

Videotaped Deposition of
Chris Kyriakakis
January 29, 2026

Suzhou Mojawa Intelligent Electronic Co., LTD.

VS.

Shenzhen Shokz Co., LTD.



www.aptusCR.com | 866.999.8310

Page 1 1 UNITED STATES PATENT AND TRADEMARK OFFICE 2 BEFORE THE PATENT TRIAL AND APPEAL BOARD 3 4 5 SUZHOU MOJAWA INTELLIGENT) ELECTRONIC CO, LTD.,) 6) Case No. Petitioner,) IPR2025-00842 7) Patent No. v.) 11,197,084 B2 8) SHENZHEN SHOKZ CO., LTD.,) Case No. 9) IPR2025-00843 Patent Owner.) Patent No. 10) 11,310,582 B2 _____) 11 12 VIDEOTAPED DEPOSITION OF CHRIS KYRIAKAKIS 13 LOS ANGELES, CALIFORNIA 14 THURSDAY, JANUARY 29, 2026 15 8:51 A.M. - 2:17 P.M. 16 17 18 19 20 21 22 STENOGRAPHICALLY REPORTED BY: 23 CHERYL ASADA 24 CA CSR NO. 13496 25 JOB NO. 10181942	Page 3 1 A P P E A R A N C E S (CONTINUED): 2 3 ALSO PRESENT: 4 TRAVIS SIMMONS, Videographer 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25												
Page 2 1 VIDEOTAPED DEPOSITION OF CHRIS KYRIAKAKIS, 2 TAKEN AT PERKINS COIE LLP, 633 WEST 5TH 3 STREET, SUITE 5850, LOS ANGELES, CALIFORNIA 4 90071, COMMENCING AT 8:51 A.M. AND CONCLUDING 5 AT 2:17 P.M., ON THURSDAY, JANUARY 29, 2026, 6 BEFORE CHERYL ASADA, CALIFORNIA CERTIFIED 7 SHORTHAND REPORTER NO. 13496. 8 9 * * * 10 11 A P P E A R A N C E S: 12 13 FOR THE PETITIONER: 14 DLA PIPER 15 By: MICHAEL L. BURNS, Esq. 16 1201 North Market Street, Suite 2100 17 WILMINGTON, DELAWARE 19801 18 (302) 468-5673 19 michael.burns@us.dlapiper.com 20 21 FOR THE PATENT OWNER: 22 PERKINS COIE LLP 23 By: EVAN S. DAY, Esq. 24 11452 El Camino Real, Suite 300 25 San Diego, California 92130 (858)720-5700 eday@perkinscoie.com	Page 4 1 I N D E X 2 3 W I T N E S S: 4 CHRIS KYRIAKAKIS PAGE 5 EXAMINATION BY MR. DAY 7 6 - AFTERNOON SESSION - 7 EXAMINATION (resumed) BY MR. DAY 127 8 9 INFORMATION REQUESTED: 10 (NONE) 11 12 QUESTIONS INSTRUCTED NOT TO ANSWER: 13 (NONE) 14 15 16 PREVIOUSLY MARKED EXHIBITS: 17 <table border="1"> <thead> <tr> <th>NUMBER</th> <th>PAGE</th> </tr> </thead> <tbody> <tr> <td>Exhibit 1003</td> <td>10</td> </tr> <tr> <td>Exhibit 1004</td> <td>53</td> </tr> <tr> <td>Exhibit 1005</td> <td>147</td> </tr> <tr> <td>Exhibit 1011</td> <td>79</td> </tr> <tr> <td>Exhibit 1012</td> <td>82</td> </tr> </tbody> </table> 21 22 23 24 25	NUMBER	PAGE	Exhibit 1003	10	Exhibit 1004	53	Exhibit 1005	147	Exhibit 1011	79	Exhibit 1012	82
NUMBER	PAGE												
Exhibit 1003	10												
Exhibit 1004	53												
Exhibit 1005	147												
Exhibit 1011	79												
Exhibit 1012	82												

1 E X H I B I T S Page 5 2 NUMBER DESCRIPTION PAGE 3 Exhibit World Intellectual Property 90 4 Annotated 1022 Organization WO 2008/007666 - 5 Exhibit 2020 Annotated by the witness 6 Curriculum Vitae for Professor 18 7 Chris Kyriakakis 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	Page 7 1 Will counsel please identify yourselves 2 and state whom you represent starting with the 3 noticing attorney. 4 MR. DAY: Evan Day from Perkins Coie, San 5 Diego office, on behalf of Patent Owner, Shokz. 6 MR. BURNS: Michael Burns from DLA Piper 7 on behalf of Petitioner, Mojawa. 8 THE VIDEOGRAPHER: Thank you. 9 Will the court reporter introduce 10 themselves and swear in the witness. 11 THE COURT REPORTER: In accordance with 12 AB 3252, we are on the record. My name is Cheryl 13 Asada, CSR No. 13496. I will now swear in the 14 witness. 15 16 CHRIS KYRIAKAKIS, 17 HAVING BEEN DULY ADMINISTERED AN OATH, 18 WAS THEREUPON EXAMINED AND TESTIFIED AS FOLLOWS: 19 THE WITNESS: I do. 20 THE COURT REPORTER: Thank you. 21 22 EXAMINATION 23 BY MR. DAY: 24 Q Good morning, Dr. Kyriakakis. 25 A Good morning.
Page 6 1 LOS ANGELES, CALIFORNIA 2 THURSDAY, JANUARY 29, 2026 3 8:51 A.M. - 2:17 P.M. 4 * * * 5 THE VIDEOGRAPHER: Good morning. We are 6 now on the record. Today's date is January 29th, 7 2026. The time is 8:51 a.m. 8 This is the video deposition of Chris 9 Kyriakakis, being taken in the matter of Suzhou 10 Mojawa Intelligent Electronic Co. Ltd. versus 11 Shenzhen Shokz Co., Ltd., on behalf of the 12 Petitioner, pending in the United States Patent 13 and Trademark Office, Case Number IPR 2025-00843 14 and IPR 2025-00842. 15 This deposition is taking place at 633 16 West Fifth Street in Los Angeles, California. 17 My name is Travis Simmons, appearing for 18 Aptus Court Reporting, located at 401 West A 19 Street, Suite 1680, San Diego, California 92101. 20 I am the official videographer, and this 21 is the only authorized video recording of the 22 deposition. 23 The audio and video recording will take 24 place at all times unless all counsel have agreed 25 to go off the record.	Page 8 1 Q Now, you have been deposed before. Is that 2 right? 3 A Yes. 4 Q Including our previous meeting remotely in 5 the district court case relating to these IPRs? 6 A Correct. 7 Q All right. I'm going to go over some basic 8 procedures for this deposition, and I understand that 9 because you have been deposed before, some of this 10 might be a little bit repetitive, but -- but I'll 11 emphasize it anyway. 12 So in this deposition, I'll ask you -- I'll 13 ask questions. I would like to ask you to verbalize 14 your answers because we are being captured by the 15 court reporter, that the -- things like the head nod 16 and the nonverbal gestures aren't necessarily 17 recorded. 18 Can you do that? 19 A Yes. 20 Q Please make sure to let me finish my question 21 before -- before you answer. I'll do my best to let 22 you finish your -- your answer before I proceed to my 23 next question. And, again, that's to let the -- the 24 court reporter get an accurate record and avoiding 25 talking over each other.

Page 9

1 Can you do that?

2 A Yes.

3 Q If there's anything in my questions that's --

4 that's not clear or that -- or that you -- you feel

5 like you need to understand better, please let me know

6 what it is you don't understand, then I'll try and

7 clarify the question.

8 Can you do that?

9 A Yes.

10 Q Your counsel may have objections to some of

11 my questions. If there are -- if there are

12 objections, you should still answer the question

13 unless your counsel specifically instructs you not to.

14 Do you understand that?

15 A Yes.

16 Q We'll try to take breaks periodically.

17 Typically, I try to take a break about every hour, but

18 that may be more or less depending on, you know,

19 things like natural breaks and -- in the questioning,

20 and if -- if you need to take a break at any time,

21 just let me know.

22 Do you understand that?

23 A Yes.

24 Q And one specific exception to that. I will

25 ask that we not take breaks unless [sic] there's a

Page 10

1 question pending. And there's an exception to the

2 exception, which is -- which are very rare quest- --

3 very rare circumstances that will probably be handled

4 by counsel.

5 Do you understand that?

6 A I do.

7 Q Now, you should have four documents in front

8 of you, and I believe those should be the '084 Patent,

9 which is the challenged patent in IPR 2025-00842; the

10 '582 Patent, which is the challenged patent in

11 IPR 2025-00843; and your expert declarations, which

12 are identified as Exhibit 1003 in each of those two

13 cases.

14

15 (Exhibit 1003 was previously marked.)

16 BY MR. DAY:

17 Q Do you see those documents in front of you?

18 A I see them.

19 Q Now, with respect to the two declarations in

20 front of you, what did you do to -- to prepare to

21 write those declarations?

22 A To write them?

23 Q Yes.

24 A I read the patents. I read the -- the file

25 history, and then searched for places -- places that I

Page 11

1 know for related art. I evaluated that art, and then

2 I wrote the declarations based on that.

3 Q Did you identify any of the -- the prior art

4 that's cited in your declarations yourself?

5 A Yes.

6 Q And which references would that be?

7 A Oh. This was about a year ago, so I don't

8 know if I could answer that precisely. There -- there

9 was a significant amount that was collected. I have

10 to remember culling through it to find the more

11 appropriate ones to put here, but, I'm sorry, I can't

12 point you to specific ones. I don't remember.

13 Q When you were preparing your declarations,

14 did you speak to anyone besides counsel?

15 A No.

16 Q What did you do to prepare for your

17 deposition today?

18 A I read through my two declarations, the

19 patents, and then some excerpts of the prior art as

20 they related to some of the claims that I was reading

21 in my declaration.

22 Q About how much time do you think you spent

23 preparing for your deposition today?

24 A I would say 10 to 12 hours.

25 Q Did you speak to anyone besides counsel to

Page 12

1 prepare for your deposition?

2 A No.

3 Q To prepare for your deposition, did you

4 review any materials besides those cited in your

5 declarations?

6 A No.

7 Q And I believe -- so did you review both of

8 your declarations to prepare for your deposition

9 today?

10 A I did. They have several common parts; but

11 yes, I did.

12 Q And did you identify any errors in your

13 declarations?

14 A I did find two things: One is that I noticed

15 that it says that my CV is in Appendix A, but then

16 there's no Appendix A. So somehow -- I have a copy of

17 my CV if you would -- I brought it because of that; I

18 realized it wasn't attached.

19 Q Are you aware of -- I'll start again.

20 If we can get a copy of that, I would like

21 that. I don't know if we'll necessarily introduce

22 that as an exhibit but I would like to get a copy of

23 it and maybe review it during a break.

24 So was it your understanding that that was,

25 like, intended to be filed with -- with your

Page 13 1 declaration but then was not actually filed. Is 2 that -- 3 A I didn't know it wasn't filed until I looked 4 for Appendix A when I was reviewing these again; but 5 yes, my -- it was submitted at the time and listed as 6 Appendix A, but I couldn't locate an Appendix A. 7 Q Okay. And I think you said you found two 8 things. What was the other? 9 A The other one is a typo, and it's -- it's -- 10 in Preamble of Claim 18 is where I noticed it, and 11 it's -- I can walk you through it. It's a minor typo. 12 Q Can you identify which case it is? 13 A Oh, it's in both. 14 Q Okay. In both? 15 A Yes. Well, let's look at the -- the '582. 16 And it's at page -- page 185. It applies because 17 Claim 18 and, actually, Claim 19 are dependent on 18 Claim 17. 19 The first sentence in Paragraph 286 should 20 say: The Liao, Xu, Wang -- or actually -- well, the 21 second one should say Liao, Wang, Xu. Because I used 22 both Wang and Xu in Claim 17. 23 So the second one would be -- oh, the -- the 24 name Xu was omitted. That's X-u. 25 Q I see.	Page 15 1 Q How were you aware of their products? 2 A In my work, I go to trade shows a lot and I 3 also have trade show publications, and so I had seen 4 them listed there. Consumer Electronics Show is one 5 that comes to mind. I don't remember exactly, but I'm 6 sure that's where I saw them at some point. 7 Q I see. 8 Consumer Electronics Show, is that the CES 9 show in Las Vegas? 10 A Yes, that's the one. 11 Q Were you familiar with Shokz before you were 12 retained on this case? 13 A Yes, I was in the same way. 14 Q Do you recall which of those you became aware 15 of first? 16 A Probably Shokz. 17 Q Well -- and what makes you say that? 18 A I don't know. It's just a recollection. 19 It's possible that Shokz -- maybe I -- I don't 20 remember if I knew that Shokz was -- has been around 21 longer as a company. I'm not sure. But that's my 22 recollection. 23 Q And -- and how did you first become aware of 24 Shokz? 25 A In the same way. Walking -- I don't know if
Page 14 1 And other than the omitted CV and the omitted 2 reference in Paragraph 286, did you identify any other 3 errors in your declaration? 4 A I did not. 5 Q Were there any opinions provided in either of 6 those declarations that you would revise now? 7 A No. 8 Q Is there any additional information you have 9 been aware of since providing either of those 10 declarations that would change your opinion? 11 A No. 12 Q When were you originally retained by Mojawa? 13 A I don't remember the date. It was, I would 14 say, a month before the IPRs were filed is my 15 estimate. So at the beginning of last year or right 16 before that, maybe December. I could look it up at 17 the break if it's important. It's around -- it's 18 right before the IPRs or some amount of time before 19 the IPRs. 20 Q Yeah. I think that's probably a close enough 21 estimate. 22 Were you aware of Mojawa prior to being 23 retained by counsel for -- for those IPRs? 24 A I was aware of their products, yes, some of 25 their products.	Page 16 1 it was Consumer Electronics Show or sometimes there 2 are other shows. But one of those shows, they had a 3 booth and I tried on their product and I did some 4 listening. 5 Q What were your initial reactions when you 6 tried on the Shokz product? 7 MR. BURNS: Objection, form. 8 THE WITNESS: It was just professional 9 curiosity. I -- I didn't find the audio quality 10 to be particularly high, but it does serve a 11 purpose. All bone conduction headphones serve a 12 certain purpose. 13 BY MR. DAY: 14 Q In your own professional work, have you 15 worked on bone conduction headphones before? 16 A I've worked on the pieces that are made into 17 make bone conduction headphones, which are the 18 transducers, the enclosures, electromagnetics, 19 magnetic circuits specific -- for large speakers, but 20 also for very small speakers. 21 Q Have you worked on any circuits that 22 were specific for -- specifically for bone conduction 23 headphones? 24 MR. BURNS: Objection, form. 25 THE WITNESS: I -- like I said, I worked

Page 17 1 on -- more on the -- examined the basic science 2 and some design of miniature drivers and 3 transducers that could go into bone conduction 4 headphones, but I wasn't working on a product that 5 was related to that. 6 BY MR. DAY: 7 Q I see. 8 So when you say drivers and transducers, were 9 you -- was it -- were you working on hardware that was 10 not specific to bone conduction headphones but 11 could've been used in bone conduction headphones. Is 12 that right? 13 A That's right. 14 Q Okay. Actually, it might be helpful to have 15 a copy of -- of your CV -- 16 A Oh. 17 Q -- so we can maybe refer to -- like, 18 understand where that was -- where and when that was. 19 THE WITNESS: Is that an exhibit we're... 20 MR. DAY: Yes, I think we'll have to mark 21 this. 22 THE COURT REPORTER: What are we marking 23 it? 24 MR. DAY: That's actually a good 25 question, because this would normally be a	Page 19 1 listed on the first page. 2 I guess the more detailed description of that 3 wouldn't be in the CV but in my background in the 4 declaration itself, if we wanted to look at more 5 specific things that I worked on in that company. 6 But my role there was to -- one of the things 7 we did there was to build a very large database of 8 headphones that were measured and compared to what 9 human hearing expects to hear and make corrections 10 from the more inexpensive ones to the more expensive 11 ones so that they match what human hearing does. And 12 as part of that we did some research on and design, 13 actually, on transducers to see if we can make ones 14 that have better performance. So it was during that 15 time. 16 Q About what year would that be? 17 A 2015, plus or minus a couple years -- or plus 18 or minus a year. Somewhere around there. 19 Q And just for the record, that's Audyssey is 20 A-u-d-y-s-s-e-y. Is that right? 21 A Yes. 22 Q Okay. So when you said that you built a very 23 large database of headphones that were measured, were 24 those headphones that your company designed or just 25 headphones that you found from other manufacturers?
Page 18 1 petitioner exhibit. I don't know off the top of 2 my head what we're up to right now. Give me just 3 a moment; I can answer that question. 4 So I guess this would be Exhibit -- you 5 can mark this as 2020 in IPR 2025-00842. 6 (Exhibit 2020 was marked for 7 identification.) 8 BY MR. DAY: 9 Q And for the record, we should've now marked 10 Exhibit 2020. 11 And do you have that exhibit in front of you? 12 A I do. 13 Q Do you recognize that as your CV that was -- 14 you originally intended to submit with your 15 declaration? 16 A Yes. 17 Q So going back to the question I was asking 18 you a moment ago about where you said you -- I believe 19 your testimony was that you were working on some 20 transducers and circuits that could've been used in 21 bone conduction headphones. 22 Can you identify where in your CV that work 23 would be described? 24 A It was -- it would be in my role as the 25 co-founder and CTO of Audyssey Laboratories that's	Page 20 1 A From other manufacturers. We -- we purchased 2 a very large number of them and measured them and 3 actually created an iPhone app that allowed you to 4 play your music through some correction -- acoustic 5 correction technology that we had to make them all 6 sound how the way they should and the human ear 7 expects. 8 Q Did that large database of headphones include 9 any bone conduction headphones? 10 A Not the published one, but we did measure -- 11 try to measure some. Of course, the mechanism of bone 12 conduction is a little different. Of course, it 13 doesn't go through the ear, so we were -- it was part 14 of an R&D project to try to see is there a way to 15 measure acoustic performance without the ability to 16 put microphones inside the ear. 17 Q Why would it be more difficult to measure the 18 performance of bone conduction headphones? 19 A Because when you measure headphones, 20 typically, you either have a mannequin that has 21 microphones inside in an artificial ear canal or you 22 could use human subjects and put miniature microphones 23 in their ear canal from the outside and then play test 24 signals and see what they're expected to be and what 25 they become. There was no simple way to do that with

Page 21 1 bone conduction because there's nowhere to put a 2 microphone that's touching your skin. 3 Q Why would you use a -- a mannequin or a human 4 subject to measure the performance of a set of 5 headphones? 6 A Because we want to -- we want to measure the 7 performance of a headphone as it is worn by human 8 listeners. 9 With loudspeakers, we don't have to do that. 10 We put them a room that has -- it's either a 11 calibrated room or anechoic room that doesn't 12 introduce any sound reflections, and there you can 13 measure the free field, the performance of the 14 loudspeaker. 15 But with headphones, you can't just hold it 16 up in the air and take a measurement. It doesn't 17 match how it's going to be used at all, so you have to 18 do it in the ear. 19 Q So if I understand this correctly, the 20 purpose of a mannequin or human subject is that the -- 21 the performance of a set of headphones is also going 22 to be affected by the way that that -- those 23 headphones interact with the human body. Is that 24 right? 25 A With the outer ear -- yes, part of the human	Page 23 1 A Oh. There was a -- a headband. I'm trying 2 to remember if one model may -- one model may have 3 individual ear hooks that go over each ear, and the 4 other one may have been a -- one continuous headband. 5 It's quite a while ago, so I don't remember 6 exactly. 7 Q Okay. Now, and in the context of headphones, 8 like, what is a headband? 9 MR. BURNS: Objection, form. 10 THE WITNESS: A headband serves multiple 11 purposes. One -- one of them is to keep 12 headphones -- if we're talking about headphones 13 now, headphones that are over the ear. The big 14 professional ones that we see, they need a 15 headband to be able to be kept there. 16 Some -- well, no, that's -- that's the 17 pur- -- the main purpose is to -- is for holding 18 them there, but also, depending on the design of 19 the headphone, it -- if you connect only to one 20 side, the headphone may contain wiring to send the 21 audio signals to the other side. 22 BY MR. DAY: 23 Q Okay. And you also mentioned that -- that 24 some models may have had individual ear -- ear hooks. 25 What's -- in the context of headphones, what's the
Page 22 1 body. 2 Q So when you said that, I think, in one of 3 your earlier responses you tried to measure some bone 4 conduction headphones, do you recall which bone 5 conduction headphones those were? 6 A I do not. I was -- no, I don't know -- I 7 don't recall. There were a couple of different 8 models, but I don't recall what they were. 9 Q Do you remember how the -- those -- those 10 bone conduction headphone models would be mounted on 11 the user's head? 12 A How they would be mounted? 13 They were -- there was a rectangular housing 14 that was placed -- I don't know what the -- this 15 part of the -- the upper cheek close to the ear. The 16 temple. Not the temple. This part here, which 17 doesn't help the reporter when I point to it; but the 18 upper cheek close to the ear. 19 Q Okay. And I think you gave enough of a 20 verbal -- 21 A Okay. 22 Q -- description to get it. 23 I guess, besides where -- where the speaker 24 is mounted, I mean, how would that speaker have 25 actually been supported on the user's head?	Page 24 1 purpose of an ear hook? 2 MR. BURNS: Objection, form. 3 THE WITNESS: The -- the -- we were 4 talking about bone conduction models that we 5 looked at, yes. So those -- the purpose of it 6 would -- was to hold it behind the ear so it 7 doesn't fall. 8 BY MR. DAY: 9 Q And in -- in a headphone that's supported by 10 an ear hook, the weight of -- the ear hook is actually 11 bearing the weight of the -- the headphone. Is that 12 right? 13 MR. BURNS: Objection to form. 14 THE WITNESS: Well, the ear -- the upper 15 earlobe is bearing the weight. The ear hook -- I 16 don't know. I guess it's distributed -- the ear 17 hook goes behind the earlobe and it prevents it 18 from sliding forward. 19 BY MR. DAY: 20 Q Okay. You mentioned the weight is -- is -- 21 actually, I should say -- I'll start again. 22 So the upper earlobe is actually bearing the 23 weight of -- of the headphone when you use an ear 24 hook. Is that right? 25 MR. BURNS: Objection, form.

Page 25 1 THE WITNESS: We're -- we're going 2 between headphone and bone conduction, and 3 sometimes that's a little different. A headphone 4 that has an ear hook is also -- it means it's also 5 going in your ear, and so the transistor that goes 6 in your ear is also bearing some of that weight, 7 it doesn't pop out. 8 For bone conduction, depending on the 9 construction of it, I guess the heavier part would 10 be the housing. So you need to balance it with 11 the ear hook using your ear as a holder. 12 BY MR. DAY: 13 Q Would it be fair to say that the -- the 14 amount of weight that's placed on the -- on the 15 earlobe could be a significant design consideration in 16 designing a -- a headphone? 17 MR. BURNS: Objection, form. 18 THE WITNESS: Different models have gone 19 different ways. That could be one consideration. 20 It depends on the design of the transducer and the 21 housing how heavy it is. I think that's one of 22 the reasons people have gone to use headbands. 23 There are also, I guess, neck bands. 24 There's -- there are many different ways to do it. 25 ///	Page 27 1 What do you mean by that? 2 A I don't know if I said bigger, but 3 professional headphones are typically ones that are 4 cups that go over, that cover the entire outer ear, 5 the pinna, so I was referring to those I believe. 6 Q And for larger professional headphones, are 7 those typically supported by headbands? 8 A Yes. Actually, could I add something to 9 that? 10 Q Sure. 11 A Professional -- when I -- when I gave that 12 example, I was thinking of a -- a mixing engineer in a 13 studio or a -- what's called a front of house engineer 14 at a live concert that's listening to the mix. There 15 are professional headphones that do not include 16 headbands that go straight into the ear and some -- of 17 them are molded to match exactly the ear opening, and 18 that's used on stage by many, many musicians. Those 19 are professional, as well. 20 Q Okay. So maybe I should clarify that 21 question. For, like, you talked about, like, large -- 22 larger professional headphones that have cups that 23 cover the -- the outer ear. 24 Would those typically be supported by 25 headbands?
Page 26 1 BY MR. DAY: 2 Q When you say "I think that's one of the 3 reasons people have gone to use headbands," can you 4 elaborate on that comment? 5 A Comfort is -- is one of the reasons, but as 6 we said before, other reasons are to -- to carry 7 signals. If it's not a wireless transmission, you 8 need to -- you need to get signals to both sides, a 9 headband is a good place to put wires in. 10 Q So if -- if you have a -- a heavier speaker, 11 a headband is usually a more comfortable way to 12 support that weight than a -- than an ear hook is. Is 13 that right? 14 MR. BURNS: Objection, form. 15 THE WITNESS: I don't know. Having 16 worked with human subjects for so long, everybody 17 has different tolerances for what they like. Some 18 people don't like headbands. Some people like the 19 ear hook because you can quickly remove it if you 20 need to. So -- I don't know if I can give you a 21 general answer to that. 22 BY MR. DAY: 23 Q Okay. I think one -- one of your previous 24 answers you said something like the -- the bigger 25 professional headphones.	Page 28 1 A Yes. 2 Q Has -- has any of your work with headphones 3 related to the design of the supporting structure for 4 those headphones? 5 A The design, you mean like the headbands or 6 the hooks? No -- not -- no. Not the design. But it 7 was part of the evaluation. We did try to do some 8 measurements of those and -- and try to assess the 9 amount of pressure that the bone conduction-type 10 headphones or other headphones would put, because that 11 affects the audio quality. So I have some experience 12 analyzing those but not designing them directly. 13 Q How would the amount of pressure that the 14 bone conduction headphones put affect the audio 15 quality? 16 A It's -- it's about the efficiency of the 17 transmission of the audio information, which in the 18 end, mechanical vibration. And so the better -- the 19 contact with the skin, which means more surface area 20 and more pressure, the more -- more of that 21 information gets through, and that improves the 22 frequency range and the dynamic range of the 23 experience. 24 Q So as a general matter, would -- would more 25 pressure result in better transmission of sound?

Page 29 1 MR. BURNS: Objection, form. 2 THE WITNESS: Yes. Within limits of 3 comfort, of course. Having a vise over somebody's 4 head would measure probably better but not be very 5 comfortable. 6 BY MR. DAY: 7 Q I see. So -- so there's a trade-off between 8 how much pressure you're putting against the user's 9 head and -- and how well the sound is transmitted. Is 10 that right? 11 A Yes, that's right. We have to -- we have to 12 be -- remain -- the product has to remain comfortable 13 so it can be worn. 14 Q So -- and -- and the -- the weight of the 15 device would be another one of those -- those 16 trade-offs with how comfortable the device is. Is 17 that right? 18 A The weight, but it's not in isolation because 19 the weight is offset by -- in a proper design, the way 20 it would be offset by the right mounting to the head 21 to -- to -- so it's not just hanging there. 22 Q What do you mean by "not just hanging there"? 23 A It's what we talked about before. The -- the 24 ear -- for example, an -- an ear hook that goes behind 25 the ear offsets some of that weight mechanically by	Page 31 1 balanced on the lobe of the ear, then the speaker 2 itself is creating some -- some leverage on the -- on 3 the earlobe. Is that right? 4 MR. BURNS: Objection, form. 5 THE WITNESS: That's the mechanical 6 balance that I -- I guess that's what I said 7 before. It may be -- yes, there's a front weight. 8 Just in any mechanical lever system, there's a -- 9 there's weight that is offset by the hook in this 10 case. 11 BY MR. DAY: 12 Q And the more weight that -- I'll start again. 13 The heavier that that speaker in front of the 14 ear is, the more weight that has to be mechanically 15 offset somehow. Is that right? 16 A Maybe, but I guess the -- the -- I don't 17 know. I haven't measured the mechanical offset, but 18 the -- the offset could be so much that -- that 19 there's a wide range of weight that it would accept 20 and not specifically made for one weight only. So... 21 Q In your -- in your work prior to getting 22 involved in this case, did you do any work that 23 related to any handheld bone conduction speakers? 24 A Handheld bone conduction? Could you -- I'm 25 not familiar with that term.
Page 30 1 distributing it over the -- over the length of that 2 ear hook. The headband does the same thing by 3 distributing it and using your head as a -- as a stop; 4 the neck band the same. 5 Q Okay. And I think you also mentioned balance 6 a little bit earlier. Is -- is that also a -- a 7 consideration with- -- within an ear hook design? 8 MR. BURNS: Objection, form. 9 THE WITNESS: I'm not sure what -- what I 10 said about balance. Are we talking about -- 11 BY MR. DAY: 12 Q Maybe I can -- yeah, maybe I can start that 13 one again. 14 So you -- you had mentioned -- you talked 15 about using some bone conduction headsets before, and 16 you talked about some examples where you had a speaker 17 that was -- I'll try and describe it for the court 18 reporter -- to place against your upper cheekbone just 19 slightly -- slightly in front of the ears. Is that 20 right? 21 A Yes, that's right. 22 Q So if you have that situation where -- where 23 the speaker is -- where the speaker is slightly in 24 front of the ear and the weight of the headphone is 25 being supported by -- by an -- by an ear hook that's	Page 32 1 Q Well, so -- so, for example, I mean, 2 typically if you're using a -- a cell phone handset 3 without a -- a -- without any headphones, you would 4 typically hold it up to your -- your ear. Is that 5 right? 6 A Yes. 7 Q Or -- I just realized I -- I'm doing it 8 myself. I made the "hold it up to the ear" gesture 9 without -- without -- without putting it on the 10 record. So I'll do that now. 11 But are -- are you aware of any -- of any 12 bone conduction speakers that are designed to be held 13 up against the -- the user's skull for them to listen 14 to? 15 MR. BURNS: Objection, form. 16 THE WITNESS: Only through marketing 17 information. I haven't measured them. But I do 18 know that cell phones combine some tactile 19 vibration with acoustic information. 20 BY MR. DAY: 21 Q What do you mean by "combine tactile 22 vibration with acoustic information"? 23 A They -- they rely on contact with whatever 24 part of the body you're touching, either the upper 25 cheek or the outer part of your ear, to deliver the

Page 33 1 sound acoustically through your ear canal through a 2 traditional speaker, but also that speaker might be 3 producing vibrations, as well, that could be 4 considered bone conduction. Remember the drivers are 5 the same. It's just a matter of how you use them. 6 Q So is the -- the -- the feature that you just 7 described in your last answer, is that characteristic 8 of most handheld cell phones? 9 MR. BURNS: Objection, form. 10 THE WITNESS: I -- don't know. I haven't 11 done a survey of speaker systems in handhelds for 12 that purpose. I'm not sure. 13 BY MR. DAY: 14 Q Are you aware of any handheld speakers that 15 are specifically designed to be used as bone 16 conduction speakers? 17 MR. BURNS: Objection, form. 18 THE WITNESS: I'm aware of university 19 research efforts that were -- have been presented 20 at conferences that use those types of speakers 21 you described, but in a kind of different way; and 22 this is why I was asking about handheld. It's 23 actually producing bone conduction through 24 vibrations while you're holding the cellphone in 25 your hand.	Page 35 1 probably around ten years ago. 2 Q Do you recall why you have better voice 3 intelligibility from a -- a bone conduction speaker 4 being held in your hand? 5 A The search was done to compare with and 6 without and, in fact -- well, the way we perceive 7 sound, and especially voice, is multimodal, which 8 means we use multiple senses. The obvious ones are 9 our hearing and our eyes, of course, lips moving. 10 But tactile sensations such as the ones that 11 a bone conduction device would produce, also -- they 12 showed also helped. They were -- they experimented 13 with just reproducing the voice itself, like a bone 14 conduction speaker would near your ear, but also other 15 signals that were maybe not recognizable as voice, but 16 tied to what the voice signal was doing. 17 Q With a handheld speaker device, would the -- 18 the presence of the user's hand against the other side 19 of the device affect the quality of the sound? 20 MR. BURNS: Objection, form. 21 THE WITNESS: Not the -- not the presence 22 of it, but the -- the pressure that it would be 23 applying towards the ear would be. 24 BY MR. DAY: 25 Q Okay. So in a -- in a headphone, the amount
Page 34 1 BY MR. DAY: 2 Q Uh-huh. 3 A And the research that I -- the paper that I 4 recall -- and I don't remember the university right 5 now -- showed that you can have better voice 6 intelligibility when you're listening to something in 7 noise, but the bone conduction speaker in your hand is 8 augmenting that, which I found interesting. But 9 that's why I -- I asked about handheld. 10 Q Are you aware of any specific consumer 11 devices that are designed -- I'll start again. 12 Are you aware of any handheld consumer 13 devices that are designed specifically to be bone 14 conduction speakers? 15 A Any handheld devices? I'm -- no, I don't 16 know of any right now off the top of my head. 17 Q So a couple answers ago, you -- you mentioned 18 some university research efforts that are presented at 19 conferences. Do you recall what university research 20 efforts those were? 21 A No, I don't remember which university it was. 22 It was at a technical conference that was most likely 23 the -- either the IEEE, Institute of Electrical 24 Engineers Signal Processing Conference, or the 25 Acoustical Society of America Conference. This was	Page 36 1 of pressure being applied to the speaker would be 2 based on the -- the design of -- of -- of the 3 headphone and the way it's mounted on the user's body; 4 whereas, in -- with a handheld device the amount of 5 pressure would be a function of how hard the user 6 themselves is holding it up against their body. Is that 7 generally fair? 8 MR. BURNS: Objection, form. 9 THE WITNESS: No. I think we need to 10 clarify a few things. 11 So first of all, on the headphone side, 12 the amount of pressure that an overhead band that 13 has a -- some kind of spring mechanism in it is 14 part of the answer. The other part is how well 15 the fit of the cup is over the ear, because those 16 contact points change. 17 If you're familiar with work that says 18 every time you put on your over-ear headphones, 19 you get a different response because it's not 20 touching the ear exactly the same way. So that's 21 one thing. 22 The other headphones that go inside the 23 ear canal, as long as there's a seal and there's 24 no air leaking back out from the ear canal, then 25 the amount of pressure doesn't matter.

Page 37 1 And then I think you asked about bone 2 conduction. Actually, could you repeat the bone 3 conduction part? 4 BY MR. DAY: 5 Q In a handheld device, the amount of pressure 6 being applied would be a function of how hard the user 7 themselves is holding it up against -- against their 8 body. Is that right? 9 MR. BURNS: Objection, form. 10 THE WITNESS: In a handheld. Okay. I 11 thought you meant in a regular bone conduction. 12 Yes. The amount of pressure, the only 13 way to do it is to push against it with your hand, 14 yes. 15 BY MR. DAY: 16 Q Have you worked with what I call, for lack of 17 a better -- better term, like, "sports headphones" in 18 your -- in your professional life? 19 A I'm not sure what that category -- let's -- I 20 mean, let me understand better what you mean by that. 21 Q Yeah. It is a little bit of a tricky 22 category to define, but I'll come -- I mean, I'll 23 come -- I'll come at this a different way. 24 I mean, like -- like, we talked a little bit 25 about some of, like, the over-the-ear professional	Page 39 1 BY MR. DAY: 2 Q Okay. Are there different design 3 considerations that come into play for headphones that 4 are designed to be worn while doing physical activity? 5 A Portability, lighter weight. For some kind 6 of sports, resistance to humidity or water or sweat. 7 Q Okay. 8 A And obviously, battery life, if they're 9 wireless. There's all kinds of other considerations. 10 Q So -- and -- and -- and I should've clarified 11 my question a little bit more. 12 So when I say "different design 13 considerations," some of those factors could be 14 differences between a headphone that's being designed 15 for use during physical activity in a -- in a 16 headphone that's designed to be used kind of in a 17 stationary setting where it's just plugged in. Is 18 that right? 19 MR. BURNS: Objection, form. 20 THE WITNESS: Some are, but I -- I 21 just -- I don't want to give the impression that 22 you can't wear a sports headphone at home while 23 you're typing on your computer because. You can 24 just fine. 25 ///
Page 38 1 headsets that a -- that -- that you might use in a 2 studio where there's not really much concern about the 3 headphones being portable. Is that right? 4 A Correct. 5 Q And at a -- the other extreme of that, 6 there's sort of the line of devices that, you know, 7 might have started with something like the Sony 8 Walkman for a user to carry while they're -- they're 9 going -- they're going on a run or something like 10 that. 11 Is that -- is that generally a fair 12 characterization? 13 A Yes. There's a whole category of those, yes. 14 Q So, you know, when I say -- you know, would 15 it be fair to use "sports headphones" as kind of a 16 shorthand for that -- that -- that range of devices 17 from, like, a Sony Walkman, but basically just 18 designed to have -- to be worn while doing some sort 19 of physical exercise? 20 MR. BURNS: Objection, form. 21 THE WITNESS: I mean, in my mind, those 22 are portable headphones. There's -- "sports" 23 implies that you're doing a sporting activity, and 24 some of those can be used for that, but -- but not 25 all.	Page 40 1 BY MR. DAY: 2 Q Okay. 3 All right. Do you have the '084 Patent in 4 front of you? 5 A The '084, yes. 6 Q Can you turn to column 1, lines 14 through 7 16. 8 And under the heading -- in column 1 -- I'll 9 start again. 10 In column 1 under the heading "Technical 11 Field," the '084 Patent states (as read): 12 "The present disclosure relates to a 13 loudspeaker apparatus and in particular 14 to a loudspeaker apparatus with a 15 waterproof function." 16 Do you see that? 17 A I do. 18 Q And then going down to line 27 of column 1, 19 the -- the '084 Patent states (as read): 20 "Ordinary earphones can no longer 21 meet the normal use of users in some 22 special scenes, e.g., swimming, rainy 23 days," et cetera. 24 Do you see that? 25 A Yes.

Page 41 1 Q Would you agree that waterproofing is one of 2 the goals of the '084 Patent? 3 MR. BURNS: Objection, form. 4 THE WITNESS: Waterproofing, in technical 5 terms, has a wide range of possibilities from 6 splash resistance to you can wear it underwater. 7 So I think the word "waterproof" is too 8 general to be able to say that. But that's one of 9 the goals. 10 BY MR. DAY: 11 Q I can state that more generally. 12 Do you agree that -- that at least water 13 resistance is a significant goal of the '084 Patent? 14 MR. BURNS: Objection, form. 15 THE WITNESS: It covers several things. 16 One of them is water resistance, so I'm just -- I 17 hesitate to say significant goal. 18 BY MR. DAY: 19 Q Would you agree that water resistance is a 20 goal of the '084 Patent? 21 MR. BURNS: Objection, form. 22 THE WITNESS: It's mentioned here in the 23 specification. I would need to refresh my memory 24 of what the claims say, but I don't know if it 25 mentions waterproof there, but -- or how it	Page 43 1 material and the core housing being elastically 2 abutted against the protective sleeve is -- is 3 improving water resistance to the device? 4 MR. BURNS: Objection, form. 5 THE WITNESS: That's what's being claimed 6 here, yes. 7 BY MR. DAY: 8 Q And going back to line 50. Actually, I'll 9 start again. 10 I just read the line (as read): 11 "Elastically abutted against the 12 protective sleeve." 13 What does it mean for two surfaces to 14 abut? 15 A To -- 16 MR. BURNS: Objection, form. 17 THE WITNESS: To touch. 18 BY MR. DAY: 19 Q So any sort of -- any two surfaces that touch 20 each other are abutting? 21 MR. BURNS: Objection, form. 22 THE WITNESS: Any two surfaces that touch 23 are abutting. 24 I think in a general sense, yes. 25 ///
Page 42 1 mentions it. So I... 2 BY MR. DAY: 3 Q Okay. Can you turn to Claim 1, which I think 4 starts on column 36. 5 A 36, yes. 6 Q And the first limitation start- -- starting 7 on line 50 (as read): 8 "An ear hook including a first plug 9 end and the second plug end. The ear 10 hook being surrounded by a protective 11 sleeve. The protective sleeve being made 12 out of an elastic waterproof material." 13 Do you see that? 14 A Yes. 15 Q And then the next limitation is (as read): 16 "A core housing for accommodating an 17 earphone core. The core housing, you 18 affix to the first plug end and 19 elastically abutted against the 20 protective sleeve." 21 Do you see that? 22 A Yes. 23 Q Would you agree that one of the purposes 24 of -- of the elements of the -- of having a protective 25 sleeve being made out of an elastic waterproof	Page 44 1 BY MR. DAY: 2 Q If you go up to line 51, it states (as 3 read): 4 "The ear hook being surrounded by a 5 protective sleeve." 6 Do you see that? 7 A Yes. 8 Q Is -- what is the difference between being 9 surrounded in line 51 and abutted in line 56? 10 MR. BURNS: Objection, form. 11 THE WITNESS: The -- those are just 12 describing two different things. The sleeve is -- 13 "surrounded by" means it's wrapped or dipped in 14 some -- "the ear hook is surrounded by a 15 protective sleeve" means it -- there's something 16 inside and it's surrounded by the sleeve. 17 "Abutting" is talking about a different 18 portion of the head- -- of the -- of the 19 headphone, which is the core housing, touching up 20 against this sleeve that we just talked about. 21 BY MR. DAY: 22 Q What does it mean for two surfaces to be 23 elastically abutted? 24 MR. BURNS: Objection, form. 25 THE WITNESS: That they have some give in

Page 45 1 their -- in the material, which makes sense 2 considering that they're talking about an elastic 3 waterproof material, like rubber, for example. 4 BY MR. DAY: 5 Q Would any contact between an -- elastic 6 material and another surface be elastically abutting? 7 MR. BURNS: Objection, form. 8 THE WITNESS: If one of the two has -- is 9 surrounded by elastic material and it's pushed 10 against another surface that may or may not have 11 it, I think they are, yes. 12 BY MR. DAY: 13 Q And what do you mean by "pushed against"? 14 A This is -- we're talking very generally. In 15 the case of components that are made -- that are 16 required to touch each other, if only one of them has 17 rubber and in manufacturing is abutted, touches 18 another piece of the product or another component, I 19 would consider that abutted even if they both don't 20 have elastic waterproof material around them. 21 Q Would you consider two surfaces to be 22 elastically abutted as long as they are in contact and 23 at least one of them is an elastic material? 24 MR. BURNS: Objection, form. 25 THE WITNESS: I believe that's what I was	Page 47 1 "The control circuit or the battery 2 driving the earphone core to vibrate." 3 Do you see that? 4 A I do. Let me just read the whole sentence. 5 Yes, I see it. 6 Q In order -- I'll start again. 7 Now, as it's described in Claim 1, the -- the 8 control circuit or the battery are inside a circuit 9 housing that's on one end of an ear loop. Is that 10 right? 11 A I'm sorry, one end of a earlobe you said? 12 Q Loop. 13 A Loop. 14 MR. BURNS: Objection, form. 15 THE WITNESS: This claim doesn't talk 16 about a loop. It just says there's a housing. 17 BY MR. DAY: 18 Q You know what? I apologize. I misspoke. 19 The control circuit or the battery would be inside a 20 circuit housing that's on one end of the ear hook. Is 21 that right? 22 A Again, just focusing on just what this 23 element says, it doesn't talk about ear hooks. The 24 control housing could be other places, as well, in 25 general.
Page 46 1 saying before, yes. 2 BY MR. DAY: 3 Q Would there need to be any force or tension 4 between those two surfaces in order for that contact 5 to be elastically abutting? 6 MR. BURNS: Objection, form. 7 THE WITNESS: Not necessarily. This -- 8 especially looking at the claim, it doesn't say 9 anything about the amount of force on the ab- -- 10 abutting part. 11 BY MR. DAY: 12 Q So is -- is your view that -- that two -- two 13 surfaces could be in contact with zero or negligible 14 force putting them together and still be elastically 15 abutting? 16 MR. BURNS: Objection, form. 17 THE WITNESS: Well, if they're in 18 contact, there has to be some force holding them 19 together; otherwise, they would fall apart. So -- 20 all I'm saying is that the amount of force needed 21 to cause elastic abutting is not specified here 22 and it could be anything. 23 BY MR. DAY: 24 Q All right. We can go down in Claim 1 to -- 25 starting at Line 59, it reads (as read):	Page 48 1 Q Going back to earlier in that claim element. 2 Starting at Line 50 (as read): 3 "There is an ear hook including a 4 first plug end and a second plug end." 5 Correct? 6 A Yes. 7 Q And on Line 55 (as read): 8 "There is a core housing next to the 9 plug end." 10 Correct? 11 A Yes. 12 Q And beginning at Line 58 (as read): 13 "There is a circuit housing affixed 14 to the second plug end." 15 Correct? 16 A Yes. 17 Q So there -- the circuit housing and the core 18 housing are on opposite ends of an ear hook. Correct? 19 A I guess by the transitive property of plug 20 ends, yes. 21 Q And in order for the -- and, actually, one 22 more piece here. 23 The -- the control circuit or battery is 24 within a circuit housing. Correct? 25 A Yes.

Page 49 1 Q In -- in order for the control circuit or the 2 battery to drive the earphone core to vibrate, there 3 would have to be an electrical connection between 4 the -- the circuit housing and the -- the core 5 housing. Correct? 6 MR. BURNS: Objection, form. 7 THE WITNESS: It depends on your 8 definition of electrical. It doesn't have to be 9 wired; it could be wireless. 10 BY MR. DAY: 11 Q Okay. There would have to be some sort of 12 electrical -- I'll start again. 13 There would have to be some sort of 14 electrical connection between the control circuit or 15 the battery and the earphone -- the earphone core. 16 Right? 17 MR. BURNS: Objection, form. 18 THE WITNESS: As long as we include 19 wireless in -- in electrical. 20 BY MR. DAY: 21 Q Okay. Now, if the -- if the circuit housing 22 and the -- the core housing are on opposite ends of an 23 ear hook, the distance they would be separated by 24 would be about the width of a human ear. Right? 25 MR. BURNS: Objection, form.	Page 51 1 Q And that's in Column 37. Starting at Line 2 47, that claim recites two elastic hooks being 3 arranged on a side of an inserting portion facing 4 inside the core housing. 5 Do you see that? 6 A Yes. 7 Q A couple of lines down beginning at Line 51, 8 it recites (as read): 9 "After passing through the stopping 10 block, the two elastic hooks are 11 elastically restored to be stuck on an 12 inner surface of the stopping block to 13 realize a fixation of the core housing in 14 the first plug end." 15 Do you see that? 16 A Yes. 17 Q Would you agree that as described in -- in 18 Claim 8, after the inserting portion being referenced 19 there is passed through the stopping blocks, the 20 elastic hooks would be inside the core housing? 21 MR. BURNS: Objection, form. 22 THE WITNESS: I need to read this one 23 more time. It says on Line 47 (as read): 24 "The elastic hooks arranged on the 25 side of the inserting portion facing
Page 50 1 THE WITNESS: So by "ear hook" you mean a 2 U-shaped-type device that goes over a -- a 3 component that goes over the earlobe, and if they 4 are on opposite ends of that. I mean, if one is 5 behind the earlobe, that's kind of a fixed 6 position. The other side could be further down. 7 I don't know. It's on that order, but it's -- 8 it's up to the design to -- to say what the actual 9 spacing would be. 10 BY MR. DAY: 11 Q And that might be on the order of a few 12 inches. Is that right? 13 MR. BURNS: Objection, form. 14 THE WITNESS: The spacing? 15 BY MR. DAY: 16 Q Yes. 17 A I think that's right, yes. 18 Q Okay. Are you aware of any devices that use 19 a wireless connection to -- for a -- a control circuit 20 to drive a housing that's, you know, a few inches 21 away? 22 A I don't have a model in mind, but -- but 23 there's nothing technical that would prevent that. 24 Q Okay. Turn to Claim 8. 25 A Yes.	Page 52 1 inside of the core housing." 2 I don't know if that means inside of the 3 core housing. 4 BY MR. DAY: 5 Q Are you still reading that portion? 6 A No. I guess my reading of it was that it 7 says "facing inside the core housing" but not "inside 8 the core housing." 9 Q Well, Line 51 states (as read): 10 "After passing through the stopping 11 block, the two elastic hooks are 12 elastically restored to be stuck on an 13 inner surface of the stopping block." 14 Do you see that? 15 A Yes. 16 Q Would you agree that the inner surface of the 17 stopping block is inside the core housing? 18 MR. BURNS: Objection, form. 19 THE WITNESS: I'm trying to think of 20 possible shapes that the core housing could have 21 that would make it not be -- it's possible. It 22 depends on the shape of the -- of the core 23 housing. 24 BY MR. DAY: 25 Q What do you mean by that?

Page 53 1 A For example, if the core housing is not a -- 2 a regular shape like a -- a square or a cube or a 3 parallel -- parallelepiped, it might have an 4 indentation on the side which makes the core housing 5 have a surface that's not flat, but the connector is 6 there, and that's where this happens. 7 It's -- the claim is not necessarily saying 8 that they're inside. It depends on the shape. 9 MR. DAY: Okay. I think we've been going 10 for a little bit more than an hour, so it might be 11 a logical stopping point for a break. 12 MR. BURNS: All right. 13 THE WITNESS: Sure. 14 THE VIDEOGRAPHER: Off the record at 15 10:01. 16 (Recess.) 17 THE VIDEOGRAPHER: We are back on the 18 record at 10:10. 19 MR. DAY: I should've distributed these 20 before we went on the break. 21 (Exhibit 1004 was previously marked.) 22 BY MR. DAY: 23 Q Dr. Kyriakakis, I just handed you what has -- 24 what was previously marked as Exhibit 1004 in both IPR 25 proceedings, the A-42 and the A-43 proceeding.	Page 55 1 conduction on their earphones that the weight of the 2 device will be supported on the user's ear? 3 A I mean, I think if we look at this weight 4 support problem, we would have to look at the 5 distribution of support. I think the general gist of 6 that statement is that he -- he's saying that it hangs 7 from the ear. That does support some of the weight. 8 I'm just not sure that we could just say that it's 9 just the ear. 10 Q Would you agree that making a lightweight 11 device is a concern throughout the Li reference? 12 MR. BURNS: Objection, form. 13 THE WITNESS: I'd have to -- it's been a 14 while since I looked at this. For that purpose, 15 let me -- I can look through it real quick. 16 I mean, in the abstract, he talks about 17 making a device that improves a bending 18 performance of bone conduction earphones. 19 I'm happy to look further if you want me 20 to find a place about lightweight. 21 BY MR. DAY: 22 Q And I can also direct you to the -- 23 Paragraph 29 on the following page. And the 24 second-to-last sentence in that paragraph beginning -- 25 beginning five lines down reads (as read):
Page 54 1 Do you recognize that as the English 2 translation of the Li reference you discussed in your 3 declaration? 4 A Yes, I do. 5 Q Can you turn to Paragraph 25 of Page 2 of Li? 6 A Yes. 7 Q And the first sentence of Paragraph 25 reads 8 (as read): 9 "The ear hook assembly is generally 10 used for users to hang the bone 11 conduction earphone on their ears when 12 wearing them which make the bone 13 conduction earphone more firmly worn on 14 the user's ear." 15 Do you see that? 16 A I do. 17 Q Which -- you agree that Li describes a device 18 that would support the weight of the headset on the 19 user's ear through the ear hook? 20 MR. BURNS: Objection, form. 21 THE WITNESS: Well, he doesn't use those 22 words. He says to hang it on their ears. 23 BY MR. DAY: 24 Q Would you agree, though, that as described in 25 Paragraph 25 the -- if a user is hanging the bone	Page 56 1 "This makes the connection between 2 the first housing 111, the second housing 3 112, and the first elastic metal wire 4 1- -- 1131 more stable and enhances the 5 sense of union and the texture of the 6 bone conduction headphone making the 7 structure of the bone conduction earphone 8 more compact and lightweight." 9 Do you see that? 10 A Yes. 11 Q Would you agree that making the structure of 12 the bone conduction earphone more lightweight is a 13 goal of the Li reference? 14 MR. BURNS: Objection, form. 15 THE WITNESS: It's described in the 16 specification, but as before, to me, the goals are 17 better stated in the claims. So if we look at the 18 claims and it says that or something similar, that 19 would help. 20 Which are on page -- what page are the 21 claims on? I don't see it. 22 MR. DAY: I think they start on Page 2. 23 THE WITNESS: Oh. The whole thing. I'm 24 sorry. 25 Okay. Yes. I forgot this is a -- the

Page 57 1 claims. 2 Was there one that you wanted to point me 3 to or should I read through this, with that in 4 mind? 5 BY MR. DAY: 6 Q Well, I mean, you -- yeah, you raised the 7 issue of the claims, so I wasn't sure if there was one 8 that you -- that you wanted to refer to. 9 A No. I was saying that I would use the claims 10 to answer your question as to what the goals of the 11 patent are. 12 Q Well, actually, since -- since you raised the 13 claim, I think I can point you to Claim 2 where it 14 recites (as read): 15 "The bone conduction earphone, 16 according to Claim 1, characterized in 17 that the first housing and the second 18 housing are fixedly connected to both 19 ends of the first elastic metal wire by 20 injection molding; wherein, the first 21 elastic coating layer is fixedly wrapped 22 on the first elastic metal wire by 23 injection molding." 24 THE COURT REPORTER: I'm sorry. Can you 25 read slower?	Page 59 1 layer 1132 is fixedly wrapped around the 2 first elastic metal wire 1131 by 3 injection molding. 4 "Optionally, the first housing 111 5 and the second housing 112 are plastic 6 housings fixed at both ends of the first 7 elastic metal wire 1131 by injection 8 molding, and the first elastic coating 9 layer 1132 is integrally formed to cover 10 the first elastic metal wire 1131." 11 Do you see those two sentences? 12 A I do. 13 Q Would you agree that -- that those two 14 sentences generally describe the same feature recited 15 in Claim 2 of the Li reference, that the first and 16 second housings are connected to the end of -- of a 17 first elastic metal wire by injection molding? 18 A I agree. Yes. 19 Q And then in the third sentence of Paragraph 20 29, which I referred you to earlier, that sentence 21 describes one of the purposes of that injection 22 molding structure as "creating a device that is more 23 compact and lightweight." 24 Do you see that? 25 A Let me just read it one more time.
Page 58 1 MR. DAY: Sorry. All right. I'll start 2 again. 3 BY MR. DAY: 4 Q Claim 2 reads (as read): 5 "The bone conduction earphone, 6 according to Claim 1, characterized in 7 that the first housing and the second 8 housing are fixedly connected to both 9 ends of the first elastic metal wire by 10 injection molding; wherein, the first 11 elastic coating layer is fixedly wrapped 12 on the first elastic metal wire by 13 injection molding." 14 Do you see that? 15 A Yes. 16 Q And if you turn to Paragraph 29. And I 17 apologize. I'm going to do a little more reading, but 18 we'll tie it together in a little bit. 19 The first two sentences of Paragraph 29 read 20 (as read): 21 "Optionally, the first housing 111 22 and the second housing 112 are fixedly 23 connected to both ends of the first 24 elastic metal wire 1131 by injection 25 molding, and the first elastic coating	Page 60 1 I see it, yes. 2 Q Would you agree, based on that claim and the 3 relationship between that portion of -- of the 4 specification that we just read, that one of the goals 5 achieved in the Li reference, both from the claims and 6 in the specification, is making a device that is more 7 lightweight? 8 MR. BURNS: Objection, form. 9 THE WITNESS: Well, the way I understand 10 this is that the claim is speaking generally about 11 the elements that we talk about. 12 I read Paragraph 29 as an example of 13 non-limiting embodiment. I don't think the whole 14 patent is Paragraph 29. 15 BY MR. DAY: 16 Q All right. Can you turn to Figure 2 of the 17 Li reference. 18 A Yes. 19 Q Does Figure 2 show a rear hook assembly? 20 MR. BURNS: Objection, form. 21 THE WITNESS: It does. 22 Actually, if you allow me to look at my 23 declaration, I have some notations in there. 24 BY MR. DAY: 25 Q All right. And -- and actually, I should've

Page 61 1 said that upfront. If you do need to refer to your 2 declaration, you're -- feel free to do so. Just if 3 you're going to do that, please note on the record, 4 like, where -- what you're looking at and -- and, 5 like, what page and paragraph you're referring to. 6 A I understand. I just need a minute to 7 find -- I know I had some color diagrams related to 8 that, so if you give me a second, I can look for that. 9 Yeah. 10 So I'm on Page 59 of the '582 declaration. 11 Q All right. 12 A I -- it refers to the same figure that you 13 were showing me, Figure 2 of Li, and I have denoted 14 there the second elastic metal wire, at the top of 15 Page 59, and some of the other elements that relate to 16 this Figure 9 from Li that shows the plug-in portions. 17 And on Page 64 of my declaration, Element 12 18 is the rear suspension assembly which holds the wires 19 that go in the band. 20 Q Okay. And, actually, on Page 59 of your 21 declaration, you also have Figure 9. Is that right? 22 A Figure 9 as well, yes. 23 Q And that -- I don't think you have annotated 24 that that rear suspension assembly is marked as Item 25 12 in Figure 9?	Page 63 1 Q And Li does not actually disclose plug-ins on 2 either end of that connecting component 113. Correct? 3 A Li does not. But in my analysis, I talked 4 about the -- the POSITA would understand the benefits 5 of using plug-ins, and that it would make a lot of 6 sense to use them there as well. 7 Li does disclose them for the part that I was 8 talking about previously, the plug-in portions for the 9 headband. 10 And given the benefits that I describe in my 11 report for using plugs and sockets, I think it would 12 be obvious to a POSITA to use them there as well. 13 Q Okay. The -- the plugs that you're referring 14 to are on either ends of the rear suspension assembly. 15 Is that right? 16 A The example, yes. 123, I believe it's 17 labeled. 18 Q And those plugs both carry electrical 19 connections. Correct? 20 A Yes. 21 Q And the -- that specific electrical 22 connection joins the opposite sides of a stereo set of 23 headphones. Is that right? 24 MR. BURNS: Objection, form. 25 THE WITNESS: It connects the left and
Page 62 1 A Yes. I believe I have it annotated in Figure 2 12 of Li, which is on Page 64. 3 The rear suspension assembly? That's the one 4 you're referring to? 5 Q Yes. 6 A Yes. 7 Q That rear suspension assembly is not an ear 8 hook. Correct? 9 A It's not. 10 Q And the component that you have mapped to the 11 ear hook in your analysis is the connecting component 12 at 113. Is that right? 13 A I just realized you're asking about ear hook, 14 and I answered about ear band, I believe. 15 But I -- can you repeat your original 16 question so I can give a better answer? 17 Q Sure. 18 The component -- the component that you have 19 mapped to the ear hook in the claims of both the '084 20 and '582 patents in your analysis -- or I'll start 21 again. 22 In your analysis, you have identified the 23 connecting component 113 of Li as the ear hook in the 24 claims of the '084 and '582 patents. Is that right? 25 A Yes, that's right.	Page 64 1 the right side of the headphones, yes. 2 BY MR. DAY: 3 Q And there would be no need for the plug 123 4 to connect the left and the right headphones in a 5 single ear headphone setup. Correct? 6 A You're saying if there's no other side? It's 7 only one side? 8 Q Correct. 9 A Correct, you would not need to send 10 electrical signals to something that's not there. 11 Q Now, in Li itself, the -- the connecting 12 component 113 includes an electrical wire that 13 provides an electrical connection between the two 14 housings. Correct? 15 A 113 in Li connects the -- which are you 16 calling the two housings? The control housing in the 17 transducer or the left and right? 18 Q Well, I think referring to -- why don't I 19 start again. 20 In Figure 1 of Li, which I think you have on 21 Page 58 -- 22 A Yes. 23 Q -- of your '582 declaration, the connecting 24 component 113 includes a wired connection that 25 provides an electrical connection between the housing

Page 65

1 shown on the left and right of Figure 1. Correct?

2 A Correct.

3 Q Actually, I was about to ask you a question

4 about the other declaration, but I'll see if I can

5 find the same element in this one so we can stay in

6 the same declaration.

7 Actually, I apologize. Why don't you -- can

8 you turn --

9 A Sure.

10 Q -- to your '084 declaration and turn to

11 Paragraph 136?

12 A Yes.

13 Q And the beginning of Paragraph 136 you state

14 (as read):

15 "Li also discloses or renders obvious

16 the control circuit or the battery

17 driving the earphone core to vibrate."

18 Do you see that?

19 A Yes.

20 Q And then you have an excerpt from -- that's

21 followed by an excerpt from Paragraph 24 of Li. And

22 the second sentence of that excerpt reads (as read):

23 "The battery is used to power the

24 various components of the bone conduction

25 earphone."

Page 66

1 Do you see that?

2 A I do.

3 Q And then following that sentence, the third

4 sentence in that excerpt from Li reads (as read):

5 "The control circuits used to control

6 the bone conduction earphone such as for

7 adjusting volume, turning on and off,

8 playing audio and Bluetooth

9 communication."

10 Do you see that?

11 A Yes.

12 Q So as your -- I'll start again.

13 In the Li reference, both the control circuit

14 and the battery drive the earphone core to vibrate.

15 Correct?

16 MR. BURNS: Objection, form.

17 THE WITNESS: That's not what it says.

18 It says the control circuit is used to control the

19 earphone.

20 BY MR. DAY:

21 Q Would the Li's earphone core be able to

22 produce sound without a control circuit driving it to

23 vibrate?

24 MR. BURNS: Objection, form.

25 THE WITNESS: Not interesting musical

Page 67

1 sound. It might be able to make clicks or

2 something, but no, I would say no.

3 BY MR. DAY:

4 Q Okay. So in order to produce any intended

5 sound, the device in Li would require the control

6 circuit to -- to drive the earphone core to vibrate.

7 Correct?

8 A Yes. The control circuit is delivering the

9 intended audio signals to the transducer that

10 vibrates.

11 Q And in order to -- for the control circuit to

12 deliver -- I'll start again.

13 In order for the control circuit in Li to

14 deliver the intended audio analysis to the transducer

15 that vibrates, that control circuit would need to have

16 a power supply. Correct?

17 A It would need to be powered in some way, yes.

18 Q And in the Li reference, that power source is

19 a battery. Correct?

20 MR. BURNS: Objection, form.

21 THE WITNESS: Battery is what's in this

22 excerpt. I don't know if he mentions -- there are

23 other ways to do it -- external power, connecting

24 to a mobile phone, solar -- there's many different

25 ways to do it.

Page 68

1 BY MR. DAY:

2 Q But my question is more about, like, the --

3 the what you're relying on in your declaration as

4 your -- as you're mapping it to the claim elements.

5 So now, in the excerpt that -- that you've --

6 that you've relied on from Li, the battery is -- is

7 providing the power that the control circuit uses

8 to -- to drive the -- the earphone to vibrate. Is

9 that right?

10 A That's what that excerpt says, but -- so --

11 my response here is to Element 1-D of Claim 1 where it

12 says -- it's on -- I'm reading from Page 73 of my

13 report at the bottom. No, not 1-D -- sorry. No, yes,

14 1-D. (As read):

15 "Circuit housing for accommodating a

16 control circuit or a battery?

17 So to opine on that part of the element,

18 I -- I was looking for a control circuit or a

19 battery example and, to me, "or" meant "or." I

20 found one with control circuit, which is -- is

21 controlling it, which is Li.

22 Q So would you agree, though, that in the -- in

23 the Li reference the -- I'll start again.

24 Within the Li reference, itself, the Li

25 reference requires both a battery and a control

Page 69 1 circuit to generate sound. Correct? 2 A I don't -- it -- "requires" is too strong. 3 It gives the battery as an example to power the 4 various components, not just the control circuit. But 5 I don't think Li says anywhere that no other method 6 can be used. 7 Q Well, Li does not disclose any other method 8 that can be used. Correct? 9 A That's the part I was saying. I don't have 10 Li memorized. There might be a line in one embodiment 11 that says something. We can look, I can look. I'm 12 just saying from a POSITA perspective, I don't 13 consider battery to be the only way to power. 14 Q Okay. And I'll just return it back to, like, 15 what you were using -- how you were mapping this in 16 your declaration. 17 Is it fair to say, based on the portion that 18 you have excerpted in Paragraph 136 of your 19 declaration, that you are -- that when you state that 20 Li also discloses or renders obvious the control 21 circuit or the battery driving the earphone core to 22 vibrate, that the excerpt that you have cited refers 23 to both the battery and the control circuit? 24 MR. BURNS: Objection, form. 25 THE WITNESS: The -- the purpose for	Page 71 1 THE WITNESS: Yes. 2 BY MR. DAY: 3 Q Okay. And it doesn't exclude both? 4 MR. BURNS: Objection, form. 5 THE WITNESS: You mean can they both be 6 there? 7 BY MR. DAY: 8 Q Correct. 9 A Is it -- it doesn't exclude it, but it 10 doesn't require it. 11 Q And -- and Li has both. Right? 12 A In that excerpt, Li is saying that it's 13 powered by battery, but he's not saying that the 14 battery is driving anything acoustic. 15 Q Okay. If you turn back to the Li reference 16 and turn to Paragraph 61. 17 Let me know when you're there. 18 A Yes, I'm here. 19 Q All right. Turning to Paragraph 61, 20 the first -- I'll start again. 21 The first two sentences of Paragraph 61 read 22 (as read): 23 "Continuing to refer to Figures 9 and 24 10, optionally a groove 1231 is provided 25 on the sidewall of the plug-in portion of
Page 70 1 citing that excerpt was to show that the control 2 circuit is used to control the bone conduction 3 earphone, as it says. And that is one element of 4 the "or" construction -- or not construction -- 5 the "or" language in the claim. So I was using 6 that last sentence of my quote to satisfy the "or" 7 part. 8 BY MR. DAY: 9 Q Okay. So as long as -- so when you say "to 10 satisfy the or part" -- "or part," your testimony is 11 as long as you have at least one of the two, that that 12 claim is satisfied, that claim element is satisfied? 13 A Right. That's how I read "or." 14 Q Okay. 15 A Or the other, yeah. 16 Q So you say that you read "or" as one or the 17 other? 18 MR. BURNS: Objection, form. 19 MR. DAY: I'll -- I'll withdraw that and 20 start again. 21 BY MR. DAY: 22 Q Would you -- when you say "one or the other," 23 does that mean -- just mean it can be at least one of 24 the two? 25 MR. BURNS: Objection, form.	Page 72 1 123. The groove 1231 exposed or 2 partially exposed by the opening 1112 and 3 is used to receive adhesive or locking 4 piece." 5 Do you see that? 6 A Yes. 7 Q Would you agree that Paragraph 61 of -- 8 actually, I'll start again. 9 Two sentences later it also recites (as 10 read): 11 "In other embodiments, both adhesive 12 and locking piece can be used 13 simultaneously, for example, affixing 14 with locking piece first and then 15 applying adhesive for further fixation." 16 Do you see that? 17 A Yes. 18 Q Would you agree that that Paragraph 61 of Li 19 refers to methods to fix the -- the plug-in portion 20 permanently to the housing? 21 MR. BURNS: Objection, form. 22 THE WITNESS: In the last part that you 23 read, it says -- again, as an example of where you 24 would put adhesive on both parts -- but I don't 25 know if it's -- if he's teaching permanently.

Page 73 1 BY MR. DAY: 2 Q I can ask a different question. Would you 3 agree that Paragraph 61 of Li refers to a process that 4 would occur during the assembly of the headset that's 5 being described? 6 MR. BURNS: Objection, form. 7 THE WITNESS: Yeah, I think that's right. 8 BY MR. DAY: 9 Q So, for example, that that process in 10 Paragraph 61 is something that could happen at the 11 factory. Is that right? 12 MR. BURNS: Objection, form. 13 THE WITNESS: It could -- it could also 14 happen, I guess, by the user when they buy it. 15 They -- they would put it together. Products do 16 that sometimes. 17 BY MR. DAY: 18 Q Are you aware of any disclosure in Li that 19 suggests separating the -- the plug-in portion 123 20 from the -- the portion of the housing that it's 21 connected to after they've been assembled? 22 A I don't recall a specific reference to that, 23 but just from the type of connectors that he's using 24 and talking about, there's nothing to prevent them 25 from being removable.	Page 75 1 first housing 111 of the two ear hook 2 assemblies 11, the issue of large 3 earphone size caused by screw fixation in 4 existing bone conduction earphones are 5 improved, simplifying the structure, 6 reducing the weight of bone conduction 7 earphones, facilitating later wiring, and 8 reducing costs." 9 Do you see that? 10 A I see it. 11 Q Would you agree that the issue -- the screw 12 fixation in Paragraph 59 refers to the connection 13 between a -- the rear suspension assembly 12 and the 14 housing? 15 A It doesn't say that directly, but maybe we 16 can infer that from the -- because of the portion that 17 he's talking about. 18 Q And do you -- when you say "and infer that," 19 do you mean that because that -- that -- it describes 20 the plugs at that specific location as an alternative 21 to screw fixation? Is that right? 22 A Yes. 23 Q Li does not refer to screw fixation ever 24 having been used in any prior art at the ends of 25 the -- on connecting component 113. Correct?
Page 74 1 Q As you sit there, are you aware in 2 anything -- I'll start again. 3 As you sit there, are you aware of anything 4 in Li that affirmatively suggests that the plug-in 5 connection 123 would be removable from the housing 6 once it's been connected? 7 MR. BURNS: Objection, form. 8 THE WITNESS: As I said, I don't have Li 9 memorized, so I would have to go look if -- if 10 there's some implication of that. To a POSITA, 11 the -- the fact that Li is proposing connectors 12 and not just soldering wires. Soldering wires 13 would be more permanent than a connector. 14 Connector implies that for various reasons, when 15 you -- which I discuss in my report -- modularity, 16 repairs, and so on -- that those could be 17 disconnected, if needed. 18 BY MR. DAY: 19 Q Okay. Can you turn to Paragraph 59 of Li 20 which is on the previous page, Page 10. 21 A Yes. 22 Q I think that paragraph just has a single 23 sentence which reads (as read): 24 "By connecting the plug-in portion 25 123 of the rear hook assembly 12 with the	Page 76 1 MR. BURNS: Objection, form. 2 THE WITNESS: Not in this paragraph. I 3 don't think he's quoting prior art here. He's 4 just presenting a problem of weight perhaps that 5 can be facilitated with connectors. The last few 6 words "facilitating later wiring" I think goes to 7 the point we're talking about before, as well. 8 Connectors facilitate later wiring because they 9 can be connected and disconnected and changes can 10 be made. 11 BY MR. DAY: 12 Q As you sit there, are you aware of anywhere 13 else in Li that references screw fixation being an 14 issue at the ends of the connecting component 113? 15 A Li is several pages and very dense writing, 16 so I don't have it memorized. 17 Let me just -- if I could look through it to 18 see if he mentions it anywhere else, if you would like 19 me to. 20 Q Okay. In one of your previous answers, you 21 referred to -- I think you talked about, like, 22 interchangeable or -- or modular headphones. 23 I think in your declaration, you used the 24 term "interchangeable headphone prior art." 25 Do you recall that?

Page 77 1 A Yes. I was -- let me just look real quick. 2 "Interchangeable audio headset prior art." 3 Yes. 4 Q What do you mean by the term 5 "interchangeable"? 6 A That the components of the product can be 7 disconnected, replaced, interchanged with the other 8 products. For example, a headband could be used with 9 different transducers. 10 I gave here seven examples of prior art, 11 which is a -- kind of a small subset of the well-known 12 techniques or methods that are known in the industry 13 that there are many benefits to doing that. 14 Q And some of your -- I think one of the first 15 questions I asked, you know, you mentioned something 16 about identifying some prior art on your own out of a 17 larger set. Is that right? 18 A In the beginning, I -- yes. I do remember 19 that, yes. 20 Q Were some of these references, references 21 that you identified? 22 A I don't recall which ones I identified or 23 not. I know there were more than these, some of which 24 were by me and some of which were by counsel, but I 25 don't remember which was which. It's a little over a	Page 79 1 BY MR. DAY: 2 Q Do -- now, in your declaration starting on 3 Page 39, you've identified a -- several references 4 that you refer to as "interchangeable headphone 5 references." Is that right? 6 A That was the title in my table of contents 7 for that section, yes. 8 Q And none of those references are bone 9 conduction headphones. Correct? 10 A I don't believe so. That wasn't the point of 11 this. It was to show the -- why a POSITA would have 12 known by then that it was well-known that making 13 headphones of any kind in a modular way is 14 advantageous; and these were all examples. 15 There's nothing about bone conduction 16 earphones that would prohibit them being any different 17 in the -- in terms of the benefits than regular 18 headphones. 19 (Exhibit 1011 was previously marked.) 20 BY MR. DAY: 21 Q Okay. Let's talk about the first one. 22 On Page 40 of your '084 declaration, you 23 have -- you excerpt a figure from the Hupkes reference 24 Exhibit 1011. Is that right? 25 A Yes.
Page 78 1 year ago now. 2 Q Okay. You also used the term "modular" in 3 your -- in your declaration. What do you mean by 4 modular? 5 A Is there a place you want to point me to or 6 just a -- just so I have the context. 7 And we're in the '084, yes? 8 Q Yes. 9 A Okay. 10 Q So if you look in Page 37, Paragraph 76. 11 A Yes, I see it. 12 So I give some examples of what I mean: 13 Speakers, control circuits, batteries. Those are 14 modules. That's what I call modules that can be put 15 together in different ways to create variations of a 16 different product. 17 Q How would you define the term "modular"? 18 A A piece of a larger product that contains 19 several pieces. 20 Q Are there disadvantages to modular 21 headphones? 22 MR. BURNS: Objection to form. 23 THE WITNESS: Disadvantages? I can't 24 think of any disadvantages. 25 ///	Page 80 1 Q And the Hupkes reference talks about 2 interchanging an in-ear and in-concha speaker. Is 3 that right? 4 A Yes. 5 Q What is the difference between those two 6 terms? 7 A It has to do with the anatomy of our ear. 8 "In-ear" is the opening in the pinna, the 9 very edge of it, closest to the outside. "Concha" is 10 the part that connects to the eardrum -- to the ear 11 canal. 12 So it's kind of hard to show without a 13 diagram but it's just different parts of the anatomy 14 of the ear. 15 Q And Figure 2 shows how -- how an in- -- how 16 those two types of speakers could be interchanged with 17 the headset. Correct? 18 A It's one of the examples from -- from his 19 patent, yes. 20 Q The interchangeable junction that's shown or 21 I'll start again. 22 The junction in Figure 2 where the 23 interchangeable components would come together is 24 between an earpiece and an earpiece body. Correct? 25 A Earpiece.

Page 81 1 I'm just going back and forth to look at 2 numbers. Yes. 3 Q Yeah. I guess to make this a little bit more 4 concrete to refer to the -- refer to Figure 2. 5 There's a -- there's an earpiece body 42 on 6 top and then an -- a speaker module 44 on the bottom; 7 and those are the two components that can be 8 separated, and the speaker module 44 can be replaced 9 with an in-ear speaker module. Is that right? 10 A Can be replaced with another type, yes. 11 Doesn't have to be just in-ear. Yes. 12 Q And the -- the point where those two 13 components joined is not the -- is not an end of an 14 ear hook. Correct? 15 A The point where -- which two components? I'm 16 sorry. 17 Q The point where -- I shouldn't say "point." 18 But the -- the region where the speaker 19 module 44 makes contact with the earpiece body 42 is 20 not the end of an ear hook. Correct? 21 A In this product, the speaker 44 goes directly 22 into some portion of the ear that we talked about 23 before. There's no ear hook. 24 Q All right. I think you said there's no ear 25 hook. Is that right?	Page 83 1 start again. 2 Dyer does not disclose an ear hook? 3 MR. BURNS: Objection, form. 4 THE WITNESS: I think as I said earlier, 5 these were not intended to disclose ear hooks. I 6 was just trying to show different examples of how 7 connectors like Dyer could be attached in -- 8 wiring connectors can be attached -- indeed, 9 attached to, in this case, in-ear to show that a 10 POSITA understands the notion of adding connectors 11 for modularity. 12 BY MR. DAY: 13 Q I see. 14 So when -- when you -- for -- really for this 15 group of interchangeable references, your intention 16 was to show the general concept of interchangeability 17 or modularity rather than the specific location of any 18 connection with respect to an ear hook. Is that 19 right? 20 A That's right. That was my intent, yes. 21 Q Turning to Page 50 of your -- or actually, 22 turn to Page 48 of your declaration. 23 You talk about the -- the Lott reference? 24 A Okay. Before we do that, can I add something 25 to my previous comment?
Page 82 1 A In this example that we're seeing here, the 2 point of this example was to show the 3 interchangeability, not the ear hooks. 4 Q Okay. So you're relying on 5 interchangeability as a general principle -- I'll 6 start again. 7 You're relying on the Hupkes reference to 8 show interchangeability as a general principle, not 9 the specific location of a junction of an ear hook. 10 Correct? 11 A Not just the Hupkes. I'm relying on all 12 those seven examples to show -- it was my attempt to 13 show that a POSITA understands very well the concept 14 of interchangeability, and here are seven different 15 types of product examples where that happens. 16 (Exhibit 1012 was previously marked.) 17 BY MR. DAY: 18 Q Okay. So after Hupkes on Pages 42 and 41, 19 you cite the Dyer reference, which is Exhibit 1012. 20 Is that right? 21 A Yes. 22 Q At Dyer -- at least the portions of Dyer that 23 you cite refer to in-the-ear monitors. Is that right? 24 A That's correct. 25 Q Dyer does not disclose an ear loop -- or I'll	Page 84 1 Q Sure. 2 A I didn't -- I don't know if it came out that 3 way. I wasn't implying that none of them have ear 4 hooks in the seven that I had there. It was just -- 5 some of them do, but it wasn't my intent to provide 6 reference to ear hooks. It was just to the 7 modularity. 8 I just want to clarify my previous answer. 9 Q Okay. I guess since you clarified your 10 answer, I should -- I might need to ask another 11 clarifying question. 12 When you say that it wasn't your intent to 13 provide reference to ear hooks, is it accurate to say 14 that you're not relying on any of these -- on any of 15 those references as disclosing a -- a specific plug-in 16 connection from an ear hook? 17 MR. BURNS: Objection, form. 18 THE WITNESS: I'm relying on these to 19 show that plug-in connections of various types are 20 known in the industry and have been known to 21 POSITAs, but not a specific one, no. 22 BY MR. DAY: 23 Q Okay. You're not arguing that any of these 24 references specifically teach a connection -- a 25 plug-in connection -- a plug end connection between an

Page 85 1 ear hook and any specific housing module headphone. 2 Correct? 3 A Okay. That's different from what I 4 understand your previous question to be. 5 The ones that have ear hooks obviously have a 6 plug-in connection to a module. For example, Meis, 7 the next one, and some others. 8 I thought you were asking am I relying on the 9 specific type of connection -- connector, and I'm not. 10 But I'm relying on some of these to show the 11 background of a POSITA would know that connectors 12 between components, including ear hooks and headphone 13 drivers/enclosures, can be modular using various types 14 of connectors. 15 Q Okay. Since you referenced the Mei 16 reference, can you turn to Pages 42 and 43 of your 17 declaration? 18 A Yes. 19 Q And you show Figure 1 of -- of Mei on Page 43 20 of your declaration. Correct? 21 A Yes. 22 MR. DAY: And that's the '084 declaration 23 for purposes of the record. 24 BY MR. DAY: 25 Q In Figure 1 of Mei, the -- actually, I'll	Page 87 1 of where the speaker component could be attached to 2 the hook. 3 Q In Figure 19 of Mei, do you see those -- the 4 dark filled-in portions at the top? 5 A I do. 6 Q What are those dark filled-in portions? 7 A Let's see. It's some portion of the 8 connector. 9 I would have to look at Mei again to see what 10 they called them. We can see it also on the next page 11 more clearly. It's Element 1014 on page 45 of Figure 12 17. But I don't remember the name. 13 Q Would it be fair to say that Element 1014 14 is -- would be what might be referred to as the -- the 15 female end of a connection between the earphone and 16 the -- that speaker assembly? 17 A It's possible. Again, I'd have to go look, 18 but, yes, it's -- it's some way of attaching to the 19 end of that hook. 20 Q Does Element 1014 appear to be a plug? 21 A Well, a plug-in requires a plug in a socket. 22 It appears to be the socket. The plug would be on the 23 back of whatever you're attaching to it. 24 Q So in -- in that connection, the socket 25 portion of it is -- is on the ear hook. Correct?
Page 86 1 back up a bit. 2 The speaker that's shown in Figure 1 of Mei 3 is an in-ear speaker. Correct? 4 A Correct. 5 Q And that speaker is not attached to the end 6 of the ear hook. Correct? 7 A Not in this figure it's shown. They're shown 8 detached. 9 Q Well, they're -- but the figure also shows 10 the point where it would attach to the ear hook. 11 Correct? 12 A Which part are you referring to? 13 Q As you see, Item 1012. 14 A Yes. 15 Q And do you understand 1012 to be some type of 16 a mating plug with the -- the speaker assembly? 17 A Yes. 18 Q And the location of that mating plug is not 19 at the end of the ear hook. Correct? 20 A Not in that figure, but in the next page it 21 is. 22 Q Which page is that? 23 A Sorry. Forty-four. 24 Q Figure 19? 25 A Figure 19. I think Mei had several examples	Page 88 1 A Possibly. Without going back and looking at 2 it, I can't say for sure. 3 Q All right. Let's turn to your discussion of 4 the Lott reference starting on page 48. 5 And in Paragraph 95 on page 49, you state (as 6 read): 7 "As shown below in Figure 7, Lott 8 discloses an auxiliary extension 280 9 having a cable 282 extending from an ear 10 hook portion 284 that is adapted to rest 11 in contact with the forward pinna portion 12 of the user's ear along with a portion of 13 the user's head." 14 Do you see that? 15 A I do. 16 And then it looks like "pima," but it's 17 "pinna" with two "Ns." 18 Q Okay. 19 A Oh. It's not a typo. 20 Q Is it a typo? It seems -- 21 A I think you actually -- 22 Q Oh. 23 A I don't think it matters. I think it's 24 actually typed as an "N," but I think it -- 25 Q It should be "pinna"?

Page 89 1 A Yeah. Yeah, it might have been a -- yeah, it 2 might have been an OCR picking it up that way or 3 something. 4 Q Oh, it could be, yes. So, yes, I see that. 5 So the -- the ear -- the ear hook portion 284 6 in lot -- in Figure 7 ends at a cable 282 at one end. 7 Correct? 8 A Yes. 9 Q And that cable is not a plug. Correct? 10 A It doesn't show the plug here. There might 11 be another figure in Lott that shows what's connected 12 to the other end of the cable. 13 MR. DAY: I think we're probably at, I 14 think, a fairly logical stopping point, so I think 15 now might be a good time to take a break. 16 MR. BURNS: Okay. 17 THE WITNESS: Sure. 18 THE VIDEOGRAPHER: We are off the record 19 at 11:09. 20 (Recess.) 21 THE VIDEOGRAPHER: We are back on the 22 record at 11:20. 23 BY MR. DAY: 24 Q All right. So Dr. Kyriakakis, you should 25 have in front of you what has previously been marked	Page 91 1 Fujita was particular structure of the transducer. 2 I don't know if he uses the word "headphone" 3 anywhere as a possible application, but that's -- 4 that's what I took out of Fujita. 5 BY MR. DAY: 6 Q As you sit there now, are you aware of any 7 disclosure in Fujita that affirmatively refers to a 8 headphone? 9 A I take a quick look at the background. 10 He gives examples of where bone conduction 11 receivers can be used as interfaces for information 12 devices to accurately convey audio information such as 13 mobile phones. 14 So he may not use the word "headphone." I 15 don't know. I'm not going to read the whole thing 16 right now, but it's clear that this transducer could 17 be used in headphones. 18 Q The specific example that is provided of a 19 device for the transistor is used is a handheld 20 handset. Correct? 21 A The example in Figure 20, yes, that's 22 correct. 23 Q You mean Figure 8 -- 24 A Sorry, yes, Figure 8 on Page 20. 25 Q And Fujita also has several figures that --
Page 90 1 as Exhibit 1022. 2 (Exhibit Annotated 1022 was marked for 3 identification.) 4 BY MR. DAY: 5 Q And do you recognize that as the Fujita 6 reference? 7 A I do. 8 Q The Fujita reference describes a handheld 9 device. Correct? 10 A It describes a bone conduction receiver. 11 Q Okay. Can you turn to Page 20 of Fujita? 12 A Yes. 13 Q And Figure -- Page 20 of Fujita shows 14 Figure 8. Correct? 15 A Yes. 16 Q And as shown in Figure 8, that is a handheld 17 device. Correct? 18 A That is a device that has the Fujita 19 transducer in it that is handheld. 20 Q Fujita does not contain any description of a 21 headphone. Correct? 22 MR. BURNS: Objection, form. 23 THE WITNESS: I mean, just from the title 24 "Bone Conduction Receiver," that is a device that 25 produces sound through bone conduction. By use of	Page 92 1 that show the interaction of the device with the scan 2 including Figure -- so, for example, Figures 4, 6, 7-A 3 through C -- yeah -- yeah, sorry. 4, 6, and 7-A 4 through C. 5 Do you see those figures? 6 A 4, 6, 7-A through C. Yes, I see them. 7 Q And all of those figures would be consistent 8 with the handheld device that's shown in Figure 8. 9 Correct? 10 A Well, Figure 4 is just a -- focusing on the 11 design of the transducer itself including Figure 3, 12 which is just that -- so yes, his device can be used 13 in handheld, but there's nothing that precludes it 14 from getting used in any kind of other bone conduction 15 application. 16 Q Is the applic- -- is the application in which 17 it's intended to be used relevant to the design of the 18 transducer? 19 MR. BURNS: Objection, form. 20 THE WITNESS: I didn't understand that 21 one. 22 BY MR. DAY: 23 Q So I -- like I said, I was trying to ask a -- 24 a follow-up to something you said in one of your -- 25 your -- your previous answers, so I think you said

Page 93 1 that this device could be -- I'll just read it off the 2 transcript. You said (as read): 3 "Yes, his device can be used in 4 handheld but nothing precludes it in bone 5 conduction application." 6 In your opinion, is the application that 7 a transducer being used for relevant to the design 8 of the transducer itself? 9 MR. BURNS: Objection, form. 10 THE WITNESS: So to clarify what we mean 11 by "transducer," it's the mechanism inside that 12 produces -- that produces the vibrations in 13 response to the electric signal. As long as 14 that -- the -- the product requires that, then the 15 design of that part doesn't matter for the 16 application. The application is to deliver audio. 17 The external housing, which is what the innovation 18 here is by Fujita, it is affected by the fact that 19 this is going to be a bone conduction mechanism, 20 and based on what we talked about earlier in the 21 day, maximizing the -- optimizing the -- the angle 22 of delivery of sound to the skin so that we get 23 best transfer of energy. That's how I used and 24 understood Fujita to be innovating. 25 ///	Page 95 1 where in -- or does Figure 2 show the transducer in -- 2 in the Fujita reference? 3 MR. BURNS: Objection, form. 4 THE WITNESS: If I could look at my 5 report, I think I may have marked it there. 6 BY MR. DAY: 7 Q Sure. 8 A There it is. Page 80. 9 It's just annotat- -- it's me annotating 10 Fujita Figure 2. So the transducer would be Element 11 12, which he calls the columnar piezoelectric element. 12 Q What is a piezoelectric element? 13 A Piezoelectrics are a very interesting kind of 14 material. They -- they produce motion by expanding 15 and contracting. It's crystal that produces motion in 16 response to an electric signal, in this case an audio 17 signal. So when driven, it would -- it expands and 18 contracts based on a certain stress mechanism, and 19 that drives that element which is not -- oh, it is. 20 It's the flat line above 11a. Just as in a regular 21 transducer, the upper part would be moving in response 22 to electromagnetic forces. 23 Q Okay. So to break that down a bit, the -- 24 the portion that actually generates vibrations in 25 Fujita is the columnar piezoelectric Element 12.
Page 94 1 BY MR. DAY: 2 Q Okay. You mentioned the angle of delivery of 3 sound of the skin. 4 Would you agree that in a handset, the angle 5 of delivery of sound of the skin can change based on 6 how the user is holding the handset? 7 A Yes. 8 Q Okay. I want to direct your attention to 9 Paragraph 24 of -- of Fujita, which describes Figure 10 2 -- actually, why -- sorry. Why don't we start with 11 Figure 2 and if you need to refer to the text -- 12 A Yeah. 13 Q -- it starts in -- in Figure -- it starts in 14 Paragraph 24. Now, you rely on Figure 2 in your 15 declaration as the -- the -- teaching the transducer 16 structure of Fujita. Correct? 17 A Based on what I just defined as the 18 transducer, which would be the inner part, it's -- 19 it's -- let's call it the housing. It's the external 20 parts, especially portion 16 that is at an angle, but 21 the whole external part. The transducer is inside and 22 that's the vibrating portion. That's -- that's 23 interchangeable and can be used in any kind of 24 transducer. 25 Q When you say "the transducer is inside,"	Page 96 1 Correct? 2 A Well, it's kind of the whole thing. I mean, 3 that -- that vibrates, but the sound is produced by 4 putting that upper flat portion for -- 11a into 5 motion, which is what -- it's a -- it's a bigger 6 surface in that transfers energy better to the 7 external housing. 8 Q Okay. And maybe I should have phrased my 9 question better. The -- the source of the vibration 10 is the -- the columnar piezoelectric Element 12. Is 11 that right? 12 A Correct. 13 Q Okay. And those -- those vibrations are -- 14 are -- I'll start again. 15 As shown in Figure 2, that columnar 16 piezoelectric element is displaced from the center of 17 the figure. Correct? 18 A Yes. 19 Q It's much closer to the left side than the 20 right side. Correct? 21 A Yes. 22 Q And why is that? 23 MR. BURNS: Objection, form. 24 THE WITNESS: I don't know the specific 25 reason. I would have to look through -- I don't

Page 97 1 recall what the other elements to the right are, 2 perhaps to make room for them. I'm not -- I'm not 3 sure what the reason for that is. 4 BY MR. DAY: 5 Q Why don't you turn to Paragraph 27 of the 6 Fujita reference. 7 So in -- in Paragraph 27 if you start four 8 lines down, there's a sentence beginning in that line 9 that reads (as read): 10 "The vibration output part 11a and at 11 Cushion 16 rotate and vibrate with a 12 rotation center of leveraged output part 13 11a near the intersection of the 14 vibration output part 11b and the elastic 15 part 11b as a reference." 16 Do you see that? 17 A Yes. 18 Q And it goes on to say (as read): 19 "Therefore, the elastic part 11b 20 possesses a hinge function for supporting 21 the vibration output part 11a at a 22 rotatable state." 23 Do you see that? 24 A I do. 25 Q Does that discussion help inform my previous	Page 99 1 that on -- in writing on your copy of -- do you have 2 Exhibit -- you should have Exhibit 1022 in front of 3 you. Right? 4 A Yes. 5 Q Would you be able to annotate on Figure 2 the 6 approximate location of the hinge? 7 A Okay. Let me just reread Paragraph 27 just 8 to inform my scribbling. 9 MR. BURNS: Objection, form. 10 THE WITNESS: So rereading 27, it says 11 that (as read): 12 "The mechanism possesses a hinge 13 function." 14 So I don't know if it specifies a thing 15 that's the hinge, itself. 16 BY MR. DAY: 17 Q So in the sentence that I just read, it 18 refers to the vibration -- (as read): 19 "The rotation center of the vibration 20 output part 11a near the intersection of 21 the vibration output part 11b and the 22 elastic part 11b as a reference." 23 Do you see that? 24 A Yes. Right. 25 Q I mean, since it refers to the vibration part
Page 98 1 question about why the -- the piezoelectric drive is 2 placed on the left side? 3 A Fujita talks about a hinge, which is a -- I 4 guess a mechanical term that implies how the vibration 5 of the plate moves in response to the columnar 6 element, but I don't know that he says that it's -- 7 where the location of that hinge should be. He shows 8 it in the example of being to the left, but I'm not 9 sure that it has to be there. 10 Q Well, in -- in -- in Figure 2 as it -- and as 11 it's described in Paragraph 27, the hinge is somewhere 12 on the left side of that figure. Right? 13 A Yes. 14 Q Would you be able to identify based on the 15 description in Paragraph 27 where -- where the -- the 16 hinge is? 17 A Presumably, that little white square in 18 Figure 2 at the top of the columnar element. I don't 19 know if you see it. It's -- that element usually 20 is -- is -- it's a hash mark, but it has an opening in 21 white, that's white. 22 I don't know. I'm assuming that that's what 23 he means. 24 Q Okay. It might be easier, just so we get 25 a -- a clean record here, I'd like to maybe identify	Page 100 1 at -- vibration output part 11a, is it possible that 2 the second reference to the vibration output part was 3 a typographical error that was intended to say 11a? 4 MR. BURNS: Objection, form. 5 THE WITNESS: Sorry. Can you point me to 6 which one you think is typographical? 7 BY MR. DAY: 8 Q So in the sentence that I just read, there's 9 two references to the vibrational output part 11a? 10 A Uh-huh. 11 Q Do you see that? 12 A Yes. 13 Q And -- and the first of those references 14 refers to it as vibrational output part 11a. 15 A Yeah. 16 Q And then the second refers to a separation 17 output part 11b. 18 A Oh. 19 Q Do you see that? 20 A Yep. 21 Q And 11b is -- also refers to it as the 22 elastic part. 23 Do you see that? 24 A Yeah. 11b looks from the diagram to be the 25 sidewall, so it's possible that they meant 11a.

Page 101 1 Q Okay. Would you agree based on that 2 description that if that is a typographical error, 3 that the rotation center would be near the 4 intersection of the -- the vibration output part 11a, 5 and -- which is shown as a horizontal line, and the 6 elastic part 11b which is shown as a -- as a vertical 7 structure? 8 MR. BURNS: Objection, form. 9 THE WITNESS: It's possible. Yeah, it's 10 not totally clear, but I believe the intent is to 11 put plate 11a into vibration, but the location of 12 the hinge may not be totally clear. 13 BY MR. DAY: 14 Q Okay. So based on that -- based on that 15 description, would the rotation center be essentially 16 that corner where 11a and 11b intersect? 17 MR. BURNS: Objection, form. 18 THE WITNESS: Based on what we just said, 19 it's possible, yes. 20 Do you want me to mark that? Or I guess 21 I already said it, but... 22 MR. DAY: Yeah. If you can mark that on 23 1022. 24 THE WITNESS: Oh. I don't -- 25 MR. BURNS: Yeah. Object to the marking	Page 103 1 have any question about whether -- whether the 2 intersection of the Element 11a and -- and the Element 3 11b are in that figure? 4 A That is not my uncertainty. My uncertainty 5 is to whether that is the hinge function that the 6 patent is referring to. 7 Q Okay. So since the -- I think what we'll do 8 to address that is -- that question since -- since the 9 question is whether it's the hinge function, not 10 whether -- where that point is, can you just mark the 11 intersection of 11a and 11b as Point A and draw an 12 arrow to it? 13 MR. BURNS: Objection, form. 14 THE WITNESS: You mean write the A and 15 then draw an arrow to... 16 BY MR. DAY: 17 Q Yeah, where that point is on the figure. 18 A Maybe I can put a circle around it and then 19 say A? 20 Q That would work. 21 A Or put a -- I'll just put A. 22 Okay. 23 Q Can I see your annotation? 24 A Oh. 25 Q All right.
Page 102 1 on possibility. 2 THE WITNESS: Yeah. How is the marking 3 going to be remembered that it was a guess? 4 BY MR. DAY: 5 Q I mean, if you state that and -- as long as 6 you state that in your -- in your answer, I mean, it's 7 -- it -- but the record will reflect if you're stating 8 that you have some uncertainty. 9 A Okay. 10 Figure 2. Okay. 11 MR. BURNS: I would request something 12 that -- on the marking to include the uncertainty. 13 You can leave a question mark or something. 14 Because I don't think he should mark the drawing 15 without all this speculation about where it could 16 be. 17 Oh, I'm sorry. 18 BY MR. DAY: 19 Q Yeah, I think I had a pending question about, 20 like, whether -- whether you're able to mark the 21 intersection of -- actually, I may need to ask a new 22 question based on some of your counsel's objections. 23 Since I think your counsel had some 24 objections about whether -- that any marking was going 25 to reflect your uncertainty, do you have any -- do you	Page 104 1 A Can I write something like "possible hinge 2 location" or "uncertainty"? 3 Q Yes. Yeah. 4 MR. BURNS: Well, I think he was just 5 marking where the intersection was -- 6 THE WITNESS: Yes. 7 MR. BURNS: -- right? 8 THE WITNESS: That is. So -- 9 MR. BURNS: So that's what the record's 10 reflecting, right -- 11 THE WITNESS: Right. 12 MR. BURNS: -- where the intersection is. 13 So I don't think you need to mark anything on that 14 paper. 15 THE WITNESS: Okay. Good point. 16 Oh, here's your pen. 17 BY MR. DAY: 18 Q Actually, I may give you the pen back in a 19 moment. 20 Is the -- the -- now, on the right side of 21 the figure, if you're going over from the point you 22 labeled as Point A -- actually, I'll start again. 23 So that -- that vibration output part 11a 24 transmits vibrations to a structure that is identified 25 as a Cushion 16. Is that right?

Page 105 1 A Yes. 2 Q So as that vibration output part moves, the 3 Cushion 16a would move with it. Correct? 4 A It would move in response to the vibration. 5 There are different materials with it, and so I don't 6 think it's correct. It would move in response to the 7 vibration it's receiving. 8 Q Okay. When you say, like, they're different 9 materials -- I mean, I have a question about your last 10 response that I'm trying to formulate correctly so 11 it's an understandable question. 12 Why would the different materials affect the 13 way that that structure would move in response to the 14 vibration it's receiving? 15 MR. BURNS: Objection, form. 16 THE WITNESS: I guess I should ask what 17 you meant "with it." To me, that meant in the 18 same way. 19 But different materials have mechanically 20 different compliances. They have mechanical 21 impedances. 22 So to me, that wouldn't imply "with it," 23 it would imply "in response to it." 24 BY MR. DAY: 25 Q Okay. What is a mechanical impedance?	Page 107 1 transferred in some amount to 16. 2 Q Okay. Yes. So, like, the -- basically, the 3 -- the chain is -- is -- is that there's a -- some 4 vibration that's generated by that piezoelectric 5 Element 12 that's transferred to the vibrating part 6 11a, and then -- from that; and then that transferred 7 vibrations to Element 16, which transfers those 8 vibrations to the skin of a user. Is that right? 9 A Almost the -- the columnar part 16, 10 whatever it is. 12, sorry. Columnar part 12 is 11 generating a force, not a vibration. The force 12 interacts with 11a and becomes vibration that then -- 13 that is what we just said. 14 Q Okay. And do you see on the right side of 15 Figure -- of Figure 2, there's an Element 13 which is 16 described as a "base weight"? 17 Do you see that? 18 A Yes. I can go look up -- I don't remember 19 the name, but I presume you're representing it's 20 called the base plate. 21 Q It's in Paragraph 26, if you want to look at 22 it to confirm. 23 A Yes. 24 Q Okay. And I would actually like you to -- 25 like you to annotate another point on this figure,
Page 106 1 MR. BURNS: Objection, form. 2 THE WITNESS: I guess it has to do with 3 the stiffness of the material and how it moves, 4 given a certain driving force. How efficient it 5 is. There are different ways to look at it. 6 But it's a way of -- it's something that 7 impedes the full force of the driving to be 8 delivered, or -- or it alters the full force 9 amount based on how pliable it is, for example. 10 BY MR. DAY: 11 Q Okay. So I guess maybe to go back a couple 12 questions. I -- since, you know, you took issue with 13 the phrase "with it," can we at least agree that the 14 Cushion 16 moves in response to vibrations from the 15 vibration output part 11a? 16 MR. BURNS: Objection, form. 17 THE WITNESS: I agree with that, yes. 18 BY MR. DAY: 19 Q Okay. 20 A Sorry. Remem- -- let me add something. I 21 was... 22 Remembering that the vibration part 11a is -- 23 moved itself by the piezoelectric structure. That's 24 what's producing the driving force. The 11a is 25 producing the vibration motion, and that gets	Page 108 1 and -- I just want to do that just so we have a clear 2 reference to talk to. 3 Can you -- I'm going to hand you my pen 4 again. Can you indicate again on Exhibit 1022 the 5 point on Figure -- the point in Figure 2 where the -- 6 the Cushion 16 contacts the base weight 13? 7 MR. BURNS: Objection, form. Same 8 objection as before. 9 THE COURT REPORTER: I'm sorry, what was 10 that? 11 MR. BURNS: About marking the exhibit. 12 MR. DAY: And, actually, I'll -- I'll 13 add. Can you locate the point where the Cushion 14 16 touches the base weight 13 and mark that as 15 Point B. 16 MR. BURNS: Same objection. 17 THE WITNESS: Just by looking at the 18 figure, it looks like there are multiple places 19 where that happens. Right? There's that one 20 prong that goes down and then there's the right 21 side, which also touches in a couple places. 22 Although -- 23 BY MR. DAY: 24 Q I'm only seeing one where the shaded por- -- 25 portions actually contact each other.

Page 109 1 MR. BURNS: Objection, form. 2 THE WITNESS: Oh, I see. What I can't 3 tell from this figure is what the line that is 4 touching the -- the second from the right prong of 5 Figure 16 near where 16b is pointed to, that is 6 touching a straight line that extends out from 7 11a, but I don't know what that is. It didn't 8 have anything to do with my analysis because I was 9 looking at forces, but that doesn't seem to be 10 labeled. 11 MR. DAY: It does appear that there is 12 a -- a gap between the shaded region marked as 13 13 and the -- the straight line that you referred to 14 in your last answer. 15 MR. BURNS: Objection, form. 16 THE WITNESS: It does. I just don't know 17 if that's intended or -- or not. As I said, my 18 analysis -- the use of this was for something 19 else, having to do with the force being generated, 20 so I haven't -- I haven't looked at that to see 21 what that gap means, if anything. 22 BY MR. DAY: 23 Q Are you reviewing something in the reference? 24 A Yes. 25 Q Okay.	Page 111 1 stacked columnar piezoelectric element 12 2 is inserted in the" U-ship -- "U-shaped 3 frame, and structure with the 4 displacement of the stacked columnar 5 piezoelectric Element 12 is amplified 6 through a lever principle that's 7 provided." 8 Do you see that? 9 A Yes. 10 Q Do you understand how the -- what the lever 11 principle being referred to in Paragraph 36 is? 12 A It appears to be related to the hinge concept 13 that we talked about before. A lever is something 14 that causes a surface to move around -- around the 15 center where the lever is touching. 16 Q Okay. And, actually, the -- the following 17 sentence might -- might add some clarity, too. "The 18 displacement of the stack" -- I'll start again. 19 I'm reading the following sentence (as read): 20 "The displacement of the stacked 21 columnar piezoelectric Element 12 takes 22 the rotation center of the vibration 23 output part 11a near the intersection of 24 the vibration output part 11a and the 25 elastic part 11b as a reference origin,
Page 110 1 A I'm reading a paragraph -- a couple 2 paragraphs below to see if there's any help with that. 3 I don't, at this point, see any reference to 4 it, so I'm not sure what that means in terms of 5 contact that you asked me about. 6 Q All right. Yeah. We may move on, I guess, 7 and come back to it so we don't get too bogged down on 8 that point. 9 A Okay. 10 Q Will you turn to Paragraph 36 of the -- of 11 Fujita. 12 Did you review Paragraph 36 before you 13 provided your initial declaration? 14 MR. BURNS: Objection, form. 15 THE WITNESS: I reviewed the entire 16 patent. I don't specifically recall that I would 17 have skipped anything. 18 BY MR. DAY: 19 Q Did any of the discussion in Fujita about -- 20 I'll start again. 21 Let's look more specifically at that 22 paragraph. So Paragraph 36 reads (as read): 23 "The bone conduction speaker 10 of 24 the bone conduction receiver 1, according 25 to the embodiment shown in Figure 2, a	Page 112 1 causing the vibration output part 11a to 2 undergo rotational vibration." 3 Do you see that? 4 A Yes. 5 Q And I noticed in -- in this sentence it 6 refers to the intersection of the vibration output 7 part 11a and the elastic part 11b. Is that the point 8 that you annotated as Point A on -- on Figure 2 of 9 your copy? 10 A Yes, it is. 11 Q Okay. So would you agree that the point that 12 you labeled as Point A is the point that is identified 13 as the rotation center in the second sentence of 14 Paragraph 36? 15 MR. BURNS: Objection, form. 16 THE WITNESS: It appears to be that, yes. 17 BY MR. DAY: 18 Q And if the structure is providing a lever 19 principle, would it be fair to refer to that point as 20 the fulcrum or the lever? 21 MR. BURNS: Objection to form. 22 THE WITNESS: Yes. 23 BY MR. DAY: 24 Q Okay. And I'm going to read the -- the 25 remainder of Paragraph 36. (As read):

Page 113 1 "On the vibration output part 11a, 2 the further the vibration output part 11a 3 is from the rotation reference, the 4 greater the displacement amplification of 5 the vibration output part 11a becomes. 6 In contrast, in a position far from the 7 stacked columnar piezoelectric 8 Element 12, the displacement of vibration 9 output part 11a exceeds that of the 10 monomer of the stacked piezoelectric 11 Element 12 and reaches the maximum extent 12 at the far end of the vibration output 13 part 11a farthest from the rotation 14 center." 15 Do you see that? 16 A Yes. 17 Q Would you agree that -- I'll start again. 18 Would that description also support the 19 understanding that the structure shown in Figure 2 20 of -- of Fujita is providing a levered structure? 21 MR. BURNS: Objection, form. 22 THE WITNESS: The entire structure? No. 23 The lever is the element that we just talked 24 about, right, not the -- not the whole housing. 25 ///	Page 115 1 Q And would you agree that as described in 2 Paragraph 36, the -- the further right you go on that 3 Element 11a, the more that Element 11a is going to be 4 displaced by -- by the movement of the piezoelectric 5 column? 6 A That's what it's saying here, yes. 7 Q So would it be fair to say that the structure 8 described in Figure 2 is a third class lever with 9 the -- with the fulcrum at that hinge point that you 10 marked as Point A, the driving force being provided by 11 the -- the piezoelectric Column 12 and the load spread 12 throughout the length of the -- the Element 11a? 13 MR. BURNS: Objection, form. 14 THE WITNESS: The load spread. How are 15 you defining that? 16 BY MR. DAY: 17 Q Maybe I can break that down into a couple of 18 questions. 19 Would it be fair to say that the lever 20 principle being described in Paragraph 36 would 21 essentially show a -- a third class lever? 22 MR. BURNS: Objection, form. 23 THE WITNESS: I'm trying to remember my 24 lever classes, so I -- I don't recall the names of 25 each one of them. Is there a definition that you
Page 114 1 BY MR. DAY: 2 Q And maybe I can rephrase the question. Would 3 that description that we just read support the -- the 4 understanding that the -- the Element 11a in Fujita is 5 operating as a lever? 6 MR. BURNS: Objection, form. 7 THE WITNESS: I believe that's what he's 8 trying to say; however, that's not what I was on 9 opining on. That doesn't talk about this -- the 10 driving force which comes from the column. That 11 just talks about the -- how it's transferred -- 12 how the vibration that results is transferred -- 13 or is generated. 14 BY MR. DAY: 15 Q Would you agree that in order for the -- in 16 order for the displacement of the -- I'll start again. 17 So in the beginning of the couple sentences 18 that I just read it says (as read): 19 "The farther out the vibration output 20 part 11a is from the rotation reference." 21 Would you agree that in Figure 2 that the 22 -- the farther out from the rotation reference 23 would be towards the -- the right side of the 24 figure? 25 A Yes.	Page 116 1 have handy? 2 BY MR. DAY: 3 Q No, I'll be honest, I don't have one handy, 4 because I had to look it up myself today. 5 A It -- there's a lever there, and that's -- we 6 can agree on that. 7 Q Okay. 8 A It's being driven by a vertical force, the 9 driving force, which I -- the direction which I 10 indicated in green on my annotated figure in -- on 11 Page 80 of my report. And then, in my mind, that's 12 all that matters for this claim is which way is the 13 driving force and which way is the normal to the 14 surface that's touching the skin. That's what the 15 claim required. How the energy gets transferred and 16 all of that, I -- I have to admit I didn't look into 17 that because it -- it wasn't relevant to my analysis. 18 Q Okay. So with regard to the specific lever 19 structure -- or I'll start again. 20 You didn't consider the specific lever 21 structure described in -- in Fujita to be relevant to 22 your analysis. Is that right? 23 MR. BURNS: Objection, form -- form. 24 THE WITNESS: Not in determining what the 25 straight line of the driving force is, no. It

Page 117 1 wasn't needed. 2 BY MR. DAY: 3 Q Okay. So in order for the -- so I think in 4 one -- one of my previous questions, I -- I think you 5 stated that the -- the further right you go on 6 Element 11a in Figure 2 of Fujita, the -- the more 7 that element is displaced in response to the driving 8 force from the -- the piezoelectric element. Is that 9 right? 10 A Yes, I was agreeing, basically, with Fujita's 11 description. It says the same thing. 12 Q In order for that element to be displaced 13 more as you go further to the right, would the -- the 14 right side of that element have to be free to move? 15 MR. BURNS: Objection, form. 16 THE WITNESS: What -- what do you mean by 17 "free to move"? 18 BY MR. DAY: 19 Q So in order for a -- in order to have a lever 20 principle as is described in Paragraph 36, the -- a 21 lever would not function if the opposite end of the 22 lever from the fulcrum was held in place. Correct? 23 A Two parts to that answer. I don't believe 24 the -- it is being held in place; and, secondly, even 25 if it were for some reason -- we're talking	Page 119 1 of the Cushion 16? 2 A I didn't analyze it. That's a complicated 3 question because of the shape and the angles and how 4 much mechanical energy is transferred through those 5 prongs, for lack of a better word. I don't know if we 6 can say that for certain. 7 Q All right. So the -- the -- well, maybe I 8 can direct you to a portion of Fujita that actually 9 talks about this. 10 A Okay. 11 Q You turn to Paragraph 41, it's -- I think 12 it's on Page 9. And -- all right. So Paragraph -- 13 I'm trying to think whether I want to read the whole 14 thing or just pick a couple sentences. 15 So I'll start with the second sentence of 16 Paragraph 41. It says -- which reads (as read): 17 "As shown in Figure 2, in the bone 18 conduction speaker 10, according to the 19 embodiment, a structure based on the 20 lever principle is adopted." 21 Do you see that? 22 A Yes. 23 Q (As read): 24 "Therefore, even if the expansion and 25 contraction amount of the stacked
Page 118 1 hypothetically here -- even if it were held in place, 2 the part of 11a, that is, say, to the right of the 3 columnar element would still move. It could have 4 bending modes or other methods of -- of producing 5 vibration. 6 Q And I think the first part of your answer 7 actually gets more to what I was asking at. The -- 8 when you say it -- I don't believe that -- you said, 9 "I don't believe that it is being held in place." Why 10 not? 11 A Well, to me, held in place means it's glued 12 or screwed down or -- preventing from vibrating, which 13 would not make any sense in this application. It is 14 touching parts of the cushion, but it's not being held 15 in place. 16 Q Okay. When you say it -- I think my original 17 question was about the right side of the Element 11a. 18 Is that right? 19 A That's the one I'm referring to, yes. 20 Q Okay. And since the -- I think I'll start 21 again. 22 Since the right side of Element 11a is being 23 displaced more than the left side of Element 11a, 24 would it also follow that the right side of the 25 Cushion 16 is being displaced more than the left side	Page 120 1 columnar piezoelectric electric 12 2 monomer is approximately 2 micrometers to 3 3 micrometers, the displacement of the 4 Cushion 16 mounted to the vibration 5 output part 11a is still amplified by the 6 design-specified value." 7 Do you see that? 8 A Yes. 9 Q Would you agree that as described in that 10 paragraph, the -- the right side of the -- I'll start 11 again. 12 Would you agree that as described in that 13 paragraph with reference to the Figure 2, the right 14 side of Figure 2 in Fujita is being displaced by a 15 greater degree than the left side? 16 MR. BURNS: Objection to form. 17 THE WITNESS: Just to be clear, the 18 left -- I understand the right side. I think -- 19 well, I just -- can you point me to what you mean 20 by the left side? 21 BY MR. DAY: 22 Q So closer to the -- the -- the point that we 23 identified as Point A earlier. 24 A Right. 25 So the way I read this, I think the -- the

Page 121

1 last sentence, maybe if we could read that, helps (as
2 read):

3 "Therefore, sufficient vibration can
4 be transmitted to the perception part of
5 the user and recognized as sound
6 information."

7 So what Fujita is using the lever for is
8 to amplify the limited motion of the
9 piezoelectric. So it's -- the piezoelectric
10 that's driving this vertically starts to drive
11 this springboard, let's call it, mechanism which,
12 because of the lever effect, acts as an amplifier
13 to overcome perhaps slower sound levels that would
14 come out without it.

15 This was one of my main motivations as to
16 why a POSITA would change that piezoelectric into
17 a more traditional electromagnetic-type structure
18 to overcome that limitation.

19 **Q All right. Let's talk about that limitation.**
20 **And I think I asked you a little bit about**
21 **what piezoelectric elements are earlier, and I want to**
22 **drill down on that a little bit more.**

23 **Is it fair to say that piezoelectric elements**
24 **can -- are often used because they -- they -- a**
25 **piezoelectric element will expand or contract by very**

Page 122

1 small distances?

2 A I don't know if that's why they're used.
3 They're -- some would consider that a limitation.
4 So no, I don't think it's fair to say that
5 that's why they're used.

6 **Q Okay. Yeah, I guess I'm going to have --**
7 **maybe talking about some personal experience that's**
8 **totally outside the scope of this case, but --**
9 **actually -- well, you mentioned that being a**
10 **limitation.**

11 **Is it fair to say that -- that one limitation**
12 **of piezoelectric elements is that the amount of -- of**
13 **displacement that they -- they actually create, their**
14 **full range, can be fairly small?**

15 A Yes, that is -- that is a limitation of
16 piezoelectrics.

17 And Fujita is trying to address that, I think
18 here, with this lever mechanism to get more sound out
19 of it.

20 **Q Right.**

21 **And -- and because the displacement of a**
22 **piezoelectric drive is relatively small if you're**
23 **using it as a driver to create sound, the**
24 **piezoelectric sound is not going to create a very**
25 **large -- a very loud sound, basically. Right?**

Page 123

1 A Well, it still has to be connected to a
2 vibrating surface. So it's just providing the force.
3 Just like in an electromagnetic driver, the force in
4 the gap is being provided by the magnetic field in
5 response to the current; here it's being -- but both
6 of them require a surface like 11a to produce
7 vibration that eventually gets to the bone.

8 **Q And in the structure that's shown by Fujita,**
9 **the -- the whole lever mechanism of -- is essentially**
10 **a way to address the limitation of the -- the**
11 **piezoelectrical drive. Right?**

12 A It's a way to increase the vibration, yes.
13 That's right.

14 **Q Okay. And in Figure 2 of -- of Fujita, the**
15 **-- the vertex -- the highest point of that Cushion 16**
16 **is -- also occurs to the right side of that figure.**
17 **Right?**

18 A The high -- oh, yes. Uh-huh.

19 **Q And that vertex is labeled as point 16b. Is**
20 **that right?**

21 A Is that what 16b refers to? I'm not sure. I
22 guess I can look.

23 **Q In Paragraph 37 on that.**

24 A Oh, okay. The vertex. Yes, I see it.

25 **Q So in other words, the curve of the top**

Page 124

1 **surface of that Cushion 16 is asymmetrical. Right?**

2 A I'm sorry. I need you to tell me what you
3 mean by asymmetrical.

4 **Q Well, the -- the vertex being located to**
5 **one -- more to one side of the center would mean that**
6 **it's not a symmetrical surface. Right?**

7 MR. BURNS: Objection to form.

8 THE WITNESS: I don't think that that --
9 I don't think we can draw conclusions about
10 symmetry.

11 So you're implying that if it was in the
12 center, it would be symmetrical?

13 BY MR. DAY:

14 **Q I -- I -- I might have phrased that poorly.**
15 **In any case, you'd agree that the vertex is**
16 **off center to the right of the Cushion 16 in Figure 2**
17 **of Fujita. Correct?**

18 A Yes. Yes.

19 **Q And the vertex 16b is located at a point**
20 **where the -- the -- the vibrations induced by that**
21 **piezoelectric drive are amplified by that 11 principle**
22 **we've been discussing. Correct?**

23 A Well, it's amplified across the length of it
24 in various amounts. So they're -- the vertex is just
25 past the end point of that springboard that we talked

Page 125 1 about. 2 Q And just to be clear, I think -- I just want 3 to get a clear answer to that question. 4 So because that -- that vertex is located 5 past the -- the end of the springboard 11a, the -- the 6 vibrations induced by the piezoelectric drive would be 7 amplified at that point. Correct? 8 A I don't think I can draw that conclusion 9 based on just that fact. I don't know how it -- the 10 front surface of 16, the whole cushion, would vibrate 11 exactly at each point. 12 That wasn't part -- that was -- I didn't 13 analyze that. That wasn't -- my -- my intent here, as 14 I said, was to show that the angled major part that 15 starts with the vertex on the right and goes all the 16 way lower to the left has a normal line that is at an 17 angle to the force, driving force angle, which is what 18 the claim required. 19 Q And so the lever structure of -- of the 20 Fujita reference didn't factor into your analysis of 21 it? 22 MR. BURNS: Objection, form. 23 THE WITNESS: The level structure doesn't 24 have anything to do with the driving force. It 25 just has to do with the efficiency of transferring	Page 127 1 LOS ANGELES, CALIFORNIA 2 THURSDAY, JANUARY 29, 2026 3 1:10 P.M. TO 2:17 P.M. 4 * * * 5 CHRIS KYRIAKAKIS, 6 HAVING PREVIOUSLY BEEN DULY ADMINISTERED AN OATH, 7 WAS EXAMINED AND TESTIFIED AS FOLLOWS: 8 9 THE VIDEOGRAPHER: We are back on the 10 record at 1:10. 11 12 EXAMINATION (resumed) 13 BY MR. DAY: 14 Q All right. Welcome back, Dr. Kyriakakis. 15 I have a few more questions related to the 16 Fujita reference. 17 Before we finish that line of questioning, 18 can you turn to Figure 6 of the Fujita reference. I 19 think it's on Page 18. 20 A Yes. 21 Q Would you agree that Figure 6 shows on the 22 left side a diagram of the -- that Cushion 16 of 23 Fujita making contact with the user's skin? 24 A Yes, I see that. 25 Q And the right side is a diagram of contact
Page 126 1 energy from the piezoelectric. 2 Which I also said later on in my report, 3 that's -- because of those kinds of limitations 4 that we talked about, that would be replaced by a 5 POSITA anyway by a more traditional and lower cost 6 electromagnetic driver while still reaping the 7 benefits of the curved cushion. 8 MR. DAY: Okay. I think we've been going 9 for about an hour, and we have lunch here. 10 Would now be a good time to take a lunch 11 break? 12 MR. BURNS: Sure. 13 THE VIDEOGRAPHER: Off the record at 14 12:22. 15 (Whereupon, at the hour of 12:22 p.m., a 16 luncheon recess was taken.) 17 * * * 18 /// 19 /// 20 /// 21 /// 22 /// 23 /// 24 /// 25 ///	Page 128 1 pressure? 2 A Yes. 3 Q And the arrows in that diagram would indicate 4 that the -- the contact pressure corresponds to the 5 points in the left side of the diagram where the -- 6 the cushion is making contact with the skin? 7 A The graph of the contact pressure matches 8 roughly that shape, yes. 9 Q The -- the peak of diagraphic contact 10 pressure corresponds to the vertex of the cushion. 11 Correct? 12 A Yes. It's not labeled, but it appears to be 13 that, yes. 14 Q Okay. Thank you. 15 If you turn to Figure 3 of -- of Fujita. 16 A Yes. 17 Q How does Figure 3 relate to Figure 2? 18 A The description, it appears to be additional 19 pieces around the parts that we saw in Figure 2. 20 Q Okay. So, generally speaking, Figure 3 would 21 show the -- how the transducer apparatus of Figure 2 22 would be integrated into a larger device. Correct? 23 A That's what it looks like, but let me just 24 check the description of Figure 3 that I'm remembering 25 correctly.

Page 129 1 Yes. 2 Q So in -- in Figure 2, the bottom of that -- 3 that U-shaped plate, frame 11, part 11c is referred to 4 as the frame fixing part. Correct? 5 A Sir, I don't have the parts memorized, so I 6 would have to look it up. 7 Q Sure. 8 A You're saying 11c? 9 Q Correct. If you want a citation, it's at the 10 top of Page 6. 11 A Okay. 12 On top of Page 6, Paragraph 35? 13 Q Yes. 14 A I don't see that mentioning 11c, but... 15 Q Page 6 of Fujita would be Paragraph 24. 16 A Oh. Page 6, PDF Page 6. 17 Q Sorry, yeah, my fault. 18 Okay. So -- 19 A Okay. They call it the frame fixing part. 20 Q And the purpose of the frame fixing part is 21 to fix the -- the bottom portion of that frame to the 22 remaining structure of the headset. Correct? 23 MR. BURNS: Objection, form. 24 THE WITNESS: That is one purpose. I -- 25 I'm trying to see if it has anything to do with	Page 131 1 because 11a doesn't seem to be touching 11c or 2 anything above it. 3 BY MR. DAY: 4 Q I think 11c is at the bottom. 5 A No, I understand, but I'm just saying it's -- 6 I don't see how movement in 11a -- I believe that's 7 what you asked me. Right? 8 Q Correct. 9 A I can see how 11a is moving the cushion. I 10 don't see the second part. 11 Q That teaching in Paragraph 41 explicitly says 12 that (as read): 13 "The vibration output part 11a of 14 frame 11 and the frame fixing part 11c 15 continuously displace relative to each 16 other." 17 Correct? 18 A I -- I don't see how they're connected to be 19 displacing relative to each other. As I said, I 20 didn't -- this isn't a part that I analyzed. I was 21 just looking at the driving force and normal alliance 22 of the surfaces for purposes of my report, but -- so I 23 haven't looked at this in depth, but I just don't see 24 how they're connected to be moving relative to each 25 other.
Page 130 1 adding to the rigidity because 11cc right below it 2 is for enhancing the rigidity. So 11c connects 3 through 11cc, I would say, for fixing and helping 4 to enhance the rigidity. 5 Q All right. Can you look at Paragraph 41? 6 So frame -- Paragraph 41 reads (as read): 7 "Due to the expansion and contraction 8 changes of the stacked columnar 9 piezoelectric Element 12, the vibration 10 output part 11a of frame 11 and the frame 11 fixing part 11c continuously displace 12 relative to each other as the elastic 13 part 11b bends and deforms." 14 Do you see that? 15 A Yes. 16 Q Now, in the context of Figure 3, would you 17 agree that if the -- actually, we'll -- I'll throw in 18 another question in there and start again. 19 Would you agree that if the vibration output 20 part 11a is displacing relative to the framed fixing 21 part 11c, that the Cushion 16 is also displacing and 22 moving relative to the frame fixing part 11c? 23 MR. BURNS: Objection, form. 24 THE WITNESS: This kind of relates to 25 what we talked about before, that mystery gap,	Page 132 1 Q Okay. So this wasn't something that you -- 2 the relationship between the -- the Cushion 16 and the 3 rest of the -- the structure of the -- the device 4 shown in Fujita wasn't something you analyzed for your 5 declaration? 6 MR. BURNS: Objection, form. 7 THE WITNESS: No. I was just interested 8 in the two angles between the force and the normal 9 to the surface. 10 BY MR. DAY: 11 Q You -- you see in Figure 3 it also just shows 12 a body casing of the -- the remainder of the device? 13 A Which part are you pointing to? 14 Q In Figure 3 there's a casing 2 labeled, which 15 is identified as the body casing. 16 A Okay. I see it. 17 Q If you need a citation for that, it's 18 Paragraph 23. 19 A Let's take a look. Yeah, I see it. 20 Q Do you have any understanding on how, if at 21 all, the Cushion 16 would move relative to the -- the 22 body casing 2? 23 MR. BURNS: Objection, form. 24 THE WITNESS: I don't see any mechanism 25 that would move the body casing from the

Page 133 1 transducer or the cushion, Cushion 16. 2 BY MR. DAY: 3 Q Would you agree that if the -- Cushion 16 is 4 displacing relative to the -- the fixing element and 5 the fixing element is fixed in place with respect 6 to the -- to the body casing, that the cushion would 7 also be moving with respect to the body casing? 8 MR. BURNS: Objection, form. 9 THE WITNESS: I didn't analyze that. It 10 seems like a bit of a stretch. Many things are 11 connected, but all we know for sure, and at least 12 the part that I analyzed, is that the -- 11a, 13 which apparently here is pointed to as 10, moves, 14 and that makes Cushion 16 move. I didn't do any 15 motion analysis or connections or anything else 16 for the rest of the structure. 17 BY MR. DAY: 18 Q Can you turn to the top of Page 6 or -- 19 excuse me -- I'll be clear. Like, Page 4, PDF Page 6, 20 Paragraph 24 of Fujita. 21 A Yes. 22 Q So the -- it looks like a paragraph, even 23 though it doesn't have a separate paragraph label, and 24 the first sentence of that paragraph reads (as 25 read):	Page 135 1 might clean that up. 2 A Uh-huh, okay. 3 Q So in Paragraph 43, the first sentence reads 4 (as read): 5 "When the bone conduction speaker 10 6 of the bone conduction receiver 1, 7 according to the embodiment, is in 8 operation, the vibration output part 11a 9 and the frame fixing part 11c perform 10 displacement vibration actions in the 11 opening and closing directions of the 12 front ends." 13 Do you see that? 14 A Yes. 15 Q Then the next sentence reads (as read): 16 "At that moment, the weight of the 17 vibration output part 11a and the 18 Cushion 16 is sufficiently smaller than 19 the total weight of the positioning 20 plate 18, the base weight 13, the frame 21 fixing part 11c, and the fixing part 14 22 integrally formed with the screws 15." 23 Do you see that? 24 MR. BURNS: Objection. 25 Just for clarity, it says "at the moment"
Page 134 1 "In detail, the vibration output 2 part 11 for outputting vibration is 3 arranged on one side of a U-shaped 4 frame 11 and the weight is reduced as 5 much as possible." 6 Do you see that? 7 A Yes. 8 Q The -- the weight in that case is referring 9 to the -- the moving part 11a of the -- the frame -- 10 the U-shaped frame. Correct? 11 MR. BURNS: Objection, form. 12 THE WITNESS: It's not clear. I think 13 it's referring to the whole -- basically to Figure 14 2, the -- the whole mechanism. 15 BY MR. DAY: 16 Q Is it your opinion that reducing the weight 17 that the reduction -- excuse me -- the reference in 18 Paragraph 24 to reducing the weight refers to the 19 entire mechanism of Figure 2? 20 MR. BURNS: Objection, form. 21 THE WITNESS: I'm saying it's unclear. 22 The weight is reduced, but it doesn't say which 23 weight. 24 BY MR. DAY: 25 Q Turn to Paragraph -- Paragraph 43, and it	Page 136 1 not "that moment," just to clarify. 2 MR. DAY: Okay thanks. 3 MR. BURNS: Yeah. 4 THE WITNESS: I see it, and that was also 5 going by my -- not the same question, but "at the 6 moment" means that at other moments it's not? I 7 don't see how the weight would change. 8 BY MR. DAY: 9 Q Using Mojawa's translation, so... 10 A I understand. This happens. 11 Q Does "at that mom-" -- or, excuse me -- does 12 "at the moment" appear to refer to when the speaker is 13 in operation? 14 MR. BURNS: Objection, form. 15 THE WITNESS: I have to admit I don't 16 understand the sentence because I don't see how 17 the weight could change, whether it's in operation 18 or not. 19 BY MR. DAY: 20 Q Maybe the next sentence might clear it up a 21 little bit. In the first paragraph -- or, excuse 22 me -- in the first sentence of Paragraph 44, it states 23 (as read): 24 "In addition, the weight of the 25 fixing part 14 on the supporting side of

Page 137 1 the body casing 2 is relatively large and 2 the vibration generated by the stacked 3 columnar piezoelectric Element 12 is 4 mainly released from the vibration output 5 part 11a so that the vibration facing 6 part 14 is relatively small." 7 Do you see that? 8 A Yes. 9 Q Would that description be consistent with a 10 design in which the -- the moving parts of the -- the 11 vibration transmitting element and the cushion are 12 relatively lightweight in -- relative to the rest of 13 the device in order to transmit vibrations to the 14 user? 15 MR. BURNS: Objection, form. 16 THE WITNESS: I don't know if I can draw 17 that conclusion. What I'm having trouble with is 18 the comparison of that to the weight of the 19 non-moving parts, the fixing part 14 would consist 20 of all those other pieces. One reason could be so 21 that it -- the vibration doesn't go into the hand 22 of the person holding it. It doesn't really say. 23 BY MR. DAY: 24 Q When you say one reason could be that the -- 25 so that the vibration doesn't go to the hand of the	Page 139 1 normal line of the surface, the weight did not 2 come into play. In my analysis of whether the 3 motivation to combine, which was to replace the 4 piezoelectric transducer with a traditional 5 electromagnetic one, that was also not -- the 6 weight was not considered, in the sense that I 7 knew I wasn't adding something that would make the 8 whole device heavier and therefore it was not a 9 concern. 10 BY MR. DAY: 11 Q All right. Can you turn to Page 36 of your 12 declaration on the '084 Patent. Look at Paragraph 75. 13 A Yes. 14 Q And on that page, do you have an excerpt from 15 the Fukuda reference? 16 A Yes. 17 Q It -- and specifically at Figure 1 of Fukuda. 18 Is that right? 19 A That's correct. 20 Q How does the transducer shown in Figure 1 of 21 Fukuda generate sound? 22 A This is what I would call a more -- a 23 traditional electromagnetic-type driver. It has a 24 magnetic -- it has magnetic components, it has a voice 25 coil. There's a plate that moves up and down in
Page 138 1 person holding it, what -- what do you mean by that? 2 A In the embodiment that we looked at, when 3 this transducer is in a handheld, it could be that 4 they're trying to focus the vibration to the direction 5 of the face by putting more mass. But, again, I'm -- 6 I'm guessing, I'm interpreting mass being the weight 7 maybe. And I'm almost seeing this for the first time 8 in a year because I hadn't -- didn't look at it at all 9 for my report. 10 Q Okay. And, actually, that -- that's another 11 question. I think we've -- we've had a few questions 12 where we've had sort of a similar exchange where I 13 asked you about a part -- about a part of this 14 reference and -- and I think you had answers along the 15 lines that it wasn't something you were -- considered 16 for your report. 17 I'll ask the same question about -- about 18 this particular issue. 19 Now, was the -- the weight of the -- the 20 transducer something that you considered in your 21 analysis of whether a person of ordinary skill in the 22 art would be motivated to combine Fujita with Li? 23 MR. BURNS: Objection, form. 24 THE WITNESS: So the -- in my analysis of 25 the direction of the driving force versus the	Page 140 1 response to the electromagnetic force that is being 2 generated. I guess -- I mean, there's other -- that's 3 the basic structure. 4 Q Where is the plate that moves up and down 5 relative to the electromagnetic force being generated? 6 A Twenty-one, I think it's -- yes. It's 7 sitting on top of the yoke, so they're both moving 8 together. 9 Q Okay. Does Figure 1 appear to be symmetrical 10 across the y-axis? 11 MR. BURNS: Objection, form. 12 THE WITNESS: This is related to what we 13 talked about before. If we draw a vertical line 14 down the middle of the figure, then it is 15 symmetrical. That's a bit of an arbitrary 16 definition, but what I mean by that is if this 17 same kind of driver was placed on the side of the 18 person so that the peak isn't touching but it's 19 angled, it would be asymmetrical based on what we 20 talked about before. 21 BY MR. DAY: 22 Q Okay. And you mentioned earlier that the 23 elastic -- the plate and the yoke move together. 24 Would those two surfaces also move up and 25 down symmetrically relative to the -- the y axis?

Page 141 1 MR. BURNS: Objection, form. 2 THE WITNESS: Only if we define the 3 y-axis to be the middle point. Actually -- I'm 4 sorry, that's -- I can restate that. 5 They move vertically. If we call that 6 the vertical direction y, they're moving with a -- 7 with -- in any direction if we were to drive a 8 motion vector, it's in the direction of y north. 9 So they move together in that direction. 10 BY MR. DAY: 11 Q So the -- the left side of yoke 11 would move 12 in the same direction by the same amount as the right 13 side. Correct? 14 MR. BURNS: Objection, form. 15 THE WITNESS: Correct. The driving force 16 is normal to the -- to that direction. That's 17 right. 18 BY MR. DAY: 19 Q So I've just handed you what's previously 20 been marked as 1007 in IPR 2025-00842. Although, I 21 believe it's used in both proceedings. 22 Do you recognize that exhibit as the Numata 23 reference? 24 A I do. 25 Q Would you agree that Numata teaches a headset	Page 143 1 BY MR. DAY: 2 Q Okay. Does the -- the ear hook part 20 shown 3 on the front page of Numata contain any electrical or 4 circuit elements? 5 A I don't believe it does. 6 The purpose of Numata was to show that the 7 connector could be used in a structure like Li where 8 the ear hook does contain them. 9 Q The -- the purpose of -- of that ear hook 20 10 is supporting the weight of the receiver. Correct? 11 A It's supporting it behind your ear or using 12 your ear as a support, yes. 13 Q The circuitry that drives that receiver is 14 contained within the body of the receiver itself. 15 Right? 16 A In Numata, that is correct. 17 I think when I talked about the motivation to 18 combine, I wasn't saying to remove electronics from 19 the ear hook. I was just saying that an ear hook with 20 electronics could be connected to a Li-type product 21 with this kind of connector. That was my use of this 22 reference. 23 Q In Numata, itself, the connecting part 30 and 24 the insertion part 47, do not carry any electrical 25 connections. Is that correct?
Page 142 1 receiver part that is designed to be worn on one ear? 2 MR. BURNS: Objection, form. 3 THE WITNESS: I don't think it's just the 4 -- it could be two pieces, identical pieces that 5 could be worn on either ear, and that was worn on 6 the -- of his connector. 7 But if you flipped -- I don't know if he 8 restricts it to a single ear. Obviously, the one 9 piece can only go in one ear, but there can be two 10 that go into two ears. 11 BY MR. DAY: 12 Q All right. There's no disclosure of a -- any 13 connection to a second piece. Is that right? 14 A I don't believe -- I don't recall for sure, 15 but I don't think so. 16 Q So, like, the benefit to the -- the 17 connecting piece that you just talked about is that 18 you can put it on one ear or the other. Right? 19 MR. BURNS: Objection, form. 20 THE WITNESS: Yes. I was just starting 21 to say it's not like this patent is teaching a way 22 to use it for two ears. It's just a -- the 23 benefit is the particular way that it's formed and 24 it could be used in either ear. 25 ///	Page 144 1 MR. BURNS: Objection, form. 2 THE WITNESS: In Numata, they do not. 3 The structure could be used to carry them if 4 combined with Li. 5 BY MR. DAY: 6 Q And turn to paragraph 34 of Numata. 7 A Yes. 8 Q Does paragraph 34 refer to the locking 9 mechanism that you relied on in your declaration? 10 A It does, but I would have to look at my 11 record to see if there might be other parts in Numata 12 that I relied on for this -- for that. 13 Q Okay. Yeah. We'll -- that's fine. I -- I 14 can maybe make it a narrower question. 15 Does Paragraph 34 refer to Numata's locking 16 mechanism? 17 MR. BURNS: Objection, form. 18 THE WITNESS: Figure 8b that he talks 19 about? 20 Yes, that's right. 21 BY MR. DAY: 22 Q Now, the mechanism is shown in Figures 8 and 23 9. Right? 24 A Yes. 25 Q So generally speaking, the way that mechanism

Page 145

1 works is that the -- that connector 30 with that
 2 connecting piece 47 slides into the -- slides into a
 3 through hole, and then that pushes the two sides of
 4 that connecting piece 47 together. Then once they're
 5 all the way through the through hole the connecting
 6 pieces -- or excuse me, the two sides of that
 7 connecting piece push back out and lock it into place.
 8 Is that right?

9 MR. BURNS: Objection, form.

10 THE WITNESS: That's generally what it's
 11 doing.

12 But I do have more detail in my report,
 13 if you would like me to look there, because I map
 14 two specific elements of the claims.

15 BY MR. DAY:

16 Q So the last paragraph -- or excuse me. The
 17 last sentence of Paragraph 34 reads (as read):
 18 "Besides, this engagement
 19 relationship can be easily released by
 20 inserting a tool in the opening in the
 21 opposite direction of the relevant
 22 insertion port [sic] 47 of the through
 23 hole 65a to reduce the slit 47a so the
 24 above assembly is easy to attach and
 25 detach and change."

Page 146

1 Do you see that?

2 A I see it.

3 MR. BURNS: Sorry. Just for the record,
 4 you said port 47. It's part 47. I don't know if
 5 you...

6 MR. DAY: Yeah. We're looking at a rough
 7 right now, so some of those things will be cleaned
 8 up.

9 BY MR. DAY:

10 Q The purpose of inserting a tool from the
 11 opposite direction is to compress the two sides of
 12 that insertion part in order to remove it. Is that
 13 right?

14 A That's what he says, yes.

15 Q And in order to remove that insertion part
 16 once it's been locked into place, the two sides would
 17 need to be compressed in order to allow it to slide
 18 back through that through hole. Correct?

19 A The two sides? Which -- what are you calling
 20 the "two sides" here?

21 Q Of the -- the insertion part 47, the two
 22 sides that are divided by the slit in the middle.

23 A I see.

24 The whole thing would have to be squeezed
 25 enough so that the lock would have to be expanded.

Page 147

1 That stops it from coming out. That those ears, let's
 2 call it, get squeezed in so they can be pulled out,
 3 yes.

4 Q And the way that Numata teaches to do that is
 5 with a tool that can squeeze them together. Right?

6 A That's what he says there, yes.

7 Q And in order to use that tool to detach that
 8 assembly, the -- the user would need to have access to
 9 the -- the opposite side of -- of the through hole
 10 from the side that the insertion part is being put
 11 into. Right?

12 MR. BURNS: Objection, form.

13 THE WITNESS: Yes, that's right.

14 BY MR. DAY:

15 Q Okay.

16 All right. I've just handed you what has
 17 previously been marked as Exhibit 1005, and I believe
 18 it's the same exhibit number in both proceedings.
 19 (Exhibit 1005 was previously marked.)

20 BY MR. DAY:

21 Q Do you recognize that as the Liao reference?

22 A I do.

23 Q And can you turn to Paragraph 56 of the Liao
 24 reference?

25 A Yes.

Page 148

1 Q Paragraph 56 describes materials that can be
 2 used for a vibration panel 220. Correct?

3 A That's what it says, but I just need to
 4 remember the diagram just to reorient myself.

5 Q It's 2b at the end.

6 A Oh, yes.

7 Q Let me know if you need to review any more.

8 A Oh, I'm sorry. No, I was just looking at the
 9 diagram.

10 Q Okay. All right. Just to orient us to
 11 Figure 2b, Figure 2b shows a panel 220 at the top of
 12 the figure. Right?

13 A Yes.

14 Q And as this device would be used in a bone
 15 conduction device such as a headset, that panel 220 is
 16 the part that would be placed touching the user's
 17 skin. Right?

18 A Correct.

19 Q And because that panel 220 is the part
 20 touching the user's skin, that -- that's the part that
 21 is intended to transmit vibrations to the user. Is
 22 that right?

23 A Yes.

24 Q And the housing body of the transducer is
 25 referred to as Element 210 in Figure 2b. Is that

Page 149 1 right? 2 A I see that, yes. 3 Q Going back to Paragraph 56, there's a lengthy 4 list of materials that might be used for the -- the 5 panel 220. Is that right? 6 A I see it. Yes. 7 Q Now, that list specifically refers to 8 materials to be used for the panel 220. Correct? 9 MR. BURNS: Objection, form. 10 THE WITNESS: Yes. 11 BY MR. DAY: 12 Q Paragraph 56 does not teach using any of that 13 list of materials for the housing 210, does it? 14 MR. BURNS: Objection, form. 15 THE WITNESS: Let me just read down a 16 little bit. 17 It talks about the housing and the 18 connecting members as being affected by the 19 material that is used for the panel in terms of 20 how vibration is transmitted from this whole 21 device. 22 BY MR. DAY: 23 Q Where is that? 24 A Just at the very end of -- I'm trying to find 25 the right place. It's maybe the last sentence (as	Page 151 1 if you address that issue in your report? 2 A Go back and look. We're talking about the 3 '582 Patent. Right? For Liao? 4 Q Yes, that's correct. 5 A Okay. Sorry. So in my report, I was 6 addressing things that were specific to the claim 7 elements. I'm trying to see if there's a claim 8 element that specifies or that requires a particular 9 material, and I'm not seeing one. So without spending 10 the time reading to find something, I can't answer 11 that more definitively. 12 Q All right. Can you turn to Paragraph 66 of 13 Liao? 14 A Yes. 15 Q Would you agree that Paragraph 66 of Liao 16 discloses a formula that can be used to calculate the 17 ratio of housing vibration to panel vibration? 18 A Yes. 19 Q And then the following Paragraph 68 describes 20 some of the variables that go into that -- into that 21 formula? 22 A Yes. And also he provides a graph that might 23 be easier to look through, in one of the figures. 24 Figure 3B. This is a graph of some 25 representative values from that equation. It helps
Page 150 1 read): 2 "When the energy conversion device 3 230 transmits vibration to the panel 220, 4 the vibration will also be transmitted to 5 the housing via the connection number 240 6 causing the housing 210 to vibrate and 7 correspondingly changing the vibration 8 mode of panel 220 thereby affecting the 9 vibration transmitted from panel 220 to 10 the human skin." 11 Q That sentence does not say anything about 12 what material the housing 210 is made out of, does it? 13 A No, just that it plays a role in the 14 vibration. 15 Q Are you aware of any other teaching in Liao 16 that describes the material out of which the -- the 17 housing 210 is made of? 18 MR. BURNS: Objection, form. 19 THE WITNESS: Again, I didn't memorize 20 this patent. It's 30 pages. I'd to have to look 21 through and see if he mentions that. 22 Would you like me to look through some 23 places? I don't know how to answer that better. 24 BY MR. DAY: 25 Q Did you address that in your -- do you recall	Page 152 1 with the discussion of the amplitude ratio requirement 2 in the claim. 3 Q Okay. Did you cite Figure 3B in your 4 declaration? 5 A I don't know if -- I don't think I did, no. 6 I just remembered that the equation you pointed to had 7 a -- an associated graph. 8 Q Okay. Did you apply the -- the formula 9 that's shown in Paragraph 66 of Liao to any -- any 10 embodiment disclosed in Liao? 11 MR. BURNS: Objection, form. 12 THE WITNESS: If I used the formula to 13 inform my opinion about what was meant by the -- 14 the ratio, the requirement in the claim? 15 BY MR. DAY: 16 Q Uh-huh. 17 A But I don't know what you mean by did I apply 18 it to any embodiment. 19 Q Actually, now let's talk about Figure 3B. I 20 know you brought it up. It's not in your -- I know 21 it's not in your declaration. 22 So Figure 3B shows a relationship between 23 frequency and the -- that ratio of housing vibration 24 amplitude and panel vibration amplitude. Right? 25 A Yes. It shows a few representative curves

Page 153 1 that are parameterized by this K-1 stiffness 2 parameter. So that's -- those are not the only ones, 3 but they're just showing a sample of those. 4 Q Okay. The x-axis is frequency and Herz. 5 Correct? 6 A Yes. 7 Q And because that's a logarithmic scale, it 8 jumps by factors of 10. Is that right? 9 A It -- yes. The major tick marks, yes. 10 Q The major tick marks jump in factors of 10, 11 and then if the -- if you wanted to go in units of 1, 12 you would follow the unmarked tick marks between them. 13 Right? 14 A In -- well, it's not units of 1. It's -- so 15 if we go from the middle 1,000, 10 to the 3rd, the 16 next dotted line would be 2,000 all the way up to 7, 17 8, 9 -- 10,000. 18 Q Okay. Yeah, actually, thanks for clearing 19 that up. So thank you. You said that more 20 articulately than -- than I was. 21 So if you go from the right from the -- the 22 10 to the 3rd, 1,000, like, the next two vertical 23 bottom lines would be 2,000 and 3,000. Right? 24 A Yes. 25 Q And on all those curves in Figure 3B -- I'll	Page 155 1 continuum of these curves. 2 Q Does Liao disclose any embodiments with a 3 higher rigidity coefficient? 4 MR. BURNS: Objection, form. 5 THE WITNESS: I don't recall all of his 6 embodiments. He does talk about the effects of 7 rigidity. He does -- he talks about -- at the 8 bottom of it, I think -- or many places, but, for 9 example, using -- connection number 240 was a 10 lower rigidity to effectively reduce the vibration 11 of the housing. So he talks about the role of 12 rigidity in the housing. Other places, too. I 13 just can't remember where they are right now. 14 The general relationship, now that I'm 15 reading, is Paragraph 65. It's a second order 16 differential equation that contains the 17 displacements and the rigidities, and solving that 18 is what leads to -- to Equation 2. So that's a 19 continuum of rigidity values. 20 MR. DAY: Doctor, I think I may be pretty 21 close to done. If you want, now may be a good 22 time to take a break and if I have -- you know, if 23 I have any more questions, I'll do that or just -- 24 just conclude. 25 MR. BURNS: Sounds good.
Page 154 1 start again. 2 All -- all of the curves shown in Figure 3B 3 have a value of less than -- than 0.5 in that 4 2,000-3,000 Herz range. Correct? 5 A Yes. But they're not relevant in that range. 6 You know, the ones that are not drawn are the ones 7 that would matter. If you continue drawing these 8 peaky-looking curves off to the right of K-1, you 9 would have similar shapes that appear in 2,000 to 10 3,000. I think it would be a very busy graph. And he 11 decided to show just a few of them. That's what a 12 family of curves means. 13 Q And what is K-1? 14 A The stiffness, I think. Let me look at that 15 paragraph again. 16 Rigidity coefficient. And somewhere in 17 Paragraph 68 he says which values. It's a 18 continuous -- it's a continuum of curves. He just 19 selected some values for K-1 to show example of 20 graphs. Here. At the bottom of Paragraph 68, about 21 four lines up, rigidity coefficient is disposed from 22 left to right at 5 times, 10 times, 20 times, 40 23 times, 80 times, and 160 times of K-2. So he's 24 comparing the rigidity of one panel to the other 25 panel, and you can imagine there would be a -- a	Page 156 1 THE WITNESS: Okay. 2 THE VIDEOGRAPHER: Off the record at 3 2:05. 4 (Recess.) 5 THE VIDEOGRAPHER: We are back on the 6 record at 2:17. 7 MR. DAY: All right, Dr. Kyriakakis, 8 thanks for your -- your time in answering my 9 questions today. 10 Other than possible recross based on 11 questions your counsel may have, I don't have 12 anything further, so at this time, I'll pass the 13 witness. 14 MR. BURNS: I don't have any questions. 15 THE VIDEOGRAPHER: We are off the record 16 at 2:17. This concludes today's deposition. 17 MR. DAY: Thank you. 18 (Whereupon, at the hour of 2:17 p.m., the 19 proceedings concluded.) 20 * * * 21 22 23 24 25

Page 157

1 STATE OF CALIFORNIA)
) ss.
2 COUNTY OF LOS ANGELES)
3
4 I, CHERYL ASADA, CSR No. 13496, certify: That
5 the foregoing proceedings were taken at the time and
6 place herein set forth; at which time the witness was
7 duly sworn; and that the transcript is a true record
8 of the testimony so given.
9 The dismantling, unsealing, or unbinding
10 of the original transcript will render the
11 reporter's certificate null and void.
12 I further certify that I am not financially
13 interested in the action, and I am not related to any
14 of the parties in this case.
15 Witness review, correction, and signature was
16 (X) by Code () Requested () Not requested.
17
18
19 Dated this 6TH day of FEBRUARY, 2026.
20
21 
22 _____
23 CHERYL ASADA, CSR 13496
24
25

Page 158

1 DECLARATION UNDER PENALTY OF PERJURY
2 Case Name: Suzhou Mojawa Intelligent Electronic Co., LTD.
 vs. Shenzhen Shokz Co., LTD.
3 Date of Deposition: 01/29/2026
4 Job No.: 10181942
5
6 I, CHRIS KYRIAKAKIS, hereby certify
7 under penalty of perjury under the laws of the State of
8 _____ that the foregoing is true and correct.
9 Executed this _____ day of
10 _____, 2026, at _____.
11
12 _____
13 CHRIS KYRIAKAKIS
14
15
16 NOTARIZATION (If Required)
17 State of _____
18 County of _____
19 Subscribed and sworn to (or affirmed) before me on
20 this _____ day of _____, 20____,
21 by _____, proved to me on the
22 basis of satisfactory evidence to be the person
23 who appeared before me.
24 Signature: _____ (Seal)
25

Page 159

1 DEPOSITION ERRATA SHEET
Case Name: Suzhou Mojawa Intelligent Electronic Co., LTD.
2 vs. Shenzhen Shokz Co., LTD.
Name of Witness: Chris Kyriakakis
3 Date of Deposition: 01/29/2026
Job No.: 10181942
4 Reason Codes: 1. To clarify the record.
 2. To conform to the facts.
 3. To correct transcription errors.
5
6 Page _____ Line _____ Reason _____
7 From _____ to _____
8 Page _____ Line _____ Reason _____
9 From _____ to _____
10 Page _____ Line _____ Reason _____
11 From _____ to _____
12 Page _____ Line _____ Reason _____
13 From _____ to _____
14 Page _____ Line _____ Reason _____
15 From _____ to _____
16 Page _____ Line _____ Reason _____
17 From _____ to _____
18 Page _____ Line _____ Reason _____
19 From _____ to _____
20 Page _____ Line _____ Reason _____
21 From _____ to _____
22 Page _____ Line _____ Reason _____
23 From _____ to _____
24 Page _____ Line _____ Reason _____
25 From _____ to _____

Page 160

1 DEPOSITION ERRATA SHEET
2 Page _____ Line _____ Reason _____
3 From _____ to _____
4 Page _____ Line _____ Reason _____
5 From _____ to _____
6 Page _____ Line _____ Reason _____
7 From _____ to _____
8 Page _____ Line _____ Reason _____
9 From _____ to _____
10 Page _____ Line _____ Reason _____
11 From _____ to _____
12 Page _____ Line _____ Reason _____
13 From _____ to _____
14 Page _____ Line _____ Reason _____
15 From _____ to _____
16 Page _____ Line _____ Reason _____
17 From _____ to _____
18 Page _____ Line _____ Reason _____
19 From _____ to _____
20 Page _____ Line _____ Reason _____
21 From _____ to _____
22 _____ Subject to the above changes, I certify that the
 transcript is true and correct
23 _____ No changes have been made. I certify that the
 transcript is true and correct.
24
25 _____
 CHRIS KYRIAKAKIS

0			2
0.5 154:3	11 75:2 124:21 129:3 130:10 131:14 134:2,4 141:11	95:11,25 96:10 107:5,10 111:1,5,21 113:8,11 115:11 120:1 130:9 137:3	2 54:5 56:22 57:13 58:4 59:15 60:16,19 61:13 80:15,22 81:4 94:10,11,14 95:1,10 96:15 98:10,18 99:5 102:10 107:15 108:5 110:25 112:8 113:19 114:21 115:8 117:6 119:17 120:2,13,14 123:14 124:16 128:17,19,21 129:2 132:14,22 134:14,19 137:1 155:18
084 10:8 40:3,5,11,19 41:2,13,20 62:19,24 65:10 78:7 79:22 85:22 139:12	111 56:2 58:21 59:4 75:1 1112 72:2 112 56:3 58:22 59:5 113 62:12,23 63:2 64:12,15,24 75:25 76:14 1131 56:4 58:24 59:2, 7,10 1132 59:1,9 11:09 89:19 11:20 89:22 11a 95:20 96:4 97:10, 13,21 99:20 100:1,3, 9,14,25 101:4,11,16 103:2,11 104:23 106:15,22,24 107:6, 12 109:7 111:23,24 112:1,7 113:1,2,5,9, 13 114:4,20 115:3, 12 117:6 118:2,17, 22,23 120:5 123:6 125:5 130:10,20 131:1,6,9,13 133:12 134:9 135:8,17 137:5 11b 97:14,15,19 99:21,22 100:17,21, 24 101:6,16 103:3, 11 111:25 112:7 130:13 11c 129:3,8,14 130:2, 11,21,22 131:1,4,14 135:9,21 11cc 130:1 12 11:24 61:17,25 62:2 74:25 75:13	123 63:16 64:3 72:1 73:19 74:5,25 1231 71:24 72:1 12:22 126:14,15 13 107:15 108:6,14 109:12 135:20 13496 7:13 136 65:11,13 69:18 14 40:6 135:21 136:25 137:6,19 15 135:22 16 40:7 94:20 97:11 104:25 106:14 107:1,7,9 108:6,14 109:5 118:25 119:1 120:4 123:15 124:1, 16 125:10 127:22 130:21 132:2,21 133:1,3,14 135:18 160 154:23 1680 6:19 16a 105:3 16b 109:5 123:19,21 124:19 17 13:18,22 87:12 18 13:10,17 127:19 135:20 185 13:16 19 13:17 86:24,25 87:3 1:10 127:3,10 1lcc 130:3	2000 153:16,23 154:9 2,000-3,000 154:4 20 90:11,13 91:21,24 143:2,9 154:22 2015 19:17 2020 18:5,6,10 2025-00842 6:14 10:9 18:5 141:20 2025-00843 6:13 10:11 2026 6:2,7 127:2 210 148:25 149:13 150:6,12,17 220 148:2,11,15,19 149:5,8 150:3,8,9 23 132:18 230 150:3 24 65:21 94:9,14 129:15 133:20 134:18 240 150:5 155:9 25 54:5,7,25
1			
1 40:6,8,10,18 42:3 46:24 47:7 57:16 58:6 64:20 65:1 68:11 85:19,25 86:2 110:24 135:6 139:17,20 140:9 153:11,14 1,000 153:15,22 1- 56:4 1-D 68:11,13,14 10 11:24 71:24 74:20 110:23 119:18 133:13 135:5 153:8, 10,15,22 154:22 10,000 153:17 1003 10:12,15 1004 53:21,24 1005 147:17,19 1007 141:20 1011 79:19,24 1012 82:16,19 86:13, 15 1014 87:11,13,20 1022 90:1,2 99:2 101:23 108:4 10:01 53:15 10:10 53:18			

Chris Kyriakakis

26 107:21 27 40:18 97:5,7 98:11,15 99:7,10 280 88:8 282 88:9 89:6 284 88:10 89:5 286 13:19 14:2 29 6:2 55:23 58:16,19 59:20 60:12,14 127:2 29th 6:6 2:05 156:3 2:17 6:3 127:3 156:6, 16,18 2b 148:5,11,25 3 3 92:11 120:3 128:15, 17,20,24 130:16 132:11,14 3,000 153:23 154:10 30 143:23 145:1 150:20 3252 7:12 34 144:6,8,15 145:17 35 129:12 36 42:4,5 110:10,12, 22 111:11 112:14,25 115:2,20 117:20 139:11 37 51:1 78:10 123:23 39 79:3 3B 151:24 152:3,19, 22 153:25 154:2 3rd 153:15,22	4 4 92:2,3,6,10 133:19 40 79:22 154:22 401 6:18 41 82:18 119:11,16 130:5,6 131:11 42 81:5,19 82:18 85:16 43 85:16,19 134:25 135:3 44 81:6,8,19,21 136:22 45 87:11 47 51:2,23 143:24 145:2,4,22 146:4,21 47a 145:23 48 83:22 88:4 49 88:5 5 5 154:22 50 42:7 43:8 48:2 83:21 51 44:2,9 51:7 52:9 55 48:7 56 44:9 147:23 148:1 149:3,12 58 48:12 64:21 582 10:10 13:15 61:10 62:20,24 64:23 151:3 59 46:25 61:10,15,20 74:19 75:12	6 6 92:2,3,6 127:18,21 129:10,12,15,16 133:18,19 61 71:16,19,21 72:7, 18 73:3,10 633 6:15 64 61:17 62:2 65 155:15 65a 145:23 66 151:12,15 152:9 68 151:19 154:17,20 7 7 88:7 89:6 153:16 7-A 92:2,3,6 73 68:12 75 139:12 76 78:10 8 8 50:24 51:18 90:14, 16 91:23,24 92:8 144:22 153:17 80 95:8 116:11 154:23 8:51 6:3,7 8b 144:18 9 9 61:16,21,22,25 71:23 119:12 144:23 153:17	92101 6:19 95 88:5 A A-42 53:25 A-43 53:25 A-U-D-Y-S-S-E-Y 19:20 a.m. 6:3,7 AB 7:12 ab- 46:9 ability 20:15 able 23:15 41:8 66:21 67:1 98:14 99:5 102:20 abstract 55:16 abut 43:14 abutted 42:19 43:2, 11 44:9,23 45:17,19, 22 abutting 43:20,23 44:17 45:6 46:5,10, 15,21 accept 31:19 access 147:8 accommodating 42:16 68:15 accurate 8:24 84:13 accurately 91:12 achieved 60:5 acoustic 20:4,15 32:19,22 71:14 Acoustical 34:25 acoustically 33:1 actions 135:10
--	--	--	--

Index: 26-actions

activity 38:23 39:4,15	75:11 94:4 101:1	analyzing 28:12	appears 87:22 111:12
acts 121:12	106:13,17 112:11	anatomy 80:7,13	112:16 128:12,18
actual 50:8	113:17 114:15,21	anechoic 21:11	Appendix 12:15,16
adapted 88:10	115:1 116:6 120:9,	Angeles 6:1,16 127:1	13:4,6
add 27:8 83:24	12 124:15 127:21	angle 93:21 94:2,4,20	applic- 92:16
106:20 108:13	130:17,19 133:3	125:17	application 91:3
111:17	141:25 151:15	angled 125:14 140:19	92:15,16 93:5,6,16
adding 83:10 130:1	agreed 6:24	angles 119:3 132:8	118:13
139:7	agreeing 117:10	annotat- 95:9	applied 36:1 37:6
addition 136:24	air 21:16 36:24	annotate 99:5 107:25	applies 13:16
additional 14:8	alliance 131:21	annotated 61:23 62:1	apply 152:8,17
128:18	allow 60:22 146:17	90:2 112:8 116:10	applying 35:23 72:15
address 103:8 122:17	allowed 20:3	annotating 95:9	appropriate 11:11
123:10 150:25 151:1	alternative 75:20	annotation 103:23	approximate 99:6
addressing 151:6	alters 106:8	answer 8:21,22 9:12	approximately 120:2
adhesive 72:3,11,15,	America 34:25	11:8 18:3 26:21 33:7	Aptus 6:18
24	amount 11:9 14:18	36:14 57:10 62:16	arbitrary 140:15
adjusting 66:7	25:14 28:9,13 35:25	84:8,10 102:6	area 28:19
ADMINISTERED 7:17	36:4,12,25 37:5,12	109:14 117:23 118:6	arguing 84:23
127:6	46:9,20 106:9 107:1	125:3 150:23 151:10	arranged 51:3,24
admit 116:16 136:15	119:25 122:12	answered 62:14	134:3
adopted 119:20	141:12	answering 156:8	arrow 103:12,15
advantageous 79:14	amounts 124:24	answers 8:14 26:24	arrows 128:3
affect 28:14 35:19	amplification 113:4	34:17 76:20 92:25	art 11:1,3,19 75:24
105:12	amplified 111:5 120:5	138:14	76:3,24 77:2,10,16
affirmatively 74:4	124:21,23 125:7	anyway 8:11 126:5	138:22
91:7	amplifier 121:12	apart 46:19	articulately 153:20
affix 42:18	amplify 121:8	apologize 47:18	artificial 20:21
affixed 48:13	amplitude 152:1,24	58:17 65:7	Asada 7:13
affixing 72:13	analysis 62:11,20,22	app 20:3	asked 34:9 37:1
ago 11:7 18:18 23:5	63:3 67:14 109:8,18	apparatus 40:13,14	77:15 110:5 121:20
34:17 35:1 78:1	116:17,22 125:20	128:21	131:7 138:13
agree 41:1,12,19	133:15 138:21,24	apparently 133:13	asking 18:17 33:22
42:23 51:17 52:16	139:2	appear 87:20 109:11	62:13 85:8 118:7
54:17,24 55:10	analyze 119:2 125:13	136:12 140:9 154:9	assembled 73:21
56:11 59:13,18 60:2	133:9	appearing 6:17	
68:22 72:7,18 73:3	analyzed 131:20		
	132:4 133:12		

assemblies 75:2	43:8 48:1 53:17	behalf 6:11 7:5,7	bone 16:11,15,17,22
assembly 54:9 60:19	69:14 71:15 81:1	believe 10:8 12:7	17:3,10,11 18:21
61:18,24 62:3,7	86:1 87:23 88:1	18:18 27:5 45:25	20:9,11,18 21:1
63:14 73:4 74:25	89:21 104:18 106:11	62:1,14 63:16 79:10	22:3,4,10 24:4 25:2,
75:13 86:16 87:16	110:7 127:9,14	101:10 114:7 117:23	8 28:9,14 30:15
145:24 147:8	145:7 146:18 149:3	118:8,9 131:6	31:23,24 32:12 33:4,
assess 28:8	151:2 156:5	141:21 142:14 143:5	15,23 34:7,13 35:3,
associated 152:7	background 19:3	147:17	11,13 37:1,2,11
assuming 98:22	85:11 91:9	bending 55:17 118:4	54:10,12,25 55:18
asymmetrical 124:1,	balance 25:10 30:5,	bends 130:13	56:6,7,12 57:15 58:5
3 140:19	10 31:6	benefit 142:16,23	65:24 66:6 70:2
attach 86:10 145:24	balanced 31:1	benefits 63:4,10	75:4,6 79:8,15
attached 12:18 83:7,	band 30:4 36:12	77:13 79:17 126:7	90:10,24,25 91:10
8,9 86:5 87:1	61:19 62:14	best 8:21 93:23	92:14 93:4,19
attaching 87:18,23	bands 25:23	better 9:5 19:14	110:23,24 119:17
attempt 82:12	base 107:16,20	28:18,25 29:4 34:5	123:7 135:5,6
attention 94:8	108:6,14 135:20	35:2 37:17,20 56:17	148:14
attorney 7:3	based 11:2 36:2 60:2	62:16 96:6,9 119:5	booth 16:3
audio 6:23 16:9 23:21	69:17 93:20 94:5,17	150:23	bottom 68:13 81:6
28:11,14,17 66:8	95:18 98:14 101:1,	big 23:13	129:2,21 131:4
67:9,14 77:2 91:12	14,18 102:22 106:9	bigger 26:24 27:2	153:23 154:20 155:8
93:16 95:16	119:19 125:9 140:19	96:5	break 9:17,20 12:23
Audyssey 18:25	156:10	bit 8:10 30:6 37:21,24	14:17 53:11,20
19:19	basic 8:7 17:1 140:3	39:11 53:10 58:18	89:15 95:23 115:17
augmenting 34:8	basically 38:17 107:2	81:3 86:1 95:23	126:11 155:22
authorized 6:21	117:10 122:25	121:20,22 133:10	breaks 9:16,19,25
auxiliary 88:8	134:13	136:21 140:15	brought 12:17 152:20
avoiding 8:24	batteries 78:13	149:16	build 19:7
aware 12:19 14:9,22,	battery 39:8 47:1,8,	block 51:10,12 52:11,	built 19:22
24 15:1,14,23 32:11	19 48:23 49:2,15	13,17	Burns 7:6 16:7,24
33:14,18 34:10,12	65:16,23 66:14	blocks 51:19	23:9 24:2,13,25
50:18 73:18 74:1,3	67:19,21 68:6,16,19,	Bluetooth 66:8	25:17 26:14 29:1
76:12 91:6 150:15	25 69:3,13,21,23	body 21:23 22:1	30:8 31:4 32:15
axis 140:25	71:13,14	32:24 36:3,6 37:8	33:9,17 35:20 36:8
	bearing 24:11,15,22	80:24 81:5,19	37:9 38:20 39:19
B	25:6	132:12,15,22,25	41:3,14,21 43:4,16,
	beginning 14:15	133:6,7 137:1	21 44:10,24 45:7,24
back 18:17 36:24	48:12 51:7 55:24,25	143:14 148:24	46:6,16 47:14 49:6,
	65:13 77:18 97:8	bogged 110:7	17,25 50:13 51:21
	114:17		52:18 53:12 54:20
			55:12 56:14 60:8,20
			63:24 66:16,24

67:20 69:24 70:18, 25 71:4 72:21 73:6, 12 74:7 76:1 78:22 83:3 84:17 89:16 90:22 92:19 93:9 95:3 96:23 99:9 100:4 101:8,17,25 102:11 103:13 104:4,7,9,12 105:15 106:1,16 108:7,11, 16 109:1,15 110:14 112:15,21 113:21 114:6 115:13,22 116:23 117:15 120:16 124:7 125:22 126:12 129:23 130:23 132:6,23 133:8 134:11,20 135:24 136:3,14 137:15 138:23 140:11 141:1,14 142:2,19 144:1,17 145:9 146:3 147:12 149:9,14 150:18 152:11 155:4,25 156:14	calling 64:16 146:19 calls 95:11 canal 20:21,23 33:1 36:23,24 80:11 captured 8:14 carry 26:6 38:8 63:18 143:24 144:3 case 6:13 8:5 13:12 15:12 31:10,22 45:15 83:9 95:16 122:8 124:15 134:8 cases 10:13 casing 132:12,14,15, 22,25 133:6,7 137:1 category 37:19,22 38:13 cause 46:21 caused 75:3 causes 111:14 causing 112:1 150:6 cell 32:2,18 33:8 cellphone 33:24 center 96:16 97:12 99:19 101:3,15 111:15,22 112:13 113:14 124:5,12,16 certain 16:12 95:18 106:4 119:6 CES 15:8 cetera 40:23 chain 107:3 challenged 10:9,10 change 14:10 36:16 94:5 121:16 136:7, 17 145:25 changes 76:9 130:8	changing 150:7 characteristic 33:7 characterization 38:12 characterized 57:16 58:6 check 128:24 cheek 22:15,18 32:25 cheekbone 30:18 Cheryl 7:12 Chris 6:8 7:16 127:5 circle 103:18 circuit 47:1,8,19,20 48:13,17,23,24 49:1, 4,14,21 50:19 65:16 66:13,18,22 67:6,8, 11,13,15 68:7,15,16, 18,20 69:1,4,21,23 70:2 143:4 circuitry 143:13 circuits 16:19,21 18:20 66:5 78:13 circumstances 10:3 citation 129:9 132:17 cite 82:19,23 152:3 cited 11:4 12:4 69:22 citing 70:1 claim 13:10,17,18,22 42:3 46:8,24 47:7,15 48:1 50:24 51:2,18 53:7 57:13,16 58:4,6 59:15 60:2,10 68:4, 11 70:5,12 116:12, 15 125:18 151:6,7 152:2,14 claimed 43:5 claims 11:20 41:24	56:17,18,21 57:1,7,9 60:5 62:19,24 145:14 clarified 39:10 84:9 clarify 9:7 27:20 36:10 84:8 93:10 136:1 clarifying 84:11 clarity 111:17 135:25 class 115:8,21 classes 115:24 clean 98:25 135:1 cleaned 146:7 clear 9:4 91:16 101:10,12 108:1 120:17 125:2,3 133:19 134:12 136:20 clearing 153:18 clearly 87:11 clicks 67:1 close 14:20 22:15,18 155:21 closer 96:19 120:22 closest 80:9 closing 135:11 co-founder 18:25 coating 57:21 58:11, 25 59:8 coefficient 154:16,21 155:3 Coie 7:4 coil 139:25 collected 11:9 color 61:7
busy 154:10 buy 73:14			
C			
cable 88:9 89:6,9,12 calculate 151:16 calibrated 21:11 California 6:1,16,19 127:1 call 37:16 78:14 94:19 121:11 129:19 139:22 141:5 147:2 called 27:13 87:10 107:20			

column 40:6,8,10,18 42:4 51:1 114:10 115:5,11 columnar 95:11,25 96:10,15 98:5,18 107:9,10 111:1,4,21 113:7 118:3 120:1 130:8 137:3 combine 32:18,21 138:22 139:3 143:18 combined 144:4 come 37:22,23 39:3 80:23 110:7 121:14 139:2 comes 15:5 114:10 comfort 26:5 29:3 comfortable 26:11 29:5,12,16 coming 147:1 comment 26:4 83:25 common 12:10 communication 66:9 compact 56:8 59:23 company 15:21 19:5, 24 compare 35:5 compared 19:8 comparing 154:24 comparison 137:18 compliances 105:20 complicated 119:2 component 45:18 50:3 62:10,11,18,23 63:2 64:12,24 75:25 76:14 87:1 components 45:15 65:24 69:4 77:6	80:23 81:7,13,15 85:12 139:24 compress 146:11 compressed 146:17 computer 39:23 concept 82:13 83:16 111:12 concern 38:2 55:11 139:9 concert 27:14 Concha 80:9 conclude 155:24 concluded 156:19 concludes 156:16 conclusion 125:8 137:17 conclusions 124:9 concrete 81:4 conduction 16:11,15, 17,22 17:3,10,11 18:21 20:9,12,18 21:1 22:4,5,10 24:4 25:2,8 28:14 30:15 31:23,24 32:12 33:4, 16,23 34:7,14 35:3, 11,14 37:2,3,11 54:11,13 55:1,18 56:6,7,12 57:15 58:5 65:24 66:6 70:2 75:4,6 79:9,15 90:10,24,25 91:10 92:14 93:5,19 110:23,24 119:18 135:5,6 148:15 conduction-type 28:9 conference 34:22,24, 25	conferences 33:20 34:19 confirm 107:22 connect 23:19 64:4 connected 57:18 58:8,23 59:16 73:21 74:6 76:9 89:11 123:1 131:18,24 133:11 143:20 connecting 62:11,23 63:2 64:11,23 67:23 74:24 75:25 76:14 142:17 143:23 145:2,4,5,7 149:18 connection 49:3,14 50:19 56:1 63:22 64:13,24,25 74:5 75:12 83:18 84:16, 24,25 85:6,9 87:15, 24 142:13 150:5 155:9 connections 63:19 84:19 133:15 143:25 connector 53:5 74:13,14 85:9 87:8 142:6 143:7,21 145:1 connectors 73:23 74:11 76:5,8 83:7,8, 10 85:11,14 connects 63:25 64:15 80:10 130:2 consider 45:19,21 69:13 116:20 122:3 consideration 25:15, 19 30:7 considerations 39:3, 9,13 considered 33:4 138:15,20 139:6	considering 45:2 consist 137:19 consistent 92:7 137:9 construction 25:9 70:4 consumer 15:4,8 16:1 34:10,12 contact 28:19 32:23 36:16 45:5,22 46:4, 13,18 81:19 88:11 108:25 110:5 127:23,25 128:4,6,7, 9 contacts 108:6 contain 23:20 90:20 143:3,8 contained 143:14 contains 78:18 155:16 contents 79:6 context 23:7,25 78:6 130:16 continue 154:7 Continuing 71:23 continuous 23:4 154:18 continuously 130:11 131:15 continuum 154:18 155:1,19 contract 121:25 contracting 95:15 contraction 119:25 130:7 contracts 95:18 contrast 113:6
--	--	--	--

control 47:1,8,19,24 48:23 49:1,14 50:19 64:16 65:16 66:5,13, 18,22 67:5,8,11,13, 15 68:7,16,18,20,25 69:4,20,23 70:1,2 78:13 controlling 68:21 conversion 150:2 convey 91:12 copy 12:16,20,22 17:15 99:1 112:9 core 42:16,17 43:1 44:19 47:2 48:8,17 49:2,4,15,22 51:4, 13,20 52:1,3,7,8,17, 20,22 53:1,4 65:17 66:14,21 67:6 69:21 corner 101:16 correct 8:6 38:4 48:5, 10,15,18,24 49:5 62:8 63:2,19 64:5,8, 9,14 65:1,2 66:15 67:7,16,19 69:1,8 71:8 75:25 79:9 80:17,24 81:14,20 82:10,24 85:2,20 86:3,4,6,11,19 87:25 89:7,9 90:9,14,17,21 91:20,22 92:9 94:16 96:1,12,17,20 105:3, 6 117:22 124:17,22 125:7 128:11,22 129:4,9,22 131:8,17 134:10 139:19 141:13,15 143:10, 16,25 146:18 148:2, 18 149:8 151:4 153:5 154:4 correction 20:4,5 corrections 19:9	correctly 21:19 105:10 128:25 correspondingly 150:7 corresponds 128:4, 10 cost 126:5 costs 75:8 could've 17:11 18:20 counsel 6:24 7:1 9:10,13 10:4 11:14, 25 14:23 77:24 102:23 156:11 counsel's 102:22 couple 19:17 22:7 34:17 51:7 106:11 108:21 110:1 114:17 115:17 119:14 course 20:11,12 29:3 35:9 court 6:18 7:9,11,20 8:5,15,24 17:22 30:17 57:24 108:9 cover 27:4,23 59:9 covers 41:15 create 78:15 122:13, 23,24 created 20:3 creating 31:2 59:22 crystal 95:15 CSR 7:13 CTO 18:25 cube 53:2 culling 11:10 cup 36:15 cups 27:4,22	curiosity 16:9 current 123:5 curve 123:25 curved 126:7 curves 152:25 153:25 154:2,8,12,18 155:1 cushion 97:11 104:25 105:3 106:14 108:6, 13 118:14,25 119:1 120:4 123:15 124:1, 16 125:10 126:7 127:22 128:6,10 130:21 131:9 132:2, 21 133:1,3,6,14 135:18 137:11 CV 12:15,17 14:1 17:15 18:13,22 19:3 D dark 87:4,6 database 19:7,23 20:8 date 6:6 14:13 day 7:4,23 10:16 16:13 17:6,20,24 18:8 23:22 24:8,19 25:12 26:1,22 29:6 30:11 31:11 32:20 33:13 34:1 35:24 37:4,15 39:1 40:1 41:10,18 42:2 43:7, 18 44:1,21 45:4,12 46:2,11,23 47:17 49:10,20 50:10,15 52:4,24 53:9,19,22 54:23 55:21 56:22 57:5 58:1,3 60:15,24 64:2 66:20 67:3 68:1 70:8,19,21 71:2,7 73:1,8,17 74:18	76:11 79:1,20 82:17 83:12 84:22 85:22, 24 89:13,23 90:4 91:5 92:22 93:21 94:1 95:6 97:4 99:16 100:7 101:13,22 102:4,18 103:16 104:17 105:24 106:10,18 108:12,23 109:11,22 110:18 112:17,23 114:1,14 115:16 116:2 117:2, 18 120:21 124:13 126:8 127:13 131:3 132:10 133:2,17 134:15,24 136:2,8, 19 137:23 139:10 140:21 141:10,18 142:11 143:1 144:5, 21 145:15 146:6,9 147:14,20 149:11,22 150:24 152:15 155:20 156:7,17 days 40:23 December 14:16 decided 154:11 declaration 11:21 13:1 14:3 18:15 19:4 54:3 60:23 61:2,10, 17,21 64:23 65:4,6, 10 68:3 69:16,19 76:23 78:3 79:2,22 83:22 85:17,20,22 94:15 110:13 132:5 139:12 144:9 152:4, 21 declarations 10:11, 19,21 11:2,4,13,18 12:5,8,13 14:6,10 define 37:22 78:17 141:2 defined 94:17
--	--	---	--

defining 115:15	22:22 90:20 98:15	Diego 6:19 7:5	discussed 54:2
definition 49:8	101:2,15 113:18	difference 44:8 80:5	discussing 124:22
115:25 140:16	114:3 117:11	differences 39:14	discussion 88:3
definitively 151:11	128:18,24 137:9	different 20:12 22:7	97:25 110:19 152:1
deforms 130:13	design 17:2 19:12	25:3,18,19,24 26:17	displace 130:11
degree 120:15	23:18 25:15,20 28:3,	33:21 36:19 37:23	131:15
deliver 32:25 67:12,	5,6 29:19 30:7 36:2	39:2,12 44:12,17	displaced 96:16
14 93:16	39:2,12 50:8 92:11,	67:24 73:2 77:9	115:4 117:7,12
delivered 106:8	17 93:7,15 137:10	78:15,16 79:16	118:23,25 120:14
delivering 67:8	design-specified	80:13 82:14 83:6	displacement 111:4,
delivery 93:22 94:2,5	120:6	85:3 105:5,8,12,19,	18,20 113:4,8
denoted 61:13	designed 19:24 32:12	20 106:5	114:16 120:3
dense 76:15	33:15 34:11,13	differential 155:16	122:13,21 135:10
dependent 13:17	38:18 39:4,14,16	difficult 20:17	displacements
depending 9:18	142:1	dipped 44:13	155:17
23:18 25:8	designing 25:16	direct 55:22 94:8	displacing 130:20,21
depends 25:20 49:7	28:12	119:8	131:19 133:4
52:22 53:8	detach 145:25 147:7	direction 116:9	disposed 154:21
deposed 8:1,9	detached 86:8	138:4,25 141:6,7,8,	distance 49:23
deposition 6:8,15,22	detail 134:1 145:12	9,12,16 145:21	distances 122:1
8:8,12 11:17,23	detailed 19:2	146:11	distributed 24:16
12:1,3,8 156:16	determining 116:24	directions 135:11	53:19
depth 131:23	device 29:15,16	directly 28:12 75:15	distributing 30:1,3
describe 30:17 59:14	35:11,17,19 36:4	81:21	distribution 55:5
63:10	37:5 43:3 50:2 54:17	disadvantages	district 8:5
described 18:23	55:2,11,17 59:22	78:20,23,24	divided 146:22
33:7,21 47:7 51:17	60:6 67:5 90:9,17,	disclose 63:1,7 69:7	DLA 7:6
54:24 56:15 73:5	18,24 91:19 92:1,8,	82:25 83:2,5 155:2	Doctor 155:20
98:11 107:16 115:1,	12 93:1,3 128:22	disclosed 152:10	documents 10:7,17
8,20 116:21 117:20	132:3,12 137:13	discloses 65:15	doing 32:7 35:16
120:9,12	139:8 148:14,15	69:20 88:8 151:16	38:18,23 39:4 77:13
describes 54:17	149:21 150:2	disclosing 84:15	145:11
59:21 75:19 90:8,10	devices 34:11,13,15	disclosure 40:12	dotted 153:16
94:9 148:1 150:16	38:6,16 50:18 91:12	73:18 91:7 142:12	Dr 7:24 53:23 89:24
151:19	diagram 80:13	disconnected 74:17	127:14 156:7
describing 44:12	100:24 127:22,25	76:9 77:7	draw 103:11,15 124:9
description 19:2	128:3,5 148:4,9	discuss 74:15	125:8 137:16 140:13
	diagrams 61:7		
	diagraphic 128:9		

drawing 102:14 154:7	33:1 35:14,23 36:15, 20,23,24 42:8,9	effectively 155:10	16:1 143:18,20
drawn 154:6	44:4,14 47:9,20,23	effects 155:6	element 47:23 48:1
drill 121:22	48:3,18 49:23,24	efficiency 28:16	61:17 65:5 68:11,17
drive 49:2 50:20	50:1 54:9,14,19	125:25	70:3,12 87:11,13,20
66:14 67:6 68:8 98:1	55:2,7,9 62:7,11,13,	efficient 106:4	95:10,11,12,19,25
121:10 122:22	14,19,23 64:5 75:1	efforts 33:19 34:18,	96:10,16 98:6,18,19
123:11 124:21 125:6	80:7,10,14 81:14,20,	20	103:2 107:5,7,15
141:7	22,23,24 82:3,9,25	either 14:5,9 20:20	111:1,5,21 113:8,11,
driven 95:17 116:8	83:2,5,18 84:3,6,13,	21:10 32:24 34:23	23 114:4 115:3,12
driver 122:23 123:3	16 85:1,5,12 86:6,	63:2,14 142:5,24	117:6,7,8,12,14
126:6 139:23 140:17	10,19 87:25 88:9,12	elaborate 26:4	118:3,17,22,23
drivers 17:2,8 33:4	89:5 142:1,5,8,9,18,	elastic 42:12,25 45:2,	121:25 130:9 133:4,
drivers/enclosures	24 143:2,8,9,11,12,	5,9,20,23 46:21	5 137:3,11 148:25
85:13	19	51:2,10,20,24 52:11	151:8
drives 95:19 143:13	eardrum 80:10	56:3 57:19,21,22	elements 42:24 60:11
driving 47:2 65:17	earlier 22:3 30:6 48:1	58:9,11,12,24,25	61:15 68:4 97:1
66:22 69:21 71:14	59:20 83:4 93:20	59:2,7,8,10,17 61:14	121:21,23 122:12
106:4,7,24 114:10	120:23 121:21	97:14,19 99:22	143:4 145:14 151:7
115:10 116:9,13,25	140:22	100:22 101:6 111:25	embodiment 60:13
117:7 121:10	earlobe 24:15,17,22	112:7 130:12 140:23	69:10 110:25 119:19
125:17,24 131:21	25:15 31:3 47:11	elastically 42:19	135:7 138:2 152:10,
138:25 141:15	50:3,5	43:1,11 44:23 45:6,	18
Due 130:7	earphone 42:17 47:2	22 46:5,14 51:11	embodiments 72:11
DULY 7:17 127:6	49:2,15 54:11,13	52:12	155:2,6
Dyer 82:19,22,25	56:7,12 57:15 58:5	electric 93:13 95:16	emphasize 8:11
83:2,7	65:17,25 66:6,14,19,	120:1	enclosures 16:18
dynamic 28:22	21 67:6 68:8 69:21	electrical 34:23 49:3,	ends 48:18,20 49:22
	70:3 75:3 87:15	8,12,14,19 63:18,21	50:4 57:19 58:9,23
	earphones 40:20	64:10,12,13,25	59:6 63:14 75:24
	55:1,18 75:4,7 79:16	143:3,24	76:14 89:6 135:12
	earpiece 80:24,25	electromagnetic	energy 93:23 96:6
	81:5,19	95:22 123:3 126:6	116:15 119:4 126:1
	ears 30:19 54:11,22	139:5 140:1,5	150:2
	142:10,22 147:1	electromagnetic-type	engagement 145:18
	easier 98:24 151:23	121:17 139:23	engineer 27:12,13
	easily 145:19	electromagnetics	Engineers 34:24
	easy 145:24	16:18	English 54:1
	edge 80:9	Electronic 6:10	enhance 130:4
	effect 121:12	electronics 15:4,8	enhances 56:4
E			
e.g. 40:22			
ear 20:6,13,16,21,23			
21:18,25 22:15,18			
23:3,13,24 24:1,6,			
10,14,15,16,23 25:4,			
5,6,11 26:12,19			
27:4,16,17,23 29:24,			
25 30:2,7,24,25			
31:1,14 32:4,8,25			

enhancing 130:2	excerpt 65:20,21,22 66:4 67:22 68:5,10 69:22 70:1 71:12 79:23 139:14	extension 88:8	feel 9:4 61:2
entire 27:4 110:15 113:22 134:19	excerpted 69:18	extent 113:11	female 87:15
equation 151:25 152:6 155:16,18	excerpts 11:19	external 67:23 93:17 94:19,21 96:7	field 21:13 40:11 123:4
error 100:3 101:2	exchange 138:12	extreme 38:5	Fifth 6:16
errors 12:12 14:3	exclude 71:3,9	eyes 35:9	figure 60:16,19 61:12,13,16,21,22, 25 62:1 64:20 65:1 79:23 80:15,22 81:4 85:19,25 86:2,7,9, 20,24,25 87:3,11 88:7 89:6,11 90:13, 14,16 91:21,23,24 92:2,8,10,11 94:9, 11,13,14 95:1,10 96:15,17 98:10,12, 18 99:5 102:10 103:3,17 104:21 107:15,25 108:5,18 109:3,5 110:25 112:8 113:19 114:21,24 115:8 116:10 117:6 119:17 120:13,14 123:14,16 124:16 127:18,21 128:15,17,19,20,21, 24 129:2 130:16 132:11,14 134:13,19 139:17,20 140:9,14 144:18 148:11,12,25 151:24 152:3,19,22 153:25 154:2
especially 35:7 46:8 94:20	excuse 133:19 134:17 136:11,21 145:6,16	F	figures 71:23 91:25 92:2,5,7 144:22 151:23
essentially 101:15 115:21 123:9	exercise 38:19	face 138:5	file 10:24
estimate 14:15,21	exhibit 10:12,15 12:22 17:19 18:1,4, 6,10,11 53:21,24 79:19,24 82:16,19 90:1,2 99:2 108:4,11 141:22 147:17,18,19	facilitate 76:8	filed 12:25 13:1,3 14:14
et 40:23	existing 75:4	facilitated 76:5	filled-in 87:4,6
evaluated 11:1	expand 121:25	facilitating 75:7 76:6	find 11:10 12:14 16:9 55:20 61:7 65:5 149:24 151:10
evaluation 28:7	expanded 146:25	facing 51:3,25 52:7 137:5	
Evan 7:4	expanding 95:14	fact 35:6 74:11 93:18 125:9	
eventually 123:7	expands 95:17	factor 125:20	
everybody 26:16	expansion 119:24 130:7	factors 39:13 153:8, 10	
exactly 15:5 23:6 27:17 36:20 125:11	expected 20:24	factory 73:11	
EXAMINATION 7:22 127:12	expects 19:9 20:7	fair 25:13 36:7 38:11, 15 69:17 87:13 112:19 115:7,19 121:23 122:4,11	
examined 7:18 17:1 127:7	expensive 19:10	fairly 89:14 122:14	
example 27:12 29:24 32:1 45:3 53:1 60:12 63:16 68:19 69:3 72:13,23 73:9 77:8 82:1,2 85:6 91:18,21 92:2 98:8 106:9 154:19 155:9	experience 28:11,23 122:7	fall 24:7 46:19	
examples 30:16 77:10 78:12 79:14 80:18 82:12,15 83:6 86:25 91:10	experimented 35:12	familiar 15:11 31:25 36:17	
exceeds 113:9	expert 10:11	family 154:12	
exception 9:24 10:1,2	explicitly 131:11	far 113:6,12	
	exposed 72:1,2	farther 114:19,22	
	extending 88:9	farthest 113:13	
	extends 109:6	fault 129:17	
		feature 33:6 59:14	

fine 39:24 144:13	force 46:3,9,14,18,20 106:4,7,8,24 107:11 109:19 114:10 115:10 116:8,9,13, 25 117:8 123:2,3 125:17,24 131:21 132:8 138:25 140:1, 5 141:15	155:4	Fukuda 139:15,17,21	
finish 8:20,22 127:17		formed 59:9 135:22 142:23	fulcrum 112:20 115:9 117:22	
firmly 54:13		formula 151:16,21 152:8,12	full 106:7,8 122:14	
first 13:19 15:15,23 19:1 36:11 42:6,8,18 48:4 51:14 54:7 56:2,3 57:17,19,20, 22 58:7,9,10,12,19, 21,23,25 59:2,4,6,8, 10,15,17 71:20,21 72:14 75:1 77:14 79:21 100:13 118:6 133:24 135:3 136:21,22 138:7	forces 95:22 109:9	formulate 105:10	function 36:5 37:6 40:15 97:20 99:13 103:5,9 117:21	
fit 36:15	forgot 56:25	forth 81:1	further 50:6 55:19 72:15 113:2 115:2 117:5,13 156:12	
five 55:25	form 16:7,24 23:9 24:2,13,25 25:17 26:14 29:1 30:8 31:4 32:15 33:9,17 35:20 36:8 37:9 38:20 39:19 41:3,14,21 43:4,16,21 44:10,24 45:7,24 46:6,16 47:14 49:6,17,25 50:13 51:21 52:18 54:20 55:12 56:14 60:8,20 63:24 66:16, 24 67:20 69:24 70:18,25 71:4 72:21 73:6,12 74:7 76:1 78:22 83:3 84:17 90:22 92:19 93:9 95:3 96:23 99:9 100:4 101:8,17 103:13 105:15 106:1,16 108:7 109:1,15 110:14 112:15,21 113:21 114:6 115:13,22 116:23 117:15 120:16 124:7 125:22 129:23 130:23 132:6,23 133:8 134:11,20 136:14 137:15 138:23 140:11 141:1,14 142:2,19 144:1,17 145:9 147:12 149:9, 14 150:18 152:11	forward 24:18 88:11		
fix 72:19 129:21		found 13:7 19:25 34:8 68:20	G	
fixation 51:13 72:15 75:3,12,21,23 76:13		four 10:7 97:7 154:21	gap 109:12,21 123:4 130:25	
fixed 50:5 59:6 133:5		frame 111:3 129:3,4, 19,20,21 130:6,10, 22 131:14 134:4,9, 10 135:9,20	general 26:21 28:24 41:8 43:24 47:25 55:5 82:5,8 83:16 155:14	
fixedly 57:18,21 58:8, 11,22 59:1		framed 130:20	generally 36:7 38:11 41:11 45:14 54:9 59:14 60:10 128:20 144:25 145:10	
fixing 129:4,19,20 130:3,11,20,22 131:14 133:4,5 135:9,21 136:25 137:19		free 21:13 61:2 117:14,17	generate 69:1 139:21	
flat 53:5 95:20 96:4		frequency 28:22 152:23 153:4	generated 107:4 109:19 114:13 137:2 140:2,5	
flipped 142:7		front 10:7,17,20 18:11 27:13 30:19, 24 31:7,13 40:4 89:25 99:2 125:10 135:12 143:3	generates 95:24	
focus 138:4		Fujita 90:5,8,11,13, 18,20 91:1,4,7,25 93:18,24 94:9,16 95:2,10,25 97:6 98:3 110:11,19 113:20 114:4 116:21 117:6 119:8 120:14 121:7 122:17 123:8,14 124:17 125:20 127:16,18,23 128:15 129:15 132:4 133:20 138:22	generating 107:11	
focusing 47:22 92:10		Fujita's 117:10	gesture 32:8	
follow 118:24 153:12			gestures 8:16	
follow-up 92:24			getting 31:21 92:14	
followed 65:21			gist 55:5	
following 55:23 66:3 111:16,19 151:19			give 18:2 26:20 39:21 44:25 61:8 62:16 78:12 104:18	
FOLLOWS 7:18 127:7			given 63:10 106:4	
			gives 69:3 91:10	

glued 118:11	73:14 81:3 84:9 98:4 101:20 102:3 105:16 106:2,11 110:6 122:6 123:22 140:2	head- 44:18	help 22:17 56:19 97:25 110:2
go 6:25 8:7 15:2 17:3 20:13 23:3 27:4,16 36:22 44:2 46:24 61:19 74:9 87:17 106:11 107:18 115:2 117:5,13 137:21,25 142:9,10 151:2,20 153:11,15,21	guessing 138:6	headband 23:1,4,8, 10,15 26:9,11 30:2 63:9 77:8	helped 35:12
goal 41:13,17,20 56:13	H	headbands 25:22 26:3,18 27:7,16,25 28:5	helpful 17:14
goals 41:2,9 56:16 57:10 60:4	hand 33:25 34:7 35:4, 18 37:13 108:3 137:21,25	heading 40:8,10	helping 130:3
goes 24:17 25:5 29:24 50:2,3 76:6 81:21 97:18 108:20 125:15	handed 53:23 141:19 147:16	headphone 21:7 22:10 23:19,20 24:9, 11,23 25:2,3,16 30:24 35:25 36:3,11 39:14,16,22 44:19 56:6 64:5 76:24 79:4 85:1,12 90:21 91:2, 8,14	helps 121:1 151:25
going 8:7 18:17 21:17,21 25:1,5 38:9 40:18 43:8 48:1 53:9 58:17 61:3 81:1 88:1 91:15 93:19 102:3, 24 104:21 108:3 112:24 115:3 122:6, 24 126:8 136:5 149:3	handheld 31:23,24 33:8,14,22 34:9,12, 15 35:17 36:4 37:5, 10 90:8,16,19 91:19 92:8,13 93:4 138:3	headphones 16:11, 15,17,23 17:4,10,11 18:21 19:8,23,24,25 20:8,9,18,19 21:5, 15,21,23 22:4,5 23:7,12,13,25 26:25 27:3,6,15,22 28:2,4, 10,14 32:3 36:18,22 37:17 38:3,15,22 39:3 63:23 64:1,4 76:22 78:21 79:9,13, 18 91:17	Herz 153:4 154:4
good 6:5 7:24,25 17:24 26:9 89:15 104:15 126:10 155:21,25	handhelds 33:11	headsets 30:15 38:1	hesitate 41:17
graph 128:7 151:22, 24 152:7 154:10	handled 10:3	hear 19:9	high 16:10 123:18
graphs 154:20	handset 32:2 91:20 94:4,6	hearing 19:9,11 35:9	higher 155:3
greater 113:4 120:15	handy 116:1,3	heavier 25:9 26:10 31:13 139:8	highest 123:15
green 116:10	hang 54:10,22	heavy 25:21	hinge 97:20 98:3,7, 11,16 99:6,12,15 101:12 103:5,9 104:1 111:12 115:9
groove 71:24 72:1	hanging 29:21,22 54:25	held 32:12 35:4 117:22,24 118:1,9, 11,14	history 10:25
group 83:15	hangs 55:6		hold 21:15 24:6 32:4, 8
guess 18:4 19:2 22:23 24:16 25:9,23 31:6,16 48:19 52:6	happen 73:10,14		holder 25:11
	happens 53:6 82:15 108:19 136:10		holding 23:17 33:24 36:6 37:7 46:18 94:6 137:22 138:1
	happy 55:19		holds 61:18
	hard 36:5 37:6 80:12		hole 145:3,5,23 146:18 147:9
	hardware 17:9		home 39:22
	hash 98:20		honest 116:3
	head 8:15 18:2 22:11, 25 29:4,9,20 30:3 34:16 88:13		hook 24:1,10,15,17, 24 25:4,11 26:12,19 29:24 30:2,7,25 31:9 42:8,10 44:4,14 47:20 48:3,18 49:23 50:1 54:9,19 60:19 62:8,11,13,19,23 74:25 75:1 81:14,20, 23,25 82:9 83:2,18 84:16 85:1 86:6,10, 19 87:2,19,25 88:10

89:5 143:2,8,9,19	identification 18:7 90:3	includes 64:12,24	instructs 9:13
hooks 23:3,24 28:6 47:23 51:2,10,20,24 52:11 82:3 83:5 84:4,6,13 85:5,12	identified 10:12 62:22 77:21,22 79:3 104:24 112:12 120:23 132:15	including 8:4 42:8 48:3 85:12 92:2,11	integrally 59:9 135:22
horizontal 101:5	identify 7:1 11:3 12:12 13:12 14:2 18:22 98:14,25	increase 123:12	integrated 128:22
hour 9:17 53:10 126:9,15 156:18	identifying 77:16	indentation 53:4	Intelligent 6:10
hours 11:24	IEEE 34:23	indicate 108:4 128:3	intelligibility 34:6 35:3
house 27:13	imagine 154:25	indicated 116:10	intended 12:25 18:14 67:4,9,14 83:5 92:17 100:3 109:17 148:21
housing 22:13 25:10, 21 42:16,17 43:1 44:19 47:9,16,20,24 48:8,13,17,18,24 49:4,5,21,22 50:20 51:4,13,20 52:1,3,7, 8,17,20,23 53:1,4 56:2 57:17,18 58:7, 8,21,22 59:4,5 64:16,25 68:15 72:20 73:20 74:5 75:1,14 85:1 93:17 94:19 96:7 113:24 148:24 149:13,17 150:5,6,12,17 151:17 152:23 155:11,12	impedance 105:25	individual 23:3,24	intent 83:20 84:5,12 101:10 125:13
	impedances 105:21	induced 124:20 125:6	intention 83:15
	impedes 106:7	industry 77:12 84:20	interact 21:23
	implication 74:10	inexpensive 19:10	interaction 92:1
	implies 38:23 74:14 98:4	infer 75:16,18	interacts 107:12
	imply 105:22,23	inform 97:25 99:8 152:13	interchangeability 82:3,5,8,14 83:16
	implying 84:3 124:11	information 14:8 28:17,21 32:17,19, 22 91:11,12 121:6	interchangeable 76:22,24 77:2,5 79:4 80:20,23 83:15 94:23
	important 14:17	initial 16:5 110:13	interchanged 77:7 80:16
	impression 39:21	injection 57:20,23 58:10,13,24 59:3,7, 17,21	interchanging 80:2
	improved 75:5	inner 51:12 52:13,16 94:18	interested 132:7
housings 59:6,16 64:14,16	improves 28:21 55:17	innovating 93:24	interesting 34:8 66:25 95:13
human 19:9,11 20:6, 22 21:3,7,20,23,25 26:16 49:24 150:10	improving 43:3	innovation 93:17	interfaces 91:11
humidity 39:6	in- 80:15	inserted 111:2	interpreting 138:6
Hupkes 79:23 80:1 82:7,11,18	in-concha 80:2	inserting 51:3,18,25 145:20 146:10	intersect 101:16
hypothetically 118:1	in-ear 80:8 81:9,11 83:9 86:3	insertion 143:24 145:22 146:12,15,21 147:10	intersection 97:13 99:20 101:4 102:21 103:2,11 104:5,12 111:23 112:6
	in-hear 80:2	inside 20:16,21 36:22 44:16 47:8,19 51:4, 20 52:1,2,7,17 53:8 93:11 94:21,25	introduce 7:9 12:21 21:12
	in-the-ear 82:23	Institute 34:23	
identical 142:4	inches 50:12,20		
	include 20:8 27:15 49:18 102:12		

involved 31:22	8 12:21 13:3 15:18, 25 18:1 22:6,14 24:16 26:15,20 27:2 31:17 32:18 33:10 34:16 38:6,14 41:24 47:18 50:7,20 52:2 61:7 67:22 71:17 72:25 77:15,23 84:2 85:11 91:2,15 96:24 98:6,19,22 99:14 106:12 109:7,16 119:5 122:2 125:9 133:11 137:16 142:7 146:4 148:7 150:23 152:5,17,20 154:6 155:22	leads 155:18	Li's 66:21
iphone 20:3		leaking 36:24	Li-type 143:20
IPR 6:13,14 10:9,11 18:5 53:24 141:20		leave 102:13	Liao 13:20,21 147:21, 23 150:15 151:3,13, 15 152:9,10 155:2
IPRS 8:5 14:14,18,19, 23		left 63:25 64:4,17 65:1 96:19 98:2,8,12 118:23,25 120:15, 18,20 125:16 127:22 128:5 141:11 154:22	life 37:18 39:8
isolation 29:18		length 30:1 115:12 124:23	lighter 39:5
issue 57:7 75:2,11 76:14 106:12 138:18 151:1		lengthy 149:3	lightweight 55:10,20 56:8,12 59:23 60:7 137:12
Item 61:24 86:13		let's 13:15 37:19 79:21 87:7 88:3 94:19 110:21 121:11,19 132:19 147:1 152:19	limitation 42:6,15 121:18,19 122:3,10, 11,15 123:10
J		level 125:23	limitations 126:3
January 6:2,6 127:2	known 77:12 79:12 84:20	levels 121:13	limited 121:8
joined 81:13	Kyriakakis 6:9 7:16, 24 53:23 89:24 127:5,14 156:7	lever 31:8 111:6,10, 13,15 112:18,20 113:23 114:5 115:8, 19,21,24 116:5,18, 20 117:19,21,22 119:20 121:7,12 122:18 123:9 125:19	limits 29:2
joins 63:22	L	leverage 31:2	line 38:6 40:18 42:7 43:8,10 44:2,9 46:25 48:2,7,12 51:1,7,23 52:9 69:10 95:20 97:8 101:5 109:3,6, 13 116:25 125:16 127:17 139:1 140:13 153:16
jump 153:10		leveraged 97:12	lines 40:6 51:7 55:25 97:8 138:15 153:23 154:21
jumps 153:8		levered 113:20	lips 35:9
junction 80:20,22 82:9	label 133:23	Li 54:2,5,17 55:11 56:13 59:15 60:5,17 61:13,16 62:2,23 63:1,3,7 64:11,15,20 65:15,21 66:4,13 67:5,13,18 68:6,21, 23,24 69:5,7,10,20 71:11,12,15 72:18 73:3,18 74:4,8,11,19 75:23 76:13,15 138:22 143:7 144:4	list 149:4,7,13
K	labeled 63:17 104:22 109:10 112:12 123:19 128:12 132:14		listed 13:5 15:4 19:1
K-1 153:1 154:8,13,19	Laboratories 18:25		listen 32:13
K-2 154:23	lack 37:16 119:5		listeners 21:8
keep 23:11	language 70:5		listening 16:4 27:14 34:6
kept 23:15	large 16:19 19:7,23 20:2,8 27:21 75:2 122:25 137:1		little 8:10 20:12 25:3 30:6 37:21,24 39:11 53:10 58:17,18 77:25 81:3 98:17
kind 33:21 36:13 38:15 39:5,16 50:5 77:11 79:13 80:12 92:14 94:23 95:13 96:2 130:24 140:17 143:21	larger 27:6,22 77:17 78:18 128:22		
kinds 39:9 126:3	Las 15:9		
knew 15:20 139:7	layer 57:21 58:11 59:1,9		
know 9:5,18,21 11:1,			

121:20,22 136:21 149:16	109:9 131:21 146:6 148:8	mapping 68:4 69:15	77:4 78:3,12 90:23 91:23 93:10 96:2 99:25 102:5,6 103:14 105:9 117:16 120:19 124:3,5 138:1 140:2,16 152:17
live 27:14	looks 88:16 100:24 108:18 128:23 133:22	mark 17:20 18:5 98:20 101:20,22 102:13,14,20 103:10 104:13 108:14	means 25:4 28:19 35:8 44:13,15 52:2 98:23 109:21 110:4 118:11 136:6 154:12
load 115:11,14	loop 47:9,12,13,16 82:25	marked 10:15 18:6,9 53:21,24 61:24 79:19 82:16 89:25 90:2 95:5 109:12 115:10 141:20 147:17,19	meant 37:11 68:19 100:25 105:17 152:13
lobe 31:1	Los 6:1,16 127:1	marketing 32:16	measure 20:10,11,15, 17,19 21:4,6,13 22:3 29:4
locate 13:6 108:13	lot 15:2 63:5 89:6	marking 17:22 101:25 102:2,12,24 104:5 108:11	measured 19:8,23 20:2 31:17 32:17
located 6:18 124:4,19 125:4	Lott 83:23 88:4,7 89:11	marks 153:9,10,12	measurement 21:16
location 75:20 82:9 83:17 86:18 98:7 99:6 101:11 104:2	loud 122:25	mass 138:5,6	measurements 28:8
lock 145:7 146:25	loudspeaker 21:14 40:13,14	match 19:11 21:17 27:17	mechanical 28:18 31:5,8,17 98:4 105:20,25 119:4
locked 146:16	loudspeakers 21:9	matches 128:7	mechanically 29:25 31:14 105:19
locking 72:3,12,14 144:8,15	lower 125:16 126:5 155:10	material 42:12 43:1 45:1,3,6,9,20,23 95:14 106:3 149:19 150:12,16 151:9	mechanism 20:11 36:13 93:11,19 95:18 99:12 121:11 122:18 123:9 132:24 134:14,19 144:9,16, 22,25
logarithmic 153:7	lunch 126:9,10	materials 12:4 105:5, 9,12,19 148:1 149:4, 8,13	meet 40:21
logical 53:11 89:14	luncheon 126:16	mating 86:16,18	meeting 8:4
long 26:16 36:23 45:22 49:18 70:9,11 93:13 102:5	M	matter 6:9 28:24 33:5 36:25 93:15 154:7	Mei 85:15,19,25 86:2, 25 87:3,9
longer 15:21 40:20	magnetic 16:19 123:4 139:24	matters 88:23 116:12	Meis 85:6
look 13:15 14:16 19:4 55:3,4,15,19 56:17 60:22 61:8 69:11 74:9 76:17 77:1 78:10 81:1 87:9,17 91:9 95:4 96:25 106:5 107:18,21 110:21 116:4,16 123:22 129:6 130:5 132:19 138:8 139:12 144:10 145:13 150:20,22 151:2,23 154:14	main 23:17 121:15	maximizing 93:21	members 149:18
looked 13:3 24:5 55:14 109:20 131:23 138:2	major 125:14 153:9, 10	maximum 113:11	memorize 150:19
looking 46:8 61:4 68:18 88:1 108:17	making 55:10,17 56:6,11 60:6 79:12 127:23 128:6	mean 22:24 27:1 28:5 29:22 32:1,21 37:20, 22,24 38:21 43:13 44:22 45:13 50:1,4 52:25 55:3,16 57:6 70:23 71:5 75:19	
	mannequin 20:20 21:3,20		
	manufacturers 19:25 20:1		
	manufacturing 45:17		
	map 145:13		
	mapped 62:10,19		

memorized 69:10 74:9 76:16 129:5	models 22:8,10 23:24 24:4 25:18	mounting 29:20	need 9:5,20 23:14 25:10 26:8,20 36:9 41:23 46:3 51:22 61:1,6 64:3,9 67:15, 17 84:10 94:11 102:21 104:13 124:2 132:17 146:17 147:8 148:3,7
memory 41:23	modes 118:4	move 105:3,4,6,13 110:6 111:14 117:14,17 118:3 132:21,25 133:14 140:23,24 141:5,9, 11	needed 46:20 74:17 117:1
mentioned 23:23 24:20 30:5,14 34:17 41:22 77:15 94:2 122:9 140:22	modular 76:22 78:2, 4,17,20 79:13 85:13	moved 106:23	negligible 46:13
mentioning 129:14	modularity 74:15 83:11,17 84:7	movement 115:4 131:6	new 102:21
mentions 41:25 42:1 67:22 76:18 150:21	module 81:6,8,9,19 85:1,6	moves 98:5 105:2 106:3,14 133:13 139:25 140:4	nod 8:15
metal 56:3 57:19,22 58:9,12,24 59:2,7, 10,17 61:14	modules 78:14	moving 35:9 95:21 130:22 131:9,24 133:7 134:9 137:10 140:7 141:6	noise 34:7
method 69:5,7	Mojawa 6:10 7:7 14:12,22	multimodal 35:7	non-limiting 60:13
methods 72:19 77:12 118:4	Mojawa's 136:9	multiple 23:10 35:8 108:18	non-moving 137:19
Michael 7:6	molded 27:17	music 20:4	nonverbal 8:16
micrometers 120:2,3	molding 57:20,23 58:10,13,25 59:3,8, 17,22	musical 66:25	normal 40:21 116:13 125:16 131:21 132:8 139:1 141:16
microphone 21:2	mom- 136:11	musicians 27:18	normally 17:25
microphones 20:16, 21,22	moment 18:3,18 104:19 135:16,25 136:1,6,12	mystery 130:25	north 141:8
middle 140:14 141:3 146:22 153:15	moments 136:6		notations 60:23
mind 15:5 38:21 50:22 57:4 116:11	monitors 82:23		note 61:3
miniature 17:2 20:22	monomer 113:10 120:2	N	noticed 12:14 13:10 112:5
minor 13:11	month 14:14	name 6:17 7:12 13:24 87:12 107:19	noticing 7:3
minus 19:17,18	morning 6:5 7:24,25	names 115:24	notion 83:10
minute 61:6	motion 95:14,15 96:5 106:25 121:8 133:15 141:8	narrower 144:14	Ns 88:17
misspoke 47:18	motivated 138:22	natural 9:19	Numata 141:22,25 143:3,6,16,23 144:2, 6,11 147:4
mix 27:14	motivation 139:3 143:17	near 35:14 97:13 99:20 101:3 109:5 111:23	Numata's 144:15
mixing 27:12	motivations 121:15	necessarily 8:16 12:21 46:7 53:7	number 6:13 20:2 147:18 150:5 155:9
mobile 67:24 91:13	mounted 22:10,12,24 36:3 120:4	neck 25:23 30:4	numbers 81:2
mode 150:8			
model 23:2 50:22			

O OATH 7:17 127:6 Object 101:25 objection 16:7,24 23:9 24:2,13,25 25:17 26:14 29:1 30:8 31:4 32:15 33:9,17 35:20 36:8 37:9 38:20 39:19 41:3,14,21 43:4,16, 21 44:10,24 45:7,24 46:6,16 47:14 49:6, 17,25 50:13 51:21 52:18 54:20 55:12 56:14 60:8,20 63:24 66:16,24 67:20 69:24 70:18,25 71:4 72:21 73:6,12 74:7 76:1 78:22 83:3 84:17 90:22 92:19 93:9 95:3 96:23 99:9 100:4 101:8,17 103:13 105:15 106:1,16 108:7,8,16 109:1,15 110:14 112:15,21 113:21 114:6 115:13,22 116:23 117:15 120:16 124:7 125:22 129:23 130:23 132:6,23 133:8 134:11,20 135:24 136:14 137:15 138:23 140:11 141:1,14 142:2,19 144:1,17 145:9 147:12 149:9,14 150:18 152:11 155:4 objections 9:10,12 102:22,24 obvious 35:8 63:12 65:15 69:20	obviously 39:8 85:5 142:8 occur 73:4 occurs 123:16 OCR 89:2 office 6:13 7:5 official 6:20 offset 29:19,20 31:9, 15,17,18 offsets 29:25 oh 11:7 13:13,23 17:16 23:1 56:23 88:19,22 89:4 95:19 100:18 101:24 102:17 103:24 104:16 109:2 123:18,24 129:16 148:6,8 okay 13:7,14 17:14 19:22 22:19,21 23:7, 23 24:20 26:23 27:20 30:5 35:25 37:10 39:2,7 40:2 42:3 49:11,21 50:18, 24 53:9 56:25 61:20 63:13 67:4 69:14 70:9,14 71:3,15 74:19 76:20 78:2,9 79:21 82:4,18 83:24 84:9,23 85:3,15 88:18 89:16 90:11 94:2,8 95:23 96:8,13 98:24 99:7 101:1,14 102:9,10 103:7,22 104:15 105:8,25 106:11,19 107:2,14, 24 109:25 110:9 111:16 112:11,24 116:7,18 117:3 118:16,20 119:10 122:6 123:14,24 126:8 128:14,20	129:11,18,19 132:1, 16 135:2 136:2 138:10 140:9,22 143:2 144:13 147:15 148:10 151:5 152:3, 8 153:4,18 156:1 omitted 13:24 14:1 once 74:6 145:4 146:16 ones 11:11,12 19:10, 11,13 23:14 27:3 35:8,10 77:22 85:5 153:2 154:6 opening 27:17 72:2 80:8 98:20 135:11 145:20 operating 114:5 operation 135:8 136:13,17 opine 68:17 opining 114:9 opinion 14:10 93:6 134:16 152:13 opinions 14:5 opposite 48:18 49:22 50:4 63:22 117:21 145:21 146:11 147:9 optimizing 93:21 optionally 58:21 59:4 71:24 order 46:4 47:6 48:21 49:1 50:7,11 67:4, 11,13 114:15,16 117:3,12,19 137:13 146:12,15,17 147:7 155:15 ordinary 40:20 138:21 orient 148:10	origin 111:25 original 62:15 118:16 originally 14:12 18:14 outer 21:25 27:4,23 32:25 output 97:10,12,14, 21 99:20,21 100:1,2, 9,14,17 101:4 104:23 105:2 106:15 111:23,24 112:1,6 113:1,2,5,9,12 114:19 120:5 130:10,19 131:13 134:1 135:8,17 137:4 outputting 134:2 outside 20:23 80:9 122:8 over-ear 36:18 over-the-ear 37:25 overcome 121:13,18 overhead 36:12 Owner 7:5 P p.m. 6:3 126:15 127:3 156:18 page 13:16 19:1 54:5 55:23 56:20,22 61:5, 10,15,17,20 62:2 64:21 68:12 74:20 78:10 79:3,22 83:21, 22 85:19 86:20,22 87:10,11 88:4,5 90:11,13 91:24 95:8 116:11 119:12 127:19 129:10,12, 15,16 133:18,19
--	---	--	--

139:11,14 143:3	37:3 46:10 63:7	62:20,24	72:4,12,14 78:18
pages 76:15 82:18	68:17 69:9 70:7,10	PDF 129:16 133:19	142:9,13,17 145:2,4,7
85:16 150:20	72:22 80:10 86:12	peak 128:9 140:18	pieces 16:16 78:19
panel 148:2,11,15,19	93:15 94:18,21	peaky-looking 154:8	128:19 137:20 142:4
149:5,8,19 150:3,8,9	95:21 97:10,12,14,	pen 104:16,18 108:3	145:6
151:17 152:24	15,19,21 99:20,21,	pending 6:12 10:1	piezoelectric 95:11,
154:24,25	22,25 100:1,2,9,14,	102:19	12,25 96:10,16 98:1
paper 34:3 104:14	17,22 101:4,6	people 25:22 26:3,18	106:23 107:4 111:1,
paragraph 13:19 14:2	104:23 105:2	perceive 35:6	5,21 113:7,10 115:4,
54:5,7,25 55:23,24	106:15,22 107:5,9,	perception 121:4	11 117:8 120:1
58:16,19 59:19	10 111:23,24,25	perform 135:9	121:9,16,21,23,25
60:12,14 61:5 65:11,	112:1,7 113:1,2,5,9,	performance 19:14	122:12,22,24 124:21
13,21 69:18 71:16,	13 114:20 118:2,6	20:15,18 21:4,7,13,	125:6 126:1 130:9
19,21 72:7,18 73:3,	120:5 121:4 125:12,	21 55:18	137:3 139:4
10 74:19,22 75:12	14 129:3,4,19,20	periodically 9:16	piezoelectrical
76:2 78:10 88:5	130:10,11,13,20,21,	Perkins 7:4	123:11
94:9,14 97:5,7	22 131:10,13,14,20	permanent 74:13	piezoelectrics 95:13
98:11,15 99:7	132:13 133:12	permanently 72:20,	122:16
107:21 110:1,10,12,	134:2,9 135:8,9,17,	25	pima 88:16
22 111:11 112:14,25	21 136:25 137:5,6,	person 137:22 138:1,	pinna 27:5 80:8
115:2,20 117:20	19 138:13 142:1	21 140:18	88:11,17,25
119:11,12,16	143:2,23,24 146:4,	personal 122:7	Piper 7:6
120:10,13 123:23	12,15,21 147:10	perspective 69:12	place 6:15,24 26:9
129:12,15 130:5,6	148:16,19,20	petitioner 6:12 7:7	30:18 55:20 78:5
131:11 132:18	partially 72:2	18:1	117:22,24 118:1,9,
133:20,22,23,24	particular 40:13 91:1	phone 32:2 67:24	11,15 133:5 145:7
134:18,25 135:3	138:18 142:23 151:8	phones 32:18 33:8	146:16 149:25
136:21,22 139:12	particularly 16:10	91:13	placed 22:14 25:14
144:6,8,15 145:16,	parts 12:10 72:24	phrase 106:13	98:2 140:17 148:16
17 147:23 148:1	80:13 94:20 117:23	phrased 96:8 124:14	places 10:25 47:24
149:3,12 151:12,15,	118:14 128:19 129:5	physical 38:19 39:4,	108:18,21 150:23
19 152:9 154:15,17,	137:10,19 144:11	15	155:8,12
20 155:15	pass 156:12	pick 119:14	plastic 59:5
paragraphs 110:2	passed 51:19	picking 89:2	plate 98:5 101:11
parallel 53:3	passing 51:9 52:10	piece 45:18 48:22	107:20 129:3 135:20
parallelepiped 53:3	patent 6:12 7:5 10:8,		139:25 140:4,23
parameter 153:2	9,10 40:3,11,19		play 20:4,23 39:3
parameterized 153:1	41:2,13,20 57:11		139:2
part 19:12 20:13	60:14 80:19 103:6		
21:25 22:15,16 25:9	110:16 139:12		
28:7 32:24,25 36:14	142:21 150:20 151:3		
	patents 10:24 11:19		

playing 66:8	port 145:22 146:4	preparing 11:13,23	proceeding 53:25
plays 150:13	Portability 39:5	presence 35:18,21	proceedings 53:25 141:21 147:18 156:19
please 7:1 8:20 9:5 61:3	portable 38:3,22	present 40:12	process 73:3,9
pliable 106:9	portion 44:18 51:3, 18,25 52:5 60:3 69:17 71:25 72:19 73:19,20 74:24 75:16 81:22 87:7,25 88:10,11,12 89:5 94:20,22 95:24 96:4 119:8 129:21	presented 33:19 34:18	Processing 34:24
plug 42:8,9,18 48:4,9, 14,19 51:14 64:3 84:25 86:16,18 87:20,21,22 89:9,10	portions 61:16 63:8 82:22 87:4,6 108:25	presenting 76:4	produce 35:11 66:22 67:4 95:14 123:6
plug-in 61:16 63:8 71:25 72:19 73:19 74:4,24 84:15,19,25 85:6 87:21	POSITA 63:4,12 69:12 74:10 79:11 82:13 83:10 85:11 121:16 126:5	pressure 28:9,13,20, 25 29:8 35:22 36:1, 5,12,25 37:5,12 128:1,4,7,10	produced 96:3
plug-ins 63:1,5	POSITAS 84:21	Presumably 98:17	produces 90:25 93:12 95:15
plugged 39:17	position 50:6 113:6	presume 107:19	producing 33:3,23 106:24,25 118:4
plugs 63:11,13,18 75:20	positioning 135:19	pretty 155:20	product 16:3,6 17:4 29:12 45:18 77:6 78:16,18 81:21 82:15 93:14 143:20
plus 19:17	possesses 97:20 99:12	prevent 50:23 73:24	products 14:24,25 15:1 73:15 77:8
point 11:12 15:6 22:17 53:11 57:2,13 76:7 78:5 79:10 81:12,15,17 82:2 86:10 89:14 100:5 103:10,11,17 104:15,21,22 107:25 108:5,13,15 110:3,8 112:7,8,11,12,19 115:9,10 120:19,22, 23 123:15,19 124:19,25 125:7,11 141:3	possibilities 41:5	preventing 118:12	professional 16:8,14 23:14 26:25 27:3,6, 11,15,19,22 37:18, 25
pointed 109:5 133:13 152:6	possibility 102:1	prevents 24:17	prohibit 79:16
pointing 132:13	possible 15:19 52:20, 21 87:17 91:3 100:1, 25 101:9,19 104:1 134:5 156:10	previous 8:4 26:23 74:20 76:20 83:25 84:8 85:4 92:25 97:25 117:4	project 20:14
points 36:16 128:5	Possibly 88:1	previously 10:15 53:21,24 63:8 79:19 82:16 89:25 127:6 141:19 147:17,19	prong 108:20 109:4
poorly 124:14	power 65:23 67:16, 18,23 68:7 69:3,13	principle 82:5,8 111:6,11 112:19 115:20 117:20 119:20 124:21	prongs 119:5
pop 25:7	powered 67:17 71:13	prior 11:3,19 14:22 31:21 75:24 76:3,24 77:2,10,16	proper 29:19
por- 108:24	Preamble 13:10	probably 10:3 14:20 15:16 29:4 35:1 89:13	property 48:19
	precisely 11:8	problem 55:4 76:4	proposing 74:11
	precludes 92:13 93:4	procedures 8:8	protective 42:10,11, 20,24 43:2,12 44:5, 15
	prepare 10:20 11:16 12:1,3,8	proceed 8:22	provide 84:5,13
			provided 14:5 71:24 91:18 110:13 111:7 115:10 123:4

provides 64:13,25 151:22	96:9 98:1 102:13,19, 22 103:1,8,9 105:9, 11 114:2 118:17 119:3 125:3 130:18 136:5 138:11,17 144:14	60:4,12 65:14,22 66:4 68:14 70:13,16 71:21,22 72:10,23 74:23 88:6 91:15 93:1,2 97:9,18 99:11,17,18 100:8 110:22 111:19 112:24,25 114:3,18 119:13,16,23 120:25 121:1,2 130:6 131:12 133:25 135:4,15 136:23 145:17 149:15 150:1	142:14 150:25 155:5
providing 14:9 68:7 112:18 113:20 123:2			receive 72:3
publications 15:3			receiver 90:10,24 110:24 135:6 142:1 143:10,13,14
published 20:10	questioning 9:19 127:17		receivers 91:11
pulled 147:2	questions 8:13 9:3, 11 77:15 106:12 115:18 117:4 127:15 138:11 155:23 156:9,11,14		receiving 105:7,14
pur- 23:17			recess 53:16 89:20 126:16 156:4
purchased 20:1			recited 59:14
purpose 16:11,12 21:20 23:17 24:1,5 33:12 55:14 69:25 129:20,24 143:6,9 146:10	quick 55:15 77:1 91:9	reading 11:20 52:5,6 58:17 68:12 110:1 111:19 151:10 155:15	recites 51:2,8 57:14 72:9
purposes 23:11 42:23 59:21 85:23 131:22	quickly 26:19	reads 46:25 54:7 55:25 58:4 65:22 66:4 74:23 97:9 110:22 119:16 130:6 133:24 135:3,15 145:17	recognizable 35:15
push 37:13 145:7	quite 23:5		recognize 18:13 54:1 90:5 141:22 147:21
pushed 45:9,13	quote 70:6		recognized 121:5
pushes 145:3	quoting 76:3		recollection 15:18,22
put 11:11 20:16,22 21:1,10 26:9 28:10, 14 36:18 72:24 73:15 78:14 101:11 103:18,21 142:18 147:10	R	real 55:15 77:1	record 6:6,25 7:12 8:24 18:9 19:19 32:10 53:14,18 61:3 85:23 89:18,22 98:25 102:7 126:13 127:10 144:11 146:3 156:2,6,15
putting 29:8 32:9 46:14 96:4 138:5	R&d 20:14	realize 51:13	record's 104:9
Q	rainy 40:22	realized 12:18 32:7 62:13	recorded 8:17
quality 16:9 28:11,15 35:19	raised 57:6,12	really 38:2 83:14 137:22	recording 6:21,23
quest- 10:2	range 28:22 31:19 38:16 41:5 122:14 154:4,5	reaping 126:6	recross 156:10
question 8:20,23 9:7, 12 10:1 17:25 18:3, 17 27:21 39:11 57:10 62:16 65:3 68:2 73:2 84:11 85:4	rare 10:2,3	rear 60:19 61:18,24 62:3,7 63:14 74:25 75:13	rectangular 22:13
	ratio 151:17 152:1,14, 23	reason 96:25 97:3 117:25 137:20,24	reduce 145:23 155:10
	reaches 113:11	reasons 25:22 26:3,5, 6 74:14	reduced 134:4,22
	reactions 16:5	recall 15:14 22:4,7,8 34:4,19 35:2 73:22 76:25 77:22 97:1 110:16 115:24	reducing 75:6,8 134:16,18
	read 10:24 11:18 40:11,19 42:7,15 43:10 44:3 46:25 47:4 48:2,7,12 51:8, 22,23 52:9 54:8 55:25 57:3,14,25 58:4,19,20 59:25		reduction 134:17
			refer 17:17 57:8 61:1 71:23 75:23 79:4 81:4 82:23 94:11

112:19 136:12 144:8,15 reference 14:2 54:2 55:11 56:13 59:15 60:5,17 66:13 67:18 68:23,24,25 71:15 73:22 79:23 80:1 82:7,19 83:23 84:6, 13 85:16 88:4 90:6,8 95:2 97:6,15 99:22 100:2 108:2 109:23 110:3 111:25 113:3 114:20,22 120:13 125:20 127:16,18 134:17 138:14 139:15 141:23 143:22 147:21,24 referenced 51:18 85:15 references 11:6 76:13 77:20 79:3,5,8 83:15 84:15,24 100:9,13 referred 59:20 76:21 87:14 109:13 111:11 129:3 148:25 referring 27:5 61:5 62:4 63:13 64:18 86:12 103:6 118:19 134:8,13 refers 61:12 69:22 72:19 73:3 75:12 91:7 99:18,25 100:14,16,21 112:6 123:21 134:18 149:7 reflect 102:7,25 reflecting 104:10 reflections 21:12 refresh 41:23 regard 116:18	region 81:18 109:12 regular 37:11 53:2 79:17 95:20 relate 61:15 128:17 related 11:1,20 17:5 28:3 31:23 61:7 111:12 127:15 140:12 relates 40:12 130:24 relating 8:5 relationship 60:3 132:2 145:19 152:22 155:14 relative 130:12,20,22 131:15,19,24 132:21 133:4 137:12 140:5, 25 relatively 122:22 137:1,6,12 released 137:4 145:19 relevant 92:17 93:7 116:17,21 145:21 154:5 relied 68:6 144:9,12 rely 32:23 94:14 relying 68:3 82:4,7,11 84:14,18 85:8,10 remain 29:12 remainder 112:25 132:12 remaining 129:22 Remem- 106:20 remember 11:10,12 14:13 15:5,20 22:9 23:2,5 33:4 34:4,21 77:18,25 87:12 107:18 115:23 148:4	155:13 remembered 102:3 152:6 remembering 106:22 128:24 remotely 8:4 removable 73:25 74:5 remove 26:19 143:18 146:12,15 renders 65:15 69:20 reorient 148:4 repairs 74:16 repeat 37:2 62:15 repetitive 8:10 rephrase 114:2 replace 139:3 replaced 77:7 81:8,10 126:4 report 63:11 68:13 74:15 95:5 116:11 126:2 131:22 138:9, 16 145:12 151:1,5 reporter 7:9,11,20 8:15,24 17:22 22:17 30:18 57:24 108:9 Reporting 6:18 represent 7:2 representative 151:25 152:25 representing 107:19 reproducing 35:13 request 102:11 require 67:5 71:10 123:6 required 45:16	116:15 125:18 requirement 152:1,14 requires 68:25 69:2 87:21 93:14 151:8 reread 99:7 rereading 99:10 research 19:12 33:19 34:3,18,19 resistance 39:6 41:6, 13,16,19 43:3 respect 10:19 83:18 133:5,7 response 36:19 68:11 93:13 95:16, 21 98:5 105:4,6,10, 13,23 106:14 117:7 123:5 140:1 responses 22:3 rest 88:10 132:3 133:16 137:12 restate 141:4 restored 51:11 52:12 restricts 142:8 result 28:25 results 114:12 resumed 127:12 retained 14:12,23 15:12 return 69:14 review 12:4,7,23 110:12 148:7 reviewed 110:15 reviewing 13:4 109:23 revise 14:6 right 8:2,7 14:15,18
---	--	--	---

17:12,13 18:2 19:20 21:24 24:12,24 26:13 29:10,11,17, 20 30:20,21 31:3,15 32:5 34:4,16 37:8 38:3 39:18 40:3 46:24 47:10,21 49:16,24 50:12,17 53:12 58:1 60:16,25 61:11,21 62:12,24, 25 63:15,23 64:1,4, 17 65:1 68:9 70:13 71:11,19 73:7,11 75:21 77:17 79:5,24 80:3 81:9,24,25 82:20,23 83:19,20 88:3 89:24 91:16 96:11,20 97:1 98:12 99:3,24 103:25 104:7,10,11,20,25 107:8,14 108:19,20 109:4 110:6 113:24 114:23 115:2 116:22 117:5,9,13,14 118:2, 17,18,22,24 119:7, 12 120:10,13,18,24 121:19 122:20,25 123:11,13,16,17,20 124:1,6,16 125:15 127:14,25 130:1,5 131:7 139:11,18 141:12,17 142:12, 13,18 143:15 144:20,23 145:8 146:7,13 147:5,11, 13,16 148:10,12,17, 22 149:1,5,25 151:3, 12 152:24 153:8,13, 21,23 154:8,22 155:13 156:7 rigidities 155:17 rigidity 130:1,2,4 154:16,21,24 155:3, 7,10,12,19	role 18:24 19:6 150:13 155:11 room 21:10,11 97:2 rotatable 97:22 rotate 97:11 rotation 97:12 99:19 101:3,15 111:22 112:13 113:3,13 114:20,22 rotational 112:2 rough 146:6 roughly 128:8 rubber 45:3,17 run 38:9 S sample 153:3 San 6:19 7:4 satisfied 70:12 satisfy 70:6,10 saw 15:6 128:19 saying 46:1,20 53:7 55:6 57:9 64:6 69:9, 12 71:12,13 115:6 129:8 131:5 134:21 143:18,19 says 12:15 36:17 47:16,23 51:23 52:7 54:22 56:18 66:17, 18 68:10,12 69:5,11 70:3 72:23 98:6 99:10 114:18 117:11 119:16 131:11 135:25 146:14 147:6 148:3 154:17 scale 153:7 scan 92:1	scenes 40:22 science 17:1 scope 122:8 screw 75:3,11,21,23 76:13 screwed 118:12 screws 135:22 scribbling 99:8 seal 36:23 search 35:5 searched 10:25 second 13:21,23 42:9 48:4,14 56:2 57:17 58:7,22 59:5,16 61:8,14 65:22 100:2, 16 109:4 112:13 119:15 131:10 142:13 155:15 second-to-last 55:24 secondly 117:24 section 79:7 see 10:17,18 13:25 15:7 17:7 19:13 20:14,24 23:14 29:7 40:16,24 42:13,21 44:6 47:3,5 51:5,15 52:14 54:15 56:9,21 58:14 59:11,24 60:1 65:4,18 66:1,10 72:5,16 75:9,10 76:18 78:11 83:13 86:13 87:3,7,9,10 88:14 89:4 92:5,6 97:16,23 98:19 99:23 100:11,19,23 103:23 107:14,17 109:2,20 110:2,3 111:8 112:3 113:15 119:21 120:7 123:24 127:24 129:14,25	130:14 131:6,9,10, 18,23 132:11,16,19, 24 134:6 135:13,23 136:4,7,16 137:7 144:11 146:1,2,23 149:2,6 150:21 151:7 seeing 82:1 108:24 138:7 151:9 seen 15:3 selected 154:19 send 23:20 64:9 sensations 35:10 sense 43:24 45:1 56:5 63:6 118:13 139:6 senses 35:8 sentence 13:19 47:4 54:7 55:24 59:19,20 65:22 66:3,4 70:6 74:23 97:8 99:17 100:8 111:17,19 112:5,13 119:15 121:1 133:24 135:3, 15 136:16,20,22 145:17 149:25 150:11 sentences 58:19 59:11,14 71:21 72:9 114:17 119:14 separate 133:23 separated 49:23 81:8 separating 73:19 separation 100:16 serve 16:10,11 serves 23:10 set 21:4,21 63:22 77:17
--	--	--	--

setting 39:17	36:11 50:6 51:3,25	skin 21:2 28:19 93:22	sound 20:6 21:12
setup 64:5	53:4 64:1,6,7 96:19,	94:3,5 107:8 116:14	28:25 29:9 33:1
seven 77:10 82:12,14	20 98:2,12 104:20	127:23 128:6	35:7,19 66:22 67:1,5
84:4	107:14 108:21	148:17,20 150:10	69:1 90:25 93:22
shaded 108:24	114:23 117:14	skipped 110:17	94:3,5 96:3 121:5,13
109:12	118:17,22,23,24,25	skull 32:13	122:18,23,24,25
shape 52:22 53:2,8	120:10,14,15,18,20	sleeve 42:11,20,25	139:21
119:3 128:8	123:16 124:5	43:2,12 44:5,12,15,	Sounds 155:25
shapes 52:20 154:9	127:22,25 128:5	16,20	source 67:18 96:9
Shenzhen 6:11	134:3 136:25 140:17	slide 146:17	spacing 50:9,14
Shokz 6:11 7:5 15:11,	141:11,13 147:9,10	slides 145:2	speak 11:14,25
16,19,20,24 16:6	sides 26:8 63:22	sliding 24:18	speaker 22:23,24
shorthand 38:16	145:3,6 146:11,16,	slightly 30:19,23	26:10 30:16,23 31:1,
should've 18:9 39:10	19,20,22	slit 145:23 146:22	13 33:2,11 34:7
53:19 60:25	sidewall 71:25	slower 57:25 121:13	35:3,14,17 36:1 80:2
show 15:3,4,8,9 16:1	100:25	small 16:20 77:11	81:6,8,9,18,21 86:2,
60:19 70:1 79:11	signal 34:24 35:16	122:1,14,22 137:6	3,5,16 87:1,16
80:12 82:2,8,12,13	93:13 95:16,17	smaller 135:18	110:23 119:18 135:5
83:6,9,16 84:19	signals 20:24 23:21	Society 34:25	136:12
85:10,19 89:10 92:1	26:7,8 35:15 64:10	socket 87:21,22,24	speakers 16:19,20
95:1 115:21 125:14	67:9	sockets 63:11	31:23 32:12 33:14,
128:21 143:6	significant 11:9	solar 67:24	16,20 34:14 78:13
154:11,19	25:15 41:13,17	soldering 74:12	80:16
showed 34:5 35:12	similar 56:18 138:12	solving 155:17	speaking 60:10
showing 61:13 153:3	154:9	somebody's 29:3	128:20 144:25
shown 65:1 80:20	Simmons 6:17	Sony 38:7,17	special 40:22
86:2,7 88:7 90:16	simple 20:25	sorry 11:11 47:11	specific 9:24 11:12
92:8 96:15 101:5,6	simplifying 75:5	56:24 57:24 58:1	16:19,22 17:10 19:5
110:25 113:19	simultaneously	68:13 81:16 86:23	34:10 63:21 73:22
119:17 123:8 132:4	72:13	91:24 92:3 94:10	75:20 82:9 83:17
139:20 143:2 144:22	single 64:5 74:22	100:5 102:17 106:20	84:15,21 85:1,9
152:9 154:2	142:8	107:10 108:9 124:2	91:18 96:24 116:18,
shows 15:2 16:2	Sir 129:5	129:17 141:4 146:3	20 145:14 151:6
61:16 80:15 86:9	sit 74:1,3 76:12 91:6	148:8 151:5	specifically 9:13
89:11 90:13 98:7	sitting 140:7	sort 38:6,18 43:19	16:22 31:20 33:15
127:21 132:11	situation 30:22	49:11,13 138:12	34:13 84:24 110:16,
148:11 152:22,25	size 75:3		21 139:17 149:7
sic 9:25 145:22	skill 138:21		specification 41:23
side 23:20,21 35:18			56:16 60:4,6
			specified 46:21

specifies 99:14 151:8	starting 7:2 42:6 46:25 48:2 51:1 79:2 88:4 142:20	143:7 144:3	surrounded 42:10 44:4,9,13,14,16 45:9
speculation 102:15		stuck 51:11 52:12	
spending 151:9	starts 42:4 94:13 121:10 125:15	studio 27:13 38:2	survey 33:11
spent 11:22	state 7:2 41:11 65:13 69:19 88:5 97:22 102:5,6	subject 21:4,20	suspension 61:18,24 62:3,7 63:14 75:13
splash 41:6	stated 56:17 117:5	subjects 20:22 26:16	Suzhou 6:9
sporting 38:23	statement 55:6	submit 18:14	swear 7:10,13
sports 37:17 38:15, 22 39:6,22	states 6:12 40:11,19 44:2 52:9 136:22	submitted 13:5	sweat 39:6
spread 115:11,14	stating 102:7	subset 77:11	swimming 40:22
spring 36:13	stationary 39:17	sufficient 121:3	symmetrical 124:6, 12 140:9,15
springboard 121:11 124:25 125:5	stay 65:5	sufficiently 135:18	symmetrically 140:25
square 53:2 98:17	stereo 63:22	suggests 73:19 74:4	symmetry 124:10
squeeze 147:5	stiffness 106:3 153:1 154:14	Suite 6:19	system 31:8
squeezed 146:24 147:2	stop 30:3	supply 67:16	systems 33:11
stable 56:4	stopping 51:9,12,19 52:10,13,17 53:11 89:14	support 26:12 54:18 55:4,5,7 113:18 114:3 143:12	
stack 111:18	stops 147:1	supported 22:25 24:9 27:7,24 30:25 55:2	T
stacked 111:1,4,20 113:7,10 119:25 130:8 137:2	straight 27:16 109:6, 13 116:25	supporting 28:3 97:20 136:25 143:10,11	table 79:6
stage 27:18	Street 6:16,19	sure 8:20 15:6,21 27:10 30:9 33:12 37:19 53:13 55:8 57:7 62:17 65:9 84:1 88:2 89:17 95:7 97:3 98:9 110:4 123:21 126:12 129:7 133:11 142:14	tactile 32:18,21 35:10
start 12:19 24:21 30:12 31:12 34:11 40:9 43:9 47:6 49:12 56:22 58:1 62:20 64:19 66:12 67:12 68:23 70:20 71:20 72:8 74:2 80:21 82:6 83:1 94:10 96:14 97:7 104:22 110:20 111:18 113:17 114:16 116:19 118:20 119:15 120:10 130:18 154:1	stress 95:18	surface 28:19 45:6,10 51:12 52:13,16 53:5 96:6 111:14 116:14 123:2,6 124:1,6 125:10 132:9 139:1	take 6:23 9:16,17,20, 25 21:16 89:15 91:9 126:10 132:19 155:22
start- 42:6	stretch 133:10	surfaces 43:13,19,22 44:22 45:21 46:4,13 131:22 140:24	taken 6:9 126:16
started 38:7	strong 69:2		takes 111:21
	structure 28:3 56:7, 11 59:22 75:5 91:1 94:16 101:7 104:24 105:13 106:23 111:3 112:18 113:19,20,22 115:7 116:19,21 119:19 121:17 123:8 125:19,23 129:22 132:3 133:16 140:3		talk 47:15,23 60:11 79:21 83:23 108:2 114:9 121:19 152:19 155:6
			talked 27:21 29:23 30:14,16 37:24 44:20 63:3 76:21 81:22 93:20 111:13 113:23 124:25 126:4 130:25 140:13,20 142:17 143:17

talking 8:25 23:12 24:4 30:10 44:17 45:2,14 63:8 73:24 75:17 76:7 117:25 122:7 151:2	themselves 36:6 37:7	tie 58:18	23
talks 55:16 80:1 98:3 114:11 119:9 144:18 149:17 155:7,11	thing 30:2 36:21 56:23 91:15 96:2 99:14 117:11 119:14 146:24	tied 35:16	transcript 93:2
teach 84:24 149:12	things 8:15 9:19 12:14 13:8 19:5,6 36:10 41:15 44:12 133:10 146:7 151:6	time 6:7 9:20 11:22 13:5 14:18 19:15 36:18 51:23 59:25 89:15 126:10 138:7 151:10 155:22 156:8,12	transducer 25:20 64:17 67:9,14 90:19 91:1,16 92:11,18 93:7,8,11 94:15,18, 21,24,25 95:1,10,21 128:21 133:1 138:3, 20 139:4,20 148:24
teaches 141:25 147:4	think 11:22 13:7 14:20 17:20 22:2,19 25:21 26:2,23 30:5 36:9 37:1 41:7 42:3 43:24 45:11 50:17 52:19 53:9 55:3,5 56:22 57:13 60:13 61:23 63:11 64:18, 20 69:5 73:7 74:22 76:3,6,21,23 77:14 78:24 81:24 83:4 86:25 88:21,23,24 89:13,14 92:25 95:5 100:6 102:14,19,23 103:7 104:4,13 105:6 117:3,4 118:6, 16,20 119:11,13 120:18,25 121:20 122:4,17 124:8,9 125:2,8 126:8 127:19 131:4 134:12 138:11,14 140:6 142:3,15 143:17 152:5 154:10,14 155:8,20	times 6:24 154:22,23	transducers 16:18 17:3,8 18:20 19:13 77:9
teaching 72:25 94:15 131:11 142:21 150:15	third 59:19 66:3 115:8,21	title 79:6 90:23	transfer 93:23
technical 34:22 40:10 41:4 50:23	thought 37:11 85:8	today 11:17,23 12:9 116:4 156:9	transferred 107:1,5,6 114:11,12 116:15 119:4
techniques 77:12	throw 130:17	today's 6:6 156:16	transferring 125:25
technology 20:5	THURSDAY 6:2 127:2	tolerances 26:17	transfers 96:6 107:7
tell 109:3 124:2	tick 153:9,10,12	tool 145:20 146:10 147:5,7	transistor 25:5 91:19
temple 22:16		top 18:1 34:16 61:14 81:6 87:4 98:18 123:25 129:10,12 133:18 140:7 148:11	transitive 48:19
ten 35:1		total 135:19	translation 54:2 136:9
tension 46:3		totally 101:10,12 122:8	transmission 26:7 28:17,25
term 31:25 37:17 76:24 77:4 78:2,17 98:4		touch 43:17,19,22 45:16	transmit 137:13 148:21
terms 41:5 79:17 80:6 110:4 149:19		touches 45:17 108:14,21	transmits 104:24 150:3
test 20:23		touching 21:2 32:24 36:20 44:19 109:4,6 111:15 116:14 118:14 131:1 140:18 148:16,20	transmitted 29:9 121:4 149:20 150:4, 9
TESTIFIED 7:18 127:7		trade 15:2,3	transmitting 137:11
testimony 18:19 70:10		trade-off 29:7	Travis 6:17
text 94:11		trade-offs 29:16	tricky 37:21
texture 56:5		Trademark 6:13	tried 16:3,6 22:3
thank 7:8,20 128:14 153:19 156:17		traditional 33:2 121:17 126:5 139:4,	trouble 137:17
thanks 136:2 153:18 156:8			try 9:6,16,17 20:11,14

28:7,8 30:17	typographical 100:3, 6 101:2	upper 22:15,18 24:14,22 30:18 32:24 95:21 96:4	124:4,15,19,24 125:4,15 128:10
trying 23:1 52:19 83:6 92:23 105:10 114:8 115:23 119:13 122:17 129:25 138:4 149:24 151:7	U	use 20:22 21:3 24:23 25:22 26:3 33:5,20 35:8 38:1,15 39:15 40:21 50:18 54:21 57:9 63:6,12 90:25 91:14 109:18 142:22 143:21 147:7	vertical 101:6 116:8 140:13 141:6 153:22
turn 40:6 42:3 50:24 54:5 58:16 60:16 65:8,10 71:15,16 74:19 83:22 85:16 88:3 90:11 97:5 110:10 119:11 127:18 128:15 133:18 134:25 139:11 144:6 147:23 151:12	U-SHAPED 111:2 129:3 134:3,10	user 36:5 37:6 38:8 54:25 73:14 94:6 107:8 121:5 137:14 147:8 148:21	vertically 121:10 141:5
turning 66:7 71:19 83:21	U-SHAPED-TYPE 50:2	user's 22:11,25 29:8 32:13 35:18 36:3 54:14,19 55:2 88:12, 13 127:23 148:16,20	vibrate 47:2 49:2 65:17 66:14,23 67:6 68:8 69:22 97:11 125:10 150:6
Twenty-one 140:6	U-SHIP 111:2	users 40:21 54:10	vibrates 67:10,15 96:3
two 10:12,19 11:18 12:14 13:7 43:13,19, 22 44:12,22 45:8,21 46:4,12 51:2,10 52:11 58:19 59:11, 13 64:13,16 70:11, 24 71:21 72:9 75:1 80:5,16 81:7,12,15 88:17 100:9 117:23 132:8 140:24 142:4, 9,10,22 145:3,6,14 146:11,16,19,20,21 153:22	Uh-huh 34:2 100:10 123:18 135:2 152:16	uses 68:7 91:2	vibrating 94:22 107:5 118:12 123:2
type 73:23 81:10 85:9 86:15	uncertainty 102:8,12, 25 103:4 104:2	usually 26:11 98:19	vibration 28:18 32:19,22 96:9 97:10, 14,21 98:4 99:18,19, 21,25 100:1,2 101:4, 11 104:23 105:2,4,7, 14 106:15,22,25 107:4,11,12 111:22, 24 112:1,2,6 113:1, 2,5,8,12 114:12,19 118:5 120:4 121:3 123:7,12 130:9,19 131:13 134:1,2 135:8,10,17 137:2,4, 5,11,21,25 138:4 148:2 149:20 150:3, 4,7,9,14 151:17 152:23,24 155:10
typed 88:24	unclear 134:21	V	vibrational 100:9,14
types 33:20 80:16 82:15 84:19 85:13	undergo 112:2	value 120:6 154:3	vibrations 33:3,24 93:12 95:24 96:13 104:24 106:14 107:7,8 124:20 125:6 137:13 148:21
typically 9:17 20:20 27:3,7,24 32:2,4	understand 8:8 9:5,6, 14,22 10:5 17:18 21:19 37:20 60:9 61:6 63:4 85:4 86:15 92:20 111:10 120:18 131:5 136:10,16	variables 151:20	video 6:8,21,23
typing 39:23	understandable 105:11	variations 78:15	videographer 6:5,20 7:8 53:14,17 89:18, 21 126:13 127:9
typo 13:9,11 88:19,20	understanding 12:24 113:19 114:4 132:20	various 65:24 69:4 74:14 84:19 85:13 124:24	
	understands 82:13 83:10	vector 141:8	
	understood 93:24	Vegas 15:9	
	underwater 41:6	verbal 22:20	
	union 56:5	verbalize 8:13	
	United 6:12	versus 6:10 138:25	
	units 153:11,14	vertex 123:15,19,24	
	university 33:18 34:4,18,19,21		
	unmarked 153:12		
	upfront 61:1		

156:2,5,15 view 46:12 vise 29:3 voice 34:5 35:2,7,13, 15,16 139:24 volume 66:7	89:2 105:13,18 106:6 116:12,13 120:25 123:10,12 125:16 142:21,23 144:25 145:5 147:4 153:16 ways 25:19,24 67:23, 25 78:15 106:5 we'll 9:16 12:21 17:20 58:18 103:7 130:17 144:13 we're 17:19 18:2 23:12 25:1 45:14 76:7 78:7 82:1 89:13 117:25 146:6 151:2 we've 53:9 124:22 126:8 138:11,12 wear 39:22 41:6 wearing 54:12 weight 24:10,11,15, 20,23 25:6,14 26:12 29:14,18,19,25 30:24 31:7,9,12,14, 19,20 39:5 54:18 55:1,3,7 75:6 76:4 107:16 108:6,14 134:4,8,16,18,22,23 135:16,19,20 136:7, 17,24 137:18 138:6, 19 139:1,6 143:10 Welcome 127:14 well-known 77:11 79:12 went 53:20 West 6:16,18 white 98:17,21 wide 31:19 41:5 width 49:24 wire 56:3 57:19,22	58:9,12,24 59:2,7, 10,17 61:14 64:12 wired 49:9 64:24 wireless 26:7 39:9 49:9,19 50:19 wires 26:9 61:18 74:12 wiring 23:20 75:7 76:6,8 83:8 with- 30:7 withdraw 70:19 witness 7:10,14,19 16:8,25 17:19 23:10 24:3,14 25:1,18 26:15 29:2 30:9 31:5 32:16 33:10,18 35:21 36:9 37:10 38:21 39:20 41:4,15, 22 43:5,17,22 44:11, 25 45:8,25 46:7,17 47:15 49:7,18 50:1, 14 51:22 52:19 53:13 54:21 55:13 56:15,23 60:9,21 63:25 66:17,25 67:21 69:25 71:1,5 72:22 73:7,13 74:8 76:2 78:23 83:4 84:18 89:17 90:23 92:20 93:10 95:4 96:24 99:10 100:5 101:9,18,24 102:2 103:14 104:6,8,11, 15 105:16 106:2,17 108:17 109:2,16 110:15 112:16,22 113:22 114:7 115:14,23 116:24 117:16 120:17 124:8 125:23 129:24 130:24 132:7,24 133:9 134:12,21 136:4,15 137:16	138:24 140:12 141:2,15 142:3,20 144:2,18 145:10 147:13 149:10,15 150:19 152:12 155:5 156:1,13 word 41:7 91:2,14 119:5 words 54:22 76:6 123:25 work 15:2 16:14 18:22 28:2 31:21,22 36:17 103:20 worked 16:15,16,21, 25 19:5 26:16 37:16 working 17:4,9 18:19 works 145:1 worn 21:7 29:13 38:18 39:4 54:13 142:1,5 wouldn't 19:3 105:22 wrapped 44:13 57:21 58:11 59:1 write 10:21,22 103:14 104:1 writing 76:15 99:1 wrote 11:2
W			
walk 13:11 Walking 15:25 Walkman 38:8,17 Wang 13:20,21,22 want 21:6 39:21 55:19 78:5 84:8 94:8 101:20 107:21 108:1 119:13 121:21 125:2 129:9 155:21 wanted 19:4 57:2,8 153:11 was- 125:12 wasn't 12:18 13:3 17:4 57:7 79:10 84:3,5,12 116:17 117:1 125:12,13 132:1,4 138:15 139:7 143:18 water 39:6 41:12,16, 19 43:3 waterproof 40:15 41:7,25 42:12,25 45:3,20 waterproofing 41:1,4 way 15:13,25 20:6,14, 25 21:22 26:11 29:19 33:21 35:6 36:3,20 37:13,23 60:9 67:17 69:13 79:13 84:3 87:18			
X			
x-axis 153:4 X-U 13:24 Xu 13:20,21,22,24			
Y			
y-axis 140:10 141:3 yeah 14:20 30:12			

Chris Kyriakakis

37:21 57:6 61:9
70:15 73:7 81:3 89:1
92:3 94:12 100:15,
24 101:9,22,25
102:2,19 103:17
104:3 110:6 122:6
129:17 132:19 136:3
144:13 146:6 153:18

year 11:7 14:15
19:16,18 78:1 138:8

years 19:17 35:1

Yep 100:20

yoke 140:7,23 141:11

Z

zero 46:13