. But you understand that, of course, [10] what I was relying on was the ROMless. The [11] simplified Martin that I believe one of skill in [12] the art would pursue.

[13] **Q:** Now, again, in a system like this [14] with a ROM, as shown, if the ROM were programmed [15] so that several of the memory addresses in a row [16] had the same value, that when the counter [17] counted through those addresses again, the [18] frequency would not change; correct?

[19] **A:** Yes, and in that hypothetical, of [20] course.

[21] **Q:** And now, in the system shown here [22] in Martin, the signals that are actually [23] received by the D to A converter, those are the [24] contents that are stored in the ROM memory;

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[1] right?

[2] **A:** The contents as indexed by the [3] counter, correct.

[4] Let me say once again, you seem to [5] be harping on this EPROM, which I've removed in [6] my person of skill in the art knowledge. We can [7] keep going there. We can keep talking about [8] this and coupled, but it's not what I asserted.

[9] **Q:** Correct me if I'm wrong, I believe [10] you said you believed that the Martin patent [11] anticipated Claim 1; correct?

[12] **A:** Are we talking today's testimony?

[13] **Q:** Yes, today's testimony.

[14] **A:** I said it either anticipates, or [15] rendered obvious, or both. But in my particular [16] explanation, I was only talking about obvious, [17] and that's all I am asserting, obviousness.

[18] **Q:** Okay. So when you said it [19] anticipates, you didn't mean that you were [20] asserting that today, you are really asserting [21] it's obvious? I just want to be sure we all [22] understand what your position is?

[23] **A:** For the purpose of the Court, all [24] I'm asserting is obviousness. We can go

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[1] somewhere and fight it out about anticipation, [2] but that's a separate matter.

[3] **Q:** These ladies and gentlemen are [4] going to need to decide this question of [5] invalidity.

[6] **A:** Obviousness only.

[7] **Q:** Obviousness only.

[8] **A:** Let me just summarize obviousness [9] and anticipation. After all the five claims, [10] only one —

[11] **Q:** Dr. Horowitz, please, the Court [12] will describe what anticipation and obviousness [13] means.

[14] **A:** I wasn't going to describe what [15] they mean, I was going to say which ones did [16] which. The only anticipation is '366 Claim 9, [17] all the rest are obviousness. I wasn't [18] asserting obviousness in the other claims.

[19] **Q:** Now, this opinion that the '876 [20] Claim 1 is obvious, that was not asserted in [21] your original report in 2005; correct?

[22] **A:** We want to go back to the [23] original. Again, I feel that the ordered [24] supplementary is the one that should be of most

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[1] interest. We're doing what, '876? Well, I [2] actually asserted then more anticipate in '876, [3] this is paragraph 135. And I didn't add that, [4] you know, if for some reason it's not found to [5] anticipate that it's still obvious. But I think [6] it's obvious that I intended that.

[7] **Q:** So isn't it true that you said [8] when I asked you that in deposition, I guess I [9] felt at the time it would have been superfluous [10] to add that if it's not found anticipated that [11] it would be obvious. That was your testimony?

[12] **A:** I find most of these reports [13] boringly long, and I wrote this one myself, I [14] wrote every word in it, and apparently I didn't [15] put in sufficient number of those kind of in [16] case it's not this, it's that, but the way I [17] talk about these things, if I assert that it [18] anticipates and some element is found to be [19] lacking, that I would still assert the [20] obviousness if the obviousness were, in fact, [21] true as I believe it is here.

[22] **Q:** Dr. Horowitz —

[23] **A:** In any case the supplemental [24] report does cover that ground.

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[1] **Q:** In talking about the Martin [2] patent, isn't it true that the Martin patent [3] describe the pseudo random code is useful for [4] what he said was an admitted signature?

A: That's what he said.

Q: And you said in your deposition he's quite interested in signature, right, Martin that is?

A: Yes, I think it's what really got him excited about this frequency variation, particularly in the context of his employment. I don't think those statements are inconsistent.

Q: Well, isn't it true that Martin spent a significant amount of time explaining the concept of signature and why his invention reducing signature is important?

A: Yes, I think so, because I think he was aware that EMI reduction by frequency variation was something people did understand. For instance, there is the Harden reference and so on that are in both my records, and what he felt was an important additional contribution in the case of this circuit was that he included also means not only for EMI reduction, but also

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for signature reduction. So, of course, he spent the bulk of his time talking about that.

Q: You testified I believe earlier today on direct that if you removed the ROM from what's shown in Martin, the result would have a recognizable signature, correct?

A: Yes.

Q: Now, Dr. Horowitz, even so though he —

A: But as I testified, it would have a reduction of EMI such that one could satisfy FCC 15 regulations.

Q: Dr. Horowitz, even though you only talked about the Martin patent today in asserting invalidity, the '876 patent, you in fact, talked about some other prior art in your reports; right?

A: Yes. As I explained, there were something like fifty pieces of prior art in the initial report filtered down to seven because the Court specified that there should be no more than seven. And for purposes of trial today, in the constraints of time I picked what I felt were the clearest and only used those.

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Q: Isn't it true, Dr. Horowitz, that every reference that you cite in your reports related to the '876 patent, every one included a ROM in its digital circuit?

A: Which report and would you like me to look?

Q: Well, you only refer to three references in both reports; isn't that right, for the '876 patent?

A: I haven't counted them. Let me look. I believe that's a correct statement.

Q: And in each and every one of those references, the digital circuits you pointed to included ROMs; right?

A: Of course. I'm not asserting anticipation, so the fact that it does not have the ROM removed means it does not — it does not have every claim element. And that's why my invalidity analysis is based upon obviousness.

Q: Well, let's turn now to the '366 patent. And looking at the language of Claim 1, I believe you talked about, and I'm going to focus on the soft start circuit because that's really what is in dispute here.

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You understand that the Court has construed the soft start circuit to be what is known as a means plus function circuit?

A: That's correct.

Q: And you understand that in order to satisfy that claim limitation, you must not only find the function, but you also must find structure in the prior art that is either the same or equivalent to what's shown in the patent; right?

A: Yes. But I believe also there is — there is an alternative way in which one can achieve the same function in substantially the same way to achieve substantially the same results that would be applicable, too.

Q: Is it your understanding that's just another way of saying it's equivalent?

A: Well, I'm not sure because one use is what is so-called Doctrine of Equivalents and the other one is the equivalents within the means plus function. I'm not a lawyer, I'm just saying there may be a bit more wiggle room in this analysis than even that.

Q: But you're not a lawyer?

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A: I'm not a lawyer, not now nor have I ever been.

Q: Looking at Figure 3, I believe you looked at this earlier, and you agreed that the structures that the Court has described as corresponding to the soft start circuit are at least those three structures inside the box labeled soft start; right, you agreed?

A: Yes.

Q: And I think you talked about the latch and the AND gate here. Is it true that the purpose of that latch and AND gate is to prevent what would be a repeating signal from causing the soft start to repeat?

A: Yes. I believe what I said is that particular structure is constructed in the way it is in order to make sure that structurally it only let's the first soft start through.

Q: And the third component there, that's a 460, that's the soft start comparator; right?

A: Yes. That is a comparator. That's within the soft start block.

Page 843

Q: And the patent calls it a soft start comparator, 460?

A: I believe that's correct.

Q: It's a separate comparator from this other comparator 609, the PWM comparator?

A: No. The overall converter, yes, in the soft start block there is only one and that's what you have identified as the soft start comparator.

Q: But the comparator in the soft start block as shown in the patent is a separate comparator from the PWM comparator?

A: That's correct.

Q: Now, let's look at the SMP260. And this is the same block diagram that you were referring to earlier; right?

A: I believe a bit more is shown here because in the graphic it was clipped off at the top and bottom. But it otherwise is the same, yes.

Q: And the SMP260 accomplishes soft start by adding a current signal into what you referred to as the summing junction along with the feedback signal and some other signals;

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right?

A: That's correct.

Q: And the signal that's added into the feedback signal in the summing junction is a current that's generated by what you've described as a one-time digital ramp; correct?

A: Yes, that's correct.

Q: Now, in your testimony, you said that you believed that there were some components inside the SMP260 that you said were equivalent to the described latch and AND gate; right?

A: Yes. Equivalent or perhaps performing in substantially the same way, however one would do equivalents.

Q: Well, and the purpose again of the latch and the AND gate in the patent is to prevent a repeating signal?

A: That's the purpose and the structure is such that the latch gate is set initially and then cleared, cleared and then set, so it blocks the repetitive

Exhibit V

Fairchild Semiconductor International, et al. v.
Power Integrations, Inc.

Trial Volume 4
September 20, 2007

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frequency, you'd end up varying the bias currents in the chip. And it would just be a nightmare, because they're supposed to be fixed currents or at least stay the same all the time based on what the oscillator frequency is.

Varying bias currents randomly, pseudo randomly is something we stay away from like the plague. It's a horrible thing to do.

Q: Well, have you seen anything in the references or anywhere in the prior art to suggest combining the SMP211 and the Martin patent in the manner Dr. Horowitz suggests?

Page 1041

A: I've seen nothing in Martin or anywhere in the prior art to make that suggestion. In fact, prior art, Martin teaches away, tells you you have this random stuff, pseudo random stuff.

Q: Would it be within the capabilities of a person of ordinary skill to combine the references as Dr. Horowitz suggests?

A: No. They get to one of the incompatibilities I talked about before, different manufacturing processes, that EPROM or a programmable read-only memory, if you use it instead of the EPROM.

Incompatible with the switch mode power supply. The 211 is a high voltage integrated circuit. It's a different integration technology than a ROM.

Q: I'll put up PD 1491. Does this accurately summarize your opinion that the two references would not be combined?

A: Yeah. As I said, there's no internal signal that modulates it cyclically in the predetermined frequency range. He has this pseudo random variation, not this cyclical

Page 1042

variation of the patent.

No one, to my knowledge, has ever combined these things. No reason you would.

In fact, as I said, there's reasons you wouldn't, because it would be a nightmare.

Q: Have you considered — I'm sorry. Do you have an understanding of the concept of what we call secondary considerations of non-obviousness?

A: I do. They're — secondary considerations are objective things to look at, sort of common sense things that would, if they exist, these factors, then you can consider those, whether or not — indicating whether or not the invention was obvious.

Q: And have you considered evidence of secondary considerations in your analysis?

A: I have.

Q: Okay. I'm going to show PD 1493. First, did you consider whether the problem the invention solves, the EMI problem was a long-felt need in the power supply art?

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A: I did. EMI.

MR. De BLANK: Your Honor, I'll object to the extent this is beyond the scope of the expert report.

THE COURT: All right. Objection will be noted.

THE WITNESS: EMI, as people have said, have been around since you had switching power supplies. But there was an evolution sort of in the mid-'90s when people went to the smaller units that plugged into the wall.

And you had to make the power supplies smaller, and that's where you had to make the EMI filter smaller. And that was a problem, and that was around before these patents, several years.

BY MR. POLLACK:

Q: Did you consider whether others tried to solve that problem and failed?

A: Well, what I considered was there's a lot of companies making switching power supplies. We've just heard basically about Fairchild and Power Integrations.

But I worked for one, Philips,

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National Semiconductor, Texas Instruments, Micro Linear, SGS Thompson. I could go on and on.

A lot of companies working in this space, none of them came up with this, with frequency jitter. As far as I know, none of those companies had frequency jitter in their parts in any form.

Q: Did you consider whether the products incorporating the patented frequency jitter invention were commercially successful?

A: I did. I based — we heard here yesterday and today that the PI products were commercially successful. The TinySwitch, I think I heard — it was a little hard for me to see the exact numbers from back there, but I think it was something like 50 percent of the $143 million in sales in 2005. TOPSwitch was about 25 percent, to my recollection.

So those are pretty substantial sales. Fairchild has, also, I know sold these products.

Q: Did you consider whether there was any copying of the patented invention?

A: I did. What I looked at was

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Fairchild's circuit. I considered that they knew about the patents. They reverse engineered the parts.

As we saw a half hour ago, there was a meeting to discuss the PI parts. And they had the '366 patent talking about circuits that — the PI circuits they were talking about.

Mr. Jang had the '876 patent in his development — during his development. I looked at the Fairchild products.

These patents, the '851 and '366 patents, in particular, are about these two features, integrated frequency jitter and integrated SoftStart done in a particular way where they're linked.

We have the same frequency variation signal driving, both functions. I looked at the Fairchild parts, saw that, gee, that's what they did. That's just too big a coincidence to say that they came up with that all of a sudden by themselves. I'm not saying they copied transistor for transistor everything in the part, I'm just saying they copied the stuff we're going to be taking about — we have

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talked about so far.

Q: Finally, did you consider whether anyone had ever made the combinations suggested by Dr. Horowitz?

A: I did. To my knowledge no one has ever made the combination, Dr. Horowitz certainly presented no evidence to the jury that anyone has ever done this.

Q: So in your view, if the invention was truly obvious, would someone have made the combination before Power Integrations patented it?

A: Yes.

Q: Okay. To close out this topic on '851, Claim 1, I put up 1496. Can you just very briefly summarize your opinion on why Claim 1 is not invalid?

A: Martin, the main reference Dr. Horowitz used, is missing several things, the frequency variation signal, the drive circuit, the oscillator with the maximum duty cycle, says no voltage mode drive circuit, that's the claim drive circuit, oscillation signal compared with the variable threshold.

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Even when you put it with the 211, you don't have the internal frequency variation circuit. And you wouldn't

two circuits are coupled when they're connected [16] such that voltage, current or control signals [17] pass from one to another.

[18] **Q:** Do voltage signals pass from the [19] counter to the digital to analog in the Martin [20] circuit?

[21] **A:** They do not.

[22] **Q:** Do current signals pass from the [23] counter to the D to A?

[24] **A:** No.

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[1] **Q:** Do control signals pass from the [2] counter to the D to A?

[3] **A:** No, the control signals that go to [4] the D to A come from the programing inside this [5] random access memory. What random access — no, [6] not random, read only memory, sorry, read only [7] memory, ROM. What a read only memory is is [8] something that you store information in in [9] advance, you store that information in there.

[10] And what this circuit does is it [11] addresses some of the content in that memory, [12] and then the EPROM sends whatever control [13] signals the DAC needs out through — out from [14] the EPROM. What's in there are control signals [15] that were programmed, not any kind of control [16] signals that come from the counter.

[17] **Q:** So does the counter in the Martin [18] circuit cause the D to A converter to adjust the [19] oscillator frequency?

[20] **A:** No. It's the control signals that [21] are stored in the EPROM. You can think of the [22] EPROM as being sort of this thing is sort of [23] like being like a mailbox where the counter just [24] provides the address, the real information is in

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[1] the mail, and that's what's inside the mailbox. [2] And same thing here, the information that goes [3] from the D to A is what is in the programing, [4] it's put in somewhere else.

[5] **Q:** Now, did you hear Dr. Horowitz [6] suggest that one of ordinary skill — it would [7] be obvious to a person of ordinary skill to just [8] remove the EPROM from the Martin figure to get [9] at the claimed invention?

[10] **A:** I heard that, and I disagree with [11] it.

[12] **Q:** Why do you disagree, why do you [13] believe it would not be obvious?

[14] **A:** Well, I would be totally [15] disregarding what Martin is teaching. We've [16] heard this Humvee thing where you could just [17] take some of the accessories off. Well, this [18] would be like removing the engine.

[19] The ROM is the essential part of [20] Martin. It's all over Martin's patent. It's in [21] the only figure in the patent. It's in all the [22] claims of the patent. It's what does what he [23] wants to do, what he's describing as his [24] invention. It's the only teaching in Martin is

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[1] to use this ROM.

[2] **Q:** Let's look at this. Is there [3] anything else in the prior art that you believe [4] would inform your opinion on whether one would [5] simply remove the EPROM from Martin?

[6] **A:** Yes, Dr. Horowitz found a number [7] of references, and all of them had a ROM like [8] Martin. That's just the way people did it. [9] They had this random variation or a program, [10] complicated programmed waveform, that's how [11] everybody did it. So if you were going to [12] follow down the path of prior art, that's what [13] you would have done, you would have had this ROM [14] in the circuit.

[15] You would think that's what was [16] necessary to solve the problem. That's what [17] everybody did, until PI came along and did it [18] differently.

[19] **Q:** Well, in your experience, is it [20] easy or obvious to look at a complicated [21] solution to a problem and replace it with a [22] simple one?

[23] **A:** No, that's sort of one of the [24] things you could say is the essence of the

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[1] invention, how to do something simpler.

[2] **Q:** Have you also considered secondary [3] considerations with regard to Claim 1 of the [4] '876 patent?

[5] **A:** I have. Martin had been around I [6] said eleven years before the patent, no one ever [7] did anything like that. And there were a lot of [8] companies working in that space.

[9] **Q:** And are the other considerations [10] we talked about earlier, are those the same?

[11] **A:** Yes.

[12] **Q:** Mr. Blauschild, I know we have [13] covered a lot of ground, we have done it fairly [14] quickly. In conclusion, do you have any [15] hesitation in your opinion that the claims of [16] Power Integrations circuit patents are valid in [17] view of the prior art that Fairchild has put [18] forth?

[19] **A:** I have no reservations that the [20] patents are valid. And I think the examiner, [21] the examiners awarded the patents correctly.

[22] **MR. POLLACK:** No further [23] questions, Your Honor.

[24] **THE COURT:** All right. Thank you

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[1] **CROSS-EXAMINATION**

[2] **THE WITNESS:** Can I put this one [3] away?

[4] **BY MR. DE BLANK:**

[5] **Q:** You're welcome to. You have been [6] given binders that have copies of your expert [7] reports and your deposition testimony and the [8] documents you'll probably — you may wish to [9] refer to.

[10] Good afternoon, sir.

[11] **A:** Good afternoon.

[12] **Q:** I want to touch on the Humvee [13] analogy you're referring to. Is it your [14] testimony that if someone wanted to convert a [15] military Humvee with camouflage and machine gun [16] for civilian use to drive to the grocery store, [17] the first thing they would do is to remove the [18] engine?

[19] **A:** No. What I'm suggesting is that [20] that's what to me, to me it seems like [21] Dr. Horowitz is suggesting that.

[22] **Q:** If I could have the Elmo, please. [23] I'm going to show you the Martin [24] patent, this is DX Number 83. The Martin patent

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[1] specifically said, the Martin patent [2] specifically states, "Referring now to the sole [3] figure, there is shown a circuit which reduces [4] electromagnetic interference (EMI) by frequency [5] modulation of power converters."

[6] Did I read that correctly?

[7] **A:** I believe so.

[8] **Q:** So let's look at the figure of the [9] Martin patent. And I'll put up Claim 1 of the [10] '876 patent.

[11] You agree that the Martin patent [12] teaches an oscillator for generating a signal [13] having a switching frequency, the oscillator [14] having a control input for varying switching [15] frequency, do you not?

[16] **A:** I would say so, yes.

[17] **Q:** And you agree that the figure in [18] the Martin patent teaches a digital to analog [19] converter coupled to the control input for [20] varying the switching frequency; correct?

[21] **A:** I'll agree with that.

[22] **Q:** And you agree that the Martin [23] patent includes a counter; correct?

[24] **A:** Yes.

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[1] **Q:** And you agree that the counter in [2] the Martin patent is coupled to the output of [3] the oscillator; correct?

[4] **A:** You mean the — well, I would say [5] the output of the oscillator is coupled back to [6] the counter, yes.

Exhibit W

An American National Standard

Approved July 20, 1984

IEEE Standard Dictionary of Electrical and Electronics Terms

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August 10, 1984

conductor in one second when the current is maintained constant at one ampere. 210

Coulomb friction (1) (general). A constant velocity-independent force that opposes the relative motion of two surfaces in contact. *See:* **control system, feedback.** 329

(2) (control systems). That occurring between dry (that is unlubricated) surfaces. *Note:* It is usually idealized as a constant force whose sign is such as to cause the force to oppose the relative motion of the rubbing elements. *Syn:* **dry friction.** *See:* **stiction.** 56

Coulomb's law (electrostatic attraction). The force of repulsion between two like charges of electricity concentrated at two points in an isotropic medium is proportional to the product of their magnitudes and inversely proportional to the square of the distance between them and to the dielectric constant of the medium. *Note:* The force between unlike charges is an attraction. 210

coulometer (voltameter). An electrolytic cell arranged for the measurement of a quantity of electricity by the chemical action produced. *See:* **electricity meter (meter).** 328

count (radiation counters). A single response of the counting system. *See:* **gas-filled radiation-counter tubes; scintillation counter; tube count.** 125, 190, 117, 96

count-down (transponder). The ratio of the number of interrogation pulses not answered to the total number of interrogation pulses received. *see also:* **navigation.** 13, 187

counter (1) (electronic computation). (A) A device, capable of changing from one to the next of a sequence of distinguishable states upon each receipt of an input signal. *Note:* One specific type is a circuit that produces one output pulse each time it receives some predetermined number of input pulses. The same term may also be applied to several such circuits connected in cascade to provide digital counting. (B) Less frequently, a counter is an accumulator. (C) (ring). A loop of interconnected bistable elements such that one and only one is in a specified state at any given time and such that, as input signals are counted, the position of the one specified state moves in an ordered sequence around the loop. *See:* **trigger circuit.** 210

(2) (test, measurement and diagnostic equipment). (A) A device such as a register or storage location used to represent the number of occurrences of an event: and (B) An instrument for storing integers, permitting these integers to be increased or decreased sequentially by unity or by an arbitrary integer, and capable of being reset to zero or to an arbitrary integer. 54

counter cells. *See:* **counter-electromotive-force cells.**

counterclockwise polarized wave (radio wave propagation). *See:* **left-handed polarized wave.**

counter electromotive force (any system). The effective electromotive force within the system that opposes the passage of current in a specified direction. 328

counter-electromotive-force cells (counter cells). Cells of practically no ampere-hour capability used to oppose the battery voltage. *See:* **battery (primary or secondary).** 328

counter-mounted cooking unit (National Electrical Code). A cooking appliance designed for mounting in or on a counter and consisting of one or more heating elements, internal wiring, and build-in or separately mountable controls. *See:* **wall-mounted oven.** 256

counterpoise (1) (antenna). A system of conductors, elevated above and insulated from the ground, forming a lower system of conductors of an antenna. *Note:* The purpose of a counterpoise is to provide a relatively high capacitance and thus a relatively low impedance path to earth. The counterpoise is sometimes used in medium- and low-frequency applications where it would be more difficult to provide an effective ground connection. 111

(2) (overhead line) (lightning protection). A conductor or system of conductors, arranged beneath the line, located on, above, or most frequently below the surface of the earth, and connected to the footings of the towers or poles supporting the line. *See:* **antenna; ground.** 64

counter, radiation. *See:* **radiation counter.**

counter tube (radiation counters). A device that reacts to individual ionizing events, thus enabling them to be counted. (1) (externally quenched). A radiation-counter tube that requires the use of an external quenching circuit to inhibit reignition. (2) (gas-filled, radiation). A gas tube used for detection of radiation by means of gas ionization. (3) (gas-flow). A radiation-counter tube in which an appropriate atmosphere is maintained by a flow of gas through the tube. (4) (Geiger-Mueller). A radiation-counter tube operated in the Geiger-Mueller region. (5) (proportional). A radiation-counter tube operated in the proportional region. (6) (self-quenched) A radiation-counter tube in which reignition of the discharge is inhibited by internal processes. *See:* **anticoincidence (radiation counters).** *See:* **gas-filled radiation-counter tube.** 96,125,190

counting channel (liquid-scintillation counting). A region of the pulse-height spectrum which is defined by upper and lower boundaries set by discriminators. 422

counting efficiency (1) (radiation-counter tubes). The average fraction of the number of ionizing particles or quanta incident on the sensitive area that produce tube counts. *Note:* The operating conditions of the counter and the condition of irradiation must be specified. *See:* **gas-filled radiation-counter tubes.** 125, 190

(2) (scintillation counters). The ratio of (A) the average number of photons or particles of ionizing radiation that produce counts to (B) the average number incident on the sensitive area. *Note:* The operating conditions of the counter and the conditions of irradiation must be specified. *See:* **scintillation counter.** 117

(3) (liquid-scintillation counting). The ratio of the

Exhibit X

IEEE 100
The Authoritative Dictionary of IEEE Standards Terms

Seventh Edition

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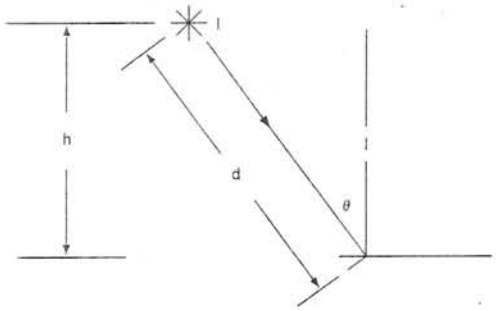
cross section at different ranges but a common height.
(AP/ANT) 145-1993

cosecant-squared pattern A vertical-plane antenna pattern in which the transmitting and receiving power gains vary as the square of the cosecant of the elevation angle. *Note:* The unique property of this pattern is that it results in the received echo signal being independent of range if

— The target is of constant radar cross section
— The target moves at constant altitude
— The earth's surface can be considered flat

See also: modified cosecant-squared antenna pattern.
(AES) 686-1997

cosine-cubed law (illuminating engineering) An extension of the cosine law in which the distance d between the source and surface is replaced by $h/\cos\theta$, where h is the perpendicular distance of the source from the plane in which the point is located. It is expressed by $E=(I\cos^3\theta)/h^2$. (See figure below.). *See also:* cosine law.



cosine-cubed law
(EEC/IE) [126]

cosine emission law *See:* Lambert's cosine law.

cosine law (illuminating engineering) A law stating that the illuminance on any surface varies as the cosine of the angle of incidence. The angle of incidence θ is the angle between the normal to the surface and the direction of the incident light. The inverse-square law and the cosine law can be combined as $E=(I\cos\theta)/d^2$. *See also:* inverse-square law.
(EEC/IE) [126]

cosmic noise Noise-like radio waves originating from extragalactic sources. (AP/PROP) 211-1997

cosmic radio waves *See:* cosmic noise.

COSRO *See:* conical-scan-on-receive-only.

Costas code A frequency-hopping pulse compression waveform in which a long pulse is divided into n subpulses with the frequency of each subpulse chosen from n contiguous frequencies in a manner first suggested by John P. Costas.
(AES) 686-1997

costate The state of the adjoint system. *See also:* control system.
(CS/IM) [120]

cost of incremental fuel (electric power system) The ultimate replacement cost of the fuel that would be consumed to supply an additional increment of generation (usually expressed in cents per million British thermal units).
(PE/PSE) 94-1970w

costs (power operations) Monies associated with investment or use of electrical plant. *See also:* fixed investment costs.
(PE/PSE) 858-1987s

COSU *See:* central office service unit.

COTS *See:* commercial-off-the-shelf.

coulomb The unit of electric charge in SI units (International System of Units). The coulomb is the quantity of electric charge that passes any cross section of a conductor in one second when the current is maintained constant at one ampere. (Std100) 270-1966w

Coulomb's law (electrostatic attraction) The force of repulsion between two like charges of electricity concentrated at two points in an isotropic medium is proportional to the product of their magnitudes and inversely proportional to the square of the distance between them and to the dielectric constant of the medium. *Note:* The force between unlike charges is an attraction. (Std100) 270-1966w

coulometer (voltameter) An electrolytic cell arranged for the measurement of a quantity of electricity by the chemical action produced. *See also:* electricity meter. (PE/EEC) [119]

count A single response of the counting system. *See also:* tube count. (NI/NPS) 309-1999

count-down (transponder) The ratio of the number of interrogation pulses not answered to the total number of interrogation pulses received. (AES/RS) 686-1982s, [42]

counter (1) (test, measurement, and diagnostic equipment) **(A)** A device such as a register or storage location used to represent the number of occurrences of an event. **(B)** An instrument for storing integers, permitting these integers to be increased or decreased sequentially by unity or by an arbitrary integer, and capable of being reset to zero or to an arbitrary integer. (MIL) [2]

(2) (software) A variable used to record the number of occurrences of a given event during the execution of a computer program; for example, a variable that records the number of times a loop is executed. (C) 610.12-1990

(3) **(A)** A device with a finite number of states each of which represents a number which, upon receipt of an appropriate signal, can be incremented or decremented by a given constant. *Note:* The device may be capable of being set to a particular state such as zero. *See also:* reversible counter; modulo-n counter; keystroke counter; line counter. **(B)** A register or storage location used to accumulate the number of occurrences of some event. *See also:* program counter.
(C) 610.10-1994

counter beam system Tunnel lighting system or luminaires having a light distribution that is greater in the opposite direction of travel. (RL) C136.27-1996

counter cells *See:* counter-electromotive-force cells.

counterclockwise arc (numerically controlled machines) An arc generated by the coordinated motion of two axes in which curvature of the path of the tool with respect to the workpiece is counterclockwise, when viewing the plane of motion in the negative direction of the perpendicular axis. (IA) [61]

counter electromotive force (any system) The effective electromotive force within the system that opposes the passage of current in a specified direction. (EEC/PE) [119]

counter-electromotive-force cells (counter cells) Cells of practically no ampere-hour capability used to oppose the battery voltage. *See also:* battery. (EEC/PE) [119]

counter-mounted cooking unit **(A)** A cooking appliance designed for mounting in or on a counter and consisting of one or more heating elements, internal wiring, and build-in or separately mountable controls. *See also:* wall-mounted oven. **(B)** An assembly of one or more domestic surface heating elements for cooking purposes, designed for flush mounting in, or supported by, a counter, and which assembly is complete with inherent or separately mountable controls and internal wiring. (NESC/NEC/C2) [86]

counterpoise (1) A system of conductors, elevated above and insulated from the ground, forming a lower system of conductors of an antenna. *Note:* The purpose of a counterpoise is to provide a relatively high capacitance and thus a relatively low impedance path to earth. The counterpoise is sometimes used in medium- and low-frequency applications where it would be more difficult to provide an effective ground connection. (AP/ANT) 145-1993

(2) A conductor or system of conductors arranged beneath the line; located on, above, or most frequently below the surface of the earth; and connected to the grounding systems of the towers or poles supporting the transmission lines.
(PE/T&D/SPD/PSIM) 1243-1997, 81-1983, C62.23-1995

(3) *See also:* ground grid. (T&D/PE) 524-1992r

Exhibit Y

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IN ITS ENTIRETY

Exhibit Z

REDACTED
IN ITS ENTIRETY

Exhibit AA

REDACTED
IN ITS ENTIRETY

Exhibit BB

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IN ITS ENTIRETY

Exhibit CC

Exhibit DD

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Exhibit EE

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Exhibit GG

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Exhibit HH

REDACTED
IN ITS ENTIRETY

Exhibit II

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Exhibit JJ

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IN ITS ENTIRETY