

DEPOSITION OF GEERT KNAPEN
CONDUCTED ON WEDNESDAY, APRIL 29, 2015

1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD
3 -----x
4 LG ELECTRONICS, INC., LG :
5 ELECTRONICS U.S.A, INC., and :
6 LG ELECTRONICS MOBILECOMM : Cases
7 U.S.A., INC., : IPR2014-01386 - Patent 6,012,103
8 Petitioner, : IPR2014-01396 - Patent 6,249,825
9 v. : IPR2014-01405 - Patent 6,493,770
10 CYPRESS SEMICONDUCTOR CORP., :
11 Patent Owner. :
12 -----x
13
14 Deposition of GEERT KNAPEN
15 Washington, DC
16 Wednesday, April 29, 2015
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18
19
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22 Reported By: Rebecca Stonestreet, RPR, CRR

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1 Deposition of GEERT KNAPEN, held at the offices
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14 Pursuant to Notice, before Rebecca Stonestreet,
15 Registered Professional Reporter, Certified Realtime
16 Reporter, and Notary Public in and for the District of
17 Columbia, who officiated in administering the oath to
18 the witness.
19
20
21
22

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EXHIBIT 2015
LG Elecs. v. Cypress Semiconductor
IPR2014-01386, U.S. Pat. 6,012,103

5		7	
1	CONTENTS	1	PROCEEDINGS
2	EXAMINATION OF GEERT KNAPEN	2	(GEERT KNAPEN, having been duly sworn, testified as
3	By Mr. Laurenzi 7	3	follows:)
4	By Mr. Shapiro 41	4	EXAMINATION BY COUNSEL FOR PATENT HOLDER
5	By Mr. Laurenzi 44	5	CYPRESS SEMICONDUCTOR CORP.
6		6	BY MR. LAURENZI:
7		7	Q Good morning. Would you please state your
8	EXHIBITS	8	name for the record?
9	(None marked)	9	A My name is Geert Knapen.
10		10	Q And what is your home address?
11		11	A 1725 Martin Avenue, San Jose, California,
12	EXHIBITS	12	95128.
13	(Exhibits previously marked and referred to in the	13	Q I'm sure your counsel has gone over this with
14	deposition.)	14	you already, but I'll go over it again and let you know
15	IPR EXHIBIT NUMBER PAGE	15	what's going to happen today.
16	Exhibit 1001 U.S. Patent No. 6,012,103 38	16	I'll be asking you a series of questions, and
17	Exhibit 1003 U.S. Patent No. 5,628,028 30	17	you're now under oath so your job is to give me the best
18	Exhibit 1004 PCCEExtend 100 User's Manual 28	18	truthful answer you can to the questions that I'll be
19	Exhibit 1012 Declaration in IPR 2014-01386 38	19	asking you.
20	relating to '103 patent	20	If there's any question I ask that you don't
21	Exhibit 1012 Declaration in IPR 2014-01386 11	21	understand, just tell me and I'll do the best I can to
22	relating to '825 patent	22	rephrase the question or clarify the question in a way
6		8	
1	EXHIBITS CONTINUED	1	that allows you to answer the question.
2	IPR EXHIBIT NUMBER PAGE	2	Do you have any questions before we begin?
3	Exhibit 1018 Personal Computer Memory Card 36	3	A I don't think so.
4	International Association	4	Q Are you on any kind of medication that would
5	PC Card Standard Release 2.1	5	prevent you from giving truthful testimony today?
6	Exhibit 1019 Personal Computer Memory Card 36	6	A No.
7	International Association Card	7	Q Have you ever given a deposition before?
8	Services Specification Release 2.1	8	A No, this is my first time.
9		9	Q When did you first hear about this -- well,
10		10	withdraw that.
11		11	When were you first contacted by either this
12		12	law firm or by LG concerning the matter of these IPRs?
13		13	A I have to dig into my memory. When would that
14		14	have been?
15		15	Q You can give me your best estimate.
16		16	A A year and a half ago.
17		17	Q And what were you told about the matter?
18		18	MR. SHAPIRO: Objection. Calls for privileged
19		19	information. I'm going to instruct you not to answer
20		20	what we told you about the matter.
21		21	MR. LAURENZI: So your position is there's a
22		22	privilege between yourself and the expert?

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9

1 MR. SHAPIRO: Yes.

2 MR. LAURENZI: And what's the basis for that?

3 MR. SHAPIRO: We discuss -- it's privileged

4 discussion of legal theories and so forth. Our

5 discussions are not discoverable.

6 MR. LAURENZI: You believe they're not

7 discoverable under the federal rules of civil procedure?

8 MR. SHAPIRO: They're not discoverable in

9 these proceedings. We can call the Board if...

10 MR. LAURENZI: I just want to establish for

11 the record what the basis is for the instruction.

12 Q Mr. Knapen, are you going to follow your

13 counsel's instruction and not answer my pending question?

14 A Yes.

15 Q You submitted three declarations on behalf of

16 LG. Is that correct?

17 A Yes.

18 Q Did you draft those?

19 A Yes.

20 Q Did you prepare the first draft of those

21 declarations?

22 A In cooperation with the lawyers.

10

1 Q But who actually prepared the first draft?

2 A I did.

3 Q And do you recall when you began drafting

4 those declarations?

5 A Not exactly, no. So...

6 Q Can you give me an estimate of how much time

7 you billed to prepare those three declarations in total?

8 Ballpark estimate is fine.

9 A I have to look at my records.

10 Q You do keep records relating to how much time

11 you spent?

12 A Well, at first, yes.

13 Q And are those reflected in invoices?

14 A Yes.

15 Q You can't give me a ballpark estimate? Do you

16 think it was more than 200 hours?

17 A No, probably not.

18 Q More than 100?

19 A I don't know.

20 Q Who first contacted you? Was it an attorney

21 from Rothwell Figg or was it someone from LG?

22 A An attorney from here.

11

1 Q Have you ever done work for LG in the past?

2 A No.

3 Q Have you met anyone from LG --

4 A No.

5 Q -- in the course of doing your work in this

6 matter?

7 A No.

8 Q Let me show you -- I'll withdraw that.

9 Let me show you Exhibit 1012, which is your

10 declaration in the IPR relating to the '825 patent, which

11 is for case IPR 2014-01396.

12 A Thank you.

13 Q Do you recognize the document, sir?

14 A Yes, it appears to be.

15 Q And that's your signature on page 95 of the

16 declaration. Is that right?

17 A That's correct.

18 Q Let me ask you to turn, please, to page 1 of

19 Exhibit 1012, your declaration. And at the bottom of

20 page 1 is the beginning of the listing of your

21 qualifications. Do you see that?

22 A Yes, I do.

12

1 Q And then if you turn over to page 2, those

2 qualifications continue there on page 2 over to page 5.

3 Do you see that?

4 A Uh-huh.

5 Q All right. So I want to direct your attention

6 to page 2, and in particular paragraph 7. It says here

7 that from 1983 until 1985 you were responsible for

8 industrial consulting and external industrial contacts at

9 the Brussels Free University. Do you see that?

10 A Yes.

11 Q What does industrial consulting refer to?

12 A It refers to the university providing services

13 to the industry whereby research results of the

14 university were brought to the industry if they wanted to

15 apply those research results.

16 Q And what was your role in terms of bringing

17 those research results to industry?

18 A I was the contact person with certain

19 companies in Belgium, and I also did implementation work,

20 so taking those research results and integrating them in

21 products for a particular company.

22 Q And what products, if you recall, during that

13

1 time were utilized with some of those research results,
2 if you can recall?

3 **A It's way too long ago. I don't recall exactly**
4 **what I was doing.**

5 Q And then the next paragraph, paragraph 8.

6 **A Yes.**

7 Q There it refers to a company that you
8 cofounded called Signal Processing Innovations. Do you
9 see that?

10 **A I do.**

11 Q And the second sentence says that the company
12 focused on development and sale of digital signal
13 processing boards and complete measurement systems. Do
14 you see that?

15 **A Yes.**

16 Q Were any digital signal processing boards
17 actually commercialized by Signal Processing Innovations?

18 **A Yes.**

19 Q Which ones?

20 **A What do you mean by "which ones"?**

21 Q Well, can you give me the name of the
22 commercial products of any digital signal processing

14

1 boards?

2 **A Well, these were boards that were used in**
3 **19-inch rack systems. One of those boards -- the**
4 **function of one of those boards was to do very high**
5 **performance, very accurate analog-to-digital conversion,**
6 **basically as a component to build measurement systems.**
7 **So we had a range of plug-in boards for a**
8 **19-inch rack on a VME bus system, and we sold those**
9 **boards, but we also sold complete systems based on those**
10 **boards with software and everything integrated.**

11 Q And those boards were based on the VME bus
12 system, you said?

13 **A Correct.**

14 Q The last sentence of that paragraph, paragraph
15 number 8, says that you were also responsible for
16 designing an FFT spectrum analyzer for the sound and
17 vibration markets. Do you see that?

18 **A Yes.**

19 Q Was that a board product or was that a
20 standalone product?

21 **A It was a standalone product based on those**
22 **boards. So a full rack with all the necessary boards**

15

1 **included, processor board, A/D, D/A, all that you need to**
2 **build, the hardware for it.**

3 Q Paragraph 9 says that in 1990 you started
4 another company called Ling Dynamic Systems. Do you see
5 that?

6 **A Yes.**

7 Q There it says that company also focused on the
8 signal processing market. Do you see that?

9 **A Uh-huh.**

10 Q Were any -- withdraw that.
11 Did you design any digital signal processing
12 boards at Ling Dynamic Systems?

13 **A Yes.**

14 Q Can you describe those boards for me, please?

15 **A Again based on VME bus containing a processor,**
16 **68000 series processor, as a coprocessor to the main**
17 **system processor, and programmed to calculate FFT,**
18 **basically.**

19 Q Did those boards have a name, a commercial
20 name?

21 **A Yeah, they were like abbreviations. That**
22 **board was called Dibuf, D-I-B-U-F.**

16

1 Q If I wanted to purchase a Dibuf board today,
2 could I, on eBay or something?

3 **A I don't think so.**

4 Q Do you have any?

5 **A No.**

6 Q Paragraph 10 talks about a company you founded
7 called Design and Advice C.V. Do you see that?

8 **A Yes.**

9 Q And is that company still active today?

10 **A No, it is not.**

11 Q And it says there that during your time at
12 Design and Advice, you began consulting for Philips
13 International Technology Center in DSP hardware and
14 software. Do you see that?

15 **A Yes.**

16 Q What are you referring to when you talk about
17 DSP hardware?

18 **A Again, Philips bought a number of our**
19 **analyzers, and when I stopped working for Ling Dynamic**
20 **Systems, Philips was interested in my services to help**
21 **them develop certain products.**

22 Q You said that they were interested in your

17

1 services. Did you provide hardware to them, either
2 actual hardware or hardware design?
3 **A I designed hardware for them, yes.**
4 **Q** And this was digital signal processing
5 hardware?
6 **A Absolutely.**
7 **Q** And it's based on the VME bus architecture?
8 **A No. That product was based on the ISA bus,**
9 **the internal initial bus for PC's.**
10 **Q** And then paragraph 11 says that while you were
11 still a consultant at Design and Advice, you became
12 involved in the creation of the USB standard. Do you see
13 that?
14 **A Yeah.**
15 **Q** Why did you become involved in the creation of
16 the USB standard in 1995?
17 **A I was asked by Philips to take up that work.**
18 **Q** Why was Philips interested in being a part of
19 the USB standard process?
20 **A As far as I understand, Philips saw huge**
21 **potential in USB technology. They wanted to get involved**
22 **both from a hardware standpoint, creating dedicated**

18

1 **semiconductors, and from a software standpoint.**
2 **The group I was working for in Leuven was**
3 **specializing actually in DSP algorithms for audio**
4 **processing, and it became natural for us to look into**
5 **using USB for audio purposes. That's what I started**
6 **working on.**
7 **Q** And the same paragraph here in the second
8 sentence says that you represented Philips in the USB
9 device working group. Do you see that?
10 **A Yes.**
11 **Q** What is the USB device working group? Or what
12 was it in 1995?
13 **A The USB device working group was a group, a**
14 **working group consisting of a number of companies with**
15 **their representatives to design the class specifications**
16 **for USB, if you understand what I'm saying.**
17 **Q** Can you explain what you mean by that?
18 **A In order for software vendors or OS vendors to**
19 **come up with standardized drivers for certain categories**
20 **of products, there needs to be a specification that**
21 **describes how that category of devices works over USB.**
22 **For example, audio devices, what can you send to the**

19

1 **devices, what can the host expect when you plug in an**
2 **audio device.**
3 **The working group was tasked with designing**
4 **those specifications for all these categories that we**
5 **thought at that moment would be beneficial for the USB**
6 **ecosystem.**
7 **Q** This paragraph says you were elected chairman
8 of the audio device class working group.
9 **A Yes.**
10 **Q** How is the audio device class working group
11 different from the device working group?
12 **A The device working group is, how do you say**
13 **that, the over -- I don't know the words in English.**
14 **Q** Umbrella organization?
15 **A Something like that, yes. So we had all these**
16 **device working groups specific for a specific device, and**
17 **then there was the umbrella working group that made sure**
18 **that every working group that was concentrating on**
19 **certain device didn't do conflicting specification,**
20 **basically. So it was more like a coordinating group.**
21 **Q** Is there a reason why you were elected the
22 chairman of the audio device class working group? Was

20

1 that because you had experience with audio processing?
2 **A Yes.**
3 **Q** And this last sentence in paragraph 11 says
4 that you were an author of the USB specification for
5 audio devices. Do you see that?
6 **A Uh-huh.**
7 **Q** Is that a particular part -- well, withdraw
8 that.
9 When you say USB specification, are you
10 referring to USB specification version 1?
11 **A No. What I'm referring to here is the audio**
12 **device class specification, version 1.0. So the result**
13 **of all these working groups I was talking about before is**
14 **the specification. Like the audio device class**
15 **specification or the hub class specification or mass**
16 **storage specification. And I basically wrote that audio**
17 **device class specification, was the editor for the group,**
18 **and also the chair of the group.**
19 **Q** In your declaration you refer to a universal
20 serial bus specification. Do you recall that?
21 **A Yes.**
22 **Q** Are any of the device group specifications

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