UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

DISH NETWORK, LLC, DISH NETWORK SERVICE, LLC, DISH NETWORK CORP., and DISH NETWORK CALIFORNIA SERVICE CORP., Petitioner, vs. ENTROPIC COMMUNICATIONS, LLC, Patent Owner.	Case: IPR2024-00393 U.S. Patent No. 7,295,518

The deposition of ALBERT GARRETT, called by the Petitioner, for examination, taken before Stephanie A. Battaglia, CSR and Notary Public in and for the County of DuPage and State of Illinois, at K&L Gates, 70 West Madison Street, Suite 3300, Chicago, Illinois, on January 15, 2025, 9:29 a.m.



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* * * *

I N D E X

WITNESS: Albert Garrett	PAGE:
EXAMINATION BY:	
Mr. Ballanco	5
Mr. Halverson	108

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EXHIBITS

Exhibit 2002	Declaration of Albert Garrett	9
DISH Exhibits		
DISH-1001	U.S. Patent No. 7,295,518	99
DISH-1007	United States Patent Application Publication US 2002/0069417	104
DISH-1030	United States Patent Application Publication US 2012/0287979	63
DISH-1031	U.S. Patent No. 9,042,823	69
DISH-1032	U.S. Patent No. 8,351,368	71

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MS. REPORTER: We are starting at 9:29 a.m.

ALBERT GARRETT,

called as a witness herein, having been first duly sworn was examined and testified as follows:

EXAMINATION

BY MR. BALLANCO:

Q. Good morning, sir.

Would you please state your name for the record?

A. My name is Albert Garrett.

Q. Good morning, Mr. Garrett.

Have you been deposed before?

A. I have not.

Q. Okay.

Well, then if this is your first time I'm just going to start with a few ground rules just so that the proceedings today go smoothly and that we are all on the same page, okay?

A. Yes.

Q. The first thing is you understand you are giving your testimony today under oath?

A. Yes.

Q. And it's just like if you were in court on the witness stand, you have been sworn in, it's your sworn testimony.

A. Understood.

Q. Is there any reason why today you can't give truthful, complete, and accurate testimony?

A. No, sir.

Q. If that changes at all at any point during the deposition, please just let me know.

A. Okay.

Q. If any medical condition or something like that were to occur, just let me know, and then we will take it from there.

A. Understood.

Q. I ask that you answer all of my questions with an audible yes or no. Is that fair?

A. Yes, sir.

Q. You can see we have a court reporter here today taking down everything that we say, so for the record to be complete that's important.

A. Understood.

Q. If you don't understand any of my questions just let me know, okay?

A. Okay.

Q. If you do answer a question I will assume that you understood my question, fair?

A. Fair.

Q. Okay.

Your attorney may object to some of the questions I ask. If there is an objection that doesn't call for privilege you still need to answer the question, is that fair?

A. Yes.

Q. And if there is a dispute about that the attorneys will figure it out, okay, but the basic rule is you have to answer a question that's pending, okay?

A. Yes.

Q. We will try to take breaks every hour or so, but if you need one before that just let me know and we will do that, right?

A. Will do.

Q. The only caveat to that is if there is a question pending I will ask you to answer the question

before we take the break.

A. Yes, okay.

Q. Okay.

So, sir, I know you said that this is your first deposition. Have you served as an expert before in any other cases?

A. No.

Q. I know that you have been named as an inventor on several patents.

Have you ever been involved in a patent infringement lawsuit vis-a-vis those patents?

A. No.

Q. So fair to say you have never served as a fact witness in a litigation before either?

A. Correct.

Q. And when I say litigation, that includes inter partes reviews. You never have given testimony in inter partes review proceedings until today?

A. No, sir.

Q. I thought that was the case, I just wanted to confirm.

I have handed to you before we got

started a binder of exhibits we might use today, okay, do you see that in front of you?

A. Yes, sir.

Q. I apologize because I meant to put your declaration, which is what we will spend a lot of time talking about, to the front of the binder but didn't get a chance to do it given we were running late which I again apologize for.

If you may, would you turn to tab -- let me get my copy, too, it's toward the back, it's Exhibit 202 on the tab, it says Declaration of Mr. Albert Garrett. Please turn to that and let me know when you are there.

MR. HALVERSON: Just for clarity, 2002?

MR. BALLANCO: Apologies, yes, 2002.

THE WITNESS: I am there.

(Document identified as Exhibit 2002 for identification.)

BY MR. BALLANCO:

Q. Mr. Garrett, do you recognize the document that's at the tab that you just turned to?

A. Yes.

Q. And what is this document that you are looking at?
A. This would be my declaration.
Q. The declaration that you submitted in the IPR Proceeding No. 2024-00393?
A. Yes.
Q. Just for the sake of the record, that IPR proceeding concerns U.S. Patent No. 7,295,518, is that right?
A. Yes, sir.
Q. Did you review this declaration in preparation for today's deposition?
A. Yes.
Q. And after that review do you still stand behind all the opinions that are included in this declaration?
A. I think there was one statement that I was concerned with in Paragraph 40.
Q. Okay.
A. It's not an opinion statement.
Q. And what was your concern with the statement in Paragraph 40 concerning the definition of

a POSITA?

A. My definition of POSITA included two years of coax experience, which is different from Williams' definition, and I did not have two years of coax experience at the time of the filing date of the application.

Q. I understand.

Would you today like to modify your definition of a POSITA or is your modification that you simply didn't satisfy it at the date of the patent?

A. That I simply didn't satisfy it at the date of the patent.

Q. Understood.

Beyond the modification that we just discussed with respect to Paragraph 40, are there any other pieces of the declaration that you would like to modify, correct, or change in some way?

A. No.

Q. Sir, what did you do to prepare for today's deposition?

A. Preparation for today's deposition, I

reviewed+ my declaration, Amit, Kliger, Jacobsen and Isaksson documents that are referenced as exhibits, and the institute decision.

Q. Any other documents you reviewed to prepare for the deposition today?

A. None that I recall.

Q. Did you meet with anyone to help prepare for today's deposition?

A. I did have a meeting yesterday to prepare.

Q. And who did you meet with yesterday to prepare?

A. Erik Halverson and Jared Lund.

Q. How long did you meet for?

A. Approximately four hours.

Q. Apart from Mr. Halverson and Mr. Lund, any other individuals you spoke with in preparation for today's deposition?

A. No, sir.

Q. If you would, sir, please turn to Paragraph 5 of your declaration. If you are there, it reads -- and let me know if I say this incorrectly --

"Have you have analyzed the '518 patent, its file history, the declaration of Tim A. Williams, four prior art references, Kliger, Isaksson, Amit, Jacobsen." And then it also says, "I have also considered the other documents or references cited in this declaration." Is that fair?

A. Yes, sir.

Q. Beyond everything that you included in Paragraph 5, were there any other pieces of information or documents that you reviewed in putting together your declaration?

A. I don't recall any specific reference outside these.

Q. Did you review any testimony from Mr. Williams or Dr. Williams in preparing your declaration?

A. Not that I recall.

Does the declaration count as the testimony?

Q. No. I am asking about a transcript of a deposition for Dr. Williams.

A. Not that I recall.

Q. Okay.

And apart from the prior art references that you cite in your declaration, you didn't review any others, is that fair?

A. That's correct.

Q. Sir, I would like to ask you about your background before we get into the substance of the dispute.

I think the best way to do that might be to go through your CV, which you included as an exhibit to your declaration, it is Exhibit A, it starts I think on Page 83 of that document.

A. Yes, sir.

Q. Is Exhibit A the CV that you provided a current and accurate representation of your CV?

A. Yes, sir.

Q. I would like to start with your educational background.

You attended Auburn University for your undergrad, is that right?

A. Yes, sir.

Q. You specialized there, it appears, in

digital communication and communication theory, is that fair?

A. Fair.

Q. What drove you to specialize in that area?

A. Probably the professors I interfaced with.

Q. What professors were those?

A. Singh, Professor Singh.

Q. Professor Singh, okay.

And how did you first come to know Professor Singh?

A. Through class, communications class.

Q. As part of your electrical engineering degree you took an intro to communications course with Professor Singh?

A. That's correct.

Q. And it was something that you enjoyed and wanted to pursue further?

A. Yes, sir.

Q. Did you do any sort of research work with Professor Singh while you were there?

A. No direct research. I requested some additional projects from him; I can't even recall what those were, just I remember the conversation.

Q. I can't remember what I was doing in 1996 either, in fairness.

What other courses did you then take after that initial communications course with Professor Singh that gave you additional expertise in digital communications?

A. I wouldn't claim that the bachelor's work did anything else for coding theory or communications.

Q. Well, you went on after studying at Auburn to get a Master's at Clemson, right?

A. Yes.

Q. Is that where you furthered your digital communications work?

A. Yes.

Q. And tell me how did that at Clemson.

A. The Clemson program was led by a Dr. Pursley who is an expert in digital communication. The program was designed around that field so virtually all work is relative to

communication/communication theory in its application.

Q. And I want to make sure I heard it correctly, Dr. Pursley?

A. Pursley, yes.

Q. And did you apply to Clemson specifically because of that digital communications program?

A. Yes, sir.

Q. Was that something that was recommended to you by Professor Singh?

A. No, sir.

Actually, Clemson came to Auburn and recruited. They had just started the program with Dr. Pursley and were actively recruiting at universities to join the program.

Q. Okay.

So were you one of the first graduates from that program?

A. I don't know if I was one of the first, but certainly I was -- I would say I was in there.

Q. Understood.

Did you go directly from Auburn to Clemson or was there any intervening work experience

or additional educational experience between the two?

A. I worked at a company called Adtran. I co-oped at Adtran throughout undergraduate work and continued working with them on side projects as I did Master's work.

Q. And where is Adtran, where were you working at, what office for them?

A. Adtran is in Huntsville, Alabama. So you are in co-op sessions, I would going to Huntsville, but while doing Master's work it was remote.

Q. Remote work back in the late '90s, you were a real innovator with that.

What does Adtran do, what work were they doing at the time?

A. Adtran worked in telephone communication systems, ISDN/HDSL at the time, testing devices, bit error rate testers.

Q. Did you say HDSL?

A. HDSL.

Q. What exactly is HDSL?

A. At the moment I can't speak to details, but it is a data subscriber loop prior to ADSL.

Q. So it is a predecessor to ADSL?

A. Yes, sir.

Q. Apologies for my ignorance here, but is there any distinction between just generic DSL and HDSL?

A. I just couldn't speak to the specifics.

Q. Okay.

What about VDSL, is that connected to HDSL at all?

A. I would assume all these are connected given the DSL acronym, that they are all part of the data subscriber loop that's relative to note work communication from a telephone central office to a terminal unit at a house. They each speak to different specifications, the HDSL, ADSL, and VDSL.

Q. Did you say media cell?

A. VDSL. I apologize.

Q. All good.

So you worked with HDSL at Adtran. Did you do work with VDSL at Adtran?

A. Just to correct the statement, I did not work with HDSL. That was a technology Adtran worked

in.

Q. Apologies.

Let me take a step back then.

What work were you performing while you were at Adtran, what type of work?

A. They moved me between various groups, so I worked in the testing group and worked on embedded software for the bit error rate testers. They moved me into a software development group and I worked on designing software for automated testing. They moved me under the advanced development group, and in that sense we were working on our own operating system for ISDN devices, so embedded software, a lot of software experience.

Q. Okay.

You finished your Master's at Clemson in 1998, right?

A. Yes, sir.

Q. And what did you go on to do after completion of your Master's degree?

A. Joined a group at Harris Corporation in research and development.

Q. What research and development work were you performing at Harris?

A. The group itself was responsible for communications systems, but we were specifically -- that is a defense contractor, so it would be basically it is a matrix organization, you would be assigned to a project based on the means of the organization. The first project was law enforcement product development.

Q. What type of law enforcement product were you helping develop?

A. I think at the time it was a cellphone sniffer.

Q. And you were at Harris for how long?

A. I was at Harris approximately two years.

Q. What other projects did you work on at Harris beyond the law enforcement product?

A. At Harris I can't think of another one. They were all law enforcement products, variations of cellphone. I recall a different last project, and while I can picture the people I can't think of the technology at the moment.

Q. Where did you go after Harris?
A. Harris had a technology that we today call Wi-Fi that they spun off to semiconductor company that was across the street called Intersil, and I joined the group that was doing com system development for 802.11 at the time.
Q. This would have been around the 2000 timeframe, if I am getting my dates right?
A. Ballpark, yes, sir.
Q. And you were working on -- I want to make sure I am accurate here -- on development of 802.11 technology or application of that technology of products?
A. I did both. I was a standards representative, so I would go try and help to find the standard, but I was also an algorithm developer, so I developed receiver algorithms for acquisition, packet tracking, demodulation, and decoding.
Q. Did any of those algorithm development projects lead to patents that were issued?
A. Yes, sir.
I think probably the first five patents

that are listed at Conexant, that group eventually became Conexant through a series of mergers and acquisitions. So all that is related.

Q. Okay.

On your resume you list your employment at Conexant from 2007 to 2008.

If I understand correctly, you were with Intersil as the predecessor to Conexant starting 2000, is that fair?

A. Yes, sir.

There is a gap in 2006 where I moved to Alabama and didn't work with Conexant and then rejoined Conexant a year later.

Q. But from 2000 to 2006 you were with Intersil?

A. Yes, sir.

Q. And for that year in 2006, what were you doing?

A. I worked at a small software shop that was called Verari, V-E-R-A-R-I; I believe that's correct.

Q. What work were you doing at Verari?

A. They developed signal processing software that was matched to intel and AMD processors in their SIMD operations. SIMD is S-I-M-D, special instruction.

Q. And when you left Verari and went to Conexant, was the work similar to the work you had been doing when you were with Intersil?

A. When I joined Conexant in 2007 it was no longer Wi-Fi, but it was MoCA.

Q. Okay.

So 2007 is when you first started working with MoCA?

A. Yes. It may have been the end of 2006, I don't have the exact -- I don't recall the exact dates, but it is close.

Q. Okay.

Sorry to jump around, but I wanted to ask you about your most recent entry for education, and it's this AI nano degree received in 2018.

A. Yes, sir.

Q. Would you explain to me exactly what that is?

A. That is one of those massive online educational systems. When I worked with -- I think you have it here -- ComplexIQ, at the end of our time there we were looking for new projects and opportunities and wanted to explore AI, so it was my job to become educated, and that was the path I took.

Q. You mentioned the end of your time at ComplexIQ. Are you no longer with ComplexIQ?

A. I am not.

Q. I notice on your CV it mentions you are there until the present. Is that something that should be corrected?

A. Yes, sir, my apologies.

Q. So when did your time at ComplexIQ finish?

A. December of 2019.

Q. Okay.

Since December of 2019 have you engaged in any other professional activity?

A. In January of 2020 I joined Financial Services Industry at Northwestern Mutual.

Q. What work or -- strike that.

Are you still there?

A. I am.

Q. What sort of work do you do there?

A. I am a financial advisor.

Q. Fair to say that your current role is not connected to your past work experiences?

A. That's correct.

Q. We spoke a little bit earlier about whether you testified before in a litigation, I believe you said you hadn't, correct?

A. Yes, sir.

Q. Have you served as an expert before in a litigation even if it didn't involve testimony?

A. No, sir.

Q. So this is your first expert engagement?

A. Yes, sir.

Q. Apart from litigation, have you served as an expert consultant before in your career?

A. No, sir.

Q. Your -- sorry, strike that.

I would like to ask you about a few communication concepts if that's all right with you,

and hopefully you can explain them to me better than I understand them presently, if that's fair.

A. Yes, sir.

Q. Are you familiar with reflections in communication systems?

MR. HALVERSON: Objection, form.

THE WITNESS: In what way?

BY MR. BALLANCO:

Q. Well, have you heard the term reflection used before in the context of a communication system?

A. Yes, sir.

Q. And in what context have you heard that term used before?

A. In the context of wireless communication, it is multiple paths between a transmitter and a receiver.

Q. So in wireless communication if there is multiple paths between a transmitter and the receiver, that's known as a reflection?

A. Yes, sir.

Q. And what causes a reflection?

A. In the context of Wi-Fi?

Q. We can start there, sure.

A. Objects that are somewhere between the two devices.

Q. And so if the signal encounters an object that will cause a -- could cause a reflection, fair?

A. Yes, sir.

Q. What about in the context of a wired communication, what are reflections?

A. Similar. The structure would be different that causes a reflection, it would be an impedance mismatch.

Q. In a wired communication is your definition of reflection different than the one you provided for wireless?

A. That I have provided a definition of reflection?

Q. Maybe definition is strong.

I think we had described it as multiple paths between a transmitter and a receiver.

A. Okay.

Q. Is that the same understanding of reflection for a wired communication?

A. I think that's fair.
Q. And when we are talking about wired communications, does that include coax, for example?
A. Yes.
Q. In a wired communication, let's stay with that, can a reflection occur if you don't have multiple paths?
A. Yes.
Q. Is the same true for a wireless communication?
A. Can we revise the previous statement? There is something about the word path is troubling.
Q. Sure.
What would you like to clarify about path?
A. I imagine a situation where there is two devices and one cable.
Q. Okay.
A. That looks like one path, but it can be multiple paths because their reflections -- the transmitter will transmit to the receiver, there is what is called return loss, there will be a reflection

off the receiver back to the transmitter, and then off the transmitter back to the receiver. That's two paths to the same device that there is physically only one path, so there is a difference between an electrical path and a physical path.

Q. And so when you had testified earlier that you can have a reflection in a wired communication if you don't have multiple paths, were you thinking of a system like the one you just described?

A. Yes, sir.

Q. Okay, I understand.

Let's stay with wired communications now for a minute. And I believe you had testified that a reflection of wired communication is caused if there is an impedance mismatch, right?

A. Yes, sir.

Q. Can a system encounter a reflection even if there is not an impedance mismatch in a wired communication?

A. Can you repeat that question?

Q. Sure.

In a wired communication can a reflection recur -- strike that.

In a wired communication can a reflection occur if there is no impedance mismatch?

A. No.

Q. So a necessary condition for a reflection in a wired communication is an impedance mismatch?

A. I believe that to be the case.

Q. Okay.

What problems do reflections cause in communication systems?

A. It depends on the communication system.

Q. How about in a wired communication system, what problems do reflections cause in those systems?

A. I guess my hesitancy is they may cause a problem or they may be beneficial.

Q. Let's take each in part.

So in a wired system what problem could be caused by a reflection?

A. A problem that could be caused is intersymbol interference.

MS. REPORTER: Is what?

THE WITNESS: ISI, intersymbol interference.

BY MR. BALLANCO:

Q. Let's go back to the example you mentioned before where we have two devices connected by a single wire, okay? Can intersymbol interference occur in that system?

A. It can.

Q. If intersymbol interference occurs in that system with two devices and a single wire, could that come from a reflection?

A. It could.

Q. What potential benefit could come in a wired system from a reflection?

A. It could complete the link.

Q. What do you mean by complete the link?

A. There are long-range communication systems that reflect off the moon in order to get a transmit signal from a transmitter to receiver is an odd example, but apart from a reflector you can't get line of sight between two devices that are on

different parts of the world, so you use a reflector to complete the link.

Q. In that example that's a wireless example, is that fair?

A. That's right.

Q. In a wired system, is there a benefit that you could experience?

A. Specifically in a coax system two terminal units can reach reflection off a splitter to complete it.

Q. Beyond ISI in a wired communication system, what other problems could a reflection cause?

A. I think my answer is subsumed in ISI, but frequency distortions.

Q. And when you say that you believe your answer is subsumed within ISI, do I take that to mean that frequency distortion is somehow related to ISI?

A. Certainly both are related to the multipath profile.

Q. Okay.

If you could, explain to me exactly what a frequency distortion is when it is caused by a

reflection.

A. Depending on the delay of a reflection at a receiver between two signal components and the magnitude of the reflection relative to the main signal component, various frequencies in the signal content can be nulled or amplified.

Q. Going back to the benefit side of wired communications, I believe you had mentioned that a potential benefit could occur from a reflection in a coax wired system, is that right?

A. Yes, sir.

Q. Beyond coax, are there other wired communications systems that might benefit from a reflection?

A. I struggle to think of one.

Q. When did the potential problem of intersymbol interference caused by reflections become known to those working in this technology?

A. I don't think I can give you a date. I would certainly say it predates my educational experience.

Q. So when you were completing your

education in digital communications, the issue of intersymbol interference was a known problem?

A. Yes.

Q. Is it something you studied in your coursework?

A. Yes.

Q. Have you in your professional career worked to mitigate problems caused by reflections?

A. Yes.

Q. Would you explain to me when you did that?

A. Educational experience was with a technology called CDMA, code-division multiple access where we use rake receivers to aggregate reflections, eliminate ISI, and form an equalized receiver.

Q. And CDMA is a wireless technology, right?

A. I don't know that I would claim that.

Q. So CDMA could be used in wired communication?

A. Yes.

Q. CDMA is used in some wireless communication like 3G, is that fair?

A. Yes.

Q. What wired systems used CDMA that you are aware?

A. I can't think of one offhand. I just can't think of a reason to constrain it as a wireless technology.

Q. Have you worked at all on your -- strike that.

I believe you prefaced your answer about designing ways to account for reflections in your educational background.

What about in your professional background, is that work that you have done?

A. Wireless domain that pairs equalizers for cellular phone receivers and Wi-Fi work do the same.

Q. And Wi-Fi work came after Harris?

A. Correct.

Q. At Intersil, is that right?

A. Right.

Q. Apart from your work at Harris on equalizers and your work at Intersil with Wi-Fi, any other professional experience accounting for the

problems caused by reflections?

A. The MoCA experience at Conexant and ComplexIQ, Cisco.

Q. Fair to say that your work on mitigating the problems caused by reflections for MoCA was your first foray into addressing that problem in a wired system?

A. Fair to say.

Q. What solutions to the reflection problem did you help develop in your MoCA work?

A. In this work I was focused on the implementation of the MoCA standard on coax, but I was responsible for developing the frequency equalizer called an FEQ. I was responsible for developing the acquisition system, which included the AGC frequency course and fine frequency compensation, time of arrival systems.

Q. The frequency equalizer that you mentioned, how did that relate to the equalizers you had worked on earlier at Harris and Intersil?

A. Intersil it would have been similar. At Harris it would have been different. Harris work was

largely single carrier waveforms, so that would have been different.

Q. At Intersil the Wi-Fi work you were doing was multicarrier communications?

A. Yes. Both.

Q. Okay.

Just so the record is clear, at Intersil you worked on both single carrier communications and multicarrier are communication the?

A. Yes. 802.11 has both.

Q. The equalizer work that you did at Intersil to address reflections on multicarrier systems was similar to the frequency equalizer work you did in connection with MoCA, fair?

A. Fair.

Q. Are you familiar with the acronym SNR?

A. Yes.

I guess I saw say I am familiar an acronym SNR, there may be more than one.

Q. What do you understand the acronym SNR to stand for?

A. In the context of communications it

stands for signal-to-noise ratio.

Q. So we are all on the same page, what is signal-to-noise ratio?

A. It is a measure of the power of a transmitted signal at an observation point relative to the noise present at that same point.

Q. You mentioned observation point. What exactly is an observation point in this context? I want to make sure I understand that.

A. Typically a receiver. It could be a monitor.

Q. Okay.

A. Test equipment.

Q. And hypothetically the monitor or the test equipment would be somewhere along the channel, is that fair?

A. Fair.

Q. Have you done monitoring of a channel to observe its signal-to-noise ratio before?

A. Yes.

Q. When did you do that?

A. That would be part of any com system

work.

Q. And why would one use a monitor as opposed to just observing the SNR at the receiver?

A. Monitoring equipment is typically much more precise. Lower noise figures allows for better observations for development work.

Q. How is signal-to-noise ratio used to characterize a channel?

MR. HALVERSON: Objection, form.

THE WITNESS: Can you be more precise?

BY MR. BALLANCO:

Q. Let me -- I will try, let me ask this question.

Are you familiar with using probe messages for channel characterization?

A. Yes.

Q. How do these probe messages work on communication systems?

A. In general probe messages are typically a known waveform transmitted over a channel that a receiver uses to compare the received signal to the known signal and determine various characteristics.

Q. Can a probe message be used to determine a signal-to-noise ratio of a channel?
A. It could.
Q. And is that something that you have done before in your career, use a probe message to determine a signal-to-noise ratio?
A. Yes.
Q. When did you -- when have you done that?
A. MoCA.
Q. Any other times?
A. To specifically determine an SNR?
Q. Let's start with that, yes.
A. No.
Q. What about putting aside determining an SNR, when did you first use probe messages in your education or career?
A. MoCA.
Q. When did you first learn about probe messages?
A. MoCA.
Q. So before your work for MoCA -- which, again, that was about 2007, is that right?

A. Yes, sir.
Q. -- you had not heard of probe messages?
A. Not that term.
Q. Had you heard about the concept under a different term?
A. I guess my hesitation is in packet systems there is a preamble which is a known waveform that's used at the receiver to determine various characteristics for reception, so in that context I know it used fixed waveforms, but I don't term those probe messages.
Q. Okay.
And those packets with preambles were used in the 802.11 communications that you were working with at Intersil?
A. Yes.
Q. Before your time at Intersil, when did you first become aware of packets with preambles that had a known characteristic in them similar to what we were just discussing?
A. Master's work.
Q. Okay.

And when you say your Master's work, was that in your coursework or the work that you were doing with Adtran at that time?

A. The dissertation was on packetized networks or packet radio using what you might term CDMA direct sequence spectrum with preambles and payloads.

Q. Okay.

And in that dissertation the packets that were discussed in it included preambles that had fixed waveforms -- strike that.

The packets that were discussed in that dissertation had preambles with known waveforms included in the preamble, is that fair?

A. Fair.

Q. We spoke earlier a little bit about intersymbol interference or ISI. Is that an acronym you are familiar with?

A. Yes, sir.

Q. I would like to talk a little bit more about it.

What exactly is intersymbol interference

or ISI?

A. It's the appearance of signal content at a time other than the most immediate. Intersymbol means it occurs inside a symbol.

Q. In layman's term is it fair to say it's almost like crosstalk, you are hearing something that shouldn't be heard at a certain time that's distorting the message you are trying to hear?

A. You could consider an echo, just like a verbal echo.

Q. Okay.

And, I believe -- I don't want to misstate your testimony, so let me know if I am wrong on this -- I believe you had testified that a reflection might cause intersymbol interference, right?

A. (Nodding.)

Q. And I hate to repeat it if I asked this before, I don't remember, could something other than a reflection cause intersymbol interference?

A. I guess I want to say hypothetically a bad transfer transmitted two images of the same signal

with delays.

Q. Is that something you have ever encountered in practice?

A. No.

Q. Fair to say that in your career the only time you have observed intersymbol interference is when it is caused from a reflection?

A. Fair.

MR. BALLANCO: I think we are just shy of an hour, I think this would be a good time for a break, if that works for you all.

THE WITNESS: Yes, thank you.

MS. REPORTER: We are off at 10:25.

(Recess taken.)

MS. REPORTER: Back on the record at 10:38.

BY MR. BALLANCO:

Q. Welcome back, Mr. Garrett.

I wanted to ask you about multicarrier modulation. Is that a concept you are familiar with?

A. Yes, sir.

Q. And what is multicarrier modulation?

A. The use of more than one carrier in parallel to transmit information.

Q. When did you first encounter multicarrier modulation?

A. Education at Clemson.

Q. And in what context was multicarrier modulation taught in your coursework at Clemson?

A. I remember it being in a Proakis, P-R-O-A-K-I-S book, I believe is correct.

Q. Apologies for my ignorance, I don't know what Proakis is. Would you --

A. The author, the author of a textbook, yes.

Q. And is Proakis a --

A. It was a large general document, I mean, general textbook for communication theory concepts and had one chapter, I believe, that was on multicarrier. That would have been my first introduction to it. I think that's correct.

Q. I am sorry to cut you off, I didn't mean to.

A. That's okay.

Q. Fair to say then that in the late '90s multicarrier modulation was a well-known concept in the communications field?

A. Fair.

Q. Having said that, do you know when communication systems started using multicarrier modulation?

A. I do not.

Q. Ballpark?

A. My reference point would be Wi-Fi when it transitioned to multicarrier, maybe 2000-ish.

Q. So Wi-Fi -- we touched on this before, Wi-Fi 802.11 can be single carrier or multicarrier, is that right?

A. Yes, sir.

Q. Beyond Wi-Fi, what other types of communication systems use multicarrier modulation?

A. DSL.

Q. DSL is something that Adtran was working on when you worked there, although I understand you weren't specifically working on DSL, right?

A. Fair.

Q. Do you know, however, if the DSL systems that Adtran was working on at that time were using multicarrier modulation?

A. In reference to the HDSL I couldn't speak to what the technology is.

Q. Okay.

Beyond Wi-Fi 802.11 and DSL, what other communication systems use multicarrier modulation?

A. Cable modems.

Q. Any others?

A. Cellular networks.

Q. When you say cellular networks, is there a particular cell standard that first adopted multicarrier modulation that you are aware of?

A. I hate to say I can't name when it transitioned.

Q. By the time that 3G was implemented, would that have --

A. 3G is what came to mind.

Q. So at least as --

A. The synapses aren't connecting there.

Q. Understand.

And I keep talking over you, I will really try to stop that.

So it's fair to say that at least as of the time that the 3G cell standard was implemented, multicarrier modulation was performed in cell networks that used 3G?

A. I think that's fair.

Q. I knew this at one point, but do you recall when 3G first was implemented in the U.S.?

A. I do not.

Q. You spoke about cable modems using multicarrier modulation, is that right?

A. Yes, sir.

Q. Do you recall when cable modems would have began using multicarrier modulation?

A. I do not.

Q. My recollection on personal experience is I first got a cable modem in the late '90s. Does that align with your understanding of when cable modems became available?

A. Yes.

Q. Would a cable modem in the late '90s have

used multicarrier modulation?

A. I don't know.

Q. So we have discussed multicarrier modulation in the context of both wired and wireless networks, right?

A. Yes.

Q. So that concept of multicarrier modulation can be used in either a wired or a wireless communication system?

A. Yes, sir.

Q. Let's talk about the wired systems.

Is multicarrier modulation technology a concept that can be used in a coaxial system?

A. Yes, sir.

Q. Is multicarrier modulation a concept that can be implemented in a twisted pair system?

A. Yes, sir.

Q. Are you familiar with the acronym in the context of communication systems DMT?

A. Discrete multitone?

Q. That was my understanding of it as well, yes.

A. Okay.
Q. What is DMT or discrete multitone?
A. I believe it's the use of orthogonal frequencies for transmission of communication signals between devices.
Q. Orthogonal frequencies are used also in OFDM, is that correct?
A. Yes, sir.
Q. What is the difference between DMT and OFDM?
A. OFDM utilizes FFT and IFFT on continuous samples to separate frequencies at a receiver and at a transmitter in order to achieve multiple frequencies in a transmission. So I believe DMT doesn't require that, it could just be two frequencies that are spaced apart sufficiently so that they don't interfere.
Q. Is it accurate then to say that DMT does not require IFFT or FFT?
A. I think that's correct.
Q. Okay.
Could OFDM then be considered a subset of DMT, a flavor of DMT, am I understanding that

correctly?

A. Yes.

Q. Specifically OFDM is a flavor of DMT that does require FFT and IFFT?

A. Agreed.

Q. What is FFT?

A. Fast Fourier transform. It is a specific implementation of a Fourier transform on continuous samples.

Q. And how about IFFT?

A. The inverse of a fast Fourier transform.

Q. When did you first encounter DMT?

A. I would say it was the Wi-Fi work.

Q. And --

A. 802.11G.

Q. Okay.

And that would have been your time at Intersil, is that right?

A. Yes, sir.

Q. When you first became familiar with DMT during that work, was it a new concept or something that had been around but you were just learning about

it?

A. Something that had been around, but I was just learning about it.

Q. And do you know when it first came about as a concept for communication systems?

A. I don't know when it first came about.

Q. But suffice it to say 2000 it was something that had been around?

A. Yes.

Q. What types of communication systems utilized DMT?

A. This would be the same list we went through a moment ago?

Q. I believe before we were talking about multicarrier modulation. Is it the same list of communication technologies?

A. Yes.

Q. So fair to say that DSL, cable modems, and cellular networks and Wi-Fi all utilize DMT?

A. Yes.

Q. Also fair to say that coaxial wired systems could utilize DMT?

A. Yes.
Q. And is the same true with twisted pair?
A. Yes.
Q. You are familiar with bitloading, right?
A. In the context of?
Q. In the context of communication systems generally.
A. Yes.
Q. What is bitloading?
A. Sorry, searching for the right starting word.
Q. Take your time.
A. Using different constellations of QAM signals on different tones or subcarriers of a DMT/OFDM system.
Q. What is the purpose of bitloading?
MR. HALVERSON: Objection, form.
THE WITNESS: I guess there could be a few purposes. The most obvious is to optimize the information that could be transmitted on the channel.
BY MR. BALLANCO:
Q. Beyond that, the most obvious purpose,

what other purposes are there for bitloading on a communication system?

A. To limit signal content so that lower power levels could be used, which is a different measure of efficiency to avoid interference.

Q. Any other purposes?

A. To allow for simultaneous transmissions.

Q. Any others that come to mind?

A. To adapt to the capabilities of acquisition systems.

Q. Any others?

A. I will stop there.

Q. Just to make sure I have it all, the purpose of bitloading in a communication system is to optimize information that can be transmitted on a channel, to limit signal content so that lower power levels can be used, to allow for simultaneous transmissions, and to adapt to the capabilities of acquisition systems, right?

A. Yes, sir.

Q. And when did you first encounter bitloading as a concept of communication systems?

A. My first encounter would be MoCA.

Q. And I know we talked about this, but your MoCA work began in the 2007 timeframe, right?

A. Yes, sir.

Q. And at that point was bitloading a new concept or something that had been around for some time and you were just learning about it?

A. Something that had been around and I was learning of it.

Q. Do you know when bitloading actually became a concept that was implemented in communication systems?

A. I don't.

I mean, I think about my education, we talked about Shannon capacity and Shannon talked about water-filling, which is tantamount to bitloading, but when it was applied to a commercialized communication system it would be DSL, I would guess.

Q. DSL is a wired system, fair?

A. Fair.

Q. So bitloading can be used in wired systems, right?

A. Yes.
Q. Can it be used in wireless communication systems?
A. Yes.
Q. Is bitloading used in any wireless communication systems that you are aware of?
A. These would be -- I will say no.
I immediately think of line-of-sight systems, but I expect those to be customized, I just don't have experience.
Q. Does bit -- strike that.
I apologize if I am retreading something, but I don't think we spoke about this, so let me ask, does bitloading address signal attenuation?
A. Can you define signal attenuation?
Q. Well, how about I ask this.
Does bitloading address or compensate for reflections?
A. It may very well, yes. It may, yes.
Q. And in your experience working with bitloading in MoCA systems, did it address reflections in those MoCA systems?

A. A consequence of a reflection, yes.

Q. And when we are talking about a consequence of a reflection, are we talking about ISI again?

A. I guess my hesitation is that you need at least one signal to have a communication channel, two signals of different delay cause intersymbol interference. Am I answering your question?

Q. I think I understand, but I would maybe like to clarify.

So in MoCA systems that have multiple signals, does bitloading ameliorate the issue of intersymbol interference?

A. It addresses the consequence of frequency amplitude variability.

Q. I am not sure that I understand that concept.

Could you explain to me what frequency amplitude variability is?

A. The varying constructive and destructive interference in the frequency domain caused by having a signal with two different delays.

Q. And so using bitloading in a MoCA system having two signals can address the consequence of having frequency amplitude variability, fair?

A. Yes, sir.

Q. And what relationship does that have to intersymbol interference?

A. It is the multiple images that cause the frequency domain variability or one of the causes of frequency domain variability is the multiple images of a signal.

Q. Going back to where I was starting with this, does the destructive interference attenuate a signal in the frequency domain?

A. Yes.

Q. Mr. Garrett, I would like you to go back to your CV that we were looking at before if we can.

A. Yes, sir.

Q. And specifically toward the end of your CV before your education you have listed several U.S. patents, do you see that?

A. Yes, sir.

Q. Could you explain to me what the patents

you have listed in your CV are?

MR. HALVERSON: Objection, form.

THE WITNESS: All of them?

BY MR. BALLANCO:

Q. Generally what patents did you include in your CV?

A. These, excluding the one at ComplexIQ, these are all patents that I participated in and were approved either at Intersil, Conexant, or Cisco.

Q. Are these all of the patents that you have been named as an inventor onto the best of your knowledge?

A. To the best of my knowledge.

Q. Okay.

A. If you know another, let me know.

Q. Before each group of patents you have listed an organization. For example, before the patent numbered 6,724,834 it says Conexant, right?

A. Yes, sir.

Q. What does the organization heading ahead of each patent grouping represent?

A. It is intended to represent the work

lineage that originated that patent.

Q. And is it fair to say that the entities you have listed before each grouping of patent was the assignee of the patent that you were named as an inventor on?

A. Fair to say.

Q. Okay.

A. To my knowledge.

Q. I know it probably differed between organization, and if it did then maybe we can go organization by organization. But generally when you were applying for these patents, explain that process to me how it came about.

A. It typically began with the work of designing a product, trying to solve a problem for a standard specification. Then in that process the staff engineers would decide if something seemed worthy of a patent application, then we would start the application and engage corporate lawyers and go through the process of drafting a patent or provisional patent, depending on the case.

Q. Okay.

And in that patent drafting patent application, rather drafting process, what was your involvement typically like?

A. I was sometimes the lead from the engineering team and worked on the document. For the application I was sometimes just someone involved in the process, part of the invention team, but not part of the team actually applying the -- putting together the documents for the work maybe is a better way to say it.

Q. In those instances where you weren't involved in putting together the application, would you still review the application before it was submitted?

A. To my recollection.

Q. As part of this process generally you mentioned working with corporate lawyers on the applications. Did you ever work with outside counsel outside of the organization you worked with on the patent applications?

A. I would say in the case of ComplexIQ it was an outside lawyer.

Q. What lawyer did you use for the ComplexIQ patent, what law firm?

A. I believe Donna Somma. She would shoot me if I don't remember the name.

Q. We won't let her know.

A. Yes.

I believe that is -- She was contracted with ComplexIQ, I don't know. Whether she was the one that actually filed the application, I don't remember, that is my interface.

Q. Does she have a law firm you are aware of?

A. Not that I am aware of.

(Document identified as Exhibit DISH-1030 for identification.)

BY MR. BALLANCO:

Q. I am going to hand a document that didn't make it into the binder that I would like to talk about. I would like to mark this exhibit as DISH-1030. That's the exhibit number.

Mr. Garrett, I have handed you an exhibit we will mark as Exhibit DISH-1030, which bears a

publication number at the top right of 2012/0287979. Do you see that?

A. Yes, sir.

Q. Do you recognize this document?

A. I do recognize it. I don't immediately remember its content.

Q. Would you identify for the record what the document is?

A. The document states System and Methods for Determining Bitloading, United States Patent Application Publication, Garrett, et al.

Q. And how are you familiar with this publication?

A. This would be -- 2012 would be work done at Cisco, along with another member of the team, Tom Matheney.

Q. I don't want to put words in your mouth. Is this a patent application that you put together with Mr. Matheney and filed?

A. Yes.

Q. Did this patent application, which has now been published, ever issue as a patent?

MR. HALVERSON: Objection, form.

THE WITNESS: I don't think so.

BY MR. BALLANCO:

Q. This patent application publication is not something you included in your CV, is that fair?

A. I did not include previous applications that were not approved as patents.

Q. Okay.

A. Excluding the one that was pending at the time I drafted this document.

Q. And that was -- just so the record is clear, the one that was pending that you did include in your CV at the time you submitted it was the one for ComplexIQ we were just talking about that was handled by Donna Somma?

A. Yes, sir.

Q. What did this patent application purport to invent?

MR. HALVERSON: Objection, form.

THE WITNESS: Improvement on bitloading inside of a MoCA system -- well, remove that last statement. I am not sure it's constrained to MoCA.

BY MR. BALLANCO:

Q. So this patent application, if I understand it, was directed to an improvement on bitloading not necessarily limited to a MoCA system?

A. That seems fair.

Q. If I could direct you to the background section of this patent application, it's Paragraph 2.

A. Yes, sir.

Q. I am looking at the second sentence and I will just read it into the record, it says, "For instance, control algorithms can set the number of bits on a given channel based on a signal-to-noise ratio (SNR) determined for each channel." Do you see that?

A. Yes, sir.

Q. And is that consistent with our discussion of signal-to-noise ratio earlier today?

A. I believe that to be the case.

Q. If you could, turn to Figure 3 of this patent application. And I realize it might be some time since you looked at this, but looking at Figure 3 do you have an understanding of what that figure is

meant to represent in this application?

MR. HALVERSON: Objection, form.

THE WITNESS: I do.

BY MR. BALLANCO:

Q. And what is that?

A. It is a picture of a -- or a figure of a premises with multiple nodes connected via channels.

Q. In the figure is it fair to say that Element 102 represents the nodes of that system?

A. Yes.

Q. Is this figure illustrating a MoCA system?

A. I would say that this document says that it's -- MoCA is an example of that type of system.

Q. Okay.

And why did you testify earlier that you don't believe this is constrained to MoCA? And when I say this, I mean this patent application.

A. Because I hadn't reviewed it and reminded myself of what the document is.

When you read through the abstract there is no mention of MoCA, and so my first response would

be this was while I was working on MoCA that would be the example.

Being that's not mentioned in the abstract, I wouldn't have claimed that it was limited to that work experience.

Q. Turning back to Figure 3, we talked about Element 102 being nodes in the communication system depicted there.

Do you have an understanding of what Element 106 is in that figure?

A. Paragraph 20 says that it's a communication medium wired optical or wireless.

Q. In Figure 3 the communication system shown could be a wired system or wireless system, right?

A. It's the way it reads.

Q. And the same bitloading improvement could be implemented in either a wired system or a wireless system, right?

A. Correct, inside the premise.

Q. I wasn't sure if you were done with your answer.

A. My apologies.

Q. It's fine, I just didn't want to cut you off.

A. No.

I merely stated Figure 3 indicates within a facility such as a home or business.

Q. You can put that to the side for now.

I am going to hand another exhibit out, and I am going to ask that this one be DISH-1031.

(Document identified as Exhibit DISH-1031 for identification.)

BY MR. BALLANCO:

Q. I will just let the record reflect that I have handed out an exhibit labeling DISH-1031, it is a patent document bearing the patent number at the top right 9,042,823.

Mr. Garrett, please take a moment to review the document and let me know when you have had a chance to look at it.

A. Do you wish that I read this?

Q. Let me ask you this. Do you recognize this document?

A. I do not.
Q. If you turn back to your CV under the patents you have listed in the Cisco subheading one of the patents listed is No. 9,042,823, is that right?
A. Yes.
Q. And fair to say that's the same patent number as is listed on the document we have handed out DISH-1031?
A. Yes.
Q. Looking at Element 75 of this patent in the top left-hand corner of the document it lists inventors and you are not listed there, is that fair?
A. That's fair.
Q. And another thing I will note is the title that you included in your CV for the '823 patent is different from the title that's included in DISH-1031, right?
A. Yes.
Q. So fair to say that the Patent 9,042,823 was erroneously included in your CV?
A. I am at a loss at the moment. I don't know if I transcribed the wrong number.

Q. You would agree you were not connected with the patent that's actually before you in this exhibit, right?

A. All I can say is my name is not on this patent.

Q. You see also this patent in DISH-1031 was assigned to Nokia, right?

A. I see that.

Q. Have you worked with Nokia in the past?

A. I have not.

Q. You can put that document to the side, sir.

(Document identified as Exhibit DISH-1032 for identification.)

BY MR. BALLANCO:

Q. I am going to hand another document out and have it labeled as DISH-1032.

I will let the record reflect that DISH-1032 is a patent document bearing the patent number at the top right corner of 8,351,368.

Mr. Garrett, do you recognize DISH-1032?

A. This looks familiar.

Q. What is DISH-1032?
A. A patent for method of extended rate range communication over a communication network with inventors Malik, Aggarwal, Garrett, Cohen, and Mittelsteadt.
Q. Is this a patent you are a named inventor on?
A. It is.
Q. And do you recall working on this patent application and submitting it for patent?
A. At the time of working with Cisco, I thought.
Q. If you turn back to your CV the patent number we had looked at a moment ago there of 9,042,823, the title you included for that patent actually matches the title of --
A. Yes, sir.
Q. -- DISH-1032, right?
A. Yes.
Q. Fair to say that this is the patent number that should have been included in your CV rather than the one that is listed there?

A. Yes, sir.

Q. You had mentioned earlier that for your patent application some you were more heavily involved in the drafting of the application and some you were more in a review role. Do you recall for this patent which of those roles you took?

A. Rahul Malik was the lead in putting this application together.

Q. Did you review it before it was filed?

A. To my knowledge.

Q. Do you see at Element 56 on the cover page of this patent there is a section that says References Cited?

A. Yes.

Q. Do you have an understanding as an inventor on this patent what that field includes?

A. I expected to find a location in background or summary of referenced patents.

Q. Let me ask you this question.

As an inventor on many patents have you in the past provided to the prosecuting patent attorney references that you were aware of related to

the invention that you are filing for?

A. I have at times.

Q. And is your understanding those references would be included in the references cited portion of the patent?

A. However, they may not be the full list.

Q. On this patent Field 73 lists an assignee of Entropic Communications, Inc., do you see that?

A. I do.

Q. And so the work that you did on this patent was then assigned to Entropic, is that fair?

A. Clarify then assigned.

Q. I am sorry, I didn't hear that.

A. Clarify your phrase then assigned.

Q. The invention of this patent when the patent issued that patent was assigned to Entropic, fair?

A. It transferred from the original?

Q. Correct.

A. Yes.

Q. And did you when you were working on this patent understand that the patent rights would be

transferred to Entropic?

A. No.

Q. Did you come to know after the patent issued that the rights had been transferred to Entropic?

A. Today.

Q. You are just learning this today?

A. Yes, sir.

It's not unusual.

Q. Again, you did not include this Patent No. 8,351,368 that was assigned to Entropic in your CV, right?

A. Fair.

Q. In your career have you interacted or worked with Entropic?

A. Yes.

Q. Could you explain the nature of that work?

A. Entropic was the originator of MoCA. They formed the MoCA Alliance, released their documents as the standard, and as a result any work on MoCA was work with Entropic to make interoperable

products.

Q. So if I am understanding correctly, your interactions with Entropic were largely related to your work with the MoCA standard setting organization?

A. I would put it in two buckets. One is the standard itself, the other is product interoperability.

Q. Let's talk about product interoperability.

What context did you interact with Entropic for product interoperability?

A. Various. Most immediate would be scheduled interop events to demonstrate to service providers that devices originated from Entropic and devices originated from Cisco or ComplexIQ could communicate.

Q. This was -- I just want to put a timeframe around it, this would have been during your time at Cisco, at ComplexIQ, or both?

A. Both.

Q. Okay, understood.

While you were at ComplexIQ was Entropic

a client of yours?

A. No.

Q. You never received payment from Entropic for any of the work you were performing on product interoperability?

A. No.

Q. And did you ever receive any payment from Entropic for any of the standards work that you were doing?

A. No.

Q. What about MaxLinear, is that an organization or company you are familiar with?

A. Yes.

Q. Who is MaxLinear?

A. MaxLinear purchased Entropic and became a developer of MoCA. They didn't do much more than that, but that is how I interfaced them.

Q. Did you know of MaxLinear before the purchase of Entropic?

A. Word of mouth perhaps. I never worked with them prior to that.

Q. After they acquired Entropic you did work

with MaxLinear?

A. Define with.

Q. Was -- let me ask this question.

Was MaxLinear a client of yours?

A. No.

Q. Did you work with MaxLinear on product interoperability?

A. Yes.

Q. And was that when you were at Cisco, at ComplexIQ, or both?

A. I think that would be -- I think that's constrained to when I was at ComplexIQ.

Q. Okay.

At ComplexIQ did you ever receive money from MaxLinear for any services you provided?

A. No.

MR. BALLANCO: We have been going about another hour, I think this would be a good time for a break. Agreed?

THE WITNESS: Okay.

MS. REPORTER: We are off at 11:34.

(Lunch recess taken.)

AFTERNOON SESSION

MS. REPORTER: We are back on the record at 12:14.

BY MR. BALLANCO:

Q. Welcome back, Mr. Garrett.

I wanted to ask some questions about your work at Intersil.

You had said that work related to 802.11, is that right?

A. Yes, sir.

Q. Did you use the 802.11 CSMA/CSA protocol in your work there?

A. Yes.

Q. What is that protocol?

A. Carrier sense multiple access, it's a requirement that a device and network first listen before it talks. We use a receiver to determine if anybody else is transmitting, and if not then it is allowed to transmit.

Q. What role did you have in the development of that standard?

A. In the development of 802.11?

Q. Specifically the CSMA/CA protocol.
A. I don't know that I had any role in the development of the standard.
Q. You were applying that standard to products?
A. Yes.
Q. Does 802.11 define any control messages as part of the standard?
A. Define control messages.
Q. Let's talk about the packets we were discussing earlier, and you had mentioned the preamble could include control type information. Do I have that right?
A. I don't recall saying that here, but I think that's true.
Q. Okay.
Then fair to say that the preamble of the 802.11 packet may include control information?
A. Fair.
Q. In that context is it fair to call at least the preamble of the packet a control message as part of the communication network?

MR. HALVERSON: Objection, form.
THE WITNESS: It is typically called a Fi header.
BY MR. BALLANCO:
Q. How about this. In 802.11 communications there are packets that include payload information, right, actual data that's being transmitted, is that correct?
A. Yes.
Q. Are there also packets that don't include payload information but only include control information?
A. I am hesitating to answer because I don't know what control information might be. In regards to the physical layer?
Q. Yes.
Let's at least start there with regard to the physical layer are there packets like the ones I just described.
A. Not to my knowledge.
Q. Okay.
Putting aside control information, are

there packets in 802.11 networks that don't include any payload information?

A. Define payload.

Q. Data that's being transferred as part of communication.

A. I don't think so.

Q. What about acknowledgment or ACK packets, are those transferred in 802.11 communications?

A. Yes.

Q. And did those include payload information as I have described it?

A. I guess I considered an ACK a payload information; it's not physical layer information, it's MAC layer.

Q. But an ACK packet is simply an acknowledgment of receipt of communication, is that right?

A. Agreed.

Q. It's used -- well, do ACK packets help to control communication between two network points in 802.11?

MR. HALVERSON: Objection, form.

THE WITNESS: ACK packets inform the transmitter of success of a transmission. That's the information that's provided.

BY MR. BALLANCO:

Q. And in so doing ACK packets ensure that a communication was successful?

A. They acknowledge that one was successful.

Q. Okay.

We spoke about this before, I want to drill into a little more.

After you worked at Intersil you had a brief communication from the communication realm, the company you worked at in Alabama, whose name I am forgetting right now, but then you began your work in 2007 at it was Cisco first, is that right?

A. Conexant.

Q. Conexant, sorry.

A. In fact, that reminds me, I may have misspoke earlier when we spoke of this Patent 8,351,368, the one where Malik was the lead, that would have been during that time at Conexant.

Q. Okay, got it.

A. I left Conexant and they subsequently filed this patent. At the time they may have been NXP.

Q. Conexant would have been NXP?

A. The group that filed this, the MoCA group went up for sale, it was sold outside of Conexant, and the lineage how it gets to Entropic, I don't know the answer.

Q. At Conexant you were working with MoCA, right, for the first time?

A. Yes, sir.

Q. So you went from work in 802.11 wireless systems to work on MoCA wired systems, right?

A. Yes, sir.

Q. At that time when you joined Conexant, what mediums were being used for in-home networks?

A. I believe at this time there was MoCA on coax, twisted pair for HPNA, and power line for unplug.

Q. And what is -- strike that.

You said HPNA, is that right? Does that stand for home PNA?

A. Yes.
Q. What exactly is that?
A. An attempt to use the phone line for communication inside a house.
Q. And did you ever work at all with home PNA?
A. I did not.
Q. Are you familiar with the concepts that are used in home PNA or not really?
A. At the moment I wouldn't claim to have recollection.
Q. Having said that, do you happen to know if home PNA networks include splitters?
A. Not to my knowledge.
I guess back up, define a splitter.
Q. You could probably define it better than I will, but I will try.
A device used to split a communication medium into multiple mediums inside of a communication network.
MR. HALVERSON: Objection, form.
THE WITNESS: Your definition I take to

be an interconnect between three points.

BY MR. BALLANCO:

Q. I don't know that it needs to be three points.

A. Three being an example.

Q. Sure.

A. Yes.

Q. And so with that understanding of a splitter, that's an interconnect, do you understand splitters being used in home PNA networks?

A. With that definition of a splitter I think you are describing what's considered taps and twisted pair, yes.

Q. How would you define splitter differently than how I have described it if someone were to just use that term in the context of communication networks?

A. Splitter I typically take to be in a different medium, like coax, where there is actually a power divider or a control that defines power division between multiple outputs.

Q. And in your definition does a splitter

require a power divider?

A. Where the power division is determined by the implementation, yes.

Q. And is the power divider in a splitter active or passive?

A. Passive typically.

Q. When you started work on MoCA at Conexant did you receive any additional education to learn about in-home networks?

A. Through the community, I guess, no classes.

Q. Did you apply any of your knowledge from working on wireless networks and transfer that to your work on in-home networks?

A. Yes.

Q. What were some of the things that you carried over from the wireless work to your in-home network work?

A. My experience was largely in acquisition for packet networks in wireless, so applied that to develop the AGC in MoCA. I also had experience with radio compensation algorithms, I applied that with

MoCA.

Q. Any other concepts that you carried over?

A. As we are just talking concepts, it's the equalizer, tracking for frequency and time, implementation of decoders, I was responsible for the receiver design in both domains, so there is a lot of overlap.

Q. You had mentioned radio compensation, I am not sure I know exactly what that is. Would you explain that to me, please?

A. When using RF signaling the analog components can cause impairments of the signal. For instance, a zero-IF radio has two legs that run in parallel, the signal is transferred to the baseband domain and you have an INQ signal. If the analog components aren't exactly matched it results in problems inside the receiver and there are ways to compensate for an imbalance between the two. That would be one example.

Q. Did you apply -- when you went from working on wireless system to in-home networks did you use your knowledge of noise from wireless systems and

apply that to the in-home networks?

A. Knowledge of noise, yes.

Noise is a broad topic. Do you have a specific?

Q. No, just conceptually.

A. Additive white Gaussian noise is often an assumption of receiver implementation.

Q. What about your knowledge of modulation, is that something that carried over from wireless work to your in-home network work?

A. Yes, sir.

Q. And specifically multicarrier modulation?

A. Yes, sir.

Q. What about when you -- strike that.

If you would, Mr. Garrett, would you please turn to your declaration, and specifically Paragraph 101.

A. 101?

Q. 101. Yes, I am sorry, I don't know the page that is on.

A. That's okay.

Q. Give me a moment. I will find it.

I will summarize quickly, because it is a long paragraph.

My understanding is that Paragraph 101 includes an example, is that right?

A. Yes, sir.

Q. And would you explain what the purpose of the example included in Paragraph 101 is?

A. The purpose of the example is to demonstrate an implication of using multicarrier modulation on an analog system.

Q. And there are certain values, numerical values, that you used in this example? You see some of them here like 15 dB gain, do you see that?

A. Yes, sir.

Q. How did you select the numerical values that you include in this example?

A. 0 dBm seemed like a good arbitrary point based on previous experience. It doesn't represent any particular system, I just recall that number.

Q. Just so the record is clear, 0 dBm is what you used in this example as the maximum power out?

A. Yes.

Q. What about the power amplifier value of 15 dB gain, how did you determine that that would be the appropriate numerical value to use for this value?

A. It seemed a reasonable number based on experience. Numbers between 10 and 20 came to mind and I just chose 15 dB.

Q. Okay.

Part of this example, I will just read it into the record, it says you need 15 dB gain -- I am sorry, strike that. Part of this paragraph reads that you would need a 1 dB compression point of -16dBm input. Why is that a requirement?

A. The goal is to ensure at the output there is no compression of the signal which causes nonlinear effects, and so the input has to be low enough that as a result of the 15 dB gain you don't cause compression at the output.

Q. Okay.

And then there are in Paragraph 101 calculations that go to the peak-to-average power ratio for both single carrier and multicarrier

systems. How did you calculate those?

A. The peak-to-average power ratio would have been determined by the number of subcarriers in the system. I didn't put a formula down, I just used my knowledge of OFDM systems to say 512 results in about a 16 dB back-off.

Q. And you mentioned OFDM. I wanted to ask, is this example specific to OFDM or could it also be applied to DMT more generally?

A. I will just say that I wrote this with OFDM in mind.

Q. Going back to the power-to-average ratio, how did you calculate the power -- peak-to-average power ratio of 3 dBm for the single carrier QAM system?

A. I grabbed it from memory.

Q. You also discussed in Paragraph 101 a MoCA with a 512 point FFT. Why was that chosen for the multicarrier system in this example?

A. That was my most recent recollection.

Q. Did you attempt to run any numbers with a lower FFT in putting together this example?

A. I did not.
Q. How did you arrive at the -28dBm input operational point?
A. Starting with the 16 dBm input point, subtract a 12 dBm back-off.
Q. That, again, just came from your memory and experience on the systems?
A. Yes.
Q. Are the amplifier characteristics and power levels I take it based on real world examples considering that you applied those using memory?
A. I believe they are.
Q. Could the same example have been developed using different numbers?
A. A similar.
I don't think the concept is limited to my experience. We could have pulled a formula out of the air and put it down and gone from there.
Q. In this example in 101, is it meant to represent typical operating conditions, worst-case scenarios, or something else?
A. Typical.

Q. If you would, sir, turn to Paragraph 114 of your declaration.

A. Yes, sir.

Q. It's Page 59.

I will give you a moment to look at it, but in this paragraph you discuss your understanding of the Isaksson reference discussion of the DAVIC specification, is that right?

A. Yes, sir.

Q. And it is DAVIC, not DAVIC, is that correct?

A. I believe you are correct.

Q. We will go with that.

In putting together this page of your declaration, Paragraph 114, what review of the DAVIC specification did you perform?

A. I don't recall a review of the DAVIC standard.

Q. Did you obtain a copy of the DAVIC specification in putting this together?

A. No.

Q. Why did you not cite the DAVIC

specification as part of your analysis here?

A. In this paragraph or in that -- is that your question?

Q. Sure, in this paragraph, yes.

A. Oversight.

Q. Are there specific portions of the DAVIC specification that you believe support your conclusion?

A. At the moment I couldn't state.

Q. If you go to that Paragraph 114 about five lines up from the bottom there is a sentence -- sorry, six lines up from the bottom there is a sentence that begins, "Further, even in the case of terrestrial distribution of coax," do you see where I am at?

A. Yes.

Q. And that sentence that I started continues, "The DAVIC standard itself asserts that additional innovation is required on the shared medium of coaxial." Did I read that correctly?

A. Yes, sir.

Q. How did you know that the DAVIC standard

itself asserted as much?

A. I don't recall.

Q. In that same paragraph -- strike that.

In that same sentence I was just reading from there is a term terrestrial distribution of coax. What is terrestrial distribution?

A. My meaning of that phrase is another way to term it would be outside the house. It is over land from central office to terminal unit, head end in the case of a cable system.

Q. And does DAVIC specification distinguish between the in-home distribution and this terrestrial distribution?

A. I don't think that DAVIC refers to in-home distribution.

Q. In other words, is it correct to say the DAVIC specification is agnostic as to the distribution type?

A. Repeat the question?

Q. Is it fair to say that the DAVIC specification is agnostic to the type of distribution that's being used?

A. I haven't -- I don't know that I have made an opinion about what DAVIC speaks to.

Q. Later in the same sentence that we have been looking at in Paragraph 114 of your declaration there is the clause making VDSL inadmissible in its existing form on coaxial cable, do you see that?

A. I do.

Q. And what does VDSL in its existing form mean?

A. A point-to-point system.

Q. Are you familiar with DOCSIS?

A. Yes, sir.

Q. What is DOCSIS?

A. A cable service provider's technology for bringing internet data to the home.

Q. If you would, sir, turn to Paragraph 107 of your declaration, it would be on Page 55.

A. Yes, sir.

Q. The first paragraph I will read into the record of Paragraph 107 is, "Amit provides a home network in a half-duplex unsynchronized manner using CSMA protocol."

How did you reach the conclusion that Amit provides a network in a half-duplex unsynchronized manner?

A. In the next example it says the data link protocol should be the 802.11 MAC layer CSMA/CA.

Q. And what about that statement that you just read from Amit demonstrates that it's half-duplex and unsynchronized?

A. By half-duplex I understand to mean only one device can communicate at a time, and that's the definition of CSMA, and unsynchronized refers to the fact that there is no scheduler.

My experience with MoCA would say there is a scheduler on the network that determines when certain transmissions occur.

Q. Is it correct to say then that your understanding of CSMA/CA is that it can't use a scheduler?

A. That's correct.

Q. Sir, I would like to have you turn to the '518 patent itself, it should be at the very front of this binder, if I am remembering correctly, yes, it is

the first tab actually.

A. Yes, sir.

(Document identified as Exhibit DISH-1001 for identification.)

BY MR. BALLANCO:

Q. This is the '518 patent you have reviewed and this proceeding is all about, right?

A. Yes, sir.

Q. On the left-hand column of the cover page at the top, Element 75 there is a list of inventors, do you see that?

A. Yes, sir.

Q. I will read it into the record, Monk, Bernath, Gurantz, El Wardani, and Ron Porat. Did I read that correctly?

A. Yes, sir.

Q. Even if I might have butchered the pronunciations, do you know any of those individuals?

A. I know Anton Monk. I don't believe I know any of the others.

Q. And when did you first meet Mr. Monk?

A. As part of the MoCA standards process, so

when I joined Conexant in 2007.

Q. I realize it might be Dr. Monk, I didn't mean to insult him there.

A. No worries.

Q. Have you kept in contact with Anton Monk since the time you first met him?

A. We are connected on LinkedIn, I think I have talked to him once since I have left the industry.

Q. When you spoke to him after leaving the industry, what was the context of the conversation?

A. Just familial, what are you doing, what do you do now, what does it look like, congratulations, good luck.

Q. And were you close collaborators on the MoCA standards board?

A. We were familiar with each other. He was -- I guess interactions change over time so when I first started inside MoCA he was at all the standards working group meetings and that is how we built a relationship. After that he was no longer involved there and then involved more in his corporate life and

saw each other on occasion and revisited, that was my recollection of the relationship.

Q. Were you aware of his patents like the '518 patent at the time you were working with him?

A. I was not.

Q. When did you first come to know of this '518 patent?

A. To my recollection when I was approached by a search agency to be an expert witness and was introduced to this team. We purposely did not search out patents to work.

Q. Understood.

If you would, can you turn to Column 4 of the '518 patent, specifically the section that is starting around Line 35 of summary of the invention.

A. Yes, sir.

Q. There is a sentence in the first paragraph under summary of the invention beginning around Line 42, I will just read into the record so we are all on the same page. It says, "Bitloading, along with power loading, adaptive power control, and frequency coordination can be used individually or in

combination to implement a network that overcomes the problem of multipath and high attenuation in building cable wiring that would restrict the ability of terminal devices to communicate with each other." Do you see that?

A. Yes, sir.

Q. So do you understand that sentence as saying that multiple techniques can be used to address signal impairments?

A. The multiple techniques being bitloading, power loading, adaptive power control, and frequency coordination?

Q. Correct.

A. Yes, sir.

Q. And is that consistent with your experience in the field that you can use multiple techniques to address signal impairments?

A. Yes, sir.

Q. Would you turn to Claim 1 of the '518 patent?

A. Yes, sir.

Q. I know it is quite a few lines here, take

a second to review if you need, but does any portion of claim 1 of the '518 patent recite in-home?

MR. HALVERSON: Objection, form.

THE WITNESS: Does it say the word in-home?

BY MR. BALLANCO:

Q. Let me first ask you that, do you see anywhere where it says in-home?

A. No, sir.

Q. And then I'd ask you to also have a look at the dependent claim 3, anywhere in the dependent claim 3 that the phrase in-home is cited?

A. No, sir.

Q. To flip back to claim 1, is there anywhere in claim 1 that you see the phrase local area network recited?

A. No, sir.

Q. And I would also ask you to look at dependent claim 3 and let me know if local area network is recited anywhere in that claim.

A. No, sir.

Q. Just one last phrase that we will do this

exercise on, the phrase is on-premises, is that phrase recited at all in claim one of the '518 patent?

A. No, sir.

Q. And I'd ask the same for claim 3, is on-premises recited at all in claim three?

A. No, sir.

(Document identified as Exhibit DISH-1007 for identification.)

BY MR. BALLANCO:

Q. *I would like to ask about the Kliger reference which unfortunately is not labeled with a name. DISH-1007, if you wouldn't mind turning to that.

A. Yes, sir.

Q. Do you recognize the Kliger prior art reference that we have been discussing?

A. Yes.

Q. Would you turn to Figure 6 in Kliger.

A. Yes, sir.

Q. Looking at Figure 6 of Kliger, do understand what that figure is meant to represent?

A. I believe so.

Q. What is that?

A. That looks like Kliger's definition of a packet.

Q. In looking at Element 202 in Figure 6?

A. Yes, sir.

Q. That is pointing at the preamble, is that right?

A. Yes, sir.

Q. Is that preamble 202 a control frame in Kliger?

A. No, sir.

Q. Why not?

A. Because it is explicitly called a preamble, which means it is fixed content.

Q. Does it include control information?

A. No, sir.

Q. What do you understand to be the fixed content that's included in preamble 202 of Kliger?

A. Periodic preamble and aperiodic preamble 210 and 212.

Q. Earlier we had discussed fixed frequency information being included in packet preambles. Is

this packet illustration in Figure 6 of Kliger consistent with what we spoke about earlier with preambles?

A. Can you say that again, I am sorry?

Q. I should, it was a terrible question.

Preamble 202 in Kliger, Figure 6, would that include the fixed frequency information we spoke about being included in packets earlier today?

A. Forgive me, but I think I reject that statement and say this is a time domain sequence. It is fixed in the time domain.

Q. If I am understanding correctly, is the distinction we spoke about earlier is the preamble had fixed frequency information, whereas in what we are looking at now, Figure 6, 202, it is fixed time information?

A. Yes, sir.

MR. BALLANCO: I think I am about done, but if I could maybe have a five-minute break to make sure I didn't miss anything.

THE WITNESS: Okay.

BY MR. BALLANCO:

Q. I might have a few other questions, but just about there.

MS. REPORTER: We are off at 1:00 o'clock.

(Recess taken.)

MS. REPORTER: We are back on the record at 1:08.

BY MR. BALLANCO:

Q. Mr. Garrett, just a couple quick questions to close here.

What process did you use to put together the declaration that you submitted in this proceeding?

A. I reviewed the '518 patent. I believe I reviewed the four references. I wrote an initial draft of the declaration and then we worked together to create what you have.

Q. You are tracking the time you are billing on this matter?

A. Yes, sir.

Q. Do you know how many hours you have billed so far?

A. 50 to 75.

Q. How many of the 50 to 75 were spent working on the declaration?

A. More than half.

Q. You are being compensated for your time in this matter?

A. I am.

Q. What is your hourly rate?

A. I was approached via a search firm to join this. The agreement I have with the search firm prevents me from stating an hourly rate.

Q. Okay, that's fine.

MR. BALLANCO: No further questions, pass the witness.

MR. HALVERSON: Just a couple quick ones.

EXAMINATION

BY MR. HALVERSON:

Q. Do you remember talking about the DAVIC standard this morning?

A. Yes.

Q. Do you recall Dr. Williams citing what or referring to the DAVIC standard in his declaration?

A. The only reference to DAVIC that I remember from Williams is referring to the sentence in Isaksson.

Q. Can you go back to Paragraph 114 of your declaration, please?

A. Okay.

Q. You were asked a few questions about the second to last sentence there, the sentence that begins, "further, even in the case," do you see that?

A. Yes.

Q. Do you remember those questions from earlier this morning?

A. I do.

Q. Do you know the origin of this sentence?

A. I created this sentence.

Q. Do you know the basis that you had for that sentence?

A. If I remember correctly, I did an internet search for DAVIC as a result of the reference to DAVIC. I don't recall the exact location of this information, but that's how I landed on this statement.

Q. Do you remember some questions earlier today about DOCSIS?
A. Yes, sir.
Q. Do you know which version of DOCSIS first was OFDM compatible?
A. I believe it's DOCSIS 3.
Q. We spent a little bit of time today talking about your MoCA experience. Do you recall that?
A. Yes, sir.
Q. What was your role with the MoCA, I say the MoCA because of the A in -- sorry, let me start over. What does MoCA stand for?
A. Multimedia over Coax Alliance.
Q. So what was your role with MoCA?
A. MoCA had several working groups, standards working group. I was a contributor to the standards working group and the chair of the standards working group, a certification working group, which was responsible for interoperability and testing, and I was chair of the certification working group at one time. And then I also participated in board meetings.

MR. HALVERSON: I have no further questions.

Anything else from Mike?

MR. BALLANCO: Nothing here.

MS. REPORTER: We are off the record at 1:13.

I assume signature is reserved?

MR. HALVERSON: Sure.

MS. REPORTER: I have no rough draft for you.

MR. HALVERSON: I would like a rough.

MS. REPORTER: Regular delivery.

MR. HALVERSON: Regular delivery.

MS. REPORTER: Mr. Palace, are you still there, are you ordering the transcript?

MR. PALACE: Let me double check with the colleagues, I thought we had instructions already set up.

MS. REPORTER: I will have my office contact you.

(WHICH WERE ALL OF THE PROCEEDINGS HAD OR TAKEN PLACE IN THE ABOVE-ENTITLED MATTER.)

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

DISH NETWORK, LLC, DISH NETWORK SERVICE, LLC, DISH NETWORK CORP., and DISH NETWORK CALIFORNIA SERVICE CORP., Petitioner, vs. ENTROPIC COMMUNICATIONS, LLC, Patent Owner.	Case: IPR2024-00393 U.S. Patent No. 7,295,518

I, ALBERT GARRETT, being first duly sworn, on oath say that I am the deponent in the aforesaid deposition taken on January 15, 2025; that I have read the foregoing transcript of my deposition, consisting of pages No. 1 through No. 118, inclusive, and affix my signature to same.

_____
ALBERT GARRETT

Subscribed and sworn to
before me this day of
, 2025

Notary Public

STATE OF ILLINOIS)
) SS.
COUNTY OF DUPAGE)

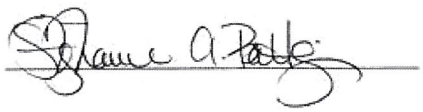
I, STEPHANIE A. BATTAGLIA, CSR and Notary Public in and for the County of DuPage and State of Illinois, do hereby certify that on January 15, 2025, at 9:29 a.m., at K&L Gates, 70 West Madison Street, Chicago, Illinois, the deponent ALBERT GARRETT personally appeared before me.

I further certify that the said ALBERT GARRETT was by me first duly sworn to testify and that the foregoing is a true record of the testimony given by the witness.

I further certify that the deposition was terminated at 4:13 p.m.

I further certify that I am not counsel for nor related to any of the parties herein, nor am I interested in the outcome hereof.

In witness whereof, I have hereunto set my hand and seal of office this 21st of January, 2025.



CSR No. 084-003337 - Expiration Date: May 31, 2025

LAWYER'S NOTES

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CERTIFICATE OF DEPONENT

I hereby certify that I have read the foregoing pages of my deposition testimony in this proceeding, and with the exception of changes and/or corrections, if any, find them to be a true and correct transcription thereof.

_____

Deponent

_____

Date

NOTARY PUBLIC

Subscribed and sworn to before me this _____ day of _____, 20___.

_____

Notary Republic

My Commission Expires:_____

INSTRUCTIONS TO WITNESS

Please read your deposition over carefully and make any necessary corrections. You should state the reason in the appropriate space on the errata sheet for any corrections that are made.

After doing so, please sign the errata sheet and date it.

You are signing same subject to the changes you have noted on the errata sheet, which will be attached to your deposition.

It is imperative that you return the original errata sheet to the deposing attorney within thirty (30) days of receipt of the deposition transcript by you. If you fail to do so, the deposition transcript may be deemed to be accurate and may be used in court.

ERRATA SHEET

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