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**IN THE COMPETITION**

Case No. : 1382/7/7/21

**APPEAL**  
**TRIBUNAL**

Salisbury Square House  
8 Salisbury Square  
London EC4Y 8AP

Monday 6<sup>th</sup> October 2025 – Tuesday 4<sup>th</sup> November 2025

Before:

Mrs Justice Bacon

Derek Ridyard

Justin Turner KC

(Sitting as a Tribunal in England and Wales)

**BETWEEN:**

Consumers' Association

**Class Representative**

v

Qualcomm Incorporated

**Defendant**

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**A P P E A R A N C E S**

PHILIP MOSER KC, ROB WILLIAMS KC, MICHAEL ARMITAGE, CIAR MCANDREW, CHARLOTTE MCLEAN, DANIEL ALEXANDER KC and DAVID IVISON (Instructed by Hausfeld & Co. LLP) on behalf of Consumers' Association

DANIEL JOWELL KC, NICHOLAS SAUNDERS KC, DAVID BAILEY, SOPHIE BIRD, CHARLES WALL, ALEXANDRA BRECKENRIDGE (Instructed by Norton Rose Fulbright LLP and Quinn Emanuel Urquhart & Sullivan LLP) on behalf of Qualcomm Incorporated

1  
 2 Monday, 20 October 2025  
 3 (10.30 am)  
 4 MR WILLIAMS: Madam, members of the Tribunal, Mr Noble is  
 5 here to give his evidence.  
 6 Could we please bring up {EAOE/17/1}.  
 7 THE CHAIR: Is he being re-sworn?  
 8 MR WILLIAMS: Well, that is perhaps a good point. I am  
 9 sorry, perhaps I will ---  
 10 THE CHAIR: I think he should start off by being sworn. He  
 11 should then go through --- I know that they were sworn  
 12 for the purpose of the hot-tub, but they should do it  
 13 now.  
 14 MR ROBIN NOBLE (sworn)  
 15 Examination-in-chief by MR WILLIAMS  
 16 MR WILLIAMS: Mr Noble, can you see the screen?  
 17 A. Yes.  
 18 Q. This is your seventh report in the proceedings, is it  
 19 not?  
 20 A. Correct, yes.  
 21 Q. Can we please turn to page 40 {EAOE/17/40}. Is that  
 22 your signature?  
 23 A. Yes, it is.  
 24 Q. Can we please bring up {POE/21/1}. This is your eighth  
 25 report?  
 A. Yes, correct.

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1 Q. Can we please turn to page 106 {POE/21/106}. Is that  
 2 your signature again?  
 3 A. Yes, it is.  
 4 Q. {POE/23/1}. (Pause)  
 5 THE CHAIR: Are we having problems bringing up a document?  
 6 EPE OPERATOR: (Inaudible).  
 7 MR WILLIAMS: Here it is. This is your ninth report. If we  
 8 turn through to page 54 {POE/23/54}. Is that your  
 9 signature again?  
 10 A. Yes, it is.  
 11 Q. Then, last of all, {IRE/28}. This is your tenth report  
 12 and if we could turn through to page 7 {IRE/28/7}, your  
 13 signature again?  
 14 A. Yes, correct.  
 15 Q. Then, finally, {POE/24}. This is the joint statement  
 16 prepared by yourself and Dr Padilla and on to page 2  
 17 {POE/24/2}. Your signature is there?  
 18 A. Yes, correct.  
 19 Q. Does the content of these reports and the joint  
 20 statement, as contributed by you, represent your true  
 21 and complete professional opinion?  
 22 A. Yes, subject to the corrections that were highlighted,  
 23 I think, when we started the hot-tub.  
 24 MR WILLIAMS: Thank you. There will be some questions for  
 25 you.

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1 Cross-examination by MR BAILEY  
 2 MR BAILEY: Good morning, Mr Noble. Good morning, members  
 3 of the Tribunal.  
 4 Can I just start by explaining the running order.  
 5 So I will start and ask you some questions about  
 6 dominance and then my learned friend Mr Jowell will ask  
 7 you some questions relating to abuse and the effects of  
 8 the conduct and then, lastly, Mr Saunders will address  
 9 you on leveraging.  
 10 THE CHAIR: Can I just clarify there is not going to be any  
 11 overlap between those issues? I do not want the same  
 12 questions or more or less the same questions being put  
 13 several times to Mr Noble.  
 14 MR BAILEY: No, Madam, we have absolutely sought to ensure  
 15 there will be no repetition.  
 16 THE CHAIR: So dominance, abuse and the leveraging analysis,  
 17 or the empirical analysis of Dr Padilla.  
 18 MR BAILEY: Yes, Madam, that is correct.  
 19 In terms of confidentiality, I will be starting in  
 20 open court for the first half and then I will need to  
 21 move into private session where I then group all of my  
 22 questions relating to confidential matters at that  
 23 point.  
 24 THE CHAIR: All right. You will finish by a little bit  
 25 before 1.00 so that there can be time for

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1 re-examination, if necessary.  
 2 MR BAILEY: We will do our level best to do so.  
 3 THE CHAIR: Yes. We have half a day with each of the  
 4 witnesses.  
 5 MR BAILEY: Mr Noble, I am going to focus on the end of  
 6 market power in your LTE markets and the point at which  
 7 you think market power began in 5G. I am going to start  
 8 with Samsung and look at the market position  
 9 between 2016 and January 2018, when the 2018 amendment  
 10 to Samsung's licence was negotiated.  
 11 I would like to start, if may, with the data and  
 12 what it tells us. Can we go to {ORI/261.8/1}. While it  
 13 is being brought up, this is a spreadsheet of the  
 14 figures that underlie figure 7 in Dr Padilla's fourth  
 15 report. In your hard bundle, it is at tab 3. It sets  
 16 out the share of Samsung's purchases. I want to focus  
 17 on the period Q1-2016 to Q1-2018. It is {ORI/261.8/1}.  
 18 It is figure 7, so the other tab, please. Go down to  
 19 Q1-2016. Can you see, Mr Noble, that the figures there  
 20 in the second column show Samsung's purchases for  
 21 Qualcomm at 58% in Q1-2016? Do you see that?  
 22 A. Yes.  
 23 Q. Row 51. Thank you.  
 24 A. Yes.  
 25 Q. If we go down to see how it changes, to Q1-2018, do you

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1 see that it has decreased to 26% in row 60?  
 2 I apologise, row 59?  
 3 A. Yes.  
 4 Q. If we look then at the third column and see what  
 5 happened in the same period to Samsung Exynos, if we go  
 6 back to Q1–2016, please, so that is row 51, do you see  
 7 it was 36% back in 2016?  
 8 A. Yes.  
 9 Q. Then the data we see that the share increases, does it  
 10 not, in Q1–2018, to a share of 61%. Do you see that?  
 11 A. Yes.  
 12 Q. Given those shifts and share of supply to Samsung, you  
 13 would accept presumably that Exynos and Qualcomm were  
 14 effectively competing in supply of chipsets to Samsung  
 15 between 2016 and 2018?  
 16 A. Well, there certainly seems to have been a degree of  
 17 switching by Samsung from one to the other.  
 18 Q. Yes. The switching obviously would therefore imply that  
 19 there was competition between Exynos and Qualcomm for  
 20 the Samsung socket during that period?  
 21 A. It certainly appears that for some sockets that Samsung  
 22 felt comfortable that it could use Exynos, as opposed to  
 23 Qualcomm, or any other supplier.  
 24 Q. Yes. Although it is not just some sockets, is it,  
 25 because we see it actually goes from 2016 Exynos had

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1 36%, and it goes up to 61% in 2018 so it is quite  
 2 a significant increase, is it not?  
 3 A. Yes, it is a significant increase.  
 4 Q. I am grateful.  
 5 I am going to move to LTE–CDMA and I am going to go  
 6 through, as you do in your markets, by type of chipset.  
 7 So I am going to start with LTE–CDMA. Can we just  
 8 recall, please, during the hot–tub, and in case you want  
 9 to look at it, it is {Day7/170}, and I just tell you  
 10 this is where Mr Ridyard asked you a question about  
 11 whether prospective market power might work in reverse.  
 12 So, in other words, where a firm thinks in six months to  
 13 two years' time it will have its own supply and will be  
 14 freed from any dependence on Qualcomm and you agreed  
 15 with that idea, as a matter of concept. Do you recall  
 16 that, sir? It is the bottom here. You will see that  
 17 Mr Ridyard asked you, line 22, {Day7/170:22} and then  
 18 over the page you will see your answer.  
 19 A. Yes, I recall that exchange.  
 20 Q. What I would like to do — let us give that  
 21 a label: "the concept of market power weakness". Excuse  
 22 me, "concept of prospective market weakness". I would  
 23 like to look at how that concept applies in practice.  
 24 So can we go, please, to {POF/649/6}. This is  
 25 a document, a Samsung document, where we must not refer

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1 to the information in grey and it is, as you can see  
 2 from the title —  
 3 A. Sorry, which hard copy is it?  
 4 Q. So it is tab 47. It is a document that is setting out  
 5 Samsung's plan for securing a CDMA solution. We can see  
 6 from the top right–hand corner, March 2016 is the date  
 7 of the document. Do you see that?  
 8 A. Yes, I see that.  
 9 Q. So can we go over the page, please {POF/649/7}. You  
 10 will see there is a big grey box and I want to focus on  
 11 the sentence above it. There is a bullet point that  
 12 says:  
 13 "So as respond to the expanding request for CDMA, S.  
 14 LSI... "  
 15 That is Samsung's own in–house business, is it  
 16 not, for chipsets? You are nodding, sir, but —  
 17 A. Sorry. Yes, it is.  
 18 Q. Thank you.  
 19 "So [Samsung] LSI also plans to gradually secure  
 20 a CDMA solution (Two–Chip solution in 2017 [and then  
 21 a] One–Chip in 2018)."  
 22 So this document suggests, does it not, that Samsung  
 23 was going to develop its own CDMA chipsets, either two  
 24 chips in 2017 and then finally its own in 2018, do you  
 25 agree with that?

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1 A. I would agree that it appears to be planning to do so.  
 2 Q. Yes. So if we just use the logic you discussed with  
 3 Mr Ridyard, any CDMA market power that Qualcomm might  
 4 have had would have been diminishing, would it not, as  
 5 soon as Samsung believed that it would obtain a credible  
 6 alternative source of CDMA chipsets in one to two years'  
 7 time from the date of this document?  
 8 A. Well, if we think about market power in the sense we use  
 9 it in this case, there is — it depends which part of  
 10 the allegation being made by the Class Representative we  
 11 are looking at. There is two ways in which an OEM may  
 12 wish to have chips. They may wish to have them now  
 13 because it is currently making phones in its current  
 14 supply chain and it may also wish to have them in the  
 15 future because it is planning its next round of phones.  
 16 So the concept of prospective market power and this new  
 17 concept of I think what you called "market weakness" in  
 18 a sense applied to that future need. They do not apply,  
 19 obviously, to the current need because that is the  
 20 chipsets you are currently using.  
 21 Q. Just to clarify, and focusing on prospective market  
 22 weakness, would you agree that insofar as this document  
 23 is showing Samsung's plans, that in the foreseeable  
 24 future any market power that Qualcomm would have would  
 25 be declining from this date onwards in light of these

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1 plans?  
 2 A. It would certainly be the case that Qualcomm would have  
 3 less market power once Samsung is comfortable that this  
 4 sort of solution is going to work than, you know, prior  
 5 to the position it would believe that such solution  
 6 would work, yes. I would agree with that.  
 7 Q. We can see that --- I am not going to traverse the facts  
 8 in the grey box with you, but that sets out some of the  
 9 detail, but I would like to just ask you to note,  
 10 because it is relevant for later on, the penultimate  
 11 bullet in the grey box, please. Could you just note  
 12 that. It says "pursuing to" and then just read the rest  
 13 of that line and I am going to come back to that, if  
 14 I may, later on. Do you see that, "pursuing to  
 15 embed ..."?  
 16 A. Yes, although I was not quite sure I understood the  
 17 context of that, but perhaps that will become clear.  
 18 Q. Do not worry. I will come back to it, I promise.  
 19 Can we look at another document, please, at  
 20 {POF/653/7}. I just want to see --- you said in the  
 21 hot-tub:  
 22 "It depends what the OEM does with the knowledge  
 23 about future supply."  
 24 A. Sorry, which hard tab?  
 25 Q. Tab 48 and it is an internal Qualcomm email in March

1 of 2016, the same month we have just been looking at,  
 2 and it is reporting on a meeting with Samsung  
 3 procurement. I just want to take you to one part of it,  
 4 if I may, and that is to be found on page 9 {POF/653/9}.  
 5 The bit I want to ask you about is you will see under  
 6 the heading, "CDMA Pricing Strategy", halfway down, it  
 7 says ---  
 8 A. Yes, I see that.  
 9 Q. "Samsung requested to reduce CDMA premium adder  
 10 referring to Samsung's S.LSI's recent activities with  
 11 VIA."  
 12 Now, VIA, that was a firm that had CDMA technology,  
 13 was it not?  
 14 A. Yes.  
 15 Q. Yes. So what this shows, does it not, is that in 2016,  
 16 Samsung was putting competitive pressure on Qualcomm to  
 17 bring down its CDMA prices by referring to  
 18 Samsung-Exynos activities with VIA. That is right, is  
 19 it not?  
 20 A. Well, I think it says that they asked for it. I do not  
 21 know whether it shows that they definitely exerted  
 22 pressure on them. They certainly requested it and ---  
 23 Q. Yes. You can see that Samsung is using it to play off  
 24 Qualcomm against Samsung LSI and its activities with  
 25 VIA; yes?

1 A. It certainly seems as though, you know, that is the tone  
 2 of the conversation.  
 3 Q. Then do you recall, sir, in your ninth report, and we  
 4 can turn it up if you wish, that you say there that  
 5 Samsung had the ability to self-supply LTE-CDMA chipsets  
 6 in 2018 and that is at paragraph 2.31, if you wish to  
 7 look at it.  
 8 A. In the ninth report?  
 9 Q. Your ninth report {E/23/15}. I am just simply referring  
 10 to what you, sir, acknowledge, in the last sentence  
 11 there:  
 12 "I note that Samsung was eventually able to  
 13 self-supply LTE-CDMA."  
 14 Do you see that?  
 15 A. Yes, I do.  
 16 Q. Do you recall that in the joint expert statement you  
 17 accepted that Qualcomm no longer had significant market  
 18 power for LTE-CDMA chipsets once it had the ability to  
 19 self-supply those chipsets?  
 20 A. Can we just ---  
 21 Q. Of course. It is paragraph 37.1 and it is {E/24/22}.  
 22 What I would like to do is join the dots between what  
 23 you say in your ninth report and what you say in the  
 24 joint expert statement.  
 25 So if you have the joint expert statement in front

1 of you, you will see that you are talking about:  
 2 "Qualcomm held particularly significant market power  
 3 with respect to ... "  
 4 You go through various types of chips. You say in  
 5 relation to LTE-CDMA, about six lines down, that it had  
 6 it from 2009 until around 2017/18, and then in brackets  
 7 you say "after which point" and we will focus on  
 8 "Samsung was able to self-supply". Do you see that?  
 9 A. Yes, I see that.  
 10 Q. Just to join the dots, do you accept therefore that  
 11 Qualcomm ceased to have particularly significant market  
 12 power with respect to LTE-CDMA chips from 2018, the date  
 13 at which you identify Samsung had the ability to  
 14 self-supply?  
 15 A. Can you ask the question again, sorry, so I can be  
 16 clear.  
 17 Q. Essentially what I am asking is when you say here that  
 18 Qualcomm would no longer have significant market power  
 19 with respect to LTE-CDMA chipsets from 2018, is that  
 20 because that is the date when Samsung had the ability to  
 21 self-supply?  
 22 A. So it may still be the case that Qualcomm has some  
 23 market power. I think what I am highlighting here is  
 24 that by 2018, a number of factors have changed and you  
 25 have the two largest OEMs having alternative sources for

1 CDMA chipsets and so that does raise a question mark  
 2 about how strong that conclusion of market power would  
 3 be. It is certainly weaker at that point than it was in  
 4 earlier years.  
 5 Q. Yes. Although you are not saying it raises a question  
 6 mark in the statement. You are saying it had  
 7 particularly significant market power with respect to  
 8 CDMA-LTE chipsets and you say to around 2017/2018. What  
 9 I was trying to do is to pin down precisely that the  
 10 date at which it ceased to have particular significant  
 11 market power for those chips was when Samsung had the  
 12 ability to self-supply, which you identified in 2018.  
 13 A. Well, I think it is quite difficult in this case to draw  
 14 a bright-line and say on this specific date, you know,  
 15 one day before it had market power and then one day  
 16 after it did not. I think that is just inherently very  
 17 difficult in this particular case and that is why I used  
 18 this particular form of words here, which is Qualcomm ---  
 19 so I am talking in the positive here --- held  
 20 particularly significant market power and then I am  
 21 talking about up until 2017/18.  
 22 Q. You say "until around". I take your point about it is  
 23 a question of degree and it changes over time and you  
 24 give, to be fair, 2017/18. I was going to ask you about  
 25 that, whether you accept that given Samsung knew, as we

1 have seen, it was developing its own supply of CDMA  
 2 chips, you would accept that, as you say, market power  
 3 is a question of degree so it was declining in 2017 in  
 4 the run-up before Samsung started to self-supply  
 5 in 2018?  
 6 A. Well, if we go back to the distinction I drew between  
 7 the future chips and the current chips, in a sense for  
 8 the current chips it does not change until you can  
 9 actually provide them to yourself and for the future  
 10 chips, it changes at the point that you are sufficiently  
 11 confident that you are going to be able to supply those  
 12 chips to yourself.  
 13 Q. But you cannot say with any confidence that Qualcomm  
 14 would have significant market power from 2018, can you?  
 15 A. It is certainly much less clear.  
 16 Q. Yes, much less clear and therefore you cannot be  
 17 confident?  
 18 A. The confidence level goes down, yes.  
 19 Q. I would like to turn to LTE-UMTS chipsets, please. You  
 20 explain in the joint statement, at page 16, that Samsung  
 21 had the ability to self-supply UMTS chipsets from 2010  
 22 onwards. Do you see that, the first line of 29.1?  
 23 A. Sorry, which --- 29 ---  
 24 Q. On page 16. It is on the screen in front of you if that  
 25 helps {E/24/16}.

1 A. Sorry, yes, I have that.  
 2 Q. Yes. So it is common ground between us that that is  
 3 when it had self-supply of UMTS, chipsets from 2010  
 4 onwards; yes?  
 5 A. I think the chronology is that they --- in 2010, they  
 6 have engineering ability to do it, but I do not think  
 7 they actually supply commercial volumes until 2011, but  
 8 it is ---  
 9 Q. Well, I was just going on what you said in the joint  
 10 expert statement but if you --- let us have a look at the  
 11 data again, shall we? The Class Representative has  
 12 prepared a table on LTE chipsets which I think you are  
 13 familiar with. That is at tab 5 of your bundle. For  
 14 the Tribunal, it is {ORI/261.15/1}. This is a table  
 15 that sets out shares and volumes for LTE chipsets  
 16 supply. I would like to focus on the percentage row for  
 17 shipments by Samsung to itself. So that is basically  
 18 four rows up from the bottom. Can we look, please, at  
 19 the position in 2016. Do you see that is 42% Samsung to  
 20 itself?  
 21 A. Yes.  
 22 Q. Then we go ahead to 2018 and it has gone up to 66%, has  
 23 it not?  
 24 A. Yes.  
 25 Q. If we look at the contrasting fortune for Qualcomm, in

1 2016, it was 52%?  
 2 A. Yes.  
 3 Q. It has fallen, has it not, to 26% in 2018?  
 4 A. Yes.  
 5 Q. So these figures suggest, do they not, that Samsung's  
 6 in-house supply of LTE chipsets was a credible  
 7 alternative for Samsung between 2016 and 2018?  
 8 A. Well, a little like the exchange we had earlier, it  
 9 certainly indicates that, as the slots have come up for,  
 10 you know, the 2017 and 2018 handsets, that Samsung has  
 11 felt comfortable to use its self-supply Exynos option,  
 12 rather than Qualcomm or any other chipset for those.  
 13 Q. Yes, so if you feel comfortable to use a Samsung chipset  
 14 in a Samsung socket, you would obviously regard it as  
 15 a credible alternative, would you not?  
 16 A. For those specific handsets, yes.  
 17 Q. Yes. I am only focusing on those particular years that  
 18 are relevant.  
 19 A. But there is still a question mark about the volumes  
 20 that do not switch, because there is a question mark  
 21 about, well, what inference do you draw from that? Do  
 22 you draw, for example, the inference that those are the  
 23 volumes that Samsung did not feel confident about  
 24 switching away to either itself or to some other OEM?  
 25 Q. Yes. I am focused on those where they did switch and

1 specifically that that tells you, does it not -- it is  
 2 a "signal", to use your wording from the hot--tub, that  
 3 Samsung regarded Exynos as a credible alternative for  
 4 LTE--UMTS between 2016 and 2018, otherwise it would not  
 5 have used it, would it?  
 6 A. Certainly for the phones where they used it, yes, they  
 7 do appear to have considered it a credible alternative,  
 8 yes.  
 9 Q. I would like to turn to 5G, if I may, and to pick this  
 10 up, just to set the scene, can we look at your eighth  
 11 report, please {E/21/69}. It is at paragraph 3.89.  
 12 A. The eighth report?  
 13 Q. Your eighth report, that is right.  
 14 A. Which paragraph?  
 15 Q. Paragraph 3.89. You say here:  
 16 "Samsung and Apple are sophisticated customers..."  
 17 I think we can agree about that:  
 18 "... with well--informed expectations as to the  
 19 relevant chipset markets, and were therefore able to  
 20 anticipate that Qualcomm would occupy a strong position  
 21 as a supplier of LTE chipsets and 5G chipsets."  
 22 Do you recall that?  
 23 A. Yes.  
 24 Q. Do you recall that in the joint expert statement you say  
 25 that Qualcomm had market power in 5G from around 2018?

17

1 A. Yes.  
 2 Q. For the tribunal's note, that is at paragraph 37.1 again  
 3 at {E/24/22}.  
 4 Now, you accept, do you not, Mr Noble, that the  
 5 parties' expectations about the strength of Qualcomm's  
 6 future position in 5G, those are factual matters, are  
 7 they not?  
 8 A. Yes.  
 9 Q. Yes. You say that in paragraph 27 of the joint expert  
 10 statement.  
 11 You nonetheless do discuss in your report some of  
 12 the evidence and discussions between Samsung and  
 13 Qualcomm. I would like to look at that, if I may. Can  
 14 we go, please, to page 67 in your eighth report?  
 15 A. Sorry, page 67?  
 16 Q. Page 67. I want to look at, in particular, the end of  
 17 paragraph 3.83 and then there is some confidential  
 18 marking in 3.84 {POE/21/67}. You are talking about  
 19 Samsung and 5G and you are saying here:  
 20 "[It] appears to have been constrained by a  
 21 continued reliance on Qualcomm's chipsets for flagship  
 22 devices in key geographies."  
 23 Then in 3.84 you elaborate upon that, citing various  
 24 bits of evidence. Do you see that?  
 25 A. Yes.

18

1 Q. Yes. You cite at the end of that, in footnote 215, four  
 2 documents. How did you identify those particular  
 3 documents?  
 4 A. How did I identify those?  
 5 Q. Yes, why those as opposed to any others?  
 6 A. I mean, we -- I and the Oxera team reviewed a large  
 7 number of documents so I do not recall specifically how  
 8 we identified those four.  
 9 Q. So you looked at a large number of documents. Did you  
 10 review any other documents that discussed 5G in terms  
 11 of 2018 and 2019?  
 12 A. When we were preparing the report, I mean, there --  
 13 there were a lot of documents so I suspect the answer is  
 14 yes, but I do not recall precisely which ones.  
 15 Q. So how were you confident that these documents were  
 16 representative of the position in 5G in 2018/2019?  
 17 A. I mean, well, I was reviewing the documents to try and  
 18 identify suitable evidence to, you know, explore the  
 19 validity or not of the case that is being put forward.  
 20 Q. You do not provide a list of the documents you looked at  
 21 in your report, do you?  
 22 A. No.  
 23 Q. So we just do not know what you looked at and what you  
 24 did not look at?  
 25 A. We do not have a definitive list, that is certainly

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1 true.  
 2 Q. No, I would like to look at a few of the documents you  
 3 cite and start with {POF/863}, please. This is an  
 4 internal Qualcomm email. You do not have it in your  
 5 hard copy because you referred to in your report.  
 6 A. Okay.  
 7 Q. So we assume you are familiar with it. Now, if we go to  
 8 page 2, please, we can see it is an email from July 2018  
 9 {POF/863/2}. So this is well before Qualcomm made its  
 10 first commercial shipments of 5G chips, is it not?  
 11 A. Yes.  
 12 Q. Because that happened in Q2--2019, did it not?  
 13 A. Yes, so it is about, what? About a year?  
 14 Q. Yes. I would like to look at the email that we see from  
 15 Kim Spencer of Qualcomm and he is reporting on  
 16 a conversation he has had with the Samsung procurement  
 17 team and he is referring to the GS10 platform. Just  
 18 pausing there. That GS10, that was going to be  
 19 Samsung's first 5G smartphone, was it not?  
 20 A. Yes, the "S", I think, refers to -- sorry, the "G"  
 21 refers to Galaxy, Galaxy Samsung.  
 22 THE CHAIR: Mr Bailey, is this document one of the documents  
 23 in footnote 215?  
 24 MR BAILEY: Yes, Madam.  
 25 THE CHAIR: Which one is it?

20

1 MR BAILEY: If we go back, please, to ---  
 2 THE CHAIR: Because there are four documents referenced. I  
 3 just cannot ---  
 4 MR BAILEY: Yes, Madam. Go back, please, to {ORI/21/67}, do  
 5 you see ---  
 6 THE CHAIR: That question is highlighted.  
 7 MR BAILEY: I am going to go to a few of those. It is on  
 8 the bottom right--hand side.  
 9 THE CHAIR: Thank you.  
 10 MR BAILEY: Go back, please, to {POF/863/2}. I would just  
 11 like to ask you to read a part of the email that you  
 12 referred to. So it is {POF/863}. If we go to the  
 13 page 3, please {POF/863/3}. We see at the top it  
 14 stated:  
 15 "[Samsung] has to consider an option that [Samsung]  
 16 LSI takes major share/volume of GS10... (0/1/2), even  
 17 said 100% share of Exynos in the worst case, and then  
 18 QCT takes GS10 5G volume only with 855 [that is a modem]  
 19 + 5G mmWave unless QCT matches the 855 price close to  
 20 [a figure] range (based on [a particular percentage])."  
 21 Now, this suggests, does it not, as of July 2018,  
 22 Samsung was considering QCT losing a major share of  
 23 chipsets used in its first 5G mobile phone? That is  
 24 what this is suggesting?  
 25 A. Can I just check --- I have slightly lost the context

21

1 here. This is a Qualcomm internal exchange and "they",  
 2 in that sentence, is Samsung?  
 3 Q. Correct. It is reporting, as I said, from a call that  
 4 Qualcomm had with Samsung.  
 5 A. Yes. Sorry, could you just repeat the question?  
 6 Q. So there are two parts to this statement. The first is  
 7 that Samsung is considering, is it not, Samsung LSI as  
 8 a credible alternative for a major share of the chips  
 9 that will be used in its first 5G mobile phone. Do you  
 10 agree with that?  
 11 A. Yes, that is what it says.  
 12 Q. We see reference also to "5G mmWave" and I know you  
 13 refer to that in your reports and I am going to come  
 14 back to that, if I may. The other thing I wanted to  
 15 just draw your attention to in this email that you  
 16 cited, at point (4) we can see here a reference to  
 17 a price gap between Qualcomm and Exynos. Do you see  
 18 that, in point (4)?  
 19 A. Yes.  
 20 Q. Yes. Then we can see that the point (a):  
 21 "[Qualcomm] We expect to face more difficult  
 22 position as [Samsung] LSI is more aggressively promoting  
 23 Exynos [product] to gain more regional footprint if we  
 24 don't react in time."  
 25 So, again, that is consistent, is it not, that

22

1 Samsung thought that at least in mid 2018 there was  
 2 a genuine choice between Exynos and Qualcomm for 5G  
 3 chips used in the Galaxy S10?  
 4 A. There certainly appears to be a choice, but I think the  
 5 point that I would highlight is what I am saying in  
 6 paragraph 3.84 is not that Exynos is not an option. The  
 7 point that I was highlighting here is that there does  
 8 appear to be a price premium potentially payable for the  
 9 Qualcomm product and I see reference here to the \$6--ish  
 10 price gap, which ---  
 11 Q. Yes. The point being that we also see Qualcomm respond  
 12 by saying.  
 13 "If we do not react in time, then we are going to  
 14 lose the socket, are we not?"  
 15 That is the point that Qualcomm is making in  
 16 paragraph (a)?  
 17 A. Well, I certainly understand that to mean that they need  
 18 to be careful about how big any such price gap would be.  
 19 Q. It is not saying that. It is just simply saying  
 20 Samsung LSI is more aggressively promoting Exynos. If  
 21 Qualcomm do not react, they are going to lose the  
 22 business, are they not?  
 23 A. Yes, but reacting could be a \$5 price gap or it could be  
 24 a zero dollars price gap.  
 25 Q. I would like to look at another document you cite. This

23

1 is again in footnote 215, and it is at {POF/895/1}. We  
 2 are moving forward in time now so we are now  
 3 in February 2019. Go to page 3, please {POF/895/3}.  
 4 Again, the context for your note is a conversation  
 5 between QCT and Samsung procurement. For reasons of  
 6 time, I would just like to look, please, at --- you see  
 7 the heading, "5G Chipset Pricing"?  
 8 A. Yes.  
 9 Q. You will see that there is a complaint in paragraph (a)  
 10 about the 5G chipset pricing?  
 11 A. Yes.  
 12 Q. Then do you see paragraph (d), the "sales  
 13 recommendation", just at the bottom of the page?  
 14 A. Yes.  
 15 Q. The account team, that is the Qualcomm account team, is  
 16 recommending to revive for 5G and then you see the size  
 17 of the figure. That is a marketing development fund  
 18 which is a type of pricing incentive. So this suggests,  
 19 does it not, that we see Samsung complain about  
 20 Qualcomm's 5G pricing, the premium point you mention,  
 21 but we see that Qualcomm is having to respond, is it  
 22 not, by having to offer price reductions in the form of  
 23 a marketing development fund?  
 24 A. It certainly does appear that there is, you know,  
 25 a potential offer on the table of a marketing

24

1 development fund, yes, correct.  
 2 Q. Can we have a look at one more document, please, and  
 3 this is at {POF/910}. This is not one that you cite,  
 4 but it was notified on the list. It is tab 78 of your  
 5 hard-copy bundle. We are moving forward again in time.  
 6 Page 2, please {POF/910/2}. This is 2 May 2019. This  
 7 is a chain again of internal Qualcomm emails. I just  
 8 want to show you what the position was on mmWave which  
 9 we have seen earlier in the evidence. Can we go to  
 10 page 4, please {POF/910/4}. You see halfway down, in  
 11 bold ---  
 12 A. Sorry, can I just check the timing, because I think  
 13 Samsung launched its phone just before this, did it not?  
 14 Was it April 2019?  
 15 Q. Yes. We are going to see that we are moving on to GS11  
 16 now. Just go to page 4 with me. So we see here:  
 17 "Samsung Exynos is very eager to win GS11  
 18 US/China/Japan regions while they believe that Exynos  
 19 can do the mmWave on time."  
 20 So what we see --- and then it goes on, first bullet:  
 21 "Samsung Exynos expressed their strong confidence to  
 22 meet Samsung Mobile's mmWave target KPI requirements...  
 23 "  
 24 So, well, first of all, this suggests, does it not,  
 25 that Samsung--Exynos is competing hard, including on

25

1 mmWave, for 5G chipsets using Samsung phones?  
 2 A. My understanding of this is that it is indicating that  
 3 at the GS10, the Samsung--Exynos was not able to do  
 4 mmWave effectively and this is then expressing  
 5 confidence or Samsung has expressed confidence to  
 6 Qualcomm that it anticipates for the next iteration of  
 7 the phone, the GS11, it would have the ability to do  
 8 mmWave.  
 9 Q. Yes. That was not my question. My question was  
 10 specifically by reference to GS11. Have you looked at  
 11 this document before?  
 12 A. I have certainly looked at it in --- when it was  
 13 notified.  
 14 Q. Right. But have you looked at it in the course of  
 15 preparing your reports?  
 16 A. I do not recall specifically.  
 17 Q. Can we look at page 7, please {POF/910/7}. This brings  
 18 out the sales recommendation and various thoughts. We  
 19 can see, just to talk you through it, at point 1,  
 20 halfway down:  
 21 "If we standstill and no further price move of  
 22 [Qualcomm modems], there is as a high risk that Samsung  
 23 will bet all 5G volume ... on Exynos solution."  
 24 The second point:  
 25 "We can hold the pricing till the end until we see

26

1 the Exynos failure of mmW but it is also the risk for us  
 2 to bet all--in for that ... "  
 3 Then we see at point 3:  
 4 "Now, we should simplify the considerations and show  
 5 our aggressive pricing move either we like it or not.  
 6 Otherwise, it will be very difficult for us to maintain  
 7 even NA/China/Japan and Samsung will minimise the  
 8 share/volume close to 0 -- 17%".  
 9 So that is saying, as at the date of these emails in  
 10 May 2019, that Qualcomm is facing stiff competition from  
 11 Exynos and it basically needs to respond with aggressive  
 12 pricing, does it not?  
 13 A. Yes, it does indicate that at that point it is  
 14 considering an aggressive pricing response, yes.  
 15 Q. I am grateful.  
 16 Moving on to Apple, if we may. I would like to take  
 17 you back, if we go in a DeLorean back in time to 2012  
 18 and this is at tab 24 of your hard bundle and it is  
 19 {POF/312}. This is an internal Qualcomm document. Page  
 20 two, please, just to show you the document {POF/312/2}.  
 21 It is a presentation made about Qualcomm account  
 22 strategies from May 2012. Do you see that?  
 23 A. Yes.  
 24 Q. It is around the time of the negotiation of the BCPA.  
 25 Have you looked at this document before?

27

1 A. Possibly. Again, I am not completely sure.  
 2 Q. You are not sure what documents you looked at for your  
 3 reports, or not?  
 4 A. There were a lot of documents.  
 5 Q. Can we look at page 9, please {POF/312/9}. You will see  
 6 it is headed, "Top Competitive Modem Threat at Mav".  
 7 "Mav" is a codename for Apple. Do you see that?  
 8 A. Yes.  
 9 Q. If we just have a little look, we can start with --- let  
 10 us start with Samsung LSI. Do you see that? If we go  
 11 across, we can see green ticks under "competitive  
 12 modem". "CDMA multimode" refers to collaboration with  
 13 VIA again, does it not? So this shows that Qualcomm  
 14 believed Samsung could meet all of Apple's chipset  
 15 needs, including CDMA multi-mode functionality?  
 16 A. I --- well, I do not know whether it does show that  
 17 because it --- I was not --- I was not sure how to  
 18 interpret that specific statement about whether that  
 19 means that by collaborating with VIA Samsung is then  
 20 able to achieve a multi-mode solution or whether its  
 21 solution to having a multi-mode handset is to  
 22 collaborate with VIA potentially and have two separate  
 23 chipsets.  
 24 Q. Whichever it is, it shows you that Qualcomm were  
 25 competing with Samsung for the Apple socket, including

28

1 on CDMA. That was Qualcomm's perception at least, was  
 2 it not?  
 3 A. Yes, although I think it matters somewhat which way  
 4 round that is, because I think if you were talking about  
 5 a "multi-chip solution", certainly my understanding of  
 6 the facts is that that is usually an inferior solution  
 7 to a single multi-mode chipset.  
 8 Q. Yes. We can also see here reference to Intel, both in  
 9 the heading and then there is, again, ticks. Intel has  
 10 a clean sweep of green ticks apart from CDMA multi-mode.  
 11 That is right, is it not?  
 12 A. Yes.  
 13 Q. Yes. So in mid-2012 Qualcomm perceived Intel and  
 14 Samsung as competitive modem threats for the Apple  
 15 socket, did it not?  
 16 A. It certainly was evaluating the threat that they posed.  
 17 I think it is a bit difficult to be completely clear  
 18 about how threatening they are because the CDMA  
 19 multi-mode is an important aspect of that and we see  
 20 across for Intel and so despite them highlighting them  
 21 as the top competitive threat, that is something that  
 22 Intel do not appear to be able to offer.  
 23 Q. No, but we can see under the Intel strengths at Mav that  
 24 it was competitive on LTE-UMTS, do we not, the third  
 25 bullet down on the left-hand side?

1 A. Yes, yes.  
 2 Q. I would like to move forward in time, if we may, to look  
 3 at the time period relevant for the negotiation of the  
 4 GPLA, the Global Patent Licence Agreement between Apple  
 5 and Qualcomm?  
 6 A. Yes.  
 7 Q. That was negotiated between mid 2018 and 2019; yes?  
 8 A. Yes.  
 9 Q. Again, I would like to start, if I may, with LTE-CDMA  
 10 and just to see if we can join the dots. Can we go to  
 11 {E/24/22}, please, the joint expert statement. Do you  
 12 recall that you say here that Qualcomm held particularly  
 13 significant market power for LTE-CDMA chipsets until  
 14 Apple was able to source them from Intel? We looked at  
 15 this earlier but I want to focus on Apple now. Three  
 16 lines up from the bottom in parenthesis.  
 17 A. Yes, I see that.  
 18 Q. Yes. Do you recall that you have explained in your  
 19 eighth report that Apple sourced LTE-CDMA from Intel  
 20 from late 2017 onwards?  
 21 A. Yes.  
 22 Q. Yes. So to join the dots, you would accept, therefore,  
 23 that Qualcomm either was declining in significant market  
 24 power vis-à-vis Apple for LTE-CDMA chipsets from  
 25 late 2017 onwards?

1 A. Yes.  
 2 Q. Insofar as Apple prospectively anticipated that it would  
 3 be able to source LTE-CDMA from Intel, then applying the  
 4 concept we discussed earlier of prospective market  
 5 weakness, that would have applied even six months or  
 6 12 months before that; correct?  
 7 A. Yes.  
 8 Q. Yes. I would like to turn then to LTE-UMTS and can we  
 9 go back, please, to the chart we were looking at  
 10 earlier. This is the Class Representative's chart at  
 11 {ORI/261.15}. This is a spreadsheet. Mr Noble, for  
 12 your reference it is at table 5 — tab 5. I do  
 13 apologise. I want to focus now on Apple, if we may.  
 14 Are you with me?  
 15 A. Yes.  
 16 Q. Yes. I am grateful.  
 17 So if we look at the percentage changes. I want to  
 18 start in 2016. We will start with Qualcomm this time.  
 19 We can see that in 2016 it was shipping 84% of LTE chips  
 20 to Apple; yes?  
 21 A. Yes.  
 22 Q. That falls to 41% in 2018; yes?  
 23 A. Yes.  
 24 Q. The contrasting fortunes for Intel is that they were  
 25 supplying 16% of LTE to Apple in 2016?

1 A. Yes.  
 2 Q. They go up to 50% — 59%, even, in 2018; yes?  
 3 A. Yes.  
 4 Q. So would you agree with me that the shifts in share of  
 5 supply to Apple are consistent with Apple exerting  
 6 a greater degree of buyer power vis-à-vis Qualcomm  
 7 between 2016 and 2018?  
 8 A. Yes, it is certainly consistent with some degree of  
 9 buyer power being exerted because they are shifting  
 10 a significant volume of chipsets.  
 11 Q. When Apple sources all of its LTE-UMTS chipsets from  
 12 Intel for iPhones in 2018, that is a good signal, is it  
 13 not, that Apple had a credible alternative to Qualcomm  
 14 in 2018?  
 15 A. For UMTS?  
 16 Q. For LTE-UMTS, yes.  
 17 A. Yes, it is a good signal.  
 18 Q. The same point for 2019, when it sources all from Intel,  
 19 LTE-UMTS, that is a good signal, is it not, that Apple  
 20 had a credible alternative for that chipset in 2019?  
 21 A. Yes.  
 22 Q. Yes. I would like to turn then to 5G, please, and at  
 23 this point, Madam, please could we sit in private and we  
 24 need to use the strictest regime of 1782 external  
 25 counsel only.

1 THE CHAIR: So we are now moving into inner ring closed  
 2 session and I think that means some people will need to  
 3 leave the room at this point.  
 4 (11.17 am)  
 5 In Private  
 6 (11.17 am)  
 7 MR WILLIAMS: Can I just say, Madam, I think we are actually  
 8 two tiers above that ring in the very complicated system  
 9 we have (inaudible).  
 10 THE CHAIR: All right.  
 11 MR BAILEY: For the avoidance of doubt, it is 1782 and it is  
 12 external counsel only.  
 13 THE CHAIR: Okay.  
 14 MR BAILEY: Mr Noble, in your eighth report at {POE/21/63},  
 15 paragraph 3.74, you refer in the first line to:  
 16 " ... as early as [2016] OEMs reasonably anticipated  
 17 their future needs for 5G chipsets."  
 18 Do you see that?  
 19 A. Yes.  
 20 Q. You cite in footnote 199 a document. I would like to  
 21 look at that, if we may. That is {POF/722/1}, please.  
 22 This is an Apple document, internal document. We can  
 23 see it sets out a plan in relation to Apple's 5G and you  
 24 can see various dates and people referred to. I just  
 25 want to pick it up actually underneath in 2020. It

1 says:  
 2 "This means that Intel will be our lead development  
 3 partner for 5G and Qualcomm will likely stay in lockstep  
 4 since they are technically capable, but there is  
 5 a chance Intel will leapfrog Qualcomm."  
 6 Do you see that?  
 7 A. Yes.  
 8 Q. So this suggests, does it not, that in 2016 Apple  
 9 envisaged that Intel would be its lead partner for 5G?  
 10 A. It certainly was expressing hope that that would be the  
 11 case.  
 12 Q. Right. It says it in terms, does it not? It says:  
 13 "This means Intel will be our lead development  
 14 partner for 5G."  
 15 A. Yes, it definitely says that.  
 16 Q. It does not suggest, does it, that Apple anticipated  
 17 that it would be reliant upon Qualcomm for 5G chips  
 18 in 2018 to 2020?  
 19 A. It does not — it certainly sets out the fact that it  
 20 anticipates that Intel will get there and Qualcomm will  
 21 also get there, so ...  
 22 Q. Let us have a little look at some of what Apple  
 23 anticipated closer to the time period relevant to the  
 24 GPLA. At tab 70 of your hard-copy bundle, I want to  
 25 move to 2018. This is {POF/864/1}. It is an internal

1 Apple cellular strategy document in July 2018. On  
 2 page 1, we can see Apple was considering Intel, Samsung,  
 3 Qualcomm and MediaTek for 5G sub-6 baseband sample  
 4 chipsets. Do you see that on page 1?  
 5 A. Sorry, which tab?  
 6 Q. If you look — tab 70.  
 7 A. Yes.  
 8 Q. You might find it easier on the screen because it is  
 9 very small in the hard copy. What I am putting to you  
 10 is that Apple was considering, in July 2018, for sub-6  
 11 5G chips, Intel, Samsung, Qualcomm and MediaTek;  
 12 correct? Well, actually the relevant bit is above the  
 13 diagram, sorry.  
 14 A. I mean, yes, this document appears to indicate that it  
 15 is seeking samples from those four entities.  
 16 Q. Yes. For 5G sub-6 baseband chipsets; yes?  
 17 A. Yes, although I would anticipate that the extent to  
 18 which it would regard them as suitable or alternatives  
 19 will depend on once it gets those samples.  
 20 Q. I am not asking you about that for the moment. I am  
 21 just trying to work out what Apple was considering in  
 22 terms of sub-6 5G chips.  
 23 A. Yes.  
 24 Q. Can we look at page 2, please, to see the mmWave  
 25 position {POF/864/2}. Here we see 5G mmWave baseband

1 sample dates. Here we also see Apple was considering  
 2 Intel, Samsung, Qualcomm and MediaTek; correct?  
 3 A. It — I mean, there are dots for Intel, Samsung and  
 4 Qualcomm, but I do not see a dot for MediaTek.  
 5 Q. If you look on the left-hand side, you can see the  
 6 players, Intel, Samsung, Qualcomm, MediaTek?  
 7 A. Yes, I see those.  
 8 Q. Yes. Certainly for Intel, Samsung and Qualcomm there  
 9 are dates set out, are there not, for 5G mmWave for  
 10 those first three suppliers?  
 11 A. Yes, but — yes, there are.  
 12 Q. Could you look at the grey and the red diamonds. So if  
 13 you look for Samsung, can you see there is a grey  
 14 diamond at the end of Q4-2018 for Samsung? Do you see  
 15 that?  
 16 A. Yes.  
 17 Q. Do you see that is earlier than the red diamond in  
 18 Q2-2019 for Qualcomm?  
 19 A. Yes.  
 20 Q. Yes. So this says, does it not, that Apple was  
 21 believing Samsung would have a platform  
 22 commercially-ready 5G mmWave chip before Qualcomm?  
 23 A. Yes, this does appear to suggest that.  
 24 Q. If we go back a page, please, we can see it is the same  
 25 story for the sub-6 as well. The grey diamond for

1 Samsung is at this moment in time, July 2018, Apple  
 2 thinks Samsung will deliver a sub-6 5G chip before  
 3 Qualcomm {POF/864/1}; yes?  
 4 A. Yes.  
 5 Q. I am grateful.  
 6 Now, I would like to move on, please to another  
 7 Apple document, but we are going to move on in time as  
 8 well. This is at {POF/934}. The date of this document  
 9 is 12 March 2019.  
 10 A. Is this in the bundle?  
 11 Q. It is, sir, yes. It is at tab 80.  
 12 A. Thank you.  
 13 Q. Again, I apologise --- well, the hard copy may be quite  
 14 small so you may find it easier to look at it on the  
 15 screen. Just to navigate ourselves, March 2019, that is  
 16 the month before the GPLA was signed is it not?  
 17 A. Yes.  
 18 Q. Yes. Now, there are various slides setting out various  
 19 quotes in this document, but for ease can we look at  
 20 page 11, please {POF/934/11}. We see here, for the  
 21 iPhone in 2020, just pausing there, Apple launched its  
 22 first 5G iPhone in 2020, did it not?  
 23 A. Yes.  
 24 Q. Yes. You will see in the grey columns and then next to  
 25 that there is a white column, headed, "5G", you see

1 there is a reference to "Karoo"?  
 2 A. Yes.  
 3 Q. Take it from me that is Intel. You see next to it you  
 4 have "Tanasi". Take it from me that is Samsung. Now,  
 5 what we see here, do we not, is that Apple, as  
 6 of March 2019, is considering quotes from Intel and  
 7 Samsung for 5G and it included mmWave, did it not? You  
 8 will see that halfway down, if you look.  
 9 A. Are these quotes?  
 10 Q. I am sorry, sir. My simple point is this: we can see  
 11 a whole series of price quotes for 5G, low price and  
 12 a high price, for each of Intel and Samsung, and I am  
 13 just putting to you that this shows that Apple was  
 14 considering Intel and Samsung for 5G, including mmWave,  
 15 in March 2019.  
 16 A. Yes, although, I mean, the reason I was querying whether  
 17 these are price quotes is because of the high and low  
 18 range. If they were price quotes, I am not quite sure  
 19 why you would have that range.  
 20 Q. Just to show you that Qualcomm was not out of the  
 21 running, can we go back to page 7 {POF/934/7}, because  
 22 we do not see Qualcomm mentioned here, but we can see on  
 23 page 7, again Intel, Tanasi and Eureka. "Eureka" is the  
 24 codename for Qualcomm, is it not?  
 25 A. That is my understanding, yes.

1 Q. So what this shows, does it not, is that regardless of  
 2 whether it is a price or a cost, we can see that Apple  
 3 is seriously considering --- these are quotes provided by  
 4 Intel and Samsung for 5G, both sub-6 and mmWave, and  
 5 Apple thinks it has, at the very least, two credible  
 6 alternatives to Qualcomm in early 2019. That is right,  
 7 is it not?  
 8 A. Well, I do not know if we can draw that conclusion. It  
 9 certainly is comparing costs. I mean, there is mention  
 10 here, I think, about quotes, but also estimates.  
 11 Q. Apple would not be considering cost quotes if it did not  
 12 seriously think that Intel and Samsung would be capable  
 13 of providing 5G chips, would it? It would not waste its  
 14 time on hypotheticals?  
 15 A. I would be surprised if it would waste its time on  
 16 hypotheticals, but this is a new technology and so it  
 17 may well be seeking price quotes at the same time as it  
 18 is evaluating the technical deliverability of any  
 19 particular solution that is being quoted for.  
 20 Q. Can we agree therefore that as the overall assessment on  
 21 the technical side, the cost and pricing side, Apple is  
 22 considering Intel, Samsung and Qualcomm for 5G  
 23 in March 2019?  
 24 A. Yes, it does appear to be seeking to explore all those  
 25 options.

1 Q. I am grateful.  
 2 I would like to look at what Qualcomm believed and  
 3 understood at the time. It is possible for my client to  
 4 come back in at this point because I will move now to ---  
 5 still in private, but no longer external eyes only.  
 6 THE CHAIR: What is this now?  
 7 MR BAILEY: This is 1782 but in-house counsel can see it.  
 8 I would like to start in April 2018 and this is  
 9 a document at {POF/848/3}, please.  
 10 A. Is there a hard copy?  
 11 Q. Yes. It is tab 67.  
 12 Can you see --- you see it on the screen anyway ---  
 13 there is a question being asked by Qualcomm:  
 14 "What do you think Maverick's [so Apple's] options  
 15 really are for 5G and when do they really need to make  
 16 a decision?"  
 17 The answer:  
 18 "I think they are intent on making Intel happen, as  
 19 we all know."  
 20 So looking at it from Qualcomm's perspective,  
 21 in April 2018, this suggests, does it not, that Qualcomm  
 22 believed Apple was intent of getting 5G chips from  
 23 Intel?  
 24 A. It certainly seems to indicate that Qualcomm believes  
 25 that the intention of Maverick/Apple is to work with

1 Intel, if it can.  
 2 Q. If we just quickly look at page 7 {POF/848/7} and the  
 3 final bullet, because we have already seen this  
 4 particular entity already, we see that Qualcomm has  
 5 picked up that they have heard Apple is trying to engage  
 6 with Samsung LSI also for a modem. So that also  
 7 suggests, does it not, that Qualcomm believe that Apple  
 8 may be engaging with Samsung for a modem?  
 9 A. Yes, although it does use the word "tried".  
 10 Q. Well, we will come on now to look at a document that you  
 11 cite that gives some further insight to this. Can we  
 12 go, please, to {POF/853/1}. For your note, this is  
 13 cited by you in footnote 125.  
 14 A. Mm—hmm.  
 15 Q. So this is therefore not in your hard copy. It is an  
 16 internal Qualcomm email in May 2018. Go to page 2,  
 17 please. We can see {POF/853/2} — it is not in the  
 18 bundle and it is just you cite this document in your  
 19 report.  
 20 A. Yes.  
 21 Q. I wanted you to have that to hand. I would like to look  
 22 at the document together which is on the screen.  
 23 We see we are in May 2018 now, so moving forward in  
 24 time, and under, "Program Update", the third sentence,  
 25 three lines down:

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1 "Maverick is working exclusively with Intel for Mav  
 2 20 — which is believed to be their first 5G platform."  
 3 That is consistent, is it not, that Qualcomm, as of  
 4 May 2018, believed Apple was working exclusively with  
 5 Intel for 5G chips?  
 6 A. That certainly seems to be the tone of that exchange.  
 7 Q. Yes. Therefore, it does not suggest, does it, that  
 8 Qualcomm believed it would be the only show in town for  
 9 5G in relation to the Apple socket as at May 2018?  
 10 A. No, it does not suggest they think they are going to be  
 11 the only show in town.  
 12 Q. It does not even suggest they are going to be in  
 13 a strong position for 5G either, does it?  
 14 A. This is — I mean, that specific paragraph certainly  
 15 does not suggest that.  
 16 Q. Well, let us look at another email and see how  
 17 Qualcomm's understanding changed throughout 2018 when  
 18 you say 5G dominance arose.  
 19 Moving to July 2018. This is at {POF/862.1/1}. It  
 20 is another Qualcomm internal email. The subject  
 21 line is, "Mav update [so Apple update] 2019/2020". So  
 22 we are looking ahead in time.  
 23 A. Is this in the hard copy?  
 24 Q. Yes, it is. It is in tab 69, if you would like to look  
 25 at it in hard copy. Are you there, sir?

42

1 A. Yes.  
 2 Q. Can we just look together to see it is the third  
 3 paragraph at the bottom of the first page:  
 4 "Mav [that is Apple] feels MediaTek is ahead of  
 5 Intel ... "  
 6 You recall we saw MediaTek earlier today?  
 7 So:  
 8 "Mav feels MediaTek is ahead of Intel for 5G and  
 9 appears to be aligning their internal resources  
 10 accordingly. With that said, [Qualcomm] customer  
 11 engineering and I do not believe that [Apple] is slowing  
 12 down their 5G work with Intel and we believe they will  
 13 continue forward... I do believe Intel's WiFi  
 14 development for Mav has been cancelled."  
 15 Then the next paragraph:  
 16 "We are also hearing that [Apple] is definitely  
 17 planning on us for some portion of their 5G  
 18 requirements — although no official signal yet. It  
 19 will likely be us plus MediaTek, unless Intel can  
 20 deliver flawlessly on 5G."  
 21 So that suggests, does it not, that in July 2018  
 22 Qualcomm anticipated that it would be one of Qualcomm  
 23 and MediaTek, and possibly Intel, in terms of the supply  
 24 of 5G chips to Apple?  
 25 A. I mean, that last sentence says "It will likely be us,

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1 Qualcomm, plus MediaTek".  
 2 Q. Yes. "Unless Intel can deliver flawlessly on 5G", that  
 3 is why I said "possibly Intel"?  
 4 A. Sorry, yes.  
 5 Q. Then if we look at page 2 of this document  
 6 {POF/862.1/2}, we see a reference — we see halfway  
 7 down, the email begins from Mr Achour on July 5, 2018:  
 8 "Samsung could be an option given that they settled  
 9 their differences. May be part of the settlement is for  
 10 Apple to use the Samsung modem!"  
 11 So, again, that also suggests, does it not, that  
 12 Qualcomm at least believes Samsung might be an option  
 13 for Apple in 5G?  
 14 A. I mean, this email certainly raises that prospect.  
 15 Q. Yes.  
 16 I am going to move forward again in 2018, now  
 17 to October 2018, and a document you cite, sir, in  
 18 footnote 43 of your eighth report. The document is  
 19 {POF/878/1}. It is a Qualcomm document and it is  
 20 entitled "Apple Update". Are you there?  
 21 A. Yes.  
 22 Q. I am grateful.  
 23 I would like to go to page 15, which sets out some  
 24 timelines for Apple phones {POF/878/15}. What we can  
 25 see if we look at the row "Chipset", is how things are

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1 changing. So 2017, it is all Intel, is it not, because  
 2 Apple was — can you see the chipset for 2017?  
 3 A. Sorry, you are looking at the first column?  
 4 Q. If you look at the first column under it says, "Phone  
 5 Cycles", the second row "Chipset"?  
 6 A. Yes.  
 7 Q. Now go along with me, 2017, it is Intel, they are  
 8 exclusively sourcing from Intel in 2017?  
 9 A. But is the 9X55 not a Qualcomm modem?  
 10 Q. Yes, you are quite right, sir. It is referring to  
 11 Qualcomm and Intel together. You are quite right.  
 12 I apologise.  
 13 If we move forward to the expectations as of 2019 —  
 14 sorry, 2020 for 5G, which is what we are focused on, you  
 15 can see that they are anticipating one of three things  
 16 that potentially could happen. The first is there is  
 17 the Qualcomm chip for 5G, that is the first one there,  
 18 is it not?  
 19 A. Yes, the SDX55.  
 20 Q. Yes. Or — and/or we have an Intel 5G chip?  
 21 A. Yes, the XMM860 — 8060, sorry.  
 22 Q. Yes. Just pausing there. This suggests, does it not,  
 23 as of October 2018, that Qualcomm anticipated that  
 24 either it may win the socket for 5G in 2020 or Intel may  
 25 win it or they may be dual sourcing; yes?

1 A. Yes.  
 2 Q. So it does not suggest that Qualcomm would have  
 3 necessarily a strong position in 5G looking at it at the  
 4 time in late 2018?  
 5 A. Yes, although, I mean, it does cite — it has a footnote  
 6 by the Intel XMM8060 saying it is based on an Intel  
 7 announcement so it is obviously — well, appears to be  
 8 based on public information as opposed to any —  
 9 Q. That is what you would expect, is it not, because  
 10 Qualcomm and Intel are competitors?  
 11 A. Yes.  
 12 Q. So it is doing the best it can with the market  
 13 intelligence it has?  
 14 A. Yes.  
 15 Q. Yes. The final document from me. We are now  
 16 in December so it is Christmas time 2018, a few months  
 17 before GPLA. Can we look at {POF/882}, please. This is  
 18 tab 72 in your hard copy bundle. This is a QCT  
 19 strategic plan if we go to page 2.  
 20 A. Yes.  
 21 Q. Have you seen this document before?  
 22 A. I certainly reviewed it before today.  
 23 Q. Yes. For the purposes of today or —  
 24 A. Yes.  
 25 Q. — for the purposes of your reports?

1 A. Again, I am not sure with sufficient certainty to say  
 2 either way before the report.  
 3 Q. I am grateful. Just look at one slide at page 18  
 4 {POF/882/18} recalling in December 2018 Qualcomm is  
 5 looking at what the position is going to be for Apple.  
 6 Do you have that?  
 7 A. Yes.  
 8 Q. I am grateful. If we look, please, under the heading on  
 9 the right—hand side "Apple revenues decreasing", do you  
 10 see that?  
 11 A. Yes.  
 12 Q. You see the second bullet:  
 13 "Planning 5G with 0% Apple share, any design wins  
 14 are accretive to plan."  
 15 A. Yes.  
 16 Q. So that does not suggest, does it, that Qualcomm  
 17 anticipated, at the end of 2018, that it would be  
 18 occupying a strong position as a supplier of 5G chips to  
 19 Apple?  
 20 A. It certainly appears to suggest that the baseline  
 21 planning assumption that they are using is that they do  
 22 not win Apple.  
 23 Q. Yes. Therefore it is not anticipating that it would  
 24 have a "strong position" in the words of paragraph 3.89  
 25 of your eighth report in 5G?

1 A. Well, it — that is certainly the baseline planning  
 2 assumption in this slide, yes.  
 3 Q. The baseline planning assumption therefore does not  
 4 support your view that Qualcomm had dominance in 2018  
 5 for 5G, does it?  
 6 A. I mean, this certainly suggests that there is an  
 7 alternative world that could have — that Qualcomm is  
 8 considering, where it does not win that and therefore  
 9 it, you know, if it gets — if it gets the slots, that  
 10 is a positive story in addition to the baseline plan.  
 11 Q. That is the positive way of looking at it, but the  
 12 realistic way of looking at it is they were expecting to  
 13 get 0% Apple share. That is what they are saying. They  
 14 are planning 5G with 0% Apple share, are they not?  
 15 A. I mean, this — you can read it that way.  
 16 MR BAILEY: I am grateful. Madam, that concludes my  
 17 questions. Mr Jowell will have some questions now.  
 18 THE CHAIR: All right. Is now a good time for a five—minute  
 19 break, given that we are changing counsel?  
 20 MR JOWELL: Yes, I think so.  
 21 THE CHAIR: All right. Thank you.  
 22 (11.40 am)  
 23 (Short Break)  
 24 (11.51 am)  
 25 Cross—examination by MR JOWELL

1 MR JOWELL: Mr Noble, could we go, please, to {E/24/32} of  
 2 the joint expert statement, at paragraph 63.1. You  
 3 refer here to proposition 51 that is agreed and you  
 4 state that:  
 5 "... the reliability and representativeness of my  
 6 bargaining model can be tested by verifying the  
 7 consistency of the assumptions and predictions against  
 8 the available evidence (and so the model itself can be  
 9 falsified )."  
 10 Do you see that?  
 11 A. Yes.  
 12 Q. Now, I think you accept that the only potential  
 13 available evidence for the Tribunal to actually carry  
 14 out that verification or falsification exercise is in ---  
 15 comes in two forms or two potential forms. One is the  
 16 factual evidence, so the documentary and witness  
 17 evidence, and the other is the leveraging analysis .  
 18 That is broadly correct? There is no other way?  
 19 A. No, I think there are other sources, for example the  
 20 market shares, you know, the other transaction data, for  
 21 example. That is certainly --- would feed in to any  
 22 verification exercise .  
 23 Q. Right. But that is within the documentary and witness  
 24 evidence?  
 25 A. Yes, so if you cast documents as being broad, then, yes,

1 I would agree with that.  
 2 Q. Okay. You take the position, and if time permits,  
 3 Mr Saunders may explore this with you a little, that the  
 4 leveraging analysis does not assist one way or the other  
 5 in verifying or falsifying your hypothesis; correct?  
 6 A. Yes, that is correct.  
 7 Q. That is your position?  
 8 A. Yes.  
 9 Q. I think, as the Tribunal has already established,  
 10 therefore, we are left with the factual and  
 11 documentary --- the documentary evidence effectively and  
 12 the witness evidence in the broad sense that you just  
 13 identified ?  
 14 A. Yes.  
 15 Q. Now, in your reports you refer to various documents and  
 16 bits of hearsay. I think you suggest that they  
 17 prima facie support your bargaining model and its  
 18 underlying assumptions and predictions; yes?  
 19 A. Yes.  
 20 Q. I just want to understand how you came to select the  
 21 documents that you mention in your expert report,  
 22 because I take it that you were not able personally to  
 23 go through all of the documents disclosed in this case?  
 24 You must have been provided with a selection of the  
 25 documents?

1 A. I, together with my team, went through a long list of  
 2 documents.  
 3 Q. That long list was provided by those instructing you?  
 4 A. I think we were provided with documents. I do not know  
 5 whether we were provided with every single document in  
 6 this case, but we certainly had a long list .  
 7 Q. But you would agree that the documents and evidence that  
 8 you have seen are only part of the total available  
 9 evidence to the Tribunal?  
 10 A. I would --- yes, I would --- I think that is right.  
 11 Q. You would accept, I think, that you have not carried out  
 12 in your reports a comprehensive and complete survey of  
 13 the available documents and I think you acknowledge that  
 14 fact-finding is therefore a task for the Tribunal?  
 15 A. Yes, and yes, to both halves of that question.  
 16 Q. Yes. Now, I think you confirmed to the Tribunal last  
 17 week that your preferred counterfactual is that found in  
 18 your eighth report at paragraph 6.65 where you state  
 19 that an OEM would be able to sign a licence specifying  
 20 that, absent an agreement over royalties, the  
 21 appropriate rate would be subject to a third-party  
 22 determination of the appropriate royalty rate as part of  
 23 a broader agreement to supply Qualcomm chipsets; yes?  
 24 A. Well, I clarified in the hot-tub that the  
 25 counterfactual, in a sense, at its heart is the no

1 linking, the no conditioning idea, that the licensing  
 2 negotiation is unaffected by chipset supply, and one way  
 3 to achieve that is what I describe in 6.65.  
 4 Q. Well, I think it is the only way, is it not, that one  
 5 can imagine, unless --- without banging into the problem  
 6 of exhaustion, is it not?  
 7 A. I do not know. Ultimately whether the problem of  
 8 exhaustion is a problem I think is not for me to answer.  
 9 Q. Assuming it is a problem, then the only viable option is  
 10 your open licence solution?  
 11 A. I outlined that as a solution to that. I do not know  
 12 whether there are solutions. There could well be other  
 13 solutions. I think the footnote to that paragraph also  
 14 identified another possibility, which is that you might  
 15 charge a fixed-fee licence alongside a chipset, as  
 16 another solution.  
 17 Q. But I think that is not being pursued, that proposal, at  
 18 least by you?  
 19 THE CHAIR: Mr Jowell, Mr Noble clarified, helpfully, that  
 20 his counterfactual was essentially that articulated by  
 21 Mr Moser in his opening submissions.  
 22 MR JOWELL: Which I understood to be the open licence, as  
 23 I ---  
 24 THE CHAIR: Well, no, Mr Moser did not say that. Mr Moser  
 25 said that the counterfactual was a world in which there

1 was no conditioning, which is what Mr Noble has just  
 2 said.  
 3 MR JOWELL: Yes. But one way — in any event, let me take  
 4 this is a little further.  
 5 So you do accept that in a world in which there was  
 6 a licence of the type that you describe, let us call it  
 7 an open licence, at a rate to be determined by, say, an  
 8 arbitration panel, you would accept that that is your  
 9 counterfactual or that is an acceptable counterfactual  
 10 in which —  
 11 A. I certainly I agree that it is, yes, it is workable —  
 12 it appears to be a workable version of the  
 13 counterfactual, the non—conditioning.  
 14 Q. Could I show you some documents that I think you do not  
 15 refer to in your report, but I think are in the bundle  
 16 before you.  
 17 A. Yes.  
 18 Q. If we go to {POF/684}, please, at tab 54. This is  
 19 a letter of 15 July 2016.  
 20 A. Yes.  
 21 Q. You see what it says in the bottom paragraph.  
 22 A. On the first page?  
 23 Q. Yes. (Pause)  
 24 We should see the next page as well so you can see  
 25 the complete paragraph {POF/684/2}. (Pause)

1 A. Yes.  
 2 Q. Let me show you another letter. This one is {POF/751},  
 3 which is tab 59 of your bundle. If we go to page 5  
 4 {POF/751/5}. Again, if you see the main paragraph.  
 5 (Pause)  
 6 A. 59?  
 7 Q. Yes.  
 8 A. Which page, sorry?  
 9 Q. Page 5.  
 10 A. The large paragraph at the bottom?  
 11 Q. The one starting, "In the meantime ..." (Pause)  
 12 A. Yes.  
 13 Q. If we go next to tab 63, please, of your bundle  
 14 {POF/790}.  
 15 THE CHAIR: Do you want to ask a question before we move on  
 16 to the document?  
 17 MR JOWELL: Well, I want to show him all three documents  
 18 just for convenience, otherwise it will ...  
 19 This one now is dated August 31, 2017.  
 20 A. Yes.  
 21 Q. You see the third sentence:  
 22 "Qualcomm also remains willing to submit the  
 23 parties' dispute to binding arbitration ... "  
 24 And so on.  
 25 A. Yes.

1 Q. My question is: were you aware of these three specific  
 2 letters before providing your expert report?  
 3 A. I do not think I was.  
 4 Q. No. But it does appear, now, does it not, that Apple  
 5 had access to precisely the sort of open—licence  
 6 arrangement that you envisage?  
 7 A. Well, I do not know whether this is quite what we  
 8 envisaged because my recollection of looking at the —  
 9 because there are other exchanges. There are responses  
 10 from Apple. My recollection of those is that they raise  
 11 question marks about the approach to be adopted in the  
 12 arbitration and the scope of the arbitration. I think  
 13 there was a dispute about whether it was SEPs only or  
 14 whether it was SEPs plus other patents, and so — and in  
 15 fact I think, if I recall, Apple itself proposed  
 16 a slightly different form of arbitration and so it  
 17 certainly appeared as though both parties were willing  
 18 to contemplate the concept of arbitration, but the  
 19 dispute appeared to be quite how it was going to work  
 20 and what was going to be included.  
 21 Q. Well, if you go to — it certainly — it certainly seems  
 22 that the terms of the arbitration that Qualcomm are  
 23 prepared to agree to are in the most open terms  
 24 possible. It does not restrict the arbitrators from  
 25 a particular valuation methodology or the arguments

1 available to either party, does it?  
 2 THE CHAIR: Mr Jowell, I am not sure we need to hear from  
 3 Mr Noble on this. Mr Noble has rightly accepted that he  
 4 has not carried out a complete survey of the available  
 5 documents and that fact—finding is a task for the  
 6 Tribunal. We would actually like to hear from Mr Noble  
 7 on the economic stuff, which Mr Saunders is going to get  
 8 to.  
 9 MR JOWELL: Yes. Very well.  
 10 My point is simply that if the Tribunal does agree  
 11 that this is an open licence of the type that you  
 12 envisage, then you would accept that the actual and the  
 13 counterfactual are the same?  
 14 A. No, I would not.  
 15 Q. Well, how is that possible?  
 16 A. Because the counterfactual envisages that they would  
 17 not — that Qualcomm would not just do this for Apple.  
 18 It would do it for everybody. So because as well as the  
 19 concerns about can Apple directly access an arbitration  
 20 or this open licence concept, there is also the question  
 21 mark about could everybody else and then that feeds back  
 22 to the second indirect mechanism that we talked about in  
 23 the hot—tub whereby the — some of the input into these  
 24 kinds of dispute resolutions mechanisms —  
 25 THE CHAIR: The tainting mechanism?

1 A. Precisely. That ultimately — if these open licences  
 2 with arbitration clauses had been offered across the  
 3 board, then that kind of concern would dissipate.  
 4 MR JOWELL: So this is your fruits of the poisoned tree  
 5 argument, is it?  
 6 A. Well, it is BJ Watrous I think that the fruit was  
 7 poisoned.  
 8 Q. But that is a very indirect mechanism, is it not?  
 9 A. Well, it is an indirect mechanism, yes.  
 10 Q. Now, I think let me turn to something else. The essence  
 11 of your bargaining model, as I think you explained to  
 12 the Tribunal last week, is an assumption that in the  
 13 actual world there is an explicit or implicit threat of  
 14 an outside option of cessation of chipset supply which  
 15 you say would occur in the event of a FRAND challenge  
 16 and so disable or deter that FRAND challenge; correct?  
 17 That is broadly your thesis?  
 18 A. Yes, that is the direct mechanism.  
 19 Q. Yes. Now, can we just consider an OEM that simply does  
 20 not buy any chipsets at all from Qualcomm and has no  
 21 intention of buying chipsets from Qualcomm. Now,  
 22 I think you would accept that the outside option does  
 23 not apply in that case because it only matters if there  
 24 is actual or prospective chipset supply to the OEM in  
 25 question; correct?

1 A. Well, the direct mechanism would not apply, but we are  
 2 back to the indirect mechanism.  
 3 Q. Okay. Subject to the indirect — I think we can take it  
 4 that subject to the indirect mechanism, there is then —  
 5 it could not then be affected by any abuse?  
 6 A. Well, it cannot be affected by the direct mechanism, but  
 7 it could be affected by the indirect mechanism.  
 8 Q. Okay. If you do have a rate that is established by one  
 9 OEM but does not have chipset dependency and then you  
 10 have another licensee that has a most favoured royalty  
 11 clause in its contract, so that I can obtain the benefit  
 12 of that other royalty rate and apply it to reduce its  
 13 own royalty rate, then you would accept, subject to your  
 14 indirect mechanism, that that other royalty rate also  
 15 cannot be affected by the alleged abuse; correct?  
 16 A. Sorry, I am — it is a long question. I am not sure  
 17 I fully followed. So the —  
 18 Q. I think you accepted if you have a chipset — if you  
 19 have other chipsets — if you have an OEM that is  
 20 negotiating a royalty rate with Qualcomm and it does not  
 21 buy any chipsets and it does not plan to in the  
 22 immediate future, then I think you accepted that,  
 23 subject to your indirect mechanism, then the abuse  
 24 cannot — your theory of abuse cannot operate?  
 25 A. Yes. So the mechanism that that entity could be

1 affected is the indirect mechanism.  
 2 Q. The only mechanism — the only way is the indirect  
 3 mechanism?  
 4 A. Yes.  
 5 Q. Okay. Again, if you have another OEM that has a most  
 6 favoured royalty rate in its contract with Qualcomm so  
 7 that it can take the benefit of the former OEM's royalty  
 8 rate, then, again, subject to your indirect mechanism,  
 9 it too — its royalty rate also cannot be affected?  
 10 A. Yes, as — but, again, subject to the indirect  
 11 mechanism.  
 12 Q. Yes.  
 13 A. Because that in a sense the source of that —  
 14 THE CHAIR: Yes, I understand.  
 15 A. Yes, yes.  
 16 MR JOWELL: Now, can I come to another assumption of your  
 17 model, one that I clarified with you at the end of the  
 18 session on Thursday, and that is — perhaps if we go to  
 19 the joint statement {E/24/35}. We see, at the bottom of  
 20 the page, 67:  
 21 "When a given conduct [for example the decision not  
 22 to supply chipsets] changes the outside options of both  
 23 parties in the SEP licence negotiation, whether the  
 24 impact of that conduct on the negotiated outcome is  
 25 influenced by the relative effect of the conduct on

1 those outside options."  
 2 You say "yes". Do you recall that?  
 3 Now, we discussed yesterday that one of the  
 4 assumptions of the bargaining model is that in order for  
 5 there to be a credible threat of cessation of supply,  
 6 you say the relative cost to Qualcomm of foregoing  
 7 chipset sales has to be less than the relative cost to  
 8 the OEM of disruption of handset sales; yes?  
 9 A. Yes.  
 10 Q. You clarified in response to my question at the end of  
 11 the session last week that when you say "relatively not  
 12 harmed", at least in the model, that is to be measured  
 13 in absolute amounts, not relative to the profits made by  
 14 the two respective businesses; yes?  
 15 A. Yes. So the "relative" in this is relative to each  
 16 other negotiation as opposed to relative to the overall  
 17 scale.  
 18 Q. Yes. So I just want to question whether that is the  
 19 correct approach, even in theory. So let me give you  
 20 an example. Suppose of a game theoretic situation,  
 21 a simple one on a road. So let us suppose there are two  
 22 cars, one of them is a Volvo and one of them is  
 23 a Rolls-Royce and let us say there is a Mexican  
 24 stand-off as to who is to reverse backward and the  
 25 outside option is that neither does and the two cars

1 scrape each other.  
 2 Now, one might say, well, if there is a scrape, it  
 3 is going to cost the Rolls-Royce owner rather more to  
 4 repair than the owner of the Volvo or the Ford; yes?  
 5 A. Yes.  
 6 Q. Right. Now, but if --- now let us change the scenario  
 7 and let us suppose that owner of Rolls-Royce is the  
 8 Sultan of Brunei and he has 50 Rolls-Royces in his  
 9 garage and, conversely, let us suppose that the owner of  
 10 the Volvo is on the verge of bankruptcy so that the cost  
 11 to him of the repairs would be catastrophic.  
 12 Now, that rather changes the likely outcome, does it  
 13 not?  
 14 A. But you have changed the outside options because the  
 15 Sultan of Brunei's outside option is to scratch the car  
 16 at then just get in another one, is it not?  
 17 Q. Well, it is not; it is simply that he is the Sultan of  
 18 Brunei so he does not have to worry about money very  
 19 much because he has lots of it.  
 20 A. I mean ---  
 21 Q. He still has to repair that Rolls-Royce. It is just it  
 22 is going to matter much less to him.  
 23 A. Well, I mean, I guess the thing I struggle with with  
 24 that is that we are talking about sort of personal  
 25 utility, which is a bit different from the example we

1 are talking about here where we are talking about two  
 2 businesses that are trying to negotiate an agreement.  
 3 Q. Well, does it matter? Let me give you another example.  
 4 Suppose you have a farmer selling to a supermarket and  
 5 you say, well, if the farmer loses a million and the  
 6 supermarket --- let us say the farmer is supplying the  
 7 product and there is a possibility of cessation of  
 8 supply, just as in our case, and the farmer loses  
 9 1 million and the supermarket loses half a million and  
 10 then the scenario flips and the supermarket loses the  
 11 million and the farmer loses half a million. You would  
 12 say, well, the advantage in the negotiation lies with  
 13 the farmer, but, again, let us suppose that the half  
 14 a million means that the farmer goes out of business.  
 15 THE CHAIR: I am not sure that these analogies from  
 16 different situations are really helpful. I mean, maybe  
 17 you just want to put the specific question about these  
 18 circumstances to Mr Noble.  
 19 MR JOWELL: Well, I think --- with respect, ma'am, let me go  
 20 down the line with the witness because I think it is  
 21 an important theoretical point which can be illustrated  
 22 by these examples, I think, and I am interested in  
 23 Mr Noble's reaction, because it does seem to me that,  
 24 even in general terms, it is almost always going to  
 25 matter what the relative effect is on the businesses

1 concerned.  
 2 A. Well, but I think in both the car example and this one  
 3 we are talking about an outcome that is truly  
 4 catastrophic for the individual on one side of the  
 5 negotiation and I think that is a bit different from the  
 6 situation that we are talking about here because it ---  
 7 from my review of the facts, this does not appear to  
 8 have been catastrophic in terms of --- I do not think it  
 9 is countenanced that either Qualcomm, or Apple, under  
 10 these outside options, even if Qualcomm --- sorry, if  
 11 Apple could not sell CDMA phones, it would cost it, you  
 12 know, very, very roughly something like 9 billion of  
 13 profit that it might lose, say, and Qualcomm potentially  
 14 loses, you know, royalties and/or, you know, chipset  
 15 revenues from that, but I do not think either of those  
 16 entities in those scenarios would be countenancing going  
 17 out of business; it is just that they lose a lot of  
 18 money.  
 19 Q. Well, let me ask you about some more of the assumptions  
 20 there, because you pose a scenario in which Qualcomm, as  
 21 an outside option, is prepared to completely cease  
 22 supply of CDMA chipsets to Apple, but obviously Qualcomm  
 23 is also engaged in repeated interactions with Apple, is  
 24 it not, and with Samsung?  
 25 A. Yes.

1 Q. So it has to take into account not just what is the  
 2 effect going to be on us of losing the CDMA sales  
 3 immediately, but also the long-term effect on the  
 4 relationship with Apple and Samsung; correct?  
 5 A. Yes, it would need to factor that in.  
 6 Q. If Qualcomm was to cut off Apple's chipset supply and  
 7 disrupt their business, there must be quite a high  
 8 probability that Apple would never choose to do business  
 9 with Qualcomm ever again in the future; correct?  
 10 A. Well, Apple might adopt a kind of retribution strategy  
 11 like that, but certainly my experience in large  
 12 corporate businesses is that they may --- they may  
 13 ultimately come back to the table and take the view  
 14 that, you know, if you have a really good product, we  
 15 will deal with you again.  
 16 Q. But that is a very large risk to take with your largest  
 17 customers, is it not?  
 18 A. It certainly --- yes, if you anticipate the counterparty  
 19 in your negotiation might behave like that, then it  
 20 would increase the risks. I would agree with that.  
 21 Q. Yes. Equally, if you were going to shut off the supply,  
 22 say, of CDMA chipsets, then you would have to take into  
 23 account that if you were selling other types of  
 24 chipsets, say UMTS chipsets, where on your theory they  
 25 do not have market power, 3G UMTS chipsets, then you

1 would have to take into account that Apple or Samsung  
 2 would then choose to go elsewhere for those chipsets;  
 3 correct?  
 4 A. For 3G UMTS?  
 5 Q. Yes.  
 6 A. Yes, you would need to factor that in.  
 7 Q. That possibility in. Of course you would also have to  
 8 factor in the possibility that Apple and Samsung, if you  
 9 disrupted their handset business, might feel that it is  
 10 important to set --- give a signal to the wider market,  
 11 so it might make sense to make an example of Qualcomm in  
 12 that scenario?  
 13 A. So this is Apple or Samsung wanting to discipline  
 14 Qualcomm publicly so that other ---  
 15 Q. Yes.  
 16 A. --- other providers of licences ---  
 17 Q. Do not disrupt them either, yes. That must be  
 18 a possibility ?  
 19 A. It would be a possibility if they felt that that was  
 20 an important signal to send.  
 21 Q. So whether you are taking --- whether you are calculating  
 22 the absolute amounts, as you prefer, or the relative  
 23 amounts, as I suggest is also relevant, it is actually  
 24 quite a complex exercise, is it not?  
 25 A. Yes, there --- in any negotiation, there are lots of

1 factors and I would certainly accept that the bargaining  
 2 model here does not try and capture every conceivable  
 3 factor. As with any economic model, it tries to zoom  
 4 out. A bit like a map, it is trying to distil the  
 5 essence, what are the most important factors, and model  
 6 those explicitly .  
 7 Q. You have only done it in the abstract. You have not  
 8 actually attempted any quantification in your report,  
 9 have you?  
 10 A. No, I think, as we talked about in the hot---tub, we do  
 11 not have explicit quantification, in part because there  
 12 are many negotiations, there are many years and of  
 13 course there is the point that we also discussed which  
 14 is that there are the negotiations that were  
 15 contemplated and never happened. So you would have to  
 16 do this again and again and again so it would be a hard  
 17 exercise to calibrate the model for every year, for  
 18 example, precisely with maths.  
 19 Q. Now, if we think about the different --- the extent of  
 20 disruption to the OEM, that will depend also upon  
 21 whether it has contractual assurances of continuity of  
 22 supply from Qualcomm in relation to chipsets for  
 23 existing models of phone, will it not?  
 24 A. Yes, and I think, as we talked about earlier, there is  
 25 the existing phones and there is the future phones and

1 if you have cast-iron commitments for delivery of  
 2 chipsets for existing phones, then obviously you will be  
 3 much less worried about that. There is a question of  
 4 how cast-iron those are, but, you know, assuming they  
 5 are cast-iron, then you will be not very worried about  
 6 that.  
 7 Q. Your model does not specifically take into account the  
 8 possibility of those assurances of supply, does it?  
 9 A. No, it does not, but in a sense the way the model is set  
 10 up, it does not explicitly model those two separately.  
 11 What it is looking at is the amalgam of is access to  
 12 Qualcomm chipsets something that will either allow you  
 13 to earn more profit on units that you sell or will it  
 14 mean that you can sell more units because perhaps, you  
 15 know, for example with CDMA, and so it essentially  
 16 merges those two mechanisms together.  
 17 Q. Can we turn to look at a bit of the evidence, and there  
 18 will not be time to look at much of it, but let us look  
 19 at something about the importance of Apple to Qualcomm  
 20 in around the time of the BCPA in 2012. If we could go,  
 21 please, to {POF/312}, which is tab 24. If we could go,  
 22 please, to page 7 {POF/312/7}. This is a Qualcomm  
 23 presentation, dated 25 May 2012.  
 24 A. This is the account strategy one?  
 25 Q. Yes. We see here "Maverick Importance to QCT",

1 "Maverick" of course is Apple. We see:  
 2 "Securing 100% share of Maverick through 2016  
 3 represents \$9B of 'additional profits'."  
 4 "Maverick accounts for 57% of FY/13 QCT."  
 5 "Socket loss at Maverick represents a fundamental  
 6 budget risk ... would require resizing QCT  
 7 organisation."  
 8 Now, had you seen this document before you prepared  
 9 your expert report?  
 10 A. I am not sure about this one.  
 11 Q. Now, if we go to --- if we can go to Dr Padilla's report.  
 12 It is at {ORE/22/29}, please. If we focus in on figure  
 13 2, the red line is Apple's share of Qualcomm's chipset  
 14 sale volumes. We see that in 2012, it is around close  
 15 to 25%?  
 16 A. Yes.  
 17 Q. So I would suggest to you that the effect on Qualcomm's  
 18 chipset business of losing Apple as a chipset customer  
 19 in 2012/2013 would have been pretty disastrous, would it  
 20 not, based on the two documents we have just seen?  
 21 A. On the chipset business?  
 22 Q. Yes.  
 23 A. Well, it would appear to --- if it lost all of it, it  
 24 would represent 25% of the sales they would directly  
 25 lose. There is then a question mark about the

1 recapture, which is something that my model tries to  
 2 capture, the notion that if they lost those 25% to  
 3 Apple, they may recapture them via other OEMs.  
 4 Q. Well, we saw there — you saw the internal document.  
 5 They certainly did not seem to think they were just  
 6 going to recapture that volume if they lost the chipset  
 7 sockets to Apple, did they? They thought they would  
 8 have to downsize the whole organisation.  
 9 A. Yes, but that is not necessarily inconsistent with  
 10 recapturing a portion of the volumes. My model does not  
 11 assume that they would recapture all of them.  
 12 Imagine — well, it assumes that they would recapture  
 13 some of them and that is consistent if you have 25% of  
 14 your sales with one customer and you recapture half of  
 15 them, then potentially you get, what, 12.5% back. So  
 16 that may — that is still 12.5% reduction in the size of  
 17 your sales and so that may well require a resizing of  
 18 the business.  
 19 Q. Okay. So you think that they might still recapture some  
 20 because that is what you're theorising?  
 21 A. Yes, the model assumes that Qualcomm would have the  
 22 ability or the expectation of recapturing some of those  
 23 volumes via, you know, sales to other OEMs, if it did  
 24 not sell those to Apple or Samsung or any other OEM.  
 25 Q. Right. Can I just explore with you a little bit how

1 realistic that is in the real world, because in the real  
 2 world, Apple phones sell on the basis of multiple  
 3 dimensions; right? It is not just the chipset inside,  
 4 it is also the camera, the battery life and so on;  
 5 right?  
 6 A. Yes.  
 7 Q. So are you really suggesting that somehow Lenovo is  
 8 going to come in and just because Apple are not selling  
 9 phones with Qualcomm chipsets inside, Lenovo are going  
 10 to come in and take up all that Apple sales volume to  
 11 customers?  
 12 A. Well, to me the clearest example of this is where Apple  
 13 was contemplating whether or not to have CDMA-enabled  
 14 chipsets because there was a whole — there were two  
 15 large US networks where you could not use an Apple  
 16 iPhone and it wanted to continue growing the sales space  
 17 in the US and so it had a strong incentive to acquire  
 18 CDMA chipsets and I infer from that and have seen in the  
 19 documents that they essentially saw that as a gateway to  
 20 additional market share. The inference of that is that  
 21 if Apple had not bought those chipsets, then other —  
 22 you know, the consumers on those networks, like Verizon,  
 23 would have been buying other phones. Maybe they would  
 24 have bought an Android phone. Maybe that would have  
 25 been a Samsung phone. Maybe it would have been a Lenovo

1 phone or a different phone, but the assumption in the  
 2 model is that at least some of those chipsets that in  
 3 the factual were in fact sold to Apple would have, in  
 4 the counterfactual where they had not agreed that with  
 5 them, been sold to other OEMs that were selling, for  
 6 example, on Verizon, because that is the network that  
 7 the customer wished to be on.  
 8 Q. I see, but we see from the internal document of Qualcomm  
 9 that they perceived it as being a fundamental budget  
 10 risk of losing the Maverick socket. How do you square  
 11 that with your thesis?  
 12 A. Well, I think both things can be true. It can be — the  
 13 model does not assume that it is costless for Qualcomm  
 14 to do this. What it is assuming —  
 15 Q. Just pausing there. So you do accept that it would be  
 16 extremely costly to Qualcomm to do this?  
 17 A. I accept that essentially declining to supply a customer  
 18 would almost, by definition, be costly to you in the  
 19 immediate sense, but the question is can you then  
 20 mitigate that cost to some degree by recapturing those  
 21 sales to somebody else?  
 22 Q. Well, I suggest to you that the available evidence to us  
 23 suggests that that mitigation would be quite small.  
 24 A. Well, my judgment overall, having seen lots of evidence,  
 25 is that it — I doubt the recapture rate is 100%.

1 I also doubt that it is zero. It is somewhere in  
 2 between the two. The question is precisely where,  
 3 particularly when we are talking about CDMA. I would  
 4 anticipate that recapture rate is quite high, because,  
 5 as I explained in the hot-tub, one of the processes that  
 6 you may expect to have happened prior to Apple launching  
 7 a CDMA-enabled iPhone is that those customers that  
 8 really wanted an iPhone that were on a CDMA-enabled  
 9 network would have switched by that point to  
 10 a UMTS-enabled network to get an iPhone and, therefore,  
 11 the customers that are left are those that are less  
 12 willing to switch and therefore by gaining access to a  
 13 CDMA-enabled iPhone or, rather, being able to sell  
 14 a CDMA-enabled iPhone, Apple is then essentially opening  
 15 up a new group of customers that it otherwise would not  
 16 be able to access.  
 17 So because of that it is — I would not say those  
 18 customers are necessarily completely captive, but they  
 19 have demonstrated a preference for a CDMA-enabled  
 20 network, for whatever reason, and therefore I think that  
 21 is consistent with the idea that this recapture rate  
 22 would not be low. It would be —  
 23 Q. You have not done anything to test whether it is — what  
 24 the rate would be? You have done no quantitative or  
 25 empirical analysis so it is just impressionistic ;

1 correct?  
 2 A. It is a judgment I have made based on the documents and  
 3 the evidence that I have seen.  
 4 Q. We will have to agree to disagree about what the  
 5 impression the documents give.  
 6 Let me turn to Samsung. If we look at  
 7 {ORE/22/29} ---  
 8 A. Tab 29?  
 9 Q. Yes. We are going back to --- it is on the screen. It  
 10 is the --- again, we see the ---  
 11 A. Sorry, this is the ---  
 12 Q. This is figure 2 again.  
 13 A. Yes, sorry. I have this.  
 14 Q. Again, if we look in the --- I am just going to focus in  
 15 on the 2008 to 2009 period when Qualcomm is negotiating  
 16 the 2009 amendment with Samsung. We see that, at that  
 17 time, around 2009, Samsung's share of Qualcomm's sales  
 18 reaches its peak at a little over 30%, almost a third;  
 19 yes? That is the blue line.  
 20 A. Yes. Yes, in volume terms, yes.  
 21 Q. Yes. Now, putting a third of your chipset sales at  
 22 risk, again, would be a huge financial risk for  
 23 Qualcomm, would it not?  
 24 A. So you are envisaging here that Qualcomm would cut off  
 25 all supplies to Samsung in that scenario?

1 Q. Actually I think one can --- it does not matter, does it,  
 2 because I think we discussed earlier that you accepted  
 3 that if they were to cut off CDMA supply, then they  
 4 might find that Samsung decided that they would not want  
 5 to buy UMTS chipsets; correct? I think you conceded  
 6 that earlier.  
 7 A. Yes, it might be the case that Samsung might seek to  
 8 substitute to the extent that it could from one chipset  
 9 to the other on UMTS.  
 10 Q. Yes. So, therefore, if it was to do something to  
 11 disrupt Samsung's sales, even if it is just of CDMA, it  
 12 is putting at risk 33% of its sales?  
 13 A. It could be, but I think we have to ask ourselves: why  
 14 is it that Samsung, who is somebody that buys from  
 15 multiple buyers when it can and also I think can it  
 16 self-supply by this point or is that by 2010?  
 17 Q. It is a little later.  
 18 A. Yes. So it cannot self-supply at this point. So as an  
 19 economist, when I look at these numbers, the inference  
 20 that I often draw is, and particularly in this case,  
 21 Samsung is choosing to buy these chipsets because it  
 22 thinks that they are the best price/value mixture for  
 23 that particular option and so it potentially could,  
 24 either then or at some other point, in response to,  
 25 say, CDMA being withheld, it could try and almost

1 reverse leverage, as I think we called it before, by  
 2 threatening or actually not buying the UMTS chipsets,  
 3 but that in itself is potentially costly to it, because  
 4 it potentially has to choose the second best supplier of  
 5 UMTS, rather than the first best supplier.  
 6 Q. Let us look at the breakdown. Let us go to {ORE/22/57}.  
 7 I know this is Padilla figure 4 which I know --- it  
 8 should be on the screen, if you want look at it.  
 9 A. Yes.  
 10 Q. We can see Samsung's chipsets purchases by the different  
 11 cellular standards; yes? If you look at 2008/2009, you  
 12 can see that there is a chunk there of 3G UMTS; yes?  
 13 A. Yes.  
 14 Q. Now, Samsung --- you do not allege that Qualcomm has  
 15 dominance in that?  
 16 A. No, no.  
 17 Q. No. That is about 20%—odd. Then 2G GSM, again, you do  
 18 not suggest that Qualcomm has dominance in that?  
 19 A. No.  
 20 Q. Then we just have 10% or 15% is 3G CDMA.  
 21 A. Which year are we in?  
 22 Q. 2008/2009.  
 23 A. 2008?  
 24 Q. Yes. Maybe 15% to 20% at most, I think, 3G CDMA?  
 25 A. Yes, 15 to 20. I would agree with that.

1 Q. Yes. So I mean, first of all, it is a relatively small  
 2 proportion of Samsung's purchases where you are alleging  
 3 dominance, but there is a huge ability there for Samsung  
 4 to come back and discipline Qualcomm by switching to  
 5 alternative suppliers for 2G GSM or 3G UMTS; correct?  
 6 A. I mean, theoretically, that might be a possibility, but,  
 7 as I said, one has to think carefully about the fact  
 8 that Samsung exercising such an option is not  
 9 necessarily costless, because of their potentially  
 10 having to move to a second best supplier in terms of  
 11 price/value.  
 12 Q. But is it --- it is not really a credible threat, is it,  
 13 from Qualcomm to threaten to cut off its largest  
 14 customer at this point in time, when it is so dependent  
 15 on it, selling 33% of its chipset sales to it?  
 16 A. Well, I think potentially it is a credible threat  
 17 because the ---  
 18 Q. Come on, Mr Noble, it is not a credible threat, is it?  
 19 A. Well, why would it not be a credible threat?  
 20 Q. Because the harm to Qualcomm is catastrophic. You  
 21 accepted that --- you said when I gave you the examples,  
 22 my examples about the car and the farmer, you said "ah,  
 23 but those are catastrophic examples." This would be  
 24 a catastrophic example for Qualcomm?  
 25 A. Well, arguably we have an example of what we might call

1 this catastrophic event, which is when Apple stops  
 2 buying chipsets from them and Apple stops paying  
 3 royalties to them. Whether it was legitimate or not to  
 4 do that, let us put that to one side, but it did in fact  
 5 do those things. What we see is that Qualcomm did not,  
 6 you know --- it did not ---  
 7 Q. Dare to cut off chipset supply.  
 8 A. It did not enter bankruptcy. It was not in those  
 9 extreme scenarios that I was talking about where ---  
 10 because in those hypothetical examples you gave those  
 11 are catastrophic examples where the future of the  
 12 business was imperiled. What we see in there is that  
 13 Qualcomm did not --- the future of Qualcomm's business  
 14 does not appear to have been imperiled and its judgment  
 15 appears --- in the aggregate, appears to have been that  
 16 it would carry on. It would continue to trade.  
 17 Q. Well, I think --- I do not know if you were here for  
 18 Mr Rogers' evidence, but he mentioned that at that time  
 19 they received a hostile takeover from Broadcom that  
 20 would have completely gutted their whole business model,  
 21 if it had been allowed to go through.  
 22 A. But, in a sense --- to my eyes as an economist, that is  
 23 a different issue. That is really the market for  
 24 corporate control becoming active and, you know, whether  
 25 that was precipitated by the dispute with Apple or

1 whether it would have happened anyway, that is hard to  
 2 know, but, you know, hostile takeovers happen and in  
 3 a sense what would Broadcom have been buying? It would  
 4 have been buying the business of Qualcomm. It would  
 5 have been buying a dispute with Apple at the same time  
 6 and so I guess for me there are somewhat separable  
 7 points.  
 8 Q. Well, let us consider that time in --- that point of time  
 9 in 2018, because when Qualcomm is in --- let us just put  
 10 it in a neutral way --- serious difficulties; yes?  
 11 A. Sorry, when?  
 12 Q. Is in serious difficulties. Do you agree that in 2018,  
 13 when Qualcomm is in such serious difficulties with  
 14 Apple, it is --- at that point at least, can we agree  
 15 that it is completely implausible that it would have cut  
 16 off chipset supply to Samsung as well?  
 17 A. I mean, that is --- in 2018 to have cut off chipset  
 18 supply to Samsung as well, well, I mean, I do not think  
 19 it is completely implausible, no. I mean, what we have  
 20 seen is that in the Apple/Qualcomm dispute there were  
 21 a variety of opportunities where both parties could have  
 22 reached a mutually acceptable agreement. For whatever  
 23 reason, they do not reach that and they end up in  
 24 litigation and, yes, to my mind, the information or  
 25 value of that is that there is then a dispute between

1 these two entities.  
 2 Q. Well, let us look at one document {POF/878}. You refer  
 3 to this in your report. If we go to page 11  
 4 {POF/878/11}, this is an internal Qualcomm presentation  
 5 from 8 October 2018. If we could go, please, to  
 6 page 11. We see here they are modelling various  
 7 hypothetical scenarios. You can see that Apple and  
 8 Huawei are split off and the reason for that is because  
 9 at this stage neither Apple, nor Huawei are paying  
 10 royalties; yes?  
 11 A. Yes.  
 12 Q. You can see that Samsung represents close to \$1 billion  
 13 in revenue, which is at this stage a third of the  
 14 revenue they are getting in, \$3.4 billion?  
 15 A. Yes.  
 16 Q. So you are seriously telling the Tribunal that, in the  
 17 midst of this dispute with Apple and Huawei, it is  
 18 plausible that Qualcomm are going to cut off --- risk  
 19 cutting off the supply of their single largest remaining  
 20 customer that is still paying royalties?  
 21 A. So which type of chipset are you imagining this example  
 22 that Qualcomm might cut off?  
 23 Q. Well, you tell me. Which one were they dominant in  
 24 your view at this stage in 2018?  
 25 A. In when?

1 Q. 2018. Because I think Mr Bailey rather established that  
 2 they were not dominant in any chipset --- particular  
 3 generation of chipset at this stage in 2018?  
 4 A. Well, ultimately if Qualcomm felt confident that it had  
 5 a very strong position in those chipsets, what I am  
 6 positing in my analysis is the extent to which it could  
 7 then credibly threaten somebody to not supply those  
 8 chipsets and the --- I mean, I am not sure there is a lot  
 9 of evidence in here, but what you do not see at this  
 10 time is that, despite the fact that Apple and Huawei are  
 11 not paying at that time --- are not actually paying  
 12 royalties, you do not see that the share price of  
 13 Qualcomm crashes. Rather, yes, it fluctuates at various  
 14 times, but share prices fluctuate and it is not the case  
 15 that you would expect because you are not receiving  
 16 revenues right now that jeopardises the future of your  
 17 business.  
 18 Ultimately what your share price is based on is the  
 19 future expectations of your investors of what revenues  
 20 you are going to earn and ultimately the judgment --- the  
 21 trade-off in the model is that Qualcomm is willing to  
 22 essentially trade revenue on --- and profitability on the  
 23 chipsets in order to maintain the revenue and  
 24 profitability on its licensing.  
 25 Q. Let us look at the share price because it is in this

1 same presentation, page 2 {POF/878/2}. You see the  
 2 share price at 1 and one sees --- you see the label 1 is  
 3 that is when Apple and the FTC launch their  
 4 litigation ---  
 5 A. Yes.  
 6 Q. --- and cease paying royalties. You see that the share  
 7 price plunges quite significantly and then continues to  
 8 go down right until November 2017 and then you have the  
 9 spike because of the Broadcom hostile bid.  
 10 A. Yes.  
 11 Q. So --- then it crashes again.  
 12 A. Well, I mean, it is difficult to interpret, you know,  
 13 a share price chart like this without seeing a benchmark  
 14 against which to evaluate, because in any share price  
 15 there are, you know, firm-specific movements but also  
 16 general market movements. So, you know, it would be  
 17 much easier to analyse this chart if we saw, for  
 18 example, the S&P 500 so that we can compare that,  
 19 because one wants to know the extent to which some of  
 20 these movements are firm-specific versus more general  
 21 market movements.  
 22 Q. Well, Qualcomm clearly labelled the graph in the way it  
 23 does because it perceives that these are the  
 24 explanations for the share price move, does it not?  
 25 A. It is certainly annotating the chart to show that, you

1 know, you may therefore infer from a movement that it is  
 2 causative. You know, from a corporate finance  
 3 perspective, the extent to which that is actually true  
 4 is, you know, to be debated, but I think one of the  
 5 other things that I do think comes out from this chart  
 6 is it is important to look at the bottom left. You will  
 7 see that the axis there goes down to \$45. What you do  
 8 not see here is that the share price shoots down. This  
 9 is not a company --- certainly not from its share price,  
 10 it does not appear to be in distress.  
 11 If it is correct that --- let us imagine all of these  
 12 movements are caused by the dots, you know, the numbers,  
 13 so what one is imagining here is that there is a \$10  
 14 movement in a share price caused by these kinds of  
 15 announcements. That moves it from \$65 to \$55.  
 16 Q. Your evidence, let me understand it, is that it is ---  
 17 even though they are in this perilous situation because  
 18 they are not being paid by Apple or Huawei, you are  
 19 suggesting that credibly they could cut off Samsung's  
 20 chipset supply at that time? Is that your evidence? Is  
 21 that still your evidence?  
 22 A. Yes, it is.  
 23 Q. I suggest to you that that is simply not realistic.  
 24 A. Well, and I would generally highlight that there are  
 25 lots of businesses, particularly in the technology

1 sector, where their evaluation is based on future  
 2 expectations about revenues. The --- if what you care  
 3 about is a high profitability part of your business,  
 4 like your licensing business that you expect to be  
 5 generating significant revenues over a long period of  
 6 time, then you might take short-term actions which are  
 7 costly to you, but your expectation is and your hope  
 8 from those is that they will have longer term positive  
 9 profit impacts for you and that ultimately that --- it is  
 10 that strategy that is value enhancing for your  
 11 shareholders.  
 12 Q. Very well.  
 13 There is just one other issue I should touch on.  
 14 You are aware of Mr Gonell's evidence that it is  
 15 possible to obtain licences that are tailored to  
 16 licensed products consisting of a particular generation  
 17 of handsets? Do you recall that evidence?  
 18 A. Yes.  
 19 Q. So, for example, if, for example, Samsung or Apple  
 20 considered that it needed to be guaranteed access to  
 21 Qualcomm's 5G chipsets, it could have obtained a licence  
 22 restricted to a 5G device licence, whilst leaving itself  
 23 unlicensed for 4G UMTS-LTE licences. Do you recall his  
 24 evidence to that effect?  
 25 A. Yes.

1 Q. Now, I do not --- I am not going to ask you to comment on  
 2 the correctness as a matter of fact. That is for the  
 3 Tribunal, but, just to be clear, that potential ability  
 4 to pick and choose licences for different product  
 5 generations, that is not something that you factor in to  
 6 your bargaining model, is it?  
 7 A. It is not explicitly modelled in the bargaining model,  
 8 no.  
 9 MR JOWELL: Thank you. I have no further questions. I do  
 10 not know if there is time for Mr Saunders. We might  
 11 need to go ---  
 12 THE CHAIR: Well, how much re-examination do you have,  
 13 Mr Williams?  
 14 MR WILLIAMS: At the moment minimal, Madam. Minimal, if  
 15 any.  
 16 THE CHAIR: All right. So can I allow Mr Saunders  
 17 ten minutes on the empirical analysis and then give you  
 18 five minutes at the end? Thank you.  
 19 MR SAUNDERS: I am grateful.  
 20 Cross-examination by MR SAUNDERS  
 21 MR SAUNDERS: Good morning, Mr Noble. I take it you are  
 22 familiar with the Padilla leveraging report?  
 23 A. Yes.  
 24 Q. Now, there are three separate analyses in there, are  
 25 there not? There is one for Apple, one for Samsung and

1 also the analysis for all the OEMs?  
 2 A. Yes.  
 3 Q. I also think there is no dispute between you, as  
 4 I understand it, about the underlying arithmetic that  
 5 led to the plotting of those individual graphs, the  
 6 starter work that was done?  
 7 A. Which chart do you have in mind?  
 8 Q. Well, just the individual graphs in the analysis. There  
 9 is no dispute about the underlying arithmetic, I think.  
 10 There are disputes about how you go about doing this,  
 11 but I do not think there is a problem with the adding up  
 12 or the running of the —  
 13 A. Well, there is a dispute about some of the dots,  
 14 I think. I do not know if I am allowed to say which  
 15 ones.  
 16 Q. There are some disputes about specific things, are there  
 17 not, in relation to — I will come on to some of those  
 18 specific points very briefly, but other than those  
 19 specific things that you call out in your report, you  
 20 are fine with the arithmetic; is that right?  
 21 A. Yes, correct.  
 22 Q. Right. Now, the work was done by Dr Chowdhury and  
 23 a team at Oxera, was it not?  
 24 A. Yes. Sorry, which work?  
 25 Q. The work looking at Dr Padilla's leveraging report?

1 A. No.  
 2 Q. You say you have been assisted by Dr Chowdhury and a  
 3 team of five people?  
 4 A. Yes, correct.  
 5 Q. They have done a very thorough job identifying potential  
 6 points, have they not, as you would expect?  
 7 A. Well, yes. Well, I was leading the work, I should  
 8 clarify that.  
 9 Q. What they have not done is identify any points in favour  
 10 of the analysis. They have not done any quantitative  
 11 work of their own to show a positive correlation, have  
 12 they?  
 13 A. No.  
 14 Q. Some of the points that they identified are quite  
 15 granular, for example, the effect on a ZTE licence  
 16 in 2011 was one of the things that was called out and it  
 17 is fair to say that they have done a very detailed job  
 18 looking through all of the information, have they not?  
 19 A. Well, you keep saying "they" I would say "I".  
 20 Q. Your team supervised by you?  
 21 A. Yes, and I, you know, for example, I mean, I do not know  
 22 if I can say the word, but the dispute was specifically  
 23 about discounting, for example. You know, that was, you  
 24 know, in terms of the internal debate that happened with  
 25 Oxera, that was my particular idea.

1 Q. Now, can we turn to the theory of harm and the  
 2 correlations. Now, the first point you make in the  
 3 joint statement is that the lack of the correlation does  
 4 not disprove the theory of harm. That is right, is it  
 5 not?  
 6 A. Yes, correct.  
 7 Q. You say the theory of harm does not require  
 8 a correlation?  
 9 A. Yes, correct.  
 10 Q. But your approach to NLNC is that it increases the cost  
 11 of the outside option such that it becomes not  
 12 a credible outside option. That is correct as well?  
 13 A. Yes, correct. That is the direct effect.  
 14 Q. So one would — it would be very surprising in those  
 15 circumstances if there was not some sign of  
 16 a correlation somewhere?  
 17 A. Not necessarily, no.  
 18 Q. I mean, it is fair to say I think that the analysis,  
 19 subject to the limitations you have identified, has not  
 20 identified any correlation, has it?  
 21 A. Dr Padilla's analysis?  
 22 Q. Yes, has not identified any correlation?  
 23 A. No, he has not and I — when I went through it, I did  
 24 not identify a positive correlation either.  
 25 Q. Right. Can we look at the two mechanisms for indirect

1 correlation, because one of the points you make is that  
 2 the report — that Dr Padilla — implicit in  
 3 Dr Padilla's approach is that the data are independent  
 4 events. So can we look at the two mechanisms by which  
 5 you say they could be correlated. Can we look at your  
 6 seventh report {EAOE/17/12} bottom of the page,  
 7 paragraph 2.18?  
 8 A. 2.?  
 9 Q. 18.  
 10 A. 18. Yes, I have that.  
 11 Q. You say that:  
 12 "Licensors' rates struck with other licencees can be  
 13 a relevant reference point in licence negotiations."  
 14 So if Qualcomm has leveraged to increase for OEMs  
 15 that do buy significant volumes of chipsets, it could  
 16 use those at reference points. Do you see that?  
 17 A. Yes.  
 18 Q. Then you go on to talk about, just over the page, some  
 19 evidence from Dr Schneider and Mr Melin. In  
 20 paragraph 2.20 you talk about Mr Melin's evidence and  
 21 you talk about the non-discrimination aspect of the  
 22 FRAND. Do you see that?  
 23 A. Yes.  
 24 Q. Now, can we just turn up one of the paragraphs you cite  
 25 there, Mr Melin's report, paragraph 63 {POE/13/27}. So

1 in paragraph 63, did you read that at the time you  
 2 prepared your report?  
 3 A. Yes.  
 4 Q. Now, what Mr Melin is saying there, you will see there,  
 5 the licensor's obligation to comply with the ND part of  
 6 FRAND needs to maintain control --- I am reading about  
 7 halfway through:  
 8 "Not only is offering dissimilar licence terms to  
 9 licensees that are not similarly situated legitimate,  
 10 but each licence negotiation is distinct, and  
 11 non-discrimination does not require that similarly  
 12 situated licensees are offered identical terms."  
 13 A. Yes.  
 14 Q. So you saw that at the time you were preparing your  
 15 report?  
 16 A. Yes, I did.  
 17 Q. I mean, the point that Mr Melin is making is the  
 18 non-discrimination limb of FRAND does not lead to  
 19 universal outcomes, does it? It can offer different  
 20 rates to different at least situated licensees, can it  
 21 not?  
 22 A. Yes, precisely, and that concern about the fact that  
 23 people might be differently situated is another debating  
 24 point between Dr Padilla and I, but, you know ---  
 25 Q. But can we --- I mean, this argument that there is this

1 correlation, it only relates to those that are similarly  
 2 situated, does it not, because the non-discrimination  
 3 limb only applies to OEMs that are similarly situated  
 4 and you have not identified the ones that are similarly  
 5 situated, have you?  
 6 A. Well, the logic of the mechanism that I am outlining  
 7 here is that because there is an obligation on different  
 8 OEMs to --- sorry, on a licensor to offer  
 9 non-discriminatory terms to different licensees, what  
 10 that can mean is that in any individual negotiation that  
 11 in negotiation A, that negotiation then has reference to  
 12 entities that are similarly situated to entity A and,  
 13 you know, in negotiation B, with entity B, there is,  
 14 again, a similar discussion. So what that would tend to  
 15 mean is that any individual dot on that chart would then  
 16 be sort of pulled more closely to equivalent dots on  
 17 that chart.  
 18 Q. But, Mr Noble, if you are going to look at that  
 19 argument, it is a prerequisite of doing it, is it not,  
 20 to identify which licensees are similarly situated to  
 21 other licensees and that is something your team and you  
 22 have not done, is it?  
 23 A. No, I do not think it is a prerequisite of that because  
 24 it is rather the other way round, that if you want to  
 25 draw informational value from a correlation analysis,

1 you need to think carefully about how independent each  
 2 dot is and what this is saying, and I think what this ---  
 3 Mr Melin's report is saying is that the dots essentially  
 4 relate to one another and of course ---  
 5 Q. Mr Noble, they do not relate to each other, unless they  
 6 are correlated in some way. That is the point you are  
 7 making.  
 8 Can we look at your report because time is tight.  
 9 Page 13 {EAOE/17/13}, paragraph 2.21. "This implies  
 10 that Qualcomm could have been relying... and [it] could  
 11 have used this to influence ... Furthermore, the  
 12 non-discrimination could give Qualcomm a pretext..."  
 13 Do you see that?  
 14 A. Yes.  
 15 Q. I mean, these are all hypotheticals, are they not?  
 16 A. Well, and that is because I have not seen information  
 17 about, you know, all these different negotiations so  
 18 I cannot know with certainty the extent to which ---  
 19 Q. Mr Noble, you cannot just pick theoretical holes in this  
 20 analysis without testing their validity, can you,  
 21 because that is not assisting the Tribunal in  
 22 determining how --- whether these points are actually  
 23 significant problems for the way that Dr Padilla has  
 24 approached this or not?  
 25 A. Well, I mean, my concern here is that it is

1 a significant problem because, you know, what Mr Melin  
 2 describes is essentially the expectation that this may  
 3 well be a factor that is taken into account in these  
 4 kinds of negotiations and you can imagine that, you  
 5 know, if we go back to the examples I gave, if you have  
 6 an entity, whether our obvious similarly situated  
 7 entities, those are very easy comparators, but I think  
 8 you can also envisage scenarios in which there might be  
 9 other benchmarks, other comparators that are used, and  
 10 distinctions are drawn to say: well, okay, this person  
 11 gets a lower rate because of X or Y, and then you can  
 12 sort of infer from that: well, I should get a higher  
 13 rate than them or I should get a lower rate than them.  
 14 Again, for me, the critical question with this  
 15 mechanism is: how independent do I think these dots are?  
 16 Q. Mr Noble, you just mentioned in your answer a second ago  
 17 that this is during the course of negotiations. That is  
 18 right?  
 19 A. Licence negotiations, yes.  
 20 Q. Yes. Now, both the experts, Dr Schneider and Mr Melin,  
 21 have both said that, generally speaking, you do not get  
 22 to see these other --- the details of the other licence  
 23 agreements during negotiations, do you? Are you  
 24 familiar with that?  
 25 A. Yes.

1 Q. So that is a significant problem, is it not, for this  
 2 theory to work because the OEM is not aware of this  
 3 problem?  
 4 A. Well, the evidence that I have seen in the Apple and  
 5 Samsung negotiations is that Qualcomm gives indications  
 6 about, you know, what the market rate is. I mean, there  
 7 is lots of quotes where they talk about it has been  
 8 established again and again in licences that rate X or Y  
 9 is the appropriate rate.  
 10 So Qualcomm is at least asserting in those  
 11 situations that there is information or content coming  
 12 from these other licences and it is informing them of  
 13 that.  
 14 Q. But those are again factual questions for the Tribunal  
 15 to assess?  
 16 A. Yes.  
 17 THE CHAIR: Mr Saunders, I think your time is up.  
 18 MR SAUNDERS: I think I probably am out.  
 19 THE CHAIR: Thank you.  
 20 Mr Williams.  
 21 Re-examination by MR WILLIAMS  
 22 MR WILLIAMS: I just had one point, Madam, and it is just  
 23 a chance to give Mr Noble a chance to complete an  
 24 answer, if he wants to.  
 25 Could we go back up to the bottom of page 89 on the

1 [draft] transcript, please. Can you see that, Mr Noble,  
 2 if we bring it up? At the bottom of page 89, line 17,  
 3 Mr Saunders asks you question:  
 4 "But, Mr Noble ..."  
 5 Then you start to answer that at line 22 and then,  
 6 on the next page, we can see he cuts off your answer.  
 7 I just want to give you a chance to complete that  
 8 answer, if you did not get a chance to complete it.  
 9 A. Could I just re-read the question?  
 10 Q. Yes, please do. (Pause)  
 11 A. So the point that I was getting at here is that I do not  
 12 think it is a prerequisite to analyse every individual  
 13 negotiation and consider exactly which OEMs are  
 14 similarly situated to which other OEMs. The concern is  
 15 a more generalistic one, that we have lot of dots on the  
 16 chart and that the licensing experts have highlighted  
 17 that there is this dimension in licensing negotiations,  
 18 where licensors have a non-discrimination obligation,  
 19 and I have seen factual evidence that indicates that  
 20 Qualcomm essentially points to that and points to what  
 21 it asserts in those negotiations is the outcome of those  
 22 kinds of negotiations.  
 23 So I do not think one has to identify specific  
 24 examples of this. I think one can, in a sense, draw  
 25 a broader conclusion that the --- that there is a concern

1 about the independence of each of those individual dots  
 2 on the chart.  
 3 MR WILLIAMS: Thank you. I do not have any other questions.  
 4 Thank you.  
 5 THE CHAIR: All right. Thank you very much.  
 6 So, Mr Noble, thank you very much for your answers  
 7 this morning. That concludes your cross-examination.  
 8 We will now take an hour for lunch and we will  
 9 return at 2 o'clock when Dr Padilla will be sworn in and  
 10 cross-examined by --- is it going to be just you,  
 11 Mr Williams, or you and Mr Armitage?  
 12 MR WILLIAMS: It is just me, for better or worse, Madam.  
 13 THE CHAIR: Thank you very much.  
 14 All right. 2 o'clock.  
 15 (1.00 pm)  
 16 (The luncheon adjournment)  
 17 (2.00 pm)  
 18 In Open Court  
 19 MR JOWELL: Good afternoon, Dr Padilla. Dr Padilla, could  
 20 I show you first your third report which is in the core  
 21 bundle 33 ---  
 22 THE CHAIR: Mr Jowell, Dr Padilla needs to be sworn in.  
 23 MR JOWELL: I made the same error. Yes, of course. You  
 24 need to be sworn first.  
 25

1 DR JORGE PADILLA (sworn)  
 2 Examination-in-chief by MR JOWELL  
 3 MR JOWELL: Core 33 {EAE0/12/1}. We see this is a copy of  
 4 your third report?  
 5 A. Sir, I do not have any copy with me.  
 6 Q. You should see it on the screen, perhaps.  
 7 A. Oh, there, yes. Excuse me.  
 8 Q. We should, I think, have --- Dr Padilla, I think should  
 9 be provided with a copy of --- it is coming. (Handed)  
 10 A. Thank you.  
 11 Q. If you go to page 4 of the report ---  
 12 A. Sorry, could you remind me of the tab?  
 13 Q. It should be core 33. I think --- is that the same ---  
 14 oh, I imagine it will be the first tab. {EAOE/12/4}.  
 15 The first tab, yes.  
 16 A. I think what I have here is, I believe, is the bundle of  
 17 documents to be for cross-examination, but not my  
 18 reports.  
 19 Q. Not the --- you should have a clean expert report bundle.  
 20 (Handed)  
 21 A. Thank you. Now I am there.  
 22 Q. You are there?  
 23 A. Yes.  
 24 Q. Go, please, to page 5 of the --- of the first tab.  
 25 A. Right.

1 Q. Is that your signature?  
 2 A. Correct.  
 3 Q. If we could go, please, to tab 4 of the bundle before  
 4 you, which is core 33, or {EAOE/22}. If we could go ---  
 5 is this your fourth expert report?  
 6 A. Correct.  
 7 Q. If we could go, please, to page 104 {EAOE/22/104}.  
 8 A. Yes.  
 9 Q. Is that your signature?  
 10 A. Correct.  
 11 Q. If we can go, please, to tab 7 in this bundle, core 38,  
 12 {IRE/25}. Is this your fifth expert report?  
 13 A. Sorry, which tab?  
 14 Q. Tab 7.  
 15 A. Tab 7, yes, this is my fifth expert report.  
 16 Q. If you could go, please, to page 8 {IRE/25/8}.  
 17 A. Yes.  
 18 Q. Is that your signature?  
 19 A. Correct.  
 20 Q. Finally, if we could go to the joint expert statement,  
 21 which you will find in tab 6 of the bundle before you  
 22 {POE/24}. If you could go, please, to page 3 of that  
 23 {POE/24/3}, again, is that your signature?  
 24 A. Correct.  
 25 Q. Are those reports and that statement true to the best of

1 your knowledge and belief?  
 2 A. Yes.  
 3 MR JOWELL: Thank you. Please wait there.  
 4 Cross-examination by MR WILLIAMS  
 5 MR WILLIAMS: Good afternoon, Dr Padilla.  
 6 A. Good afternoon.  
 7 Q. Madam, I am going to start in open and I hope to stay in  
 8 open for most of the cross-examination. I am going to  
 9 have to go into closed at the end, but I have grouped  
 10 the questions.  
 11 Dr Padilla, one of the disagreements between you and  
 12 Mr Noble is whether chips that are compatible with  
 13 different standards are in the same markets and this has  
 14 two aspects. One is whether a chip that supports an  
 15 earlier generation of standard is a substitute for  
 16 a chip that supports a later generation of standard.  
 17 That is one issue. Do you agree?  
 18 A. Correct.  
 19 Q. Another is whether a chip that is only compatible with  
 20 UMTS is a substitute for a chip that is compatible with  
 21 CDMA 2000. That is a separate issue?  
 22 A. Correct.  
 23 Q. So what I am going to do at various points in the  
 24 cross-examination, because we do not have a lot of time,  
 25 is try and summarise what I think is the state of the

1 evidence and put it to you to see if you are happy with  
 2 the summary, rather than take to you every reference,  
 3 and we will see how we go with that, if that is  
 4 acceptable?  
 5 So the first point is substitution between earlier  
 6 and later generations. In his report Mr Noble cites  
 7 evidence provided by OEMs to the European Commission,  
 8 which he says supports his view that a 3G chip, for  
 9 example, is not a substitute for a 4G chip. Do you  
 10 recall that evidence?  
 11 A. Yes.  
 12 Q. Just to summarise the position: Mr Noble says this is  
 13 the perspective of the customers who are buying the  
 14 chipsets and they say they are not substitutes, and you  
 15 say that the opinions that are contained in those  
 16 submissions come too late to illuminate the moment of  
 17 transition and you say it is the moment of transition  
 18 that matters. Is that a fair summary?  
 19 A. I think that that is correct, but not --- it does not  
 20 reflect completely my position.  
 21 Q. Right. Well, I am going to look at the --- that question  
 22 of the moment of transition. If you want to clarify  
 23 your position as we go through, then you can do that.  
 24 So can we bring up {POE/21/108}, please, which is  
 25 appendix A3 to Mr Noble's report. The first of those is

1 non-confidential. It is statements made by Apple. Do  
 2 you see the second sentence, it says:  
 3 "Consumers expect Apple's devices to include the  
 4 most recent technologies."  
 5 Do you agree that that comment is addressing the  
 6 point of transition?  
 7 A. So ---  
 8 Q. It is saying once there is a new standard consumers  
 9 expect Apple to supply a device that complies with it?  
 10 A. Sorry, I am a little bit lost. Apologies for this. You  
 11 are asking me to look at what entry --- what Apple wrote?  
 12 Q. The Apple block and the second sentence --- well, you can  
 13 read the first sentence. I was stressing the second  
 14 sentence which is:  
 15 "Consumers expect Apple's devices to include the  
 16 most recent technologies."  
 17 So that is stressing the point of transition. It is  
 18 saying once there is a new standard. consumers expect  
 19 Apple to supply a device that complies with the new  
 20 standard.  
 21 A. I do not recall now who said that on behalf of Apple or  
 22 whether this is Apple saying this, but whoever held that  
 23 opinion, I am pretty sure that he held it in good faith.  
 24 That does not tell me much about Apple's actual  
 25 behaviour, because Apple's actual devices do not tend to

1 include the most up-to-date technologies.  
 2 Q. Yes, but this is not Apple looking back several years;  
 3 this is Apple talking about the need to transition to  
 4 a new standard when the standard comes in. That is what  
 5 this is saying.  
 6 A. Right, and all that I am saying is that, based on the  
 7 facts, Apple chooses when to introduce the new  
 8 technologies and I would not say never, but rarely is it  
 9 a first-mover.  
 10 Q. Can we please bring up {POF/842}, which is a Qualcomm  
 11 internal presentation from March 2018, about a year in  
 12 advance of 5G going live, and it relates to an unnamed  
 13 customer. Now, I understand from paragraph 8 of your  
 14 report that your role did not extend to the  
 15 interpretation of documentary evidence like this. Does  
 16 that mean you did not look at documents like this  
 17 generally when you prepared the report?  
 18 A. Correct. I looked at them. I mean, looking at  
 19 documents and analysing documents is a completely  
 20 different thing. So I looked at some documents,  
 21 especially when the documents were introduced as  
 22 evidence by Mr Noble, but I did not conduct an analysis  
 23 of documents, meaning I did not look at or did not  
 24 consider whether all the documents in the file were a  
 25 representative sample of all the documents in the case.

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1 I did not look at all the documents. I did not  
 2 pre-register the analysis that I wanted to do with  
 3 documents and, no, you will not find statistics from me  
 4 saying of all the documents that I looked at, these  
 5 point in this direction and those point in the other  
 6 direction.  
 7 So I did not do an analysis of documents.  
 8 Q. I am not going to ask you to comment on what the facts  
 9 were. I just want to look at some documents in the  
 10 context of the economics.  
 11 A. Very good.  
 12 Q. Can we look at page 5 of this, please {POF/842/5}. This  
 13 sets out the benefits of 5G for user behaviour and you  
 14 can see reference to latency, speeds, coverage and  
 15 capacity and you see all of that on that slide; yes?  
 16 A. I am looking at the slide now for first time, looking  
 17 quickly. I am prepared to take it from here.  
 18 I cannot — you know, no objection from me.  
 19 Q. Then if we turn through to page 16 {POF/842/16}. This  
 20 is outer ring confidential and I will not read it out.  
 21 I would just like you to look at it. This is one of  
 22 many documents that the Tribunal has seen which relate  
 23 to Qualcomm's perception of its leadership position in  
 24 5G and just while we are going through this, I wanted  
 25 you to look at the text at the bottom right which deals

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1 with that and refers to a track record which is one of  
 2 the issues you discussed with Mr Ridyard last week. Do  
 3 you see that?  
 4 A. Yes, I see that.  
 5 Q. Now, the slide I want to move on is to 22 {POF/842/22}.  
 6 Now, this refers to a survey of about 6,000 consumers.  
 7 Now, this is not confidential. Have you seen this  
 8 before?  
 9 A. Let me just look at the source. Who has produced this  
 10 survey? Qualcomm Technologies?  
 11 Q. I think it is a survey that was produced for Qualcomm,  
 12 I think, as I understand it.  
 13 A. No, if I have seen it, I do not remember.  
 14 Q. This is material, I think produced by Qualcomm, in  
 15 relation to the transition from 4G to 5G from the  
 16 consumer perspective. Do you see that it says that  
 17 about half of all consumers are likely to shift to a 5G  
 18 device once that is available? Do you see that on the  
 19 right-hand side?  
 20 A. That is when they say:  
 21 "50% likely to purchase a phone that supports 5G  
 22 when available"?  
 23 Q. "When available"?  
 24 A. Yes, I can see that.  
 25 Q. Yes. In fact, if you look to the left of that, it says

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1 an even higher percentage expected to get a 5G phone  
 2 when they next change phones. Do you see that as well?  
 3 A. Correct.  
 4 Q. So this is Qualcomm's own analysis of consumer demand  
 5 when it was planning its strategy for 5G and Qualcomm's  
 6 assessment was that there would be distinct consumer  
 7 demand for 5G devices as soon as there was transition to  
 8 the new standard. Do you agree with that?  
 9 A. That is their assessment based on this report. This  
 10 report was, sorry, published when?  
 11 Q. It states from March 2018.  
 12 A. But the report is September 2017?  
 13 Q. That is right. Sorry, you are quite right. The survey  
 14 goes back six months previously or so.  
 15 A. So they were speculating what was going to happen  
 16 in 2019 in 2017?  
 17 Q. Well, they asked consumers what was their attitude to  
 18 switching to 5G when 5G came — became available, it  
 19 would appear, because that is what the consumer answers  
 20 say.  
 21 A. Right. I follow. That must have been — just to make  
 22 sure I do not provide an answer that is incorrect.  
 23 The September 2017 date is the date — presumably the  
 24 survey was conducted before September 2017?  
 25 Q. Presumably.

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1 A. Presumably. Right, look, I think that that may be the  
 2 opinion of Qualcomm, but that is based on --- well,  
 3 first, its opinion, I do not know whether this was  
 4 a scientific opinion or a marketing opinion, and --- but,  
 5 most importantly, the point is this was contingent  
 6 valuation. "Contingent valuation" means you are asking  
 7 people what are you going to do and I think that it is  
 8 very well-known that people answer sometimes in a very  
 9 imprecise way and that is why very often the answers to  
 10 these hypotheticals differ very much from what happens  
 11 in the actual.  
 12 2017 is relatively early. I am not sure what  
 13 information was provided to consumers as to what were  
 14 the use cases for 5G and the only thing I will notice is  
 15 that it seems that Apple was not particularly impressed  
 16 by the survey because they decided to enter in 2020, as  
 17 opposed to ---  
 18 Q. It is a Qualcomm survey. No one is suggesting that  
 19 Apple was impressed by the survey.  
 20 A. Right. Look, it is a piece of evidence, but as an  
 21 economist I cannot give you assessment of how reliable  
 22 it is.  
 23 Q. So Mr Katouzian, who is the Qualcomm witness on the  
 24 chipset side of the business, was asked about this. Can  
 25 I show you what he said. It is {Day6/117:17}. This was

1 in private session so I will not read anything out. It  
 2 should come up on the screen for you.  
 3 EPE OPERATOR: If it was in private, I do not have the  
 4 transcript.  
 5 MR WILLIAMS: That is a challenge.  
 6 THE CHAIR: Yes. Unless you have it in hard copy.  
 7 MR WILLIAMS: Well, can I put to Dr Padilla what  
 8 Mr Katouzian said by way of headline conclusion, Madam?  
 9 THE CHAIR: Let me just see if I have the transcript.  
 10 A. I am prepared to accept whatever you tell me that he  
 11 said.  
 12 THE CHAIR: I just wanted to check that there is nothing  
 13 sensitive in it. Day 6, the full transcript.  
 14 MR WILLIAMS: Page 117, line 17, down to page 118, line 16.  
 15 I was not going to go into the --- we have it on Opus  
 16 {POS/13/31}. Thank you to Mr Armitage.  
 17 THE CHAIR: Right.  
 18 MR WILLIAMS: Down at the bottom of page 17, sorry, 117, you  
 19 can see just the last point on this document, page 22.  
 20 That is the slide you have just seen. Then if we just  
 21 go down onto page 118 ---  
 22 A. 118?  
 23 Q. Yes. We can see ---  
 24 A. Which line?  
 25 Q. Line 10 through to 16.

1 THE CHAIR: Oh, yes, I do not think there is anything  
 2 confidential there.  
 3 MR WILLIAMS: No, exactly. So the --- it is put to  
 4 Mr Katouzian from the perspective of OEMs buying  
 5 chipsets, 4G chips were not substitutes for 5G chips,  
 6 were they?  
 7 We have seen the perspective of Apple and other  
 8 OEMs. That is the perspective of Mr Katouzian, who is  
 9 in the business of selling the chips.  
 10 This is what I want to put to you: in your report  
 11 you draw an inference about whether there is  
 12 substitution between chipsets across these different  
 13 standards based on the pricing of handsets at one level  
 14 removed, but we do not need to work this out indirectly,  
 15 do we? We know what the parties buying the chips  
 16 thought and we know what the parties selling the chips  
 17 thought, which is that they are not substitutes?  
 18 A. This is not the right analysis from the perspective of  
 19 my report. Here what Mr Katouzian seems to be saying,  
 20 and I agree with him, is that if you want to build a 5G  
 21 phone, you need a 5G chipset, if you want to build a 4G  
 22 phone, you need a 4G chipset and you cannot use a 4G  
 23 chipset to build a 5G phone. That, I think, is  
 24 uncontroversial and I fully agree with it.  
 25 I think that the point is whether when Apple is

1 negotiating with Qualcomm, for example, for the  
 2 acquisition of 5G chipsets, if Qualcomm demands too  
 3 much, whether Apple can say, "I am going to buy a few  
 4 less 5G chipsets because I am going to be selling more  
 5 4G chipsets. I am going to buy a few less CDMA chipsets  
 6 because I am going to buy a few more UMTS chipsets" and  
 7 this is because ultimately they are going to sell a  
 8 different product mix of phones.  
 9 Q. I understand that is the theory, but all you have done  
 10 is look at the relative pricing of devices one level  
 11 downstream, is it not? That is what you have looked at?  
 12 A. But that is the only thing that I need to do because the  
 13 level of --- the prices of the devices downstream tell me  
 14 that if a CDMA phone and a UMTS phone are selling for  
 15 prices that are very similar, that is basically telling  
 16 me, if we think about Apple, that Apple has exploited  
 17 its relative market power on both dimensions to the  
 18 point in which if there was a further increase in the  
 19 price of a chipset and the CDMA using that chipset  
 20 became less attractive, then there would be  
 21 substitution.  
 22 Q. I think you have moved on to the next topic now so that  
 23 is where I am going to go now, which is substitution  
 24 between UMTS and CDMA. I think the debate on this moved  
 25 on in the hot-tub so, again, I am going to summarise

1 where I think the debate moved.  
 2 As I understand it, you agree with Mr Noble that if  
 3 an OEM wants to launch a CDMA phone, as Apple did with  
 4 Verizon in 2011, then it needs a CDMA chipset?  
 5 A. Correct.  
 6 Q. Your evidence, I think now anyway, is that this is not  
 7 about whether CDMA and UMTS are substitutes at the point  
 8 of launch; it is about the ability of OEMs to discipline  
 9 Qualcomm, for example, by placing more emphasis on  
 10 selling UMTS and CDMA, for example, by switching their  
 11 marketing efforts. Is that a fair summary of where we  
 12 got to?  
 13 A. I think that this has been my evidence all the time.  
 14 I have never claimed that you can produce a CDMA phone  
 15 with a UMTS chipset or vice versa. I have always argued  
 16 that in the context of the markets that I am  
 17 considering, the OEM, because it is a multi-product  
 18 company, can use the fact that it is purchasing multiple  
 19 products to discipline each and every one of the inputs  
 20 that are provided by the input supplier. In the same  
 21 way that a supermarket, which is a multiple product  
 22 company, can, you know, use, for example, the fact that  
 23 it is buying a range of products from an input supplier  
 24 to discipline the prices of those where the input  
 25 supplier is relatively stronger.

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1 Q. Well, we will come back to some of that in a bit, but  
 2 just so I am clear: your report talks about OEMs' demand  
 3 for chips being derived from consumer demand, but I do  
 4 not think you make the point, do you, that if Apple does  
 5 not like Qualcomm's chip prices, it can steer customers  
 6 away from CDMA towards UMTS? I do not think you put it  
 7 in that is way in the report, do you?  
 8 A. We --- I explain it and the following --- and this is the  
 9 reason for the price overlap.  
 10 Q. Sorry, I am sorry, Dr Padilla, we do not have very long  
 11 this afternoon. Do you make that point in your report?  
 12 A. It is. If you want, I can explain.  
 13 Q. Well, maybe your counsel can take you to that in  
 14 re-examination, but if you say it is in your report.  
 15 I mean ---  
 16 THE CHAIR: But could you explain briefly what your response  
 17 is, because you are being asked about it.  
 18 A. Yes, this is a point that we started to debate in the  
 19 hot-tub but we did not go very far and this has to do  
 20 with the price overlap.  
 21 So think about Apple has two phones, a CDMA phone  
 22 and a UMTS phone and Apple is pricing both phones.  
 23 Apple in the iOS space has some market power. I am not  
 24 going to say whether it is dominant or not. I am going  
 25 to say simply that it has some market power. So it is

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1 going to bring the prices up to a point in which it is,  
 2 you know, in a sense taking them at a point in which  
 3 there is going to be substitution, otherwise you could  
 4 increase the price of one even further.  
 5 Now, consider that there is an increase in the price  
 6 of one of the chipsets, the CDMA chipset, for example.  
 7 If there is some pass on and given the level of the  
 8 prices that the downstream devices already have, then  
 9 there is going to be substitution. You may wonder ---  
 10 you may worry are you arguing cellophane fallacy. Are  
 11 you falling into the cellophane fallacy? The answer is  
 12 no and the answer is because the cellophane fallacy  
 13 occurs by reference to high prices of the product that  
 14 you are testing, whether or not it belongs to a separate  
 15 market, in this case the chipset.  
 16 All that I am saying is that the prices at the  
 17 downstream level are already high because there is  
 18 exercise of market power and this is a general  
 19 proposition that, you know, is much more difficult to  
 20 hold market power as an input supplier than as somebody  
 21 that controls directly the demand of consumers.  
 22 THE CHAIR: Thank you.  
 23 MR WILLIAMS: So I understand broadly what you say about  
 24 that and what you said in the hot-tub, Dr Padilla, but  
 25 I was asking you specifically whether this was discussed

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1 in your report and I did not understand your answer  
 2 there to refer to any part of your report.  
 3 A. So and I think it is explicit in the report when you  
 4 look at the two principles that I used in order to  
 5 assess demand-side substitution. I refer to geographic  
 6 overlap and price overlap. Those are the two principles  
 7 that I rely upon to talk precisely about demand-side  
 8 substitution.  
 9 Q. Do you refer anywhere in your report to OEMs using  
 10 marketing efforts to steer customers from CDMA to UMTS?  
 11 A. I do not recall. I think that this was something that  
 12 we discussed in the context of the hot-tub in response  
 13 to clarification questions.  
 14 Q. If we could just tease out the way I think this would  
 15 work, if I have understood it correctly. If Apple is  
 16 unhappy with the pricing on, say, CDMA, it would use  
 17 marketing efforts to steer customers towards UMTS  
 18 network, say, AT&T, rather than Verizon. Is that the  
 19 sort of thing you had in mind?  
 20 A. So let me put it in my own words, if you do not mind.  
 21 So what I am simply saying is that if Apple is not happy  
 22 with the CDMA chipsets and given that it sells few CDMA  
 23 phones and a lot of UMTS phones, it can move its demand,  
 24 readapt its demand so that it demands fewer CDMA  
 25 chipsets and more UMTS chipsets, sells fewer CDMA phones

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1 and sells more UMTS phones. I think that that is fairly  
 2 rational. It is what everybody would do if it had that  
 3 option and the report explains that the option exists  
 4 because of — there are price overlaps which indicates  
 5 substitution and there are geographic overlaps.  
 6 Q. I think you said in the hot-tub there was no evidence to  
 7 support this hypothesis, because it would be impossible  
 8 to prove if the product mix between UMTS and CDMA is  
 9 already in its optimal state. Do you remember saying  
 10 that?  
 11 A. No, but I am happy to take it as I said it and I think  
 12 that that was correct. What I cannot prove is something  
 13 that has not happened. So I think that we will need to  
 14 accept that CDMA prices were really out of line with  
 15 their competitive levels to see what would have been the  
 16 response of Apple in terms of its optimal product  
 17 portfolio and that is circular. So, no, I do not have  
 18 the evidence to conduct that experiment.  
 19 Q. There is another explanation for the absence of any  
 20 evidence to support the hypothesis, is there not, which  
 21 is that the hypothesis is wrong? That is another  
 22 possible explanation for the lack of any evidence?  
 23 A. Can you elaborate it? In which way?  
 24 Q. The hypothesis that Apple — your explanation is the  
 25 market is in an optimal state so we do not see Apple

1 applying marketing efforts to shift customers from CDMA  
 2 to UMTS. That is one reason why there might be no  
 3 evidence. Another reason might be just that this  
 4 mechanism does not happen, it just does not happen in  
 5 practice because the products are not substitutes?  
 6 A. No, I think that I explained myself incorrectly.  
 7 What you observe — when I am saying that there is  
 8 no evidence is because we do not have an experiment. We  
 9 do not see — we cannot determine or we cannot establish  
 10 a difference between a competitive CDMA chipset and what  
 11 you claim is not a competitive CDMA chipset and what  
 12 would have been the reactions of Apple. So we cannot  
 13 test whether Apple would have reacted or if Apple would  
 14 not have reacted. So what we have is not no evidence,  
 15 it is that we do not have the experiment that would  
 16 allow us to produce or to test whether my hypothesis is  
 17 correct or is incorrect.  
 18 Q. Well, we can come back to this a bit later in closed  
 19 session.  
 20 You just touched on the cellophane fallacy there and  
 21 I want to be clear what you are saying about that. Can  
 22 I just start with what the cellophane fallacy is. When  
 23 you are doing a SSNIP test, you are looking at whether  
 24 a hypothetical monopolist supply of the focal product  
 25 can sustain a SSNIP without being defeated by customer

1 switching. Am I right so far?  
 2 A. With one — by and large correct, but let me just add  
 3 one sentence: as need relative to the competitive price.  
 4 Q. Yes. Well, exactly. So the concern is that if you are  
 5 using the real-world prices charged by an allegedly  
 6 dominant firm as the starting point, there is a risk  
 7 that the prices are not at the competitive level? That  
 8 is exactly the problem?  
 9 A. That is correct.  
 10 Q. The risk with the cellophane fallacy is that it may lead  
 11 you to define overly broad markets when you should find  
 12 that the products are in separate markets. Is that  
 13 right?  
 14 A. That is correct.  
 15 Q. Mr Noble finds that UMTS and CDMA are in separate  
 16 markets, does he not?  
 17 A. That is correct.  
 18 Q. So if there is a cellophane fallacy, it is not  
 19 misleading Mr Noble into finding a broad market that  
 20 includes CDMA and UMTS. There is no risk that his  
 21 conclusion is vitiated by the cellophane fallacy, is  
 22 there?  
 23 A. Correct.  
 24 Q. I mean you find a broader market, do you not? Your  
 25 conclusion could be vitiated by the cellophane fallacy,

1 I think?  
 2 A. You cannot infer from the fact that I conclude a broader  
 3 market that it is vitiated from the cellophane fallacy,  
 4 but it would be more likely than the conclusion of  
 5 Mr Noble.  
 6 Q. Another point that came up in relation to this issue is  
 7 the suggestion that CDMA and UMTS are substitutes  
 8 because there is continuous variation in product mix.  
 9 You said that with reference to your figure 3 and  
 10 figure 4. Do you remember that?  
 11 A. Correct.  
 12 Q. So can we bring that up, please, at {EAOE/22/57}. The  
 13 first — these were once confidential, but I understand  
 14 they are not confidential any more because they are  
 15 based on third-party data.  
 16 The first graph shows Apple's product mix. We see  
 17 two spikes which I am told launch with — coincide with  
 18 the launch of two CDMA-compatible iPhones. Is that  
 19 something you have looked at?  
 20 A. Can you point to exactly —  
 21 Q. Sorry, do you see in the first — in figure 3, if we  
 22 look at 3G CDMA at the top right?  
 23 A. Right.  
 24 Q. There is a little spike just after 2010 and there is  
 25 a little spike towards 2012?

1 A. Correct. That is my understanding at that point in time  
 2 where they launch CDMA phones.  
 3 Q. Right. So that — I mean a spike when there is a phone  
 4 that is launched is not really a continuous variation in  
 5 mix, is it?  
 6 A. I am not sure what to tell you to tell you the truth.  
 7 It is continuous in a mathematical sense, but  
 8 I understand your point that there is a spike. At that  
 9 point in time, there was a significant change, much more  
 10 significant than in other years, yes.  
 11 Q. Can we then look at figure 4, which is Samsung, and to  
 12 my eye, anyway, those two lines track each other quite  
 13 closely. Do you see that? They sort of track each  
 14 other. They go up at the same time and go down at the  
 15 same time and then they tail off together?  
 16 A. What are you referring to?  
 17 Q. I am sorry. We are talking about 3G CDMA and 3G UMTS.  
 18 I am sorry, that is what I thought we were looking at,  
 19 because you are saying there is continuous variation in  
 20 the mix between them, but to my eyes those lines track  
 21 each other. There is not continuous variation. They  
 22 just track each other?  
 23 A. Yes. No, I think that perhaps I did not explain myself  
 24 sufficiently clearly. I did not say that there was  
 25 a relative change between UMTS and CDMA. All that I am

1 saying is that demand is not given and sometimes you  
 2 sell more, sometimes you sell less, and that is the  
 3 result of two things: the demand for consumers and how  
 4 much and how strong you push your products. All that  
 5 I was saying is that if you look at the variation  
 6 between 2009 and 2012, for example, on the 3G CDMA, what  
 7 you see is continuous movement in that line. I was not  
 8 using — I was not using the 3G UMTS line as  
 9 a benchmark.  
 10 Q. I thought your point was about substitution between the  
 11 two. Would that not depend on how volumes are moving  
 12 between the two?  
 13 A. No. Again, you are asking for me to produce on the  
 14 basis of these figures the sort of evidence that I tell  
 15 you that I cannot produce. I cannot see how product  
 16 portfolio would have changed relative to prices. I do  
 17 not see — here you can see that you see variations in  
 18 relative in portfolios, yes, but I do not know whether  
 19 that is in response to relative prices.  
 20 So let me put it this way: suppose — take a look  
 21 at, for example, the Samsung figure 2009. Okay? We see  
 22 there relative composition of 3G CDMA and 3G UMTS  
 23 in 2009. Let us look at 2012. Now you see that the  
 24 proportion of CDMA is much less than UMTS. That would  
 25 be a change in product portfolio that is consistent with

1 CDMA becoming less important, but I would not use that  
 2 as evidence in support of my hypothesis. It is not  
 3 evidence in support of Mr Noble's hypothesis, but it is  
 4 not even also not evidence in support of my hypothesis  
 5 because I do not have the underlying relative prices.  
 6 So you cannot use these figures either to credit or  
 7 to discredit my hypothesis and the point that I was  
 8 making with these figures was orders of magnitude more  
 9 similar — more simple, excuse me, which is that if you  
 10 look at the beginning of 2009 and the end of 2009, for  
 11 example of 3G CDMA, you see variation. So it is not  
 12 that Samsung or Apple or anyone else is compelled to buy  
 13 a given number of CDMA chipsets to produce a given  
 14 number of CDMA phones. They buy in response to demand  
 15 pressures, supply pressures and relative margins.  
 16 THE CHAIR: Thank you.  
 17 MR WILLIAMS: Madam, I am not being at all critical of  
 18 Dr Padilla, but I am very time constrained and some of  
 19 the answers are quite long.  
 20 THE CHAIR: Yes. I think you need to give more concise  
 21 answers, Dr Padilla.  
 22 A. I will do my best, I promise, and apologies for that,  
 23 Mr Williams.  
 24 MR WILLIAMS: I am going to move on now to OEM—specific  
 25 markets and you define Apple and Samsung—specific

1 markets. Just before I do that, I want to be totally  
 2 clear about what you mean by that. Your OEM—specific  
 3 markets include chips bought by other OEMs, do they not?  
 4 A. No, that is not correct. The OEM—specific markets are  
 5 chips bought by Apple and chips bought by Samsung.  
 6 Q. Yes, but within the volumes in your markets you include  
 7 equivalent chips bought by other OEMs of the same type.  
 8 Is that not right?  
 9 A. No, that is a misunderstanding as reflected in your  
 10 skeleton. The thing is that when I compute market  
 11 shares, in those OEM—specific markets I look at who  
 12 could have sold into those markets, not only who have  
 13 sold into those markets, and I proxy the relative  
 14 strength of those that could have sold on the basis of  
 15 what they sold in the market — in an OEM—agnostic  
 16 market.  
 17 Q. But you include chips that were sold by suppliers that  
 18 were not selling to Apple and Samsung. That is right,  
 19 is it not?  
 20 A. To calculate the market shares, yes, because I am  
 21 looking —  
 22 Q. So you must include chips that are being sold to other  
 23 OEMs because they are not being sold to Apple and  
 24 Samsung, they are being supplied to somebody else. That  
 25 must be right?

1 A. But, again, the market -- what I am trying to do is to  
 2 proxy the relative strength of all those people that  
 3 currently are not selling to Apple and Samsung,  
 4 therefore they are not selling to Apple and Samsung, but  
 5 could have sold to Apple and Samsung. I am using the  
 6 market-wide market shares as a proxy of the relative  
 7 strength.

8 One thing I could have done, and I explained this in  
 9 the hot--tub, is to calculate capacity market shares.

10 THE CHAIR: I think you have given the answer, yes.

11 MR WILLIAMS: Okay. So you give two reasons -- two  
 12 particular economic reasons for what you describe as  
 13 "OEM-specific markets." One is that Apple and Samsung  
 14 had distinct requirements and the other is that there is  
 15 price dispersion. Do you agree?

16 A. Yes.

17 Q. So start with distinct requirements. Can we look at  
 18 what is meant by that. Can we look at {EAOE/22/56}.  
 19 This is paragraph 166 and actually this takes us back to  
 20 the graphs we were just looking at. What we take from  
 21 166 and the graphs is that Apple and Samsung bought  
 22 chips that complied with different standards at  
 23 different times. That is right, is it not?

24 A. Yes, that is correct, but I think that the important  
 25 thing is that they have different product portfolios at

1 different points in time.

2 Q. So to make that concrete, and this is a point I think  
 3 you make in paragraph 158 of your report, at a certain  
 4 point in time, Apple stopped buying LTE chips and only  
 5 bought 5G chips, whereas Samsung continued to use LTE  
 6 chips. That is the sort of point you make about the  
 7 distinct requirements?

8 A. One of the examples, as you know, the product portfolio  
 9 of Samsung is much broader than that of Apple, yes, very  
 10 generally.

11 Q. Mr Noble's reason for not adopting OEM-specific markets  
 12 is supply-side substitution and you and Mr Noble agree  
 13 that there is supply-side substitution within each  
 14 standard, do you not?

15 A. That is correct.

16 Q. So if we just look at that, {POE/24/12}, paragraph 20.2  
 17 in the JES. So here you say:

18 "The experts agree...there is ... supply  
 19 substitution ... across suppliers within each standard.  
 20 Our analyses are therefore both premised on  
 21 substitutability across suppliers within each standard."

22 You also agree with Mr Noble that there is not  
 23 supply-side substitution between standards. That is  
 24 agreed too, is it not?

25 A. Correct.

1 Q. So there is a lot of common ground actually on those  
 2 points.

3 A. On those two points, yes.

4 Q. So if I just come back to the distinct requirements that  
 5 you identify in paragraph 166. What we see from that is  
 6 that Apple and Samsung decide when to launch handsets  
 7 complying with a new standard and when to withdraw  
 8 phones that only comply with the old standard. That is  
 9 something that all OEMs do, is it not?

10 A. That is correct.

11 Q. All the OEMs' timings will be a bit different, will they  
 12 not? They will all decide to do that at different  
 13 times?

14 A. Correct.

15 Q. None of this tells us that Apple and Samsung are buying  
 16 chips on their own product markets, does it? It just  
 17 shows them buying products on the same market as  
 18 everyone else, just at slightly different times?

19 A. That is neither here nor there. I think that all this  
 20 tells us is that they have different portfolios and  
 21 consequently they can orchestrate substitution in  
 22 different ways. Some people may do. Some people may  
 23 not do. I have only looked at Apple and Samsung.

24 Q. So the other issue that you raise in your report is  
 25 pricing dispersion. Can we just look at what you said

1 about this in the hot--tub. This is {Day7/24:7-21}.

2 THE CHAIR: You might need to give the Opus reference.

3 MR WILLIAMS: I am sorry. This was in open, Madam, so this  
 4 one should work, I think. Here we are. You say on  
 5 line 7, "There is price discrimination." At the end,  
 6 you say:

7 "This seems to me the poster child example of  
 8 a price discrimination market."

9 Do you remember saying that?

10 A. Yes.

11 Q. So can we compare that to what you say in your report at  
 12 {EAOE/22/55}. This is paragraph 160. What you say is:

13 "I note that the data shows a dispersion of pricing  
 14 consistent with OEM-specific pricing."

15 I think that is as high as you put it in your  
 16 evidence that there is "dispersion consistent with  
 17 OEM-specific markets". I did not read that as saying  
 18 there are price discrimination markets, let alone that  
 19 this is the "poster child of a price discrimination  
 20 market". Have I read that correctly?

21 A. I am a little bit surprised, not about what is in the  
 22 report but about your interpretation. I always thought  
 23 it was very clear that my OEM-specific markets were  
 24 price discrimination markets because, by definition, you  
 25 have OEM-specific markets if conditions of competition

1 are different and therefore you are going to have  
 2 different prices in different markets.  
 3 Q. Neither you, nor Mr Noble, have done any analysis of  
 4 customer-specific pricing across OEMs taking account of  
 5 the complexities of pricing like rebates and discounts,  
 6 have you?  
 7 A. I mean, we have --- I have looked at the various  
 8 negotiations and interactions between Apple and Samsung,  
 9 including MIA, the BCPA, etc, etc, and there you can see  
 10 significant differences --- sorry, you can see discounts,  
 11 rebates, that are clearly OEM-specific.  
 12 Q. Yes. But this point depends on a comparison between  
 13 Apple and Samsung and the rest of the market, does it  
 14 not? That is the way --- that is your point about  
 15 OEM-specific markets, they are different from others?  
 16 A. To the best of my understanding Apple negotiates  
 17 discounts only for itself, not for the rest of the  
 18 market, and there is evidence that they have negotiated  
 19 discounts and they have negotiated their own chipset  
 20 prices and I believe that Samsung does exactly the same.  
 21 I am not aware of any OEM that negotiates for others.  
 22 Q. Paying different prices because you buy, for example,  
 23 a different volume is not a difference in the conditions  
 24 of competition, is it? It is just buying more or less  
 25 than somebody else. Do you agree?

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1 A. No, I would agree. Paying different prices because you  
 2 have an option to self-supply that the others do not  
 3 have, that is playing separate markets. Paying  
 4 different prices because you can substitute across  
 5 products in ways that others cannot, that is a reason to  
 6 have an OEM-specific market. The logic of the CDMA/UMTS  
 7 argument that I made before applies very much to Apple  
 8 and Samsung because they are two companies --- two OEMs  
 9 with very significant market power. Other OEMs do not  
 10 have that option.  
 11 Q. Dispersion of pricing is not enough to establish  
 12 a price-discrimination market, is it?  
 13 A. No. What is important is that you observe that the  
 14 prices charged to one customer concretely are different  
 15 from the prices charged to another customer  
 16 reflecting ---  
 17 Q. To other customers, not to one other customer.  
 18 A. To other customers, reflecting the fact that that  
 19 customer or customers have different options available  
 20 to them.  
 21 Q. Can we look at {ABI/6/28}, please. This is the  
 22 Commission's Market Definition Guidelines. I am sorry,  
 23 we might need to go on to the next page {ABI/6/29},  
 24 paragraph 88. I am sorry, I have the wrong reference.  
 25 Page 28 {ABI/6/28}. This is the Commission's Market

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1 Definition Guidelines.  
 2 A. Yes.  
 3 Q. This deals with price discrimination or discrimination  
 4 markets in 88. You can read that to yourself and then  
 5 could you read footnote 119, please.  
 6 A. I think that I know paragraph 88.  
 7 Q. You know this?  
 8 A. Yes.  
 9 Q. I am not surprised.  
 10 A. I may have contributed also in the process.  
 11 Q. If you contributed, you will be familiar with footnote  
 12 119 which says:  
 13 "When conditions of competition and likely effects  
 14 are similar across customers or customer groups, for  
 15 example because of supply[side] substitution, the  
 16 Commission may nevertheless include such customers or  
 17 customer groups in the same relevant markets."  
 18 So ---  
 19 A. That is correct.  
 20 Q. --- we agreed earlier on that there is supply-side  
 21 substitution within a standard, did we not?  
 22 A. Yes, but that supply-side substitution is not the one  
 23 that is relevant here and, by the way, just to make  
 24 clear, I also wrote that report for the  
 25 European Commission in May 2021 about the use of

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1 supply-side substitution so I know very well what I am  
 2 talking about. The supply-side substitution in price  
 3 discrimination markets is not supply-side substitution  
 4 within standards. It has to be different.  
 5 Q. I think it follows from paragraph 20.2 of the JES that  
 6 if the hypothetical monopolist supplier of 5G chips were  
 7 to put up prices to Apple, then you would expect another  
 8 supplier to step in and defeat the SSNIP and there would  
 9 be switching --- supply-side switching. I think that is  
 10 your position in 20.2, is it not?  
 11 A. Sorry, let us go back to that and unpack it, do you  
 12 mind, because I am not sure that I am following you?  
 13 Sorry, I am not doubting, it is simply that I am not  
 14 following you. Let us go and unpack it.  
 15 Q. It was 24/12 --- sorry, {POE/24/12}.  
 16 A. 24/12. Is that my fourth report? No, that is ---  
 17 Q. JES, paragraph 20.2, there is supply-side substitution  
 18 across suppliers within each standard?  
 19 A. Yes.  
 20 Q. So the point I am putting to you is that if the  
 21 hypothetical monopolist supplier of 5G chips were to put  
 22 up prices to Apple, you would expect another supplier to  
 23 step in and defeat that?  
 24 A. Another supplier of what?  
 25 Q. Another supplier of 5G chips.

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1 A. No, because the hypothetical monopolist would control  
 2 all the 5G chips.  
 3 Q. The reality here is that ---  
 4 A. There is no reality. It is hypothetical. The  
 5 hypothetical monopolist would control all 5G chips. The  
 6 only form of supply-side substitution that could be the  
 7 price-discrimination market, and it is explained in the  
 8 same JES I think, is supply-side substitution across  
 9 standards and Mr Noble and I agree that there is no  
 10 supply-side substitution across standards.  
 11 Q. But this is all starting from your premise that Apple  
 12 has a distinct requirement for chips relating to  
 13 particular standards at particular points in time, does  
 14 it not? It comes back to your different requirements  
 15 point?  
 16 A. If we look at my market definition, it is very clear.  
 17 My market definition says there is an Apple-specific  
 18 market for 5G from 20 --- if I am not mistaken, 2021,  
 19 '22, '23. So the hypothetical monopolist of that market  
 20 controls all 5G chipsets. All of them. Apple cannot  
 21 buy 5G chipsets from anyone else.  
 22 Q. Right. We will move on.  
 23 A. Otherwise footnote 119 would not be an exception.  
 24 Otherwise you would have that there would never be  
 25 price-discrimination markets.

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1 Q. Can we move on to talk about self-supply, please. In  
 2 the hot-tub you said that it is intellectually rigorous  
 3 and correct to include self-supply in the market,  
 4 because when Qualcomm is negotiating chipset prices with  
 5 Apple and Samsung, it can leverage its ability to  
 6 self-supply. Do you remember saying that?  
 7 A. Yes.  
 8 Q. Now, just dealing first with Apple. Apple did not start  
 9 supplying --- self-supplying chipsets  
 10 until February 2025, did it?  
 11 A. I do not recall now, but, yes, let us take it as what  
 12 your saying is correct.  
 13 Q. Just clearing away Apple. Apple had no ability to  
 14 leverage self-supply at any stage before 2021?  
 15 A. I believe it had self-supply.  
 16 Q. Turning to Samsung, do you agree that Samsung had the  
 17 incentive to self-supply as much of its chip supply as  
 18 it could?  
 19 A. I think that yes and no. I mean, when you self-supply,  
 20 you balance quality and price and you also try to ensure  
 21 security of supply so you may --- even if self-supplying  
 22 is even more economical, you may try to avoid potential  
 23 disruptions by buying from a second source.  
 24 Q. Can we look at {IRC/3/7}, please, paragraph 29. This is  
 25 Mr Katouzian's evidence. He says:

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1 "It stands to reason it would be more profitable for  
 2 Samsung to use the Samsung Exynos products ... rather  
 3 than purchasing from a competitor."  
 4 He refers to that incentive on Samsung as part of  
 5 his description. Do you agree with Mr Katouzian?  
 6 A. This is I would agree and allow me to use the expression  
 7 of the economist, ceteris paribus, that is other things  
 8 equal, so, yes, it is more economical and that is going  
 9 to mean that other things equal, you will buy more from  
 10 your own supply than from third parties, but there may  
 11 be security supply issues, there may be quality  
 12 differentiation issues that you want to factor in and,  
 13 therefore, as a result, you multi-source.  
 14 Q. I think it is right to say that at least until today  
 15 Samsung has used its own foundries to manufacture chips,  
 16 are you familiar with that, rather than outsourcing?  
 17 A. I think that they use their own factories, yes, but  
 18 I would not be able to testify on that because whatever  
 19 knowledge I have from --- about that is from another  
 20 matter.  
 21 Q. Samsung did not start self-supplying any chips  
 22 until 2011 or thereabouts. Are you aware of that?  
 23 A. Samsung was ---  
 24 Q. Did not start self-supplying any chips until about 2011?  
 25 A. I do not recall, but I am happy to take it.

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1 Q. If that is right, self-supply could not have affected  
 2 negotiations prior to that, could it, 2008 to 2009?  
 3 A. No, but certainly it did after 2011 and, in particular,  
 4 during the relevant period that I understand  
 5 is October 2015 onwards.  
 6 Q. It did not start self-supplying CDMA until 2018. Are  
 7 you aware of that?  
 8 A. I think that is correct.  
 9 Q. Can we now look at {ORI/261.15}, please, which shows  
 10 shares of LTE supply. If we look at these and we see  
 11 shipments to Samsung, and we can see --- that is the  
 12 middle line --- you can see "device shipments" there is a  
 13 line for Samsung itself, do you see that?  
 14 A. Sorry, I am trying to locate myself here.  
 15 Q. This is shares in absolute volumes of LTE chipset  
 16 supply.  
 17 A. Yes.  
 18 Q. The top box is shipments to Apple. The second one is  
 19 shipments to Samsung.  
 20 A. Right.  
 21 Q. You can see there is a line for Samsung. So that is  
 22 Samsung shipping to itself?  
 23 A. That is shipments to Samsung, yes, and then there is  
 24 Samsung and they start, yes, I can see that.  
 25 Q. Yes. So in 2012 this data shows Samsung is not

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1 self—supplying anything to itself. I think it may be  
 2 said that it actually started to supply in that year,  
 3 but we can see from the figures for 2013 and 2014 that  
 4 it is self—supplying less than 10% of its overall LTE  
 5 chipset requirements. Do you see that?  
 6 A. It is less than 10% in which year?  
 7 Q. I was looking at 2013 and 2014.  
 8 A. Correct. Well, actually, 2014 maybe is more than 10%.  
 9 Q. There or thereabouts, is it not?  
 10 A. Give or take.  
 11 Q. Then it is buying the rest from Qualcomm at that time.  
 12 We see that —  
 13 A. These are shipments of LTE, the same time I am not sure  
 14 how many LTE phones were sold.  
 15 Q. Mostly the rest from Qualcomm. It is only once you get  
 16 to 2017 that Samsung starts self—supplying more than  
 17 half of its LTE needs. Do you see that?  
 18 A. Yes.  
 19 Q. So what it looks like from this is that Samsung is  
 20 ramping up its production over time and trying to supply  
 21 more and more of its own needs for LTE. Do you agree?  
 22 A. Yes, and the point is — the clinical point is whether  
 23 it would have ramped up its production much faster if  
 24 Qualcomm was exercising market power and charging a lot  
 25 for the chipsets, because this may well be the result of

1 Qualcomm actually internalising the fact that there was  
 2 an outside option, self—supply, and then moderating its  
 3 prices. At one point, it seemed that not even doing so  
 4 it was able to obtain half of the amount.  
 5 Q. But Samsung had the incentive, did it not, to  
 6 self—produce as much as it could? We covered that  
 7 earlier on. If it could have ramped up production  
 8 earlier on, it would have done?  
 9 A. Not necessarily. Again, if I can ramp up production but  
 10 if the threat of ramping up production means that  
 11 third—party suppliers can bring their prices down, I may  
 12 take advantage of that and, again, there are other  
 13 issues, product differentiation, security of supply.  
 14 I think that this evidence does not help you or help  
 15 me. It simply says that there is a supply, self—supply,  
 16 the self—supply change over time and the actual pattern  
 17 may reflect the very fact that the self—supply  
 18 disciplines Qualcomm prices or not.  
 19 Q. Until 2015 the volumes are just too small for Samsung to  
 20 leverage the ability to self—supply. That is the  
 21 reality, is it not?  
 22 A. Look, I cannot say one thing or the other and I am not  
 23 sure that you can put it yourself either. I think that  
 24 we do not have evidence to say that. The volumes — the  
 25 question is: could the volumes have been higher if the

1 prices were different? I do not think that we have the  
 2 evidence to say one thing or the other.  
 3 Q. Can we move on to a different topic, which is the  
 4 materiality of CDMA for Samsung. Can we look at  
 5 {EAOE/22/41}, paragraph 116, please.  
 6 A. Paragraph 11?  
 7 Q. 116. Here you say that CDMA — 3G CDMA was a small  
 8 percentage of Samsung's needs during the term of  
 9 the 2009 licence. Do you see that?  
 10 A. Yes.  
 11 Q. I do not think the figure is — the percentage is  
 12 confidential any more, but we can all see it. It is  
 13 a small percentage?  
 14 A. Yes.  
 15 Q. The term of that license is nine—years, is it not,  
 16 through to 2018? That is the basis for that figure?  
 17 A. I think so.  
 18 Q. You say:  
 19 "I find it implausible that Qualcomm could have  
 20 leveraged those limited volumes ... to extract higher  
 21 royalties ... "  
 22 And so on.  
 23 But no one is suggesting in 2009 Qualcomm was  
 24 leveraging the volumes it might sell Samsung nine years  
 25 later. If it was leveraging, it was doing so on the

1 basis of what Samsung needed at that point in time and  
 2 imminently, was it not? That is obvious, is it not?  
 3 A. That is actually in contradiction with the CR's  
 4 prospective market power theory.  
 5 Q. Could you answer the question, rather than point out the  
 6 inconsistency with another aspect of the case?  
 7 A. I — that comes precisely because I never understood  
 8 what was the theory. What we have done in the  
 9 leveraging analysis is to look at sales at that point —  
 10 at the point in the time and then during the entire  
 11 duration of the agreement so I think I have been  
 12 consistent all throughout.  
 13 Q. I mean, can we bring up 261.10, please.  
 14 A. In any event, we can look at the percentage in that  
 15 particular year.  
 16 Q. We are going to look at that now. We are going to look  
 17 at 261.10 {ORI/261.10}. One can see in 2008 and 2009  
 18 Samsung is buying 34, 45, 50, 44 million CDMA units from  
 19 Qualcomm. Do you see that?  
 20 A. I can see that.  
 21 Q. I think you can take it from me that total — Qualcomm's  
 22 total shipments of CDMA at about that time, they were  
 23 around 200 million. I can show you the figure if you  
 24 want.  
 25 A. Where to?

1 Q. About 200 million. I can show you the figure, if you  
 2 want.  
 3 A. I am prepared to take it.  
 4 Q. So Samsung is selling about 1 in four 3G CDMA phones  
 5 using a Qualcomm chip so it is about a quarter of  
 6 Qualcomm's demand. So these are material numbers of  
 7 chips, are they not? These are ---  
 8 A. Material number of chips for Qualcomm, which means that  
 9 Qualcomm will be very careful in trying to threaten to  
 10 disrupt that supply. I am not sure that ---  
 11 Q. We are focusing on --- I think your point was about the  
 12 importance to Samsung, not about the importance to  
 13 Qualcomm.  
 14 A. Correct, but you gave me a number now for Qualcomm, one  
 15 out of four was your --- I mean, let us clarify. You  
 16 said one out of four CDMA chipsets for Qualcomm was  
 17 directed to Samsung. I said "Yes, that illustrates that  
 18 Samsung was a very particularly important ---  
 19 significantly important customer for Qualcomm". So  
 20 Qualcomm would be very careful in threatening Samsung.  
 21 Q. The point I am making to you, Dr Padilla, is that  
 22 in 2008/2009, whatever the position was by 2018, these  
 23 are material numbers of chips that are important to  
 24 Samsung, are they not? It is about ---  
 25 A. The question of whether they are important or not is

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1 a relative concept. We need to look at --- again, we  
 2 could go to figure 4 in my report and see what was the  
 3 relevance of 3G CDMA for Samsung in those years,  
 4 relative to the relevance of the other technologies,  
 5 because that is the argument that I am using that there  
 6 is substitution across these technologies.  
 7 Q. The figure of 7% in paragraph 116, it does not give  
 8 a fair impression of Samsung's dependence at the  
 9 relevant point in time, does it, which is 2008/2009?  
 10 A. Samsung's dependency, no, I think that it does, and,  
 11 again, we can go to figure 4, because I do not think  
 12 that if my memory serves me well --- let me just check,  
 13 if you do not mind? I do not want to waste your time,  
 14 but given that we are here, let me just ... (Pause)  
 15 If we go to figure 4, which is {EAOE/22/57}, CDMA  
 16 was important, but it was not as important as UMTS. It  
 17 is true that it becomes less and less important over  
 18 time. So if you want to tell me that I should have  
 19 restricted attention to 2009, then it is not 7%, it is  
 20 a higher number. If I look at the entire duration of  
 21 the agreement, it is 7% and in any event has always been  
 22 much less than 3G UMTS and if we apply the argument to  
 23 CDMA-LTE, then it is small, whether we look at a given  
 24 point in time or over the years.  
 25 Q. The comparison to UMTS does not tell you whether Samsung

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1 stands to lose material volumes of business if there is  
 2 an interruption to its 3G CDMA supply, does it?  
 3 A. Right, but that is not point that we are assessing with  
 4 market power. When we are assessing market power, what  
 5 we are saying, or market definition, what we are saying  
 6 is what happens if the CDMA price, the CDMA chipset  
 7 price, goes up? The response does not need to be closed  
 8 down the entire business --- the entire CDMA business of  
 9 Samsung. The response is: I buy a few less CDMA  
 10 chipsets and I buy a few more UMTS chipsets.  
 11 Q. We are back to that point, I understand.  
 12 Can we move on to an issue about market shares?  
 13 There was disagreement between you and Mr Noble about  
 14 whether market shares were persistent. Can we please  
 15 look at {Day7/85}, please, towards the bottom. I am  
 16 sorry, could we scroll on a bit. I might have the wrong  
 17 page. I am sorry, I have the wrong reference. Sorry,  
 18 Madam, I have the wrong reference.  
 19 THE CHAIR: It is all right.  
 20 (Pause)  
 21 THE CHAIR: Will now be a good time for a break?  
 22 MR WILLIAMS: We are almost there. Top of 85.  
 23 THE CHAIR: All right.  
 24 MR WILLIAMS: It is the bottom of page 84, top of page 85.  
 25 So I think what you are saying here is Apple is choosing

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1 Qualcomm because it is the best, but that does not mean  
 2 Apple could not have made different decisions because it  
 3 had substitution possibilities. That is your evidence,  
 4 I think, on this question about what we read into market  
 5 shares.  
 6 A. I said that, but I am not sure exactly what is the  
 7 context and what is your question, to tell you the  
 8 truth.  
 9 Q. So there was a debate between Mr Noble and you about  
 10 what we read --- whether the market shares are  
 11 persistent.  
 12 A. That is correct.  
 13 Q. Yes. Perhaps it would help to look at your graph about  
 14 this. So it is {EAOE/22/78}. Now, most --- for most of  
 15 the period covered by this graph, Qualcomm's market  
 16 shares based on your market definition are over 50% and  
 17 at times they are over 80% and I think you said in the  
 18 hot-tub that market shares are high?  
 19 A. Correct.  
 20 Q. So if I understood your point correctly, it is not that  
 21 the shares are not persistently high, if you just look  
 22 at the graph; I understood your point to be that they  
 23 are not high because Apple did not have a choice, they  
 24 are high because Apple made the choices it did. That is  
 25 what I understood your evidence to be. There were

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1 substitution possibilities . That was the language that  
 2 I was drawing attention to.  
 3 A. I mean, the problem that I think we are facing is that  
 4 qualitative estimates are always complicated, including  
 5 mine. So, you know, if I compare with the market share  
 6 of Google in the search engine, which is a market of 95%  
 7 more or less every single month of every single year for  
 8 the last 20 years, that is persistently high. The  
 9 market shares that you have here are high at points, are  
 10 high — but much less high at other points, indicating  
 11 that there have been losses of market share and  
 12 acquisitions of market share, and this is because we  
 13 have had different technologies and players have been  
 14 entering into the technologies before others and then it  
 15 has taken time to catch up, but these are much more  
 16 dynamic markets than the sort of market that I think it  
 17 is typically characterised as the one with persistently  
 18 high market shares. Again, I am using as reference the  
 19 search engine market.  
 20 The other point I make, excuse me, is that to some  
 21 extent the evolution is of market shares — Qualcomm  
 22 market shares is driven by the choices of a very few  
 23 customers and in particular by Apple and Samsung.  
 24 Q. So I am just going to go through each of the different  
 25 standards. I am not going to spend time on 3G CDMA

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1 because the Tribunal knows what the position was in  
 2 relation to 3G CDMA, where Qualcomm had pretty much the  
 3 whole market share.  
 4 Can we focus on LTE, please, which is {POE/21/38}.  
 5 This is Mr Noble's report. Now, the position we see  
 6 from this — and this obviously leaves out Samsung  
 7 self-supply but I am focusing on Apple at the moment —  
 8 is before 2013 we can see — well, before 2013 there are  
 9 very, very small volumes so I want to pick it up in 2013  
 10 and we can see Qualcomm has close to 100% of the market  
 11 and MediaTek has zero. Do you see that?  
 12 A. Yes. I was still surprised by the fact that you said  
 13 you were leaving self-supply because — Apple, because  
 14 I thought that was an acknowledgement for a specific  
 15 market but sorry for that. So, yes, 100%.  
 16 Q. So at this time Apple was completely dependent on  
 17 Qualcomm for LTE and we saw earlier on that Samsung was  
 18 in more or less the same position. It was taking over  
 19 90% or 90% of its shares from Qualcomm at this time as  
 20 well. We saw that earlier on?  
 21 A. Yes, but I disagree with you. I think that what you  
 22 want to say is that Apple at that point was completely  
 23 dependent on Qualcomm to the extent that it wanted to  
 24 produce LTE—CDMAs. It does not mean that Qualcomm —  
 25 Q. I am not talking about LTE—CDMA. This is all about LTE.

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1 A. It was completely dependent, no, it was not completely  
 2 dependent.  
 3 Q. We can see the market shares in 2013. Qualcomm has  
 4 almost 100% market share and MediaTek has, I think,  
 5 basically zero. So that is the position in 2013.  
 6 A. Let me look at the data in my report.  
 7 THE CHAIR: If you can just focus on this because  
 8 Mr Williams is asking questions about what you see from  
 9 this?  
 10 A. Yes, what I wanted look in my report is the extent to  
 11 which at that point, in 2013 which is the year that  
 12 Mr Williams is referring , what was the percentage of  
 13 phones that were LTE—compliant by Apple.  
 14 MR WILLIAMS: I am not asking about that, Dr Padilla. I am  
 15 asking you about the extent to which if Apple wanted to  
 16 buy LTE chips, it was dependent on Qualcomm.  
 17 A. If it wanted to buy LTE chips, yes, I agree.  
 18 Q. If we look forward from 2013 to 2015, you can see things  
 19 have moved on a bit but it is still — Qualcomm is still  
 20 at about 80% of the market and MediaTek is only at about  
 21 10%. Do you see that?  
 22 A. Yes, but at that point it becomes much more complicated,  
 23 because at that point the figures that we have here  
 24 are — I think it is value because this is Mr Noble, so  
 25 this is value, but anyway it is volume so this reflects

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1 the actual choices made by the different players,  
 2 including Apple. It does not tell us that Apple could  
 3 not have made a different choice because MediaTek did  
 4 not have the capacity to supply. As soon as you have  
 5 activity in supply by competitors, then they could have  
 6 sold more if they had won the socket.  
 7 Q. Apple cannot make a different choice at a point when  
 8 Qualcomm has essentially 100% of the market, can it?  
 9 A. That is why I considered in 2013 that it did not have an  
 10 option, but as soon as you move away from 2013, it has  
 11 options, that is what the graph is telling us,  
 12 especially the green line, and all that I am telling you  
 13 is that the particular level of the market shares at  
 14 that time is, if I may, endogenous. It is the result of  
 15 the decisions, among others, of Apple itself.  
 16 Q. But if we just focus on 2013.  
 17 A. Yes.  
 18 Q. Qualcomm does not have the persistently high LTE — or  
 19 does not have a share at that point and in the years  
 20 afterwards because of Apple's decisions. Qualcomm has  
 21 these market shares because, like most of the market,  
 22 Apple depended on Qualcomm. That is the reality, is it  
 23 not? Until Apple sponsored Intel in 2015, it was in the  
 24 same position as others, dependent on Qualcomm?  
 25 A. At that point in time, accepting as an assumption that

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1 MediaTek has zero because it was not able to deliver  
2 in 2013, which I think that we need to establish that as  
3 a fact, then it would be dependent in 2013, but it could  
4 have waited a few months when then MediaTek is present  
5 in the market and, given that there are no capacity  
6 constraints at that stage, it may have been able to  
7 shift.

8 Again, whether or not it would have done that would  
9 depend on the relative prices, on the relative quality,  
10 etc, but the graph does not allow us to reach one  
11 conclusion or the other.

12 Q. Can we look at {Day7/154}, please. Can you just read to  
13 yourself lines 11 to 21. (Pause)

14 A. Yes.

15 Q. So the evidence you give here is that a threat to  
16 withhold 100% of chips is a very credible threat. You  
17 refer to UMTS chips, but I am talking about LTE. It  
18 would allow the supplier to increase royalties very  
19 significantly. We have just seen that in 2013 Qualcomm  
20 could withhold what was essentially 100% of LTE chips  
21 for both Apple and Samsung. So, on your own logic, the  
22 threat to Apple and Samsung in 2013 was credible, was it  
23 not?

24 A. I think that there are a number of non sequiturs in your  
25 statement, if I may.

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1 The first one is to the best of my understanding  
2 there was no threat. Secondly, the threat that I am  
3 referring here is not dated. It is --- I am killing you  
4 from the UMTS market, not in a particular point in time,  
5 but forever and ever.

6 You have the option to delay or anything like that,  
7 so I think that we are talking about very different  
8 scenarios. Plus, as I mentioned before, the fact that  
9 in 2013 Qualcomm has 100% would require, you know, we  
10 will need to check that indeed MediaTek was not capable  
11 of providing, that Apple and Samsung did not have the  
12 option to delay for a few months and so on and so forth.  
13 So this hypothetical that was used for illustration,  
14 saying there is a point in which if you control  
15 everything, of course you have a credible threat, but  
16 what you have in the picture is something that is very  
17 distant from Qualcomm controlling everything. It is  
18 having 100% market share at a particular point in time  
19 for two types of chipsets when there are competitors  
20 that, at least a few months later, are in the  
21 marketplace.

22 So very different.

23 MR WILLIAMS: I think that is a convenient moment, Madam.

24 THE CHAIR: All right. We will take five minutes.

25 (3.13 pm)

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1 (Short Break)

2 (3.21 pm)

3 MR WILLIAMS: Dr Padilla, in the light of the discussion we  
4 just had, I now want to go back to a different topic  
5 which is bidding markets, which was addressed in the  
6 hot-tub. Can we please bring up {AB3/14}. It is at tab  
7 1 of the hard copy bundle you have there, page 14. Is  
8 that right? {AB1/3}, is that --- that is it. Page 14  
9 {AB1/3/14}. This is the CMA guideline dealing with  
10 bidding markets and it sets out criteria for a "bidding  
11 market". I do not think these criteria are addressed in  
12 your report, are they?

13 A. No, they are not.

14 Q. So we can see the criteria in this paragraph at the top  
15 of the page. The first criterion we see about four  
16 lines down is that tenders are large and infrequent so  
17 that suppliers are more likely to bid. Just pausing  
18 there, there was some discussion yesterday of whether  
19 Apple and Samsung were in a different position as far as  
20 that is concerned. Do you recall?

21 A. I do not recall.

22 Q. So I think the discussion was along the lines that  
23 Samsung has a large number of competitions --- models and  
24 a large number of competitions for different slots. Do  
25 you recall that discussion in contrast to Apple?

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1 A. Yes.

2 Q. I do not think you have said that every Samsung slot is  
3 a separate bidding market, have you?

4 A. No, I did not say that. It could be, but I did not say  
5 that. I am not defining markets at the slot level, but  
6 at the OEM level.

7 Q. So I think the focus here was on Apple, which has tended  
8 to let a smaller number of exclusive contracts. Have  
9 I understood that correctly?

10 A. No. I think that in both instances, both Apple and  
11 Samsung, my view is that what they do is that they have  
12 slots and then there is competition for those slots.  
13 I do not think that they are necessarily separate and  
14 I do not even define separate markets per slot, but  
15 there are discrete opportunities, more opportunities in  
16 the context of Samsung than Apple, but discrete  
17 opportunities.

18 Q. I am sorry to talk over you. I do not think saying there  
19 is competition for slots means there is a bidding market  
20 though, does it? We are looking at criteria for  
21 a bidding market here in the CMA guideline?

22 A. No, I am saying it is one of the criteria.

23 Q. Yes.

24 A. We can go through all of them, if you wish.

25 Q. I mean, if we focus on Apple, you can see one of the

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1 criterion , if we look about two—thirds of the way  
 2 through the paragraph — halfway through:  
 3 " ... suppliers are not differentiated (so that for  
 4 any particular bid, all suppliers are equally [well]  
 5 placed to win the contract)."  
 6 Then it goes on to say:  
 7 " ... if competition at the bidding stage is  
 8 effective , this currently high market share would not  
 9 necessarily reflect market power."  
 10 Now —  
 11 A. So I did not follow that. You are looking the first  
 12 bullet of this page "bidding markets"?  
 13 Q. I am now focusing on the words where it says "This is  
 14 more likely to be the case" and one of the criteria is  
 15 that all suppliers --- sorry:  
 16 " ... suppliers are not differentiated (so that for  
 17 any particular bid, all suppliers are equally well  
 18 placed to win the contract)."  
 19 Then it goes on to say --- to refer to the need for  
 20 competition at the bidding stage to be effective .  
 21 Do you see that?  
 22 A. Yes, and I agree with that proposition , but that does  
 23 not mean that there is no differentiation whatsoever.  
 24 Q. I have not asked you any other question yet, Dr Padilla?  
 25 A. Excuse me.

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1 Q. The exclusive deal that Apple did in 2011 and indeed  
 2 in 2013 included 3G CDMA, did it not?  
 3 A. I believe so.  
 4 Q. We have just seen that in 2013 Qualcomm essentially had  
 5 100% share of the market for LTE, we saw that, did we  
 6 not?  
 7 A. Correct.  
 8 Q. So there was only one supplier that could offer Apple an  
 9 exclusive contract that included 3G CDMA and then LTE  
 10 in 2013, was there not, and that was Qualcomm?  
 11 A. Again, in that particular year, if the launch was that  
 12 particular year, Samsung --- sorry, Qualcomm would have  
 13 been in a strong position and there is a fact that will  
 14 need to be checked which is whether MediaTek was able to  
 15 deliver , given that it entered the market a few months  
 16 later . I am not able to opine on that.  
 17 Q. I am going to move on now to 5G and with some  
 18 trepidation , I am going to talk about prospective market  
 19 power, but I am going to try and avoid the language and  
 20 I am going to try and talk about the market position  
 21 in April 2019.  
 22 A. Okay.  
 23 Q. So the first 5G devices came on the market in  
 24 March 2019, I think. Does that sound about right?  
 25 A. I think that that is correct. That is correct.

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1 Q. So April 2019 was very, very early days, but the product  
 2 did actually exist on the market. There was a 5G chip  
 3 in a 5G phone at the time?  
 4 A. I think it was Samsung that first released the 5G  
 5 phones.  
 6 Q. Yes, the first ---  
 7 A. At some point in 2019.  
 8 Q. So although we have ended up talking about prospective  
 9 market power, by April 2019 at least this was a real  
 10 market, it was not a prospective market?  
 11 A. Yes, there were chipsets, yes.  
 12 Q. It is in the nature of these projects that there is  
 13 a decision about which chips to use before the chips are  
 14 in commercial supply and considerably in advance of the  
 15 handset coming on the market. That is right, is it not?  
 16 A. The choice is for the OEMs to make. Some of them  
 17 anticipate. Some of them do not anticipate much.  
 18 Q. Yes, but they do not anticipate two weeks before the  
 19 phone goes on the market, do they?  
 20 A. I doubt it. I am not an expert. I think that --- but  
 21 I doubt that it would be two months before.  
 22 Q. I mean, in April 2019, the prospective aspect for Apple  
 23 is who is going to be able to deliver the chips I need  
 24 in April --- sorry, in late 2020. That was Apple's  
 25 decision at that point in time. Do you agree?

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1 A. Assuming that late 2020 was set in stone and it was not  
 2 part of the negotiation.  
 3 Q. Yes. So I am going to cut this a bit short. You have  
 4 seen the market shares in Mr Noble's report for 5G, have  
 5 you not?  
 6 A. Yes, I do not --- I have not memorised them.  
 7 Q. Okay. Perhaps I will just bring them up. It is  
 8 {POE/21/42}. So you can see where the line sits. This  
 9 actually includes Samsung self—supply at this point.  
 10 A. Correct.  
 11 Q. Just to clear something up, you said a few times last  
 12 week that MediaTek had become the leader, I think,  
 13 market leader by 2023, but certainly we can see from  
 14 this MediaTek is not and has never been the market  
 15 leader in 5G, has it?  
 16 A. I believe that I was correct. I do not remember exactly  
 17 the data that I was using. It is a factual issue that  
 18 we can check in due course and that is my recollection.  
 19 Q. So what I want to put to you is the Class  
 20 Representative's case. I am not expecting you to agree  
 21 with the case, but I want to put it to you. What we say  
 22 is that in April 2019, Qualcomm was way ahead of the  
 23 competition on 5G. Qualcomm knew that. Apple knew  
 24 that. That was the basis on which they entered into the  
 25 suite of agreements they entered into. If that is

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1 right, there is nothing conceptually novel about calling  
 2 that market power, is there?  
 3 A. The point — let us go to the facts. So what you are  
 4 telling me is Apple launches in 2020. In 2020, MediaTek  
 5 had chipsets in the market, not chipsets that were going  
 6 to be in the market, chipsets that it was selling in the  
 7 market. I do not think that they had those chipsets for  
 8 two weeks either. If they were already selling them  
 9 in 2020, it is because they were ready for somebody at  
 10 the point in time in which that somebody could acquire  
 11 those chipsets and that must have been 2019, a bit  
 12 earlier. So in 2019 Apple could choose to go with  
 13 Qualcomm or to go with MediaTek.  
 14 Q. I am sorry, Dr Padilla, we are short of time and I put  
 15 to you very simple point, which was that on the facts,  
 16 as the Class Representative advances them, as  
 17 at April 2019, it is not conceptually novel to say that  
 18 Qualcomm had market power in 5G in a world where it had  
 19 a 77% market share and it was the undisputed market  
 20 leader?  
 21 A. I disagree with you, because I think that what you are  
 22 looking at is at the market share which is the result of  
 23 the choice of the company that you said that was subject  
 24 to that market power.  
 25 THE CHAIR: That is what you call endogenous?

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1 A. Endogenous.  
 2 MR WILLIAMS: Can we look at {EAOE/22/84}, please. 256.  
 3 Maybe we need to start on the previous page, just so you  
 4 can read it {EAOE/22/83}. I do not know if you have  
 5 a hard copy. It might be easier for you to look in your  
 6 hard copy.  
 7 A. 256 in —  
 8 Q. It is page 83, I think. 256(b).  
 9 A. Yes.  
 10 Q. So here you refer to a Qualcomm internal document  
 11 which — it is inner ring confidential so I will not  
 12 read it out or will not say what it says. It is  
 13 footnote 371. You refer to a document which you say  
 14 contradicts Mr Noble's assessment of Qualcomm's market  
 15 power at that time. Do you see that point?  
 16 A. Let me just read it.  
 17 Q. Please refresh your memory, yes. (Pause)  
 18 I want to make a simple point about it.  
 19 A. I have read it.  
 20 Q. That document dates from May 2018.  
 21 A. Correct.  
 22 Q. The Tribunal has seen evidence of how Qualcomm's  
 23 assessment of Intel and other market players evolved  
 24 over time. Would you agree that what mattered was the  
 25 assessment by April 2019, not a single point

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1 in May 2018?  
 2 A. I think that I would not be able to say April 2019, May  
 3 or March or a little bit before or a little bit later,  
 4 but I agree that what is important is, from a factual  
 5 perspective, to look at whether Apple thought it was  
 6 dependent, Qualcomm knew that Apple thought it was  
 7 dependent and Apple knew that Qualcomm knew that it  
 8 thought it was dependent. So, in other words, all this  
 9 was common knowledge.  
 10 Q. In April 2019. That is the point I am putting to you.  
 11 A. I am not even sure why it is so important April 2019. I  
 12 suppose the negotiations between Apple and Qualcomm took  
 13 some time and they were debating and — so I am happy  
 14 with Apple 2019, but I am not sure exactly what is  
 15 sanctified — what is sacred about that date to tell you  
 16 the truth.  
 17 Q. The point I am putting to you is that the position moved  
 18 on a lot after May 2018. That is all I am saying.  
 19 A. I do not know. It may be that — it depends on what is  
 20 the point in time in which Apple felt that it needed to  
 21 start acquiring chipsets or working with somebody to  
 22 develop chipsets and, as I said, I did not do an  
 23 analysis of documents so I do not think that I am in  
 24 a position to provide an answer.  
 25 I was simply pointing out that as of 2018, Apple

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1 seemed to believe that it was not dependent. What you  
 2 are saying is that then they believe convinced that they  
 3 were dependent. Fine. It is for the court to decide.  
 4 Q. I think we can move on from that point now.  
 5 Can we now look at your fifth report, please,  
 6 {IRE/25/5}. This is about Apple's alternatives at the  
 7 time of that decision.  
 8 A. Yes.  
 9 Q. You talk about Samsung and MediaTek as potential  
 10 alternatives. I am not going to debate with you the  
 11 merits of MediaTek, because that is a factual question  
 12 and the Tribunal has heard from Mr Katouzian about that.  
 13 I do want to talk about Samsung because that does raise  
 14 some economic issues.  
 15 Can we just put this in context, please, at 261.16,  
 16 which shows us 5G volumes in the market {ORI/261.16}.  
 17 If we see "Shipments to all OEMs", just below halfway  
 18 down the page, we can get a picture. In 2019 the  
 19 volumes are tiny, but we can see that things really ramp  
 20 up after that very quickly. Do you see that?  
 21 A. Yes.  
 22 Q. Actually, the take-up is very rapid if you look at the  
 23 difference between 2019 and 2020. Do you see that?  
 24 A. Yes.  
 25 Q. Just to pick this up as we go through, the position

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1 in 2019, if you look at shipments to all OEMs, MediaTek  
 2 is zero in 2019 and then it comes into the market  
 3 in 2020, but Qualcomm is still many, many times larger,  
 4 as we saw in the other graph. Do you see that?  
 5 A. Yes, except that I disagree with the expression "it  
 6 comes into the market". 2020 they made shipments. The  
 7 chipsets must have been developed before. I do not  
 8 think you develop a chipset in two weeks, as you said.  
 9 Q. Okay. Just focusing on Samsung, because, as I said,  
 10 that is where I want to look at this. If we look at the  
 11 percentage of shipments from Qualcomm to Samsung, we can  
 12 see --- I mean, it is consistently --- if we look at the  
 13 shipments to Samsung, can you see it is consistently 50%  
 14 from 2020? Do you see that?  
 15 A. Less than 50%. I mean, it is 50% in 2020, but it  
 16 becomes less over time; no?  
 17 Q. The shipments from Qualcomm?  
 18 A. So shipments ---  
 19 THE CHAIR: Well, it is hovering around that.  
 20 A. Yes. That is okay.  
 21 MR WILLIAMS: Focusing on Samsung self-supply, the pattern  
 22 we see is that the volumes go up, but actually the  
 23 proportion of the supply is going down. Do you see  
 24 that?  
 25 A. Yes, that seems correct.

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1 Q. So, I mean, that seems to suggest that Samsung could not  
 2 meet its own needs, rather than meet the needs of  
 3 another major OEM, does it not, if we look at that  
 4 pattern of Samsung supplying itself?  
 5 A. No, I do not think so. I think that is consistent with  
 6 that explanation and it is consistent with other  
 7 explanations in terms of differences in prices,  
 8 differences in quality, the emergence of MediaTek, there  
 9 are a number of potential explanations that are  
 10 consistent with those figures.  
 11 Q. Can we look at the line shipments to all OEMs and  
 12 Samsung. Can you see the numbers of shipments that it  
 13 is making there?  
 14 A. Yes, I see that.  
 15 Q. You can see the most it shipped in a single year is just  
 16 under 60 million. Do you see that in 2023?  
 17 A. 2023 is 58.2.  
 18 Q. That is right.  
 19 A. Of which it seems that ---  
 20 Q. Can we look at the top line and look at what Apple's  
 21 requirements were every year.  
 22 A. Apple needs 206.6?  
 23 Q. So Apple needs 200 million chips a year every year  
 24 basically, does it not?  
 25 A. That is what it was purchasing, yes.

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1 Q. I mean, the reality is Samsung's not a credible supplier  
 2 for Apple's 5G chip needs, is it? For two  
 3 reasons: first of all, the volumes are nowhere near big  
 4 enough and, secondly, if Samsung could make enough of  
 5 these chips, it would be using them itself rather than  
 6 sell them to Apple? Is that not the reality?  
 7 A. I think that both statements are incorrect. I think  
 8 that, again, you are forgetting that we are talking  
 9 about market definition. The question is if Qualcomm  
 10 had increased its prices, could have lost some volume,  
 11 not all volume. It is only enough that it would have  
 12 lost some volume to Samsung and the question then will  
 13 be --- I am not sure exactly what "some volume" means but  
 14 suppose there is 10%, could Samsung have moved from 58.2  
 15 to 78.2? I do not have the answer. I do not know, but  
 16 that is what would need to be investigated.  
 17 Q. I was not talking about market definition but that does  
 18 not matter.  
 19 Can we move on to a different topic now. In the  
 20 hot-tub do you remember that there was discussion about  
 21 why Qualcomm might be incentivised to put up licensing  
 22 royalties rather than chipset prices and vice versa? Do  
 23 you remember that discussion?  
 24 A. Yes.  
 25 Q. One of the points ---

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1 A. You wanted to ask a question about that and in end you  
 2 were not allowed I think.  
 3 Q. That is right. I am going to ask you, Dr Padilla.  
 4 A. Sorry.  
 5 Q. I am glad that my line of questioning is so discrete  
 6 that you cannot see where I am coming from.  
 7 So you said in your evidence that the buyer is the  
 8 same on both sides of the transaction and I think you  
 9 were talking about a situation where an OEM is both  
 10 buying chips from Qualcomm and negotiating a royalty.  
 11 In that situation, the customer is the same on both  
 12 sides. That is it right, is it not?  
 13 A. I think so; no?  
 14 Q. But the royalties, the set royalties, are not only paid  
 15 by Qualcomm to chipset customers, are they?  
 16 A. No, the royalties are paid by all chipset manufacturers.  
 17 Q. They are paid by ---  
 18 A. Sorry, by OEMs for all the chipsets that they purchase  
 19 or for all the phones that they manufacture.  
 20 Q. It is anyone who makes a device conforming to the  
 21 standard?  
 22 A. Yes, that is correct.  
 23 Q. So I am going to put something to you which is again our  
 24 case and then put something to you on the basis of our  
 25 case to see if you agree with the logic.

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1 So our case is that Qualcomm uses the conduct that  
 2 is at issue to inflate royalties and point 2 is that  
 3 that also has the effect of dragging up royalties across  
 4 the market for all licensees, including those that buy  
 5 chips from other manufacturers. You are aware that we  
 6 make both of those points?  
 7 A. I am aware of your theory of harm, but it is — but I do  
 8 not think that — well, ask your question.  
 9 Q. I think that is for the best, yes.  
 10 So if you accept those two points, then Qualcomm is  
 11 not just going to benefit from inflated royalties paid  
 12 by its own chipset customers, is it? It is going to  
 13 benefit from higher royalties from customers who do not  
 14 pay the chipset price. That is right, is it not?  
 15 A. Yes, but there is a fundamental problem so let me  
 16 explain what the fundamental problem is with an  
 17 illustration. So let us suppose that what we are saying  
 18 is Qualcomm has a monopoly in LTE—CDMA, let us say,  
 19 okay, but it does not want to exploit that monopoly in  
 20 LTE—CDMA by charging higher chipset prices because it  
 21 fears (inaudible). So it increases royalties and those  
 22 royalties, according to the CR, are going to be paid by  
 23 all chipset makers, except that, according to the CR  
 24 itself, there are no competing CDMA—LTE chipsets. So  
 25 that is the problem. The problem is that you cannot

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1 have it both ways.  
 2 You cannot say that there are no competing chipset  
 3 manufacturers and, at the same time, saying that they  
 4 are going to be taxed, because they do not exist  
 5 according to your theory.  
 6 Q. The simple point I am putting to you is that if  
 7 royalties are inflated at the — SEP royalties are  
 8 inflated, then higher royalties are going to be paid by  
 9 people who are not buying Qualcomm chips?  
 10 A. The only point I am making is that they can only be  
 11 inflated if you have credible threat, that is that there  
 12 are no alternatives, and therefore there are no  
 13 alternative chipset manufacturers that are going to be  
 14 taxed by the increased royalties.  
 15 Q. I think we are straying outside the bounds of my narrow  
 16 question. I think we are going to have to move on in  
 17 the interests of time.  
 18 There is an issue between you and Mr Noble about the  
 19 materiality for Qualcomm of losing Apple chipset  
 20 revenues. I just want to touch on that issue. Could we  
 21 please look at {POF/480/3}. This is a Qualcomm internal  
 22 email from mid—2014. I do not know whether you had ever  
 23 seen this before it was notified to you?  
 24 A. No, I had not seen it before.  
 25 Q. Could you read the paragraph in the middle that says:

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1 "Apple. The biggest upside ..."  
 2 (Pause)  
 3 A. I have read it.  
 4 Q. So in this email, Jim Thompson, he is writing to  
 5 Steve Mollenkopf, who is now the CEO, and Jim Thompson,  
 6 I believe, is either head of engineering or chief  
 7 technical officer. He is in a technical role. He says  
 8 that he knows Apple wants to bring in Intel because of  
 9 the licensing issue. Do you see that?  
 10 A. That's what he says, yes.  
 11 Q. It looks like they are talking about Apple's concerns  
 12 about the level of the royalty. That is what is look  
 13 like from the context; do you agree?  
 14 A. That seems to be the discussion and Apple has been  
 15 opposing all royalties from all licensors over the years  
 16 so I am not surprised that they thought so.  
 17 Q. What this email says is that Qualcomm is not going to  
 18 give way on the licensing issue and in fact they are  
 19 going to take a harder line. Do you agree that is what  
 20 the email says?  
 21 A. Yes.  
 22 Q. Now, the issue that you focus on, and which has come  
 23 into focus in this debate with you and Mr Noble, is the  
 24 materiality of the loss of chipset revenue, but do you  
 25 agree that Qualcomm did not look at that in isolation?

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1 We can see that from this email. It is trading off the  
 2 effect of this dispute on chipset revenues and the  
 3 effect on its licensing revenues. Do you agree with  
 4 that?  
 5 A. I think that you are reading too much into that  
 6 sentence. I am not able to take a position.  
 7 Q. I mean, we know that Qualcomm was prepared to let Apple  
 8 walk away as a chipset customer, rather than make any  
 9 concession on the royalty. We know that much, do we  
 10 not?  
 11 A. Well, we know that this engineer, who I had never  
 12 encountered before, who may be very important or not  
 13 very important — it is for the court to determine —  
 14 has an opinion.  
 15 Q. I mean, can I put this to you and see whether you can  
 16 answer it: I mean, looking at this email, if Qualcomm  
 17 had been seriously concerned about losing chipset  
 18 revenues, then it could have made concessions on the  
 19 licensing disagreement with Apple, could it not? That  
 20 would be one way of saving the chipset revenues.  
 21 A. Again, I am not sure that I understand that they think  
 22 that in equilibrium they are going to lose anything and  
 23 this is the opinion of the engineer.  
 24 Look, I am not able to provide you with  
 25 corroborating or I am not able to say that this supports

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1 or criticises anything. It is an opinion and I do not  
 2 know in which context, what was the response, what were  
 3 the questions that were considering.  
 4 Q. Can I ask you this: would you agree that in thinking  
 5 about Qualcomm's incentives in this situation, whether  
 6 to let Apple walk away, we cannot just look at the loss  
 7 of chipset revenues in isolation, we have to look at its  
 8 incentives on the licensing side too, because that is  
 9 what Qualcomm seems to be doing?  
 10 A. That is what this engineer believes and I can understand  
 11 the logic because it is the single --- it is the single  
 12 customer, as we are saying. They are buying both  
 13 things. So I think that, yes.  
 14 Q. I am going to now move on to leveraging. Can we look at  
 15 {EAOE/12/6}. Can we read, please, paragraph 2.1 and  
 16 then 2.2. (Pause)  
 17 A. Excuse me, I lost track. Paragraph 2.1 and 2.2 in?  
 18 Q. In your third report.  
 19 A. Yes.  
 20 Q. Do you see footnote 8? Can you see that cross-refers to  
 21 the Class Representative's reply?  
 22 A. Qualcomm's defence, 20 --- yes.  
 23 Q. Yes. Paragraph 25(c). So can we then look at that,  
 24 please, at {ORA/3/17}. Just read subparagraph (c) to  
 25 yourself. (Pause)

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1 A. Okay.  
 2 Q. So that paragraph is just saying that the sums that  
 3 Qualcomm charges do not reflect a fair return, but they  
 4 reflect its market power. Is it not saying that every  
 5 OEM was charged a sum that was proportionate to  
 6 Qualcomm's market power. It does not say that, does it?  
 7 A. You are questioning the footnote?  
 8 Q. I am questioning the paragraph of the pleading which you  
 9 say forms the basis of the Qualcomm --- of the Class  
 10 Representative's theory of harm and which you say leads  
 11 you to conclude that the --- that on the Class  
 12 Representative's theory of harm royalties would be in  
 13 proportion to an OEM's dependence on Qualcomm. I am  
 14 just saying the premise for that understanding is just  
 15 incorrect, it is a misreading of this paragraph, is it  
 16 not?  
 17 A. Let me consider again because you may understand I do  
 18 not remember this footnote and this paragraph so let me  
 19 read it again. There are months distance from there to  
 20 here.  
 21 Q. Does this paragraph of the reply, as you read it now,  
 22 say that royalties would be expected to be proportionate  
 23 to an OEM's dependence on Qualcomm?  
 24 A. Sorry, my reading now that I have read it again, it  
 25 confirms my interpretation. You are saying --- the

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1 paragraph in question says that the NLNC policy  
 2 inherently involves Qualcomm charging licensing sums  
 3 that reflect Qualcomm's market power in the supply of  
 4 chipsets. So it has to be related to the supply of  
 5 chipsets. If you take my OEM-specific market  
 6 definitions, it would be the supply of chipsets to Apple  
 7 and the supply of chipsets to Samsung.  
 8 If you take Mr Noble's broad market definition, then  
 9 what the --- it is alleged is that Qualcomm is leveraging  
 10 its market power in the supply of chipsets on to  
 11 royalties.  
 12 Q. But not ---  
 13 A. With all due respect ---  
 14 Q. But not in proportion to an individual OEM's dependence  
 15 on Qualcomm. That is the only point I am putting to  
 16 you.  
 17 A. But the leveraging analysis looks at dependency OEM by  
 18 OEM, but it also has a robustness test in which we are  
 19 looking at the position of Qualcomm in chipset markets  
 20 more broadly. So it is testing this proposition under  
 21 the market definition proposed by Mr Noble and under my  
 22 market definitions. When you are saying "in  
 23 proportion", I think that there is something that I need  
 24 to clarify.  
 25 The leveraging analysis does not say that a 10%

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1 increase in dependency translates into a 10% higher  
 2 royalty. It does not impose a linear relationship or  
 3 a non-linear relationship or whatever form of  
 4 relationship. It simply says that if Qualcomm is  
 5 stronger in chipsets, it should be able, according to  
 6 the theory of harm, to extract higher rents in  
 7 royalties, in whatever proportion or relationship.  
 8 Q. We saw paragraph 2.2, but we will deal with that in  
 9 submissions later on.  
 10 Can we look at Mr Noble's ninth report {EAOE/17/8}.  
 11 You are familiar with this. It is Mr Noble's ninth  
 12 report.  
 13 A. I have read it in due course, yes. I have not memorised  
 14 it either so I will follow you.  
 15 Q. 2.6, 2.8, 2.9, they set out a whole range of factors  
 16 that affect royalties which may differ across OEMs and  
 17 they are mostly taken from Mr Melin who is Qualcomm's  
 18 industry expert. As far as you are aware, is there any  
 19 disagreement about the point that Mr Melin identifies?  
 20 A. As far as I am aware.  
 21 Q. Mr Melin identifies all of these factors ---  
 22 A. No, I have no disagreement. I agree with those factors.  
 23 Q. So if the chipset royalty is affected by all of these  
 24 different factors and the effect of NLNC is to push the  
 25 rate up from where it would otherwise be, you would not

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1 expect to see a straight—line relationship between  
 2 dependence and royalties, would you? You would just  
 3 expect to see that royalty is higher than it would be in  
 4 the counterfactual for any OEM. Do you accept that?  
 5 A. I never said that there has to be a linear relationship.  
 6 All that I said is that according to your theory of  
 7 harm, there is one particular factor that is very  
 8 relevant, which is chipset market power and that that  
 9 has to be reflected in the data and it is not, but  
 10 I never postulated a linear relationship and I would  
 11 agree with you there is not necessarily a linear  
 12 relationship. It could be exponential, logarithmic,  
 13 hyperbolic, cubic.  
 14 Q. But ---  
 15 A. Quadratic.  
 16 Q. I'll keep going with that line of analysis, I mean, if  
 17 royalty rates are not in proportion to dependence, then  
 18 you do not learn anything about the Class  
 19 Representative's case from the level of the royalty paid  
 20 by Apple and Samsung relative to what other OEMs paid,  
 21 do you? They may have paid lower royalties than others  
 22 did both with and without the conduct. Do you agree  
 23 with that?  
 24 A. I am not sure that I understand the question. Could you  
 25 repeat it, sorry?

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1 Q. One of the points you make is that Apple and Samsung  
 2 paid lower royalties than others.  
 3 A. Yes.  
 4 Q. If the theory of harm is simply that the conduct  
 5 inflated the level of royalty above that in  
 6 a counterfactual ---  
 7 A. That is confidential.  
 8 Q. I was not going --- I was going to go into numbers in  
 9 confidential.  
 10 MR WILLIAMS: I am just wondering, Madam, whether I go into  
 11 closed session now.  
 12 THE CHAIR: All right. Let us do that.  
 13 (3.56 pm)  
 14 In Private  
 15 (3.56 pm)  
 16 THE CHAIR: Which level of closed session do you want to go  
 17 into?  
 18 MR WILLIAMS: 1782 at first, Madam.  
 19 THE CHAIR: Is that 1782 external or internal?  
 20 MR WILLIAMS: Not external yet, no. I am going to get to  
 21 external briefly.  
 22 THE CHAIR: So is that 1782 in --- there are several levels  
 23 of 1782. 1782 in—house counsel, is that what you are  
 24 going to?  
 25 MR WILLIAMS: In sorry, Madam, I have slightly gone out of

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1 my sequence now.  
 2 THE CHAIR: It is all right. I am just trying to work out  
 3 what level of confidential ring we are in.  
 4 MR WILLIAMS: I was going to in—house counsel at this stage.  
 5 THE CHAIR: In—house counsel.  
 6 MR WILLIAMS: I will get to the external eyes only at some  
 7 point.  
 8 THE CHAIR: All right.  
 9 MR WILLIAMS: If Apple and Samsung pay lower royalties than  
 10 other OEMs, and the theory of harm is simply that they  
 11 pay higher royalties than they would have paid in the  
 12 counterfactual, the fact that they pay those royalties  
 13 that --- those lower royalties does not tell you anything  
 14 about whether they suffered an overcharge, does it?  
 15 They may well have suffered --- paid lower rates with and  
 16 without the infringing conduct?  
 17 A. That is correct and I think that I was not referring to  
 18 the level of royalties as evidence contrary to that  
 19 aspect of the theory of harm. Having said so given the  
 20 importance that the indirect effect has taken during  
 21 these discussions, yes, the fact that they pay --- they  
 22 pay significantly lower undermines the indirect effect  
 23 that has been so much emphasised by Mr Noble in these  
 24 sessions.  
 25 Q. So I am now going to go back, Madam, to an issue we

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1 covered earlier on, which was the ability of Qualcomm to  
 2 discipline Apple in relation to 3G CDMA.  
 3 Can we please look at {POF/223}, which I think is  
 4 tab 11 in the hard—copy bundle. Can we please look at  
 5 page 5 {POF/223/5}. Can you read point 6, please. Now,  
 6 it is quite factually dense this, but the point I am  
 7 going to put to you is based on the last paragraph.  
 8 (Pause).  
 9 THE CHAIR: Can you just provide a little bit of context.  
 10 MR WILLIAMS: I am so sorry, Madam. This is an internal  
 11 Apple email, dating from 2010, and it is discussing here  
 12 what we have called the "CDMA adder" in the context of  
 13 this paragraph. It is Apple considering its chipset  
 14 supply options.  
 15 A. Mm—hmm.  
 16 Q. The only point I wanted to put to you: we talked about  
 17 how to interpret the evidential position in relation to  
 18 substitutability between UMTS and CDMA. It looks from  
 19 this last paragraph as though Apple thought it had  
 20 absolutely no ability to discipline Qualcomm's pricing  
 21 of CDMA. It says:  
 22 "The odds of this happening are zero ... textbook  
 23 monopolist pricing... "  
 24 This is inconsistent with the idea that Apple though  
 25 it had any ability to discipline Qualcomm CDMA pricing,

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1 is it not?  
 2 A. So this email indeed would suggest that there is no —  
 3 that this — whoever wrote this and in the context that  
 4 wrote this consider that Qualcomm could extract monopoly  
 5 prices for CDMA chipsets. It is interesting to think  
 6 about the relevance of this for the CR's theory of harm,  
 7 because it basically means that there is — that all  
 8 rents were extracted with the chipset, which means that  
 9 there was no need to leverage onto royalties and given  
 10 that there is disagreement among economists that there  
 11 is only one monopoly rent, that would suggest that  
 12 according to Apple that was it.  
 13 Q. On the point I asked you about in terms of Apple's  
 14 ability to discipline Qualcomm, we agree that this  
 15 appears to suggest Apple did not think it had any  
 16 ability to discipline Qualcomm's CDMA pricing?  
 17 A. This is what this individual, whoever he is, in the  
 18 context of the conversation, thought. All that I am  
 19 saying is that under the theory — the CR theory of  
 20 harm, this 5% — this \$5 adder cannot be a monopoly —  
 21 cannot reflect monopoly pricing chipset, because there  
 22 is then the theory of harm would collapse because the  
 23 theory of harm says that those rents, those monopoly  
 24 rents, are extracted through royalties, not through  
 25 chipset prices. Again, one cannot have it both ways.

1 Q. While we are in closed session, I just want to go back  
 2 to the leveraging analysis. We are now going to go into  
 3 external advisers only. (Pause)  
 4 Can we look at {EAOE/12/16}, please. So this is  
 5 a graph and you say that this shows that Apple's rates  
 6 did not move in line with its dependence on Qualcomm.  
 7 You say that undermines the theory of harm?  
 8 A. Correct.  
 9 Q. So I am going to put a different hypothesis to you about  
 10 how we read this graph. I am going to have to ask you  
 11 bear with me while I put a number of propositions to you  
 12 and then you can respond, if that is all right?  
 13 A. That is okay.  
 14 Q. There are five points.  
 15 So point 1 is Qualcomm gave Apple rebates against  
 16 the royalty rate in 2007, you are familiar with that,  
 17 before Apple was buying any chips, but it did that for  
 18 its own commercial reasons because it secured terms  
 19 which made it unlikely that Apple would use a rival  
 20 technology. So that is point 1.  
 21 Apple is not buying any chips but Qualcomm has  
 22 commercial reasons to give them a discount.  
 23 Point 2 is that by 2009, Apple had decided to launch  
 24 on CDMA networks. It needed Qualcomm chips. It wanted  
 25 to renegotiate the royalty rate, but it could not

1 because it feared disruption to chipset supply which it  
 2 was then receiving from Qualcomm. So that is point 2.  
 3 Point 3 is that Apple remained dependent on Qualcomm  
 4 until 2015/2016.  
 5 Point 4 is that it was not dependent on  
 6 Qualcomm 2016 to 2018 and in that period it litigated  
 7 with Qualcomm but did not get a reduction in the rate.  
 8 Point 5, as you know, is that by 2019 it was  
 9 dependent on Qualcomm again. It negotiated a new  
 10 licence and a settlement and it was all effectively at  
 11 the old rate.  
 12 So thank you for your patience. I mean, if what  
 13 I have just set out are the facts, that graph is  
 14 consistent with those facts, is it not?  
 15 A. That is for the court, frankly. I think that I was  
 16 trying to listen attentively, but I think that there  
 17 have been lots of fact I would need to digest. I do not  
 18 think that this alternative explanation was presented by  
 19 Mr Noble in his response and I have the opportunity to  
 20 consider it so I do not think that I can — I am in  
 21 a position to provide a response now. There are lots of  
 22 factual issues that you raised that the court would have  
 23 to determine.  
 24 I understand that what you are basically saying is  
 25 that you agree with the points that I draw in terms of

1 the affected ad valorem. Whether you are prepared to  
 2 look at is this, that you agree with the dependency  
 3 calculation and that you have a different narrative. It  
 4 is for the court. I am sorry. I would have liked to  
 5 help but I am not in a position to.  
 6 MR WILLIAMS: You have responded. That is for you to  
 7 respond.  
 8 While we are looking at the graph, there is a point  
 9 of detail. We can see that the settlement is at roughly  
 10 the same rate as the licences. We can see that, can we  
 11 not?  
 12 A. Sorry, say it again?  
 13 Q. The settlement in 2019, which is the back royalties,  
 14 that is at roughly the same level as the licences?  
 15 A. Correct.  
 16 Q. Can we look at page 10 of this report, please, and  
 17 specifically footnote 23 on page — sorry, it is  
 18 paragraph 2.8(d) and footnote 23 on page 10  
 19 {EAOE/12/10}. What you say in the footnote, as  
 20 I understand it, is that the figures you derive for the  
 21 settlement are very similar to the licence rate and so  
 22 that makes you think it is a reliable calculation of the  
 23 back royalties. Is that right?  
 24 A. Correct.  
 25 Q. The reason you expect them to be similar, I assume, is

1 that if Apple agrees to pay a royalty under a licence,  
 2 it is going to expect to pay something comparable under  
 3 a settlement. That is the logic, is it? It is going to  
 4 expect to have to pay the same rate going backwards  
 5 roughly or something comparable?  
 6 A. What I expected is that they would pay no more than they  
 7 would have instructed the CMs not to pay. So, I mean,  
 8 here there is an anchor that does not exist in other  
 9 situations where you do not know exactly what would be  
 10 the rates for past sales. Here this settlement concerns  
 11 the fact that during a period of months, Apple had  
 12 instructed the CMs not to pay and now it was  
 13 compensating Qualcomm for the amounts not paid. All  
 14 that I am saying is that the amount that I calculated  
 15 was in a sense commensurate with what the CMs had not  
 16 paid which seems to suggest that calculation was  
 17 correct.  
 18 Q. Yes. But I think the logic is you would expect to see  
 19 some level of similarity in the numbers and that gives  
 20 you comfort ---  
 21 A. There, yes, for that particular instance and because of  
 22 the settlement and it is not similar across situations,  
 23 it is not settlement with before or after; it is with  
 24 the amounts not paid.  
 25 Q. Yes, I understand.

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1 I think that is everything I needed to do in  
 2 confidential, madame. I just have a few more points in  
 3 open.  
 4 THE CHAIR: All right. So we will go back to ---  
 5 MR WILLIAMS: I do not know if I could ask for the same  
 6 clarity from my learned friend as to how long he thinks  
 7 he might need in re-ex so that I can cross-examine  
 8 until ---  
 9 MR JOWELL: At the moment, I just have one question.  
 10 THE CHAIR: All right.  
 11 MR WILLIAMS: 25 past at the moment.  
 12 THE CHAIR: 25 past.  
 13 MR WILLIAMS: I am grateful, Madam. Back in open.  
 14 (4.08 pm)  
 15 In Open Court  
 16 (4.08 pm)  
 17 MR WILLIAMS: In your leveraging analysis you have two  
 18 control groups. One of them is contract manufacturers  
 19 and you explained last week that they were less affected  
 20 by NLNC, because they generally sell to licensed OEMs  
 21 and I think you said they are not unlikely to have  
 22 foreseen a situation where they sell to an unlicensed  
 23 OEM that depends on Qualcomm?  
 24 A. I do not know whether they were able or unable. All  
 25 I am saying is that their contracts were signed so early

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1 that it is difficult to believe that they were  
 2 anticipating what would be the position of Qualcomm in  
 3 2019, for example, given that the agreements were 2004.  
 4 Q. Yes. So can we just unpack that a little bit. Can we  
 5 please bring up {POF/95}, which is an example of one of  
 6 the CM licences. This is with Foxconn, I think. Can we  
 7 turn on to page 10 {POF/95/10}. This is outer ring  
 8 confidential so I will not read anything out, but if you  
 9 just read clause 5.1, which runs from page 11 --- 10 on  
 10 to page 11 {POF/95/10-11}.  
 11 A. Sorry, it moved and I lost it. Which paragraph is it?  
 12 Q. I think it is in your hard-copy bundle. It is not. It  
 13 is clause 5.1.  
 14 A. 5.1. Okay.  
 15 Q. So you can see ---  
 16 A. I am reading. I am reading. (Pause)  
 17 Actually it is a long paragraph. Do you want to  
 18 point me to a particular sentence or sentences?  
 19 Q. So you can stop at the words "unlicensed customers"  
 20 about five lines down on page 11.  
 21 A. Okay, let me read. (Pause)  
 22 Q. Do you see that?  
 23 A. I am reading.  
 24 Q. We can see that this licence only applies where it is  
 25 actually needed. Do you see that?

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1 A. I have not finished reading.  
 2 Q. I am sorry. I thought you said you had.  
 3 A. I am slow. (Pause)  
 4 Yes. So what is the point you want to make because,  
 5 you know, I am reading but maybe I am missing something.  
 6 Q. I think the point you raised was most of the time CMs do  
 7 not need a licence because most of the OEMs were  
 8 licensed?  
 9 A. Yes.  
 10 Q. This licence is dealing --- it is specifically designed  
 11 to cater for the opposite situation. That is the only  
 12 point I am making to you. So this is a situation where  
 13 the licence is needed.  
 14 A. So this is a situation and that is why I said that it is  
 15 less needed, not absolutely needed --- not needed.  
 16 Q. I understand. One of the contract manufacturers we are  
 17 interested in is Pegatron. You are aware of them. They  
 18 were one of the suppliers to Apple?  
 19 A. Yes.  
 20 Q. They took a licence --- well, I will not say the date,  
 21 but I do not think it is confidential, but --- maybe we  
 22 can just look at the evidence I wanted to look at. It  
 23 is {POD/7/32}. You can see there is evidence from  
 24 Monica Yang of Pegatron. This is not confidential.  
 25 A. This is the date of the Pegatron ---

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1 Q. The passage that starts with 244. If you can just  
 2 read ---  
 3 A. Paragraph starts at?  
 4 Q. It is --- do you see there is a first passage number 226  
 5 and a second passage number 244? Do you see that?  
 6 A. Now I see it, yes.  
 7 Q. Could you just read the section starting 244. (Pause)  
 8 A. Right. I can see that.  
 9 Q. So on the case, as the Class Representative puts it,  
 10 this is a simple no licence, no chips, is it not? They  
 11 are a contract manufacturer, but they needed the chips  
 12 for their business and they are affected in just the  
 13 same way as an OEM is, are they not?  
 14 A. That is what he is claiming, yes.  
 15 Q. So it does not matter whether this licence was entered  
 16 into to serve Apple or anyone else, does it, because the  
 17 contract manufacturers needed the licence in order to  
 18 buy the chips to make the phone for an unlicensed  
 19 customer?  
 20 A. I think that is for the court to decide. I think that  
 21 this is the statement from this gentleman in this Q&A  
 22 prepared I do not know when in response to I do not know  
 23 what and I don't know how much you can generalise.  
 24 I suppose that there would be different positions  
 25 between the two parties and the court will have to

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1 decide. I am afraid I cannot help.  
 2 Q. So that is your first control and the point I have been  
 3 putting to you is that they are not a group that does  
 4 not need a license. They need a licence for the reasons  
 5 we have just been looking at.  
 6 Your other control is explained at {EAOE/12/6}. Do  
 7 you see (k)?  
 8 A. No.  
 9 Q. So that is your other control group and you say this is  
 10 OEMs that have not purchased before from Qualcomm.  
 11 A. Right.  
 12 Q. So they could not have been dependent on Qualcomm?  
 13 A. Yes, now I can see it. It is at the top.  
 14 Q. I will not say the names out loud because they are  
 15 marked as confidential. Now, I think it is right to say  
 16 that the last two suppliers that are named were new  
 17 entrants at the time they obtained their licences,  
 18 although I am not sure there is any evidence about that.  
 19 I mean, once they had entered market, they did have to  
 20 buy chips from somebody or they could not make any  
 21 phones. Presumably you agree with that?  
 22 A. Presumably. More than presumably, I agree with that.  
 23 Q. We can see the dates of the licenses there?  
 24 A. Yes.  
 25 Q. This is the 3G era, is it not?

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1 A. This is 3G, yes.  
 2 Q. You can see the manufacturers. I do not know how  
 3 familiar you are with them, but each of them is from  
 4 a country where CDMA is used. Do you see that?  
 5 A. Where CDMA is used, but also UMTS is used.  
 6 Q. Yes, but CDMA was used in the countries where they are  
 7 from. Do you ---  
 8 A. Yes.  
 9 Q. So it is a fair assumption, is it not, that they needed  
 10 3G CDMA chips to make phones for their home markets, is  
 11 it not?  
 12 A. I doubt it because they never bought; no? I think that  
 13 the whole purpose of this is to look at --- to look at  
 14 licensees that never purchased.  
 15 Q. Never previously purchased, never purchased before they  
 16 are licensed I thought was the point?  
 17 A. Oh, so you are saying that they were dependent --- they  
 18 would be dependent in the future?  
 19 Q. I am saying that at around the time that they entered  
 20 into these licences, they very probably needed 3G CDMA  
 21 chips to make phones for their home markets?  
 22 A. I do not know.  
 23 Q. You have not looked into that?  
 24 A. I have --- I do not recall having looked into that, no.  
 25 Q. But if they did need those chips, then they needed

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1 a licence, did they not?  
 2 A. If they wanted to sell those chips, phones on those  
 3 chips, they would need a licence.  
 4 (Pause)  
 5 Q. The last few questions are about the NDRC. Now, you say  
 6 that the NDRC rate is a potential counterfactual  
 7 benchmark, do you not?  
 8 A. Yes.  
 9 Q. If we could look at that in the JES {POE/24/45}. Can  
 10 you look at 78.2 there.  
 11 A. Yes.  
 12 Q. So, if I understand your logic here, it is that the NLNC  
 13 resolution was not --- sorry, NDRC resolution was not  
 14 itself affected by the conduct at issue. Have I read  
 15 that correctly?  
 16 I am sorry if I am squinting at you. I am now  
 17 looking straight at the sun, Dr Padilla, so it is about  
 18 the sun, rather than anything you are saying.  
 19 A. Could you repeat the question, please?  
 20 Q. So I think your logic in this paragraph is that the NDRC  
 21 resolution is not itself affected by the conduct at  
 22 issue, so therefore you are saying it is a potential  
 23 competitive benchmark?  
 24 A. So precisely what I am saying is that the royalty rates  
 25 that resulted from the NDRC resolution cannot be

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1 affected by the NLNC policy.  
 2 Q. Yes. So can we just look at what Mr Noble says about  
 3 this in the JES at 77.1, please. This is on page 44,  
 4 the previous page {POE/24/44}. What Mr Noble says here  
 5 is that he has not seen evidence that the NDRC  
 6 resolution brought the rate to a competitive level.  
 7 That is all he is saying, is it not? Do you accept  
 8 that?  
 9 A. Yes, and I think that what my interpretation of this is  
 10 that the NDRC rates proxy those that would emerge in the  
 11 counterfactual as defined by Mr Moser the other day,  
 12 that is not in the inner bilateral negotiation resulting  
 13 from, you know, which chipset dependency by third party  
 14 decision—maker.  
 15 Q. Right. But you have not presented any evidence that the  
 16 NDRC rate is itself fair value; it is just what the NDRC  
 17 accepted as an overall cap as it applies to every OEM in  
 18 the market. That is right, is it not?  
 19 A. It is a third party decision—maker which is not affected  
 20 by any degree of dependency —  
 21 Q. But it is not —  
 22 A. — from chipsets or from anything else and therefore it  
 23 is a good proxy of what an efficient decision—maker in  
 24 the counterfactual would decide.  
 25 Q. It is an overall cap for all OEMs. It is not the same

1 thing as a party going to court and seeking  
 2 a determination of a FRAND rate as it applies to them,  
 3 is it? It is not that?  
 4 A. Well, according to the indirect effect theory of  
 5 Mr Noble, one thing and the other are exactly the same,  
 6 but, leaving that aside, no, it is not the same, but it  
 7 is a good proxy is all that I am saying.  
 8 Q. Can we look at the joint expert statement on page 53,  
 9 please {POE/24/53}. At point 86, I am not going to read  
 10 this out, but Mr Noble presents other evidence that the  
 11 Qualcomm rate is inflated and he says this is a good  
 12 proxy. Do you see in point 86, that is another proxy;  
 13 yes?  
 14 A. Yes, I see that, and —  
 15 Q. If one thinks about the way that FRAND litigation works,  
 16 that is exactly the sort of evidence that would be  
 17 considered in FRAND litigation. Do you agree?  
 18 A. This is one of the things that would be looked at,  
 19 although, in my experience, and I believe consistently  
 20 with the latest ruling in Optis v Apple, you tend to  
 21 focus on the same portfolio, not in the portfolio of  
 22 another company.  
 23 Q. Right. The only point I am putting to you, Dr Padilla,  
 24 is that either we look at all of the evidence about what  
 25 might be a competitive benchmark or we look at none of

1 it. We cannot look at the NDRC resolution and  
 2 say: well, that is a competitive benchmark but we are  
 3 not going to look at that competitive benchmark. These  
 4 are all matters for trial 2, are they not; they are all  
 5 matters for another stage of the litigation?  
 6 A. Look, again, this 86 was a bit surprising to me, to tell  
 7 you the truth, because it seems to me that belongs to if  
 8 we were in a second trial. On the basis of the evidence  
 9 that I had, and I think that Mr Noble does not disagree  
 10 with that, the NDRC rate is not affected by NLNC.  
 11 Again, I do not know exactly now whether FRAND is  
 12 the relevant counterfactual in your mind or not, but  
 13 NDRC is not affected by NLNC. It seems to me that it  
 14 provided a good framework for the leveraging analysis in  
 15 the context of the first trial.  
 16 Q. I mean, you are a very experienced competition  
 17 economist, Dr Padilla. In your experience, when the  
 18 regulator — the Competition Authority looks at  
 19 a problem, do they always — and they impose remedies,  
 20 do they always go far enough to impose an appropriate  
 21 remedy for every party in the market?  
 22 A. I think that, look, they — I am pretty sure that the  
 23 Chinese Government and, in this particular instance, the  
 24 agency, the NDRC, was trying to make sure that the  
 25 companies directly in which it held a direct interest in

1 the Chinese companies, were paying something that was  
 2 fair, reasonable and non—discriminatory.  
 3 I think what happened is that later on, in 2018,  
 4 Qualcomm extended the same terms and conditions to  
 5 everybody else, not only in China.  
 6 So, yes, I think that I am pretty sure that the  
 7 Chinese were really looking to get the best possible  
 8 deal.  
 9 Q. Can I just deal with one more issue, which is whether  
 10 the NDRC's decision implies that Qualcomm's previous  
 11 rates were too high. That is on page 45 of the joint  
 12 statement {POE/24/45}. It is paragraph 78.3. The point  
 13 you make is that you can have a FRAND rate and  
 14 voluntarily charge less.  
 15 So are you saying that the NDRC thought that the  
 16 prior rate was FRAND and that Qualcomm was now  
 17 voluntarily charging less than the prior FRAND rate? Is  
 18 that what you are saying the NDRC thought?  
 19 A. So could you repeat the question?  
 20 Q. Well, I am just asking you what paragraph 78.3 means  
 21 because —  
 22 A. Let me just read it.  
 23 Q. — this is dealing with the question of whether the  
 24 NDRC's decision implies that the prior rates were too  
 25 high and I do not understand what you are saying in

1 paragraph 78.3. I mean, are you saying that the NDRC  
 2 thought that the prior rate was FRAND, or may have  
 3 thought that, and that all Qualcomm was doing under that  
 4 resolution was voluntarily reducing prices within  
 5 a FRAND range? Is that what you are saying happened  
 6 under that remedy?  
 7 A. I think that all that I am saying there is that from the  
 8 commitment achieved or the commitment entered into, you  
 9 cannot infer that the rates before were excessive or not  
 10 FRAND.  
 11 Q. Right. But I am focusing on what the NDRC thought.  
 12 I mean, do you accept that the NDRC must have thought  
 13 that the prior rates were too high?  
 14 A. The NDRC wanted lower?  
 15 Q. Yes.  
 16 A. Yes, I am prepared to accept that.  
 17 MR WILLIAMS: Madam, that is the end of my  
 18 cross-examination.  
 19 Re-examination by MR JOWELL  
 20 MR JOWELL: Dr Padilla, it probably seems quite a long time  
 21 ago, but towards the beginning of your  
 22 cross-examination — it is [draft] page 107, lines 17 to  
 23 23 — you were asked, in summary, about the ability of  
 24 OEMs to shift their purchases or some of their purchases  
 25 as between CDMA and UMTS and you recall that it was

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1 suggested that that was not contained in your reports.  
 2 If I could ask you to go, please, to 289 of your fourth  
 3 report, which is {POE/22/92}.  
 4 A. Which paragraph?  
 5 Q. 289. Could I invite you to read that paragraph and then  
 6 make any additional comments you wish to make. (Pause)  
 7 A. Well, it seems that I consider switching from CDMA to  
 8 UMTS in my report, but my memory is imperfect.  
 9 MR JOWELL: Thank you. I have no further questions.  
 10 THE CHAIR: Thank you very much, Dr Padilla. That concludes  
 11 your evidence.  
 12 That concludes the evidence in the case, as  
 13 I understand.  
 14 Housekeeping  
 15 MR JOWELL: Ma'am, it does.  
 16 One small point on skeleton arguments, which are  
 17 currently due for Monday —  
 18 THE CHAIR: Closing submissions.  
 19 MR JOWELL: Forgive me, closing submissions. The parties  
 20 have a joint request, of which I am the mouthpiece,  
 21 which is that they should be allowed to produce the  
 22 closing submissions in an unredacted form in the morning  
 23 and provide the confidential versions by close of  
 24 business.  
 25 THE CHAIR: Yes.

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1 MR JOWELL: If that is convenient to the Tribunal?  
 2 THE CHAIR: That seems sensible.  
 3 MR JOWELL: I am grateful.  
 4 THE CHAIR: We are still working to 120 pages?  
 5 MR JOWELL: We are.  
 6 THE CHAIR: Formatting agreed with a table of contents.  
 7 MR JOWELL: Yes, indeed.  
 8 THE CHAIR: Please.  
 9 MR TURNER: One area that has just confused me a little bit,  
 10 and it may be my fault, but you have — Qualcomm have  
 11 a section on extraterritoriality in the skeleton and in  
 12 that you raise the fact that the agreements are governed  
 13 by Californian law and that the leveraging of dominance  
 14 took place outside the UK and that we should have regard  
 15 to the position in the US and Korea. You mention that,  
 16 but there are potentially other questions of applicable  
 17 law which might or might not arise and it is just really  
 18 to understand, when you get to your closing, where we  
 19 are on those.  
 20 We have had a discussion that FRAND requires  
 21 a willing licensee and a willing licensor, FRAND  
 22 negotiations, and we have talked about the UK  
 23 authorities in relation to that. We have not however  
 24 been addressed, I do not think, on whether the same  
 25 principles apply in other jurisdictions, either whether

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1 that matters or whether we are working on the basis that  
 2 we assume the law in those other jurisdictions is the  
 3 same because no party has raised an alternative. That  
 4 was one area.  
 5 So just clarity on whether we have to — how we are  
 6 dealing with that.  
 7 The second thing was there has been quite a lot of  
 8 discussion in the evidence and also in oral evidence  
 9 about exhaustion of patent rights in the US. We have  
 10 not been addressed — we have also been told that there  
 11 was a developing area of law over the relevant period.  
 12 We have not been addressed on what the US law is, was,  
 13 how it developed and it may be that we do not need to be  
 14 addressed on that, but, again, just if you could  
 15 consider whether we need to worry about it or not or  
 16 whether we just accept — it is common ground we just  
 17 accept what the witnesses say on that.  
 18 MR JOWELL: Yes, indeed, we will. You are not, I assume,  
 19 asking for a response now but something to bear in mind?  
 20 MR TURNER: No, just bear those in mind for the written  
 21 closing submissions.  
 22 MR JOWELL: Yes, indeed.  
 23 THE CHAIR: Just going back on your request,  
 24 Mr Jowell: close of business, could that be 4 o'clock?  
 25 MR JOWELL: It will be 4 o'clock.

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1 THE CHAIR: All right. Just because of when the court staff  
2 leave.

3 Also your redacted versions, just because you know  
4 that we have had problems reading some of the  
5 redacted — some of the sections that are redacted,  
6 please can all the redactions be in a pale colour so  
7 that we can actually read the text because we obviously  
8 have not replaced everything that is in our core  
9 bundles, but on the original versions it was just not  
10 possible to read properly under the redactions.

11 MR JOWELL: We hear you loud and clear and respectfully  
12 agree.

13 THE CHAIR: Yes. Thank you.

14 MR WILLIAMS: In the interests of avoiding any further  
15 misunderstandings about formatting, Madam, when you  
16 refer to a table of contents, is that outside the  
17 allowance for pages?

18 THE CHAIR: All right, yes.

19 MR WILLIAMS: I am grateful.

20 THE CHAIR: Are there any other questions?

21 MR WILLIAMS: I cannot see there will not be any more  
22 questions when we start formatting the document, Madam,  
23 but I do not have any at the moment.

24 THE CHAIR: Well, if you do have questions, you can send  
25 them to the court. Thank you very much.

1 (4.31 pm)  
2 (The court adjourned until Friday, 31 October 2025)

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