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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 6th October 2025 – Tuesday 4th 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

A P P E A R A N C E S

PHILIP MOSER KC, ROB WILLIAMS KC, MICHAEL ARMITAGE, CIAR MCANDREW, DANIEL ALEXANDER KC, DAVID IVISON and CHARLOTTE MCLEAN (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 Thursday, 16 October 2025
 2 (9.30 am)
 3 MR ROBIN NOBLE (continued)
 4 DR JORGE PADILLA (continued)
 5 Questions by THE TRIBUNAL (continued)
 6 THE CHAIR: Yes, Mr Saunders.
 7 MR SAUNDERS: My Lady, I just wanted to mention one very
 8 small point of housekeeping. Just as we work through
 9 today's topics, those sitting behind me are concerned,
 10 in particular, about the rates in the agreements and the
 11 trends in the rates over time, which obviously have
 12 a lot of commercial sensitivity around them and it
 13 was — we just wanted to just remind the experts, if at
 14 all possible, not to mention those figures in open court
 15 and, insofar as necessary, we would invite you to sit in
 16 private, if it is necessary to go into those in detail.
 17 THE CHAIR: All right. Are the experts well aware of what
 18 figures are confidential so that we can — you can ask
 19 us, if necessary, to sit in private? Yes, all right.
 20 MR TURNER: Mr Noble, can I — I know we are going to come
 21 on to discuss your bargaining model, and I just wondered
 22 if I could help just summarise, before we get into the
 23 detail, it in as simple terms for me as possible and, in
 24 particular, let us assume for present purposes that
 25 Qualcomm is in a dominant position and is negotiating

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1 with Apple, take Apple as the example, and Apple is
 2 required to buy — it is necessary for Apple to buy
 3 chips from Qualcomm. We will work on those assumptions.
 4 In those circumstances, can you just explain to me
 5 why you say this is not competition on the merits and
 6 what the result of your analysis is?
 7 MR NOBLE: In the context of the bargaining model?
 8 MR TURNER: Yes.
 9 MR NOBLE: I mean, the simplest way to understand the
 10 bargaining model is it is essentially a mathematical
 11 version of the narrative —
 12 MR TURNER: I did not want you to explain the bargaining
 13 model; I wanted you to explain your conclusions that you
 14 are drawing on your consideration of the matters in this
 15 case, including the bargaining model.
 16 MR NOBLE: Okay. So, to walk through the steps in the
 17 bargaining model at a high level?
 18 MR TURNER: No, let us not go through the bargaining model.
 19 I want to know the summary of your conclusions as to why
 20 you say there is an abuse, why you say this is not
 21 competition on the merits.
 22 MR NOBLE: So —
 23 MR TURNER: Having conducted your analysis, just a summary
 24 of your position.
 25 MR NOBLE: With respect to Apple?

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1 MR TURNER: Yes, with respect to Apple.
 2 MR NOBLE: With respect to Apple, at the very highest level,
 3 the logic is that there is a negotiation between
 4 Qualcomm and Apple and you can think of that as a first
 5 stage about is there going to be an agreed royalty and
 6 that first stage is influenced by a second stage, which
 7 is are you going to get access to the chips? The
 8 conclusion that I am drawing, based on the narrative
 9 discussion and the bargaining model and the evidence, is
 10 essentially that Qualcomm's choice to engage in what the
 11 Class Representative terms NLNC and RTL influences that
 12 bargain outcome and that it influences it in favour of
 13 Qualcomm and that that can be expected to result in
 14 a higher royalty rate than Apple would agree to and that
 15 Apple would agree to that and would not exercise its
 16 option to try and seek a FRAND rate and it would not
 17 exercise that option because it values access to the
 18 chips very strongly because of the assumptions that you
 19 laid out.
 20 MR TURNER: This is because of an express or implied threat
 21 or representation that the supply of chips is at risk?
 22 MR NOBLE: Yes, essentially.
 23 MR TURNER: That is readily understandable, that if Apple is
 24 dependent on the supply of chips and there is a threat
 25 not to supply them, that the bargain on the royalty rate

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1 may not be competition on the merits, one can readily
 2 understand that.
 3 Is it therefore necessary to consider the details of
 4 the bargaining model? I mean, that seems to be almost
 5 self-evident.
 6 MR NOBLE: Well, I think that is why I mentioned that
 7 mathematical — that summary before, is that the
 8 bargaining model is essentially a mathematical version
 9 of the general narrative discussion that I have set out
 10 in my report and also that the Class Representative
 11 articulates in their Particulars of Claim and the
 12 benefits of the bargaining model are that — it forces
 13 rigorousness on you and I think we will perhaps come on
 14 in the agenda to then explore, well, does that then
 15 allow you to pull out specific propositions that you can
 16 then test and evaluate in order to kind of stress test
 17 the theory of harm and see whether it really stands up
 18 to scrutiny?
 19 MR TURNER: Dr Padilla, just at that high level, before we
 20 get into the details of the bargaining model, do you
 21 disagree with that, that if there is — assuming that
 22 Apple is dependent on Qualcomm for chips and Qualcomm is
 23 in a dominant position and Qualcomm threatens to
 24 withdraw that necessary supply of chips, that that is
 25 not competition on the merits when it comes to

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1 royalty—setting? You would agree with that, I assume?
 2 DR PADILLA: To tell you the truth, I would have a problem
 3 in terms of what is competition on the merits because
 4 I do not see that where the competitive interaction
 5 happens. There is bargaining, but I think that, going
 6 beyond that point, could that affect the bargaining
 7 outcome? Those assumptions it could, not necessarily
 8 though, and not necessarily because we are missing
 9 a number of points there. For example, we are missing
 10 that the relationship happens over time. We would be
 11 missing, for example, the consequences for Qualcomm of
 12 not supplying to Apple. It is a threat that you need to
 13 assess, whether it is credible or not, given the amount
 14 of business that you are going to lose, the real
 15 reputational effects that that would have in the market,
 16 the fact that, you know, Apple may take you to court
 17 because it considers that that threat is anticompetitive
 18 and many other factors.

19 The problem when you are using theory is that theory
 20 depends on assumptions and those assumptions need to be
 21 validated by the facts and there are certain assumptions
 22 that may look very trivial, like if you anticipate that
 23 there is going to be discontinuation of supply, that
 24 means that you are going to react by agreeing to
 25 a particular rate, but that assumption in itself could

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1 be problematic. Let me explain this by reference —
 2 because it is a little bit tricky, if I may — to a very
 3 well-known game, which is called the "ultimatum game".
 4 The ultimatum game is a game in which, let us say,
 5 Mr Noble and I have to split £100 and I am to make
 6 a proposal first and he has to respond and say "yes" or
 7 "no". If I propose a split, say 50, and he says, "Yes",
 8 then he gets 50. If he says "no", both of us will get
 9 zero.
 10 The sort of logic and mathematical logic that
 11 Mr Noble uses in his model to analyse this ultimatum
 12 game would produce a single equilibrium in which I would
 13 propose 99, if the split is, you know, integer numbers,
 14 and so that he would have to get 1. If he says "yes",
 15 he gets 1, which is better than zero. So the
 16 equilibrium is 99, my proposal, 1, and he accepts.

17 When we go to the real world and see how people play
 18 the ultimatum game, 99/1 is almost never an equilibrium.
 19 He would be so incredibly pissed off with me that he is
 20 more likely — I think that is — we are humans — to
 21 say "no" and both of us would get zero.

22 Now, you would say, but Apple is not the usual human
 23 playing ultimatum games. Well, again, think about the
 24 implication for Apple to resist in terms of its future
 25 and in terms of the reputation that it generates with

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1 other companies with whom it is negotiating, but also
 2 think that the vast amount of bargaining analysis is not
 3 done by economists, but is done in business schools and
 4 the sort of logic that is applied is not sum game
 5 perfect equilibrium à la Nash, but is more the sort of
 6 logic that I am referring to and, as you can see, when
 7 you go to any bookstore and find books about
 8 negotiation, "Getting to 'yes'", "Learning to say 'no'",
 9 "Negotiators never split the difference", there are many
 10 titles that you will see there.

11 So I think that those are the limitations in this
 12 modelling and logic that Mr Noble applies.

13 MR RIDYARD: To explore that a little bit. You are saying
 14 that even if the — because Mr Noble's sort of — his
 15 story — we will get into the theory maybe in a minute,
 16 but the short story around it is if you make the cost of
 17 going to FRAND high enough, then it will not be
 18 attractive to go to FRAND arbitration and instead you
 19 will accept, you know, a higher royalty rate than you
 20 would have expected, had you gone to FRAND. I mean,
 21 that proposition, I mean, is at some level is that
 22 reasonable?

23 DR PADILLA: It is not unreasonable. I agree that if
 24 I increase the cost to go to litigation, you are less
 25 likely to go to litigation, but the question is: would

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1 you go to litigation or not? Is the effect so
 2 determinative? So if I threaten you, the first thing is
 3 you are not going to be comfortable. Now, are you going
 4 to change your conduct? That depends on the first —
 5 whether you consider the threat credible. Second,
 6 whether you think that you can counter that threat.
 7 Third, you are going to consider whether being
 8 blackmailed in this particular way, if you accept, is
 9 going to have long-term consequences with that
 10 counterparty and with other counterparties.

11 So all that I am saying is that from theory to
 12 practice there is a long step and we need to check, not
 13 only whether there is dominance and indispensability,
 14 but also we need to check whether all those other steps
 15 are there and the reason is, first, because the
 16 relationship between Qualcomm and Apple or Qualcomm and
 17 Samsung is not static, it is dynamic, because these
 18 companies interact with many others and so on and so
 19 forth.

20 MR RIDYARD: I suppose in one way what we are — why we are
 21 asking these questions is we — is whether we get to the
 22 answer — and I think we understand the problem, as it
 23 were, but whether we get to the answer to that problem
 24 by looking more carefully at the facts or by going
 25 through the theory in detail and maybe you are going to

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1 say we should be doing both and I guess we probably have
2 to do both, but I just wondered whether --- I mean,
3 Mr Noble, maybe you could respond, whether you have
4 a view on whether this is --- the difference between you
5 is really about the facts and the parameters, as it
6 were, of the model or the theory?

7 MR NOBLE: I think there are differences on both. I mean,
8 I guess you know we are not the fact-finders. I think
9 a lot of the debate has been about facts, but if we put
10 that to one side, I think obviously if we are given the
11 same facts, then I think we are closer than we otherwise
12 would be.

13 I do detect though that Dr Padilla and I are still
14 not aligned on the value that these bargaining models
15 can provide and, I mean, the example he gave I think is
16 actually quite an extreme example of a bargaining game
17 and I do not think it really fits the facts of this case
18 because those, take it or leave it one-shot games, they
19 do not, I think, represent what we see in these
20 negotiations. We see something where, you know, we have
21 seen lots of evidence, these negotiations take one or
22 two years. There are offers from both sides. There is
23 movement on both sides.

24 So I think it is much better to sort of appeal to
25 the broader range of bargaining theory, you know, Nash

1 equilibrium. There is lots of literature that we both
2 cite that speaks to that and what you find in that
3 literature is generally that both sides' outside options
4 influence the outcome in those kinds of bargains.

5 Now, I think it is right that what we are talking
6 about there is bargaining theory. Bargaining theory
7 inherently cannot tell you for sure that this specific
8 bargain is definitely going to be impacted by these
9 elements, because it will not capture all of the
10 necessary features of that specific negotiation. There
11 may be human factors, you know, whether I am irritated
12 by Dr Padilla's £1 or not, things like that that they
13 can and they may well do influence the final actual
14 outcome. So --- but I do not think that means that the
15 theory does not help you, because I think the theory
16 does help you understand whether it is likely or not
17 that something is going to have an impact and, if that
18 is the test, then I would say that the bargaining model
19 does assist the Tribunal and going through that theory
20 does assist the Tribunal in answering whether it is
21 likely or not, but I think, you know, as my
22 understanding is, this whole case has been divided in
23 two, because then there is a second half that would then
24 look at, well, okay, in fact did this specific outcome
25 in this specific bargain have a specific effect?

1 THE CHAIR: If that is the case, then I am just still
2 struggling with what insights we get from all the fancy
3 economics, to put it bluntly. I mean, you have a sort
4 of economic model which you elaborate on, but if
5 ultimately you come down to the question of what are the
6 actual facts, what are the --- what are the psychologies
7 of the parties, what was said in the interchange between
8 them, I think this is Dr Padilla's ultimate position,
9 then you say your bargaining model just tells you what
10 is likely, but ultimately you then have to still revert
11 to what are the facts.

12 MR NOBLE: I do agree that the facts matter. I mean,
13 I guess it is worth noting that the bargaining model was
14 in fact Qualcomm's idea. You know, it came from them,
15 their methodology statement, and, you know, I read that
16 methodology statement and thought it was a very good
17 idea and that is one of the reasons why I spent so much
18 time and energy developing it.

19 The other reason is I think that it is --- the
20 bargaining model helps you understand some of the --- the
21 relevance or non-relevance of some of the different
22 submissions that have been made. So, for example, I do
23 understand there is a debate about whether or not
24 explicit threats are needed or not and the bargaining
25 model helps you understand that is not a necessary

1 requirement. So I do think the bargaining model can
2 help you understand whether or not you need to see
3 explicit threats, for example.

4 MR TURNER: But is not Dr Padilla sort of taking a Yogi
5 Bear---er approach, which is in theory there is no
6 difference between theory and practice but in practice
7 there is, so he is reminding us of the limitations of
8 the Nash equilibrium and the realities of the world and
9 says deals are done by businessmen, they are not done by
10 mathematicians, which is obviously correct, but insofar
11 as we get assistance from the mathematical model or the
12 model you are putting forward, it is just showing us ---

13 So there is that debate to have, whether the real
14 world works in accordance with models, but there is
15 a separate question actually whether the model itself is
16 giving us any information that is not self-evident,
17 i.e. that if you threaten someone to potentially destroy
18 their business, they are going to look at that threat
19 very, very seriously and they may end up paying you
20 a higher royalty.

21 MR NOBLE: Yes.

22 MR TURNER: As I say, if those are the facts, and of course
23 there is absolutely no agreement and we have not formed
24 that view at this stage, of course, but if those are the
25 facts, then the mathematical model is just telling us

1 something that is self-evident if you want to analyse it
 2 in that way.
 3 MR NOBLE: Yes.
 4 MR TURNER: Whether that applies in the real world for the
 5 reasons Dr Padilla is indicating is of course
 6 a secondary question.
 7 MR NOBLE: Yes. I think — I do not think you have to use
 8 the model I think is the short answer. I think the
 9 point of the model is to try and help. If the model
 10 does not help, then you can put it to one side and
 11 I think you can decide the case, in a sense, in the
 12 narrative way. I do not — yes, so — but the purpose
 13 of the model and the reason economists have spent so
 14 many decades working on bargaining models is to try and
 15 understand how these complex interactions operate and to
 16 try and provide sort of further insights on them, but
 17 ultimately, you know, that — all of that needs to be
 18 seen in the context of the specific — and the specifics
 19 of the case.
 20 THE CHAIR: That is very helpful. Thank you.
 21 DR PADILLA: If I may, the way that Mr Noble is presenting
 22 the literature is a little bit simplistic, to tell you
 23 the truth. Yesterday night in preparation for today,
 24 looking at the agenda, I was again researching the
 25 bargaining literature to try to see whether or not the

1 outside option principle, that outside option that
 2 changes in the outside option, makes a difference whole
 3 whole and under which conditions. There are plenty of
 4 papers with some of them tellings you which conditions
 5 the outside — changes in the outside option will have
 6 an impact in the bargaining outcome and many, many
 7 papers that tell you about conditions in which that is
 8 not going to happen.
 9 So eventually you need to go to the facts. In
 10 addition, my problem with Mr Noble's model is in
 11 addition is that the model is biased. The model is
 12 saying: in the counterfactual, what Apple is going to do
 13 is Apple is going to go and seek a FRAND determination.
 14 How do we know that? It could well engage in holdout
 15 and wait and wait. If that is the case, you know, then
 16 the result is different. It could actually purchase the
 17 chipsets and claim exhaustion. I am not an expert in
 18 exhaustion, but, if it does, then, again, the
 19 counterfactual is different. The model is biased
 20 because it takes into account the impact of the threat
 21 on Apple, but the threat does not come free — for free.
 22 It has a cost. If Qualcomm refuses to sell chipsets,
 23 there are many volumes that are lost.
 24 MR TURNER: That is a slightly separate question. We are
 25 making the assumption that Apple is — that Qualcomm is

1 making that threat.
 2 DR PADILLA: Correct. I can leave that aside.
 3 MR TURNER: Let us for present purposes make the assumption
 4 it means it. It is not an empty threat.
 5 DR PADILLA: So why — and indeed I think that Mr Noble is
 6 absolutely right that initially I thought that we could
 7 deal with this through modelling and the reason why
 8 I did not do modelling in the end is because I came to
 9 the conclusion that I had so many degrees of freedom
 10 that I could almost create any story that would fit
 11 anything.
 12 The problem is that, as usual the counterfactual is
 13 not observable, plus in this case we have another
 14 problem, which is that we have an exploitative case with
 15 no corpse; the corpse may be found in the second trial
 16 but there is no corpse now.
 17 So we have a problem with the factual because we do
 18 not have a corpse and we have a problem with the
 19 counterfactual, the usual problem is very difficult to
 20 predict. So what I thought then is to assist the
 21 Tribunal, instead of removing the contested conduct, the
 22 NLNC or chipset supply practice, let us try to proxy the
 23 counterfactual in a different way and that is the
 24 empirical work. Empirical work that it tries to do is
 25 say: well, if what is problematic is dependency, let us

1 try to see what happens when there is no dependency.
 2 THE CHAIR: Okay. We will come on to that.
 3 DR PADILLA: But it is to explain the alternative way of
 4 modelling the counterfactual.
 5 MR RIDYARD: Maybe, as we are on the counterfactual, it
 6 might just be helpful, Mr Noble, if you could just
 7 briefly summarise your counterfactual. The
 8 counterfactual you have in paragraph 6.65 of your eighth
 9 report, you say one alternative could be for Qualcomm
 10 and the OEMs to sign a licence specifying that, absent
 11 an agreement over royalties, the appropriate rate would
 12 be subject to a third-party determination of the
 13 appropriate rate. So if they could not agree a licence,
 14 they go to FRAND.
 15 In that, do you mean both sides would commit to just
 16 accepting whatever turns out from the FRAND process?
 17 MR NOBLE: So maybe if I just step back and then I will be
 18 certain to answer that part.
 19 MR RIDYARD: Yes.
 20 MR NOBLE: So the way I have approached the counterfactual
 21 and thinking about how to build the bargaining model and
 22 the whole framework is that what we want to remove is
 23 the allegedly offending conduct, the NLNC and the RTL,
 24 and so it is, in a sense, the counterfactual is
 25 characterised by in a sense non-conditioning. That's

1 the critical assumption that the royalty agreement, the
 2 royalty rate is not conditioned or affected by the
 3 supply or non-supply of chipsets. They are separate
 4 conversations.
 5 MR RIDYARD: You want Qualcomm to behave as if
 6 Qualcomm --- the chipset company arm to behave as if it
 7 does not have a licensing arm as well?
 8 MR NOBLE: Well, that is one way to think of it that it is a
 9 sort of structural separation or something like that
 10 that, in a sense, these are two separate conversations
 11 and they are independent and they are not jointly profit
 12 maximising. They are individually profit maximising in
 13 those two conversations.
 14 Now, there is a debate about patent exhaustion and
 15 about whether that means that, in the special case of
 16 Qualcomm, where you have these two businesses, that
 17 these sort of two separate conversations do not work.
 18 I do not know the answer to that. That's a question
 19 about patent law and exhaustion, but assuming that that
 20 is a good answer, that means that there is some
 21 rationale for why you might be allowed to link the two,
 22 then, in a sense, that is when 6.65 kicks in because
 23 that then says: well, even in that circumstance, then
 24 there is still a way to separate or at least give people
 25 the option that they can separate these conversations.

1 MR RIDYARD: Okay. Can you just clarify where --- in terms
 2 of your counterfactual, where we are on the --- because
 3 you mentioned RTL there as well in your description,
 4 where we are on chipset licensing? Is chipset --- do you
 5 think that Qualcomm needs to be offering chipset
 6 licensing, or is it okay for Qualcomm to carry on doing
 7 end-device licensing?
 8 MR NOBLE: That is a part I am more agnostic about on the
 9 economics because, in a sense, if RTL is problematic for
 10 the reasons set out by the Class Representative, there
 11 is a requirement that Qualcomm should have been doing
 12 it, then obviously that needs to be different in the
 13 counterfactual, but I think this goes to the buttressing
 14 conversation we had yesterday, that in a sense the
 15 primary reason that I think about RTL is because of this
 16 bypass route. If that bypass route does not exist, then
 17 it does not exist.
 18 MR RIDYARD: We covered that yesterday, yes.
 19 MR NOBLE: Exactly. So, in a sense, there is no difference
 20 between the factual and the counterfactual if it does
 21 not exist anyway.
 22 DR PADILLA: May I make two comments on this?
 23 So the first comment is the reason that my
 24 understanding is that Qualcomm's argument for its
 25 chipset supply practice is precisely exhaustion. So

1 what Mr Noble is saying is if we remove exhaustion from
 2 the picture, then Qualcomm would not need the chipset
 3 supply practice. That is for Qualcomm to decide, but it
 4 seems that that may be the case. That is precisely the
 5 reason, this patent exhaustion is at the core of this
 6 issue and it does not resolve --- we do not know whether
 7 this counterfactual is, you know, better or worse than
 8 the factual from a competition and efficiency
 9 perspective. So exhaustion cannot be ignored.
 10 My second comment with this counterfactual, and in
 11 general with the analysis of Mr Noble, is that he
 12 ignores what is going to happen with chipset prices. So
 13 suppose that the royalties as a result of this, in this
 14 counterfactual, went down. Then we are working under
 15 the assumption that Qualcomm is dominant --- not only
 16 dominant, but Apple really needs those chipsets.
 17 I would expect chipset prices to go up and we are back
 18 to the discussion that we had yesterday.
 19 If Mr Noble now tells me, "No, they cannot go up
 20 because entry will be immediately kicked in", then we
 21 have a problem because if entry is at the gate ---
 22 MR RIDYARD: I think Mr Noble did try to finesse that by
 23 saying there was some power to raise prices.
 24 MR NOBLE: Yes. I think the other point to bear in mind is
 25 what we are talking about here is a damages claim that

1 relates to purchases in the UK and they do not have
 2 phones and Qualcomm has been at pains to point that out
 3 every time that phones that are sold in the UK are
 4 almost universally UMTS compatible and not CDMA
 5 compatible and, in a sense, a lot of the conversation is
 6 about how much market power they have in CDMA and if
 7 they have lots of market power in CDMA and we talked
 8 about the CDMA adder yesterday, then one would expect
 9 that the first round effect is if they have market power
 10 there that they are not exploiting, they might seek to
 11 exploit it there, but the first round effect of that
 12 would not obviously be on UK consumers, it would be on
 13 US consumers, because they are the ones that are
 14 purchasing CDMA phones.
 15 MR RIDYARD: But we are looking --- obviously it is a global
 16 negotiation, but we are looking at what the outcome of
 17 that negotiation is.
 18 MR NOBLE: Yes.
 19 MR RIDYARD: Okay. I need to think more about that.
 20 MR NOBLE: Yes, the other part to think about in that is
 21 also the dynamics, the time periods, because of course
 22 if Qualcomm has the market power and puts the prices
 23 up, I think the conversation we had yesterday about
 24 barriers to entry is that it does not mean you simply
 25 get rid of them; it is that you create a stronger

1 incentive to jump over them. So if people could jump
 2 over them eventually, they might jump over them a bit
 3 sooner than otherwise they might have done and, again,
 4 that feeds into the time periods that we are looking at
 5 in this case.
 6 THE CHAIR: Can I just tease out, leading on from that
 7 discussion about what your counterfactual is, Mr Noble,
 8 do you understand your counterfactual to be the same as
 9 that articulated by Mr Moser for the Class
 10 Representative? So if I just take that from Which?'s
 11 further Note on Negotiation which — do you have that?
 12 MR NOBLE: I do not have it in hard copy.
 13 THE CHAIR: Can that just go up on the screen. So we are in
 14 open session so I am not sure if there is a version
 15 which has appropriate redactions or whether the
 16 redactions are going to be visible to anyone who should
 17 not be seeing them, but I am looking at — I do not need
 18 to see a confidential version — paragraph 3. Maybe
 19 I can just read it out.
 20 MR MOSER: Would it help if I give the page reference?
 21 THE CHAIR: If there is one, yes.
 22 MR MOSER: EAOX/3/2.
 23 THE CHAIR: "As the Tribunal's letter of 9 October 2025
 24 correctly identifies, and as lead counsel for Which?
 25 explained in opening submissions, the counterfactual in

1 the present case is one in which the abusive conduct
 2 described in paragraph 1 is absent and, in consequence,
 3 OEMs were able to challenge Qualcomm's SEP royalty rate,
 4 (including through a FRAND negotiation and litigation
 5 process), without risking the loss of their supply of
 6 chipsets from Qualcomm."
 7 The point is then made in summary that the OEM would
 8 not necessarily have had to have litigation, but the
 9 ability to do so without the risk of disruption to
 10 supply and in the absence of comparator rates tainted by
 11 Qualcomm's conduct would have improved the bargaining
 12 position and likely reduced the rate payable.
 13 So, in essence, what is described is the ability to
 14 challenge the royalty rate, even if you did not exercise
 15 it. So the ability to challenge and knowing that you
 16 could challenge that without risking the loss of supply
 17 of chipsets.
 18 Is that a correct articulation of your position?
 19 MR NOBLE: Yes.
 20 THE CHAIR: It is?
 21 MR NOBLE: Yes.
 22 THE CHAIR: So it is one and the same counterfactual?
 23 MR NOBLE: Yes.
 24 THE CHAIR: That is very helpful. Thank you.
 25 MR RIDYARD: Okay. Let us move on to the bargaining model

1 framework. I think, just based on the previous and the
 2 prior discussion, we have seen that both of you have
 3 said in the joint report where you go through
 4 a number of the theoretical points in some detail and,
 5 I mean, I think there is a question mark about how
 6 productive it would be to rehearse that, given what both
 7 of you have just said. I mean, I think really
 8 understanding the narrative and the facts around it may
 9 well be more useful for us, but I think, nevertheless,
 10 it would be helpful if I could just ask you to give the
 11 brief version of what is it between you — what are the
 12 key points between you on the theory — on the
 13 bargaining model theory, the sort of three-minute
 14 version, as it were.
 15 MR NOBLE: That's part —
 16 MR RIDYARD: I would just like you to summarise what you —
 17 you know, in brief, what you think the key areas of
 18 battle are between you and Dr Padilla on the bargaining
 19 model theory itself, before we get into some of the
 20 facts.
 21 MR NOBLE: I think there is only one, which is — but that
 22 Dr Padilla will no doubt correct me —
 23 DR PADILLA: I will.
 24 MR NOBLE: Well, maybe the main one is the link between
 25 outside options and the bargaining outcome. That is

1 certainly a significant difference between us.
 2 MR RIDYARD: That is a short answer.
 3 DR PADILLA: Yes, so I will expand a little bit, although
 4 I think by and large Mr Noble is correct.
 5 I think that — so areas of agreement. Areas of
 6 agreement are that the conduct at issue may affect the
 7 licensee's outside option. The disagreement there is
 8 that I say, in certain circumstances, you need to check
 9 the facts and my interpretation of Mr Noble is he says
 10 it does in all circumstances.
 11 Then there is an agreement that changing the outside
 12 option may affect the bargaining outcome. The
 13 disagreement is I say in certain circumstances you need
 14 to check the facts, and Mr Noble tends to say almost
 15 always.
 16 So to confirm — or to make the disagreements
 17 a little bit more clear. My position is that whereas
 18 the threat could change the outside option available to
 19 Apple, whether it does or not depends on circumstances,
 20 such as is the threat credible or not, how is Apple
 21 responding to that threat in the context in which it is
 22 negotiating multiple rounds and with multiple people?
 23 When we look at the change in the outside option
 24 implied by the threat, another difference is that
 25 I consider that that has an impact on Qualcomm and

1 I believe, Mr Noble, that your model does not take into
 2 account the impact on Qualcomm, which, you know, has
 3 a relationship with the credibility of the threat, but,
 4 even if you think that the threat is credible and you
 5 use the Nash bargaining framework, basically there is
 6 a change in both outside options simultaneously.
 7 Then there are disagreements about whether the
 8 factual assumptions are correct or not, whether this
 9 model applies to the Apple situation or the Samsung
 10 situation on the facts.
 11 Finally, there is a disagreement as to whether any
 12 change in the royalty agreed would have an impact on
 13 chipset prices or not. My view is that Mr Noble's model
 14 abstract from what would happen in the chipset dimension
 15 if there was a change in royalties.
 16 I think that, by and large, these are the areas of
 17 disagreement.
 18 MR RIDYARD: Mr Noble.
 19 MR NOBLE: So I think there are three that Dr Padilla has
 20 just outlined, so maybe if I just summarise them to make
 21 sure I have correctly ingested them.
 22 The first one is there are disagreements between us
 23 on the facts, which ultimately the Tribunal will decide
 24 whether or not the facts marry up with the bargaining
 25 model and so on and our case as a whole. So that is one

1 group.
 2 I think the second group is the point that I raised,
 3 which is then around the, in a sense, what one might
 4 think of as the strength of the linkage of how likely is
 5 it that that bargaining model can tell you something
 6 useful about whether the options are more likely than
 7 not to impact the outcome or otherwise.
 8 I think the third one is then this point about
 9 this — I think it is reverse leveraging that Dr Padilla
 10 was referring to, the idea that Qualcomm loses lots of
 11 chipset sales. Is that the point?
 12 DR PADILLA: Yes. The question is that this is not a chip
 13 threat.
 14 MR NOBLE: Well —
 15 DR PADILLA: It is not like hiring somebody to shoot you
 16 down which costs, but not that much.
 17 MR NOBLE: But I think that is a crucial part of the
 18 bargaining model so I do not think it is correct to say
 19 that the model does not look at that. It does look at
 20 that and that is the whole notion of recapture and that
 21 is the very important part of the logic of this, which
 22 is that — consider CDMA chipsets, particularly in the
 23 period when Qualcomm was the only game in town, that the
 24 logic of the model is to say that if Qualcomm — the
 25 threat is credible because Qualcomm cannot sell to Apple

1 or Samsung or whomever and can be assured that it will
 2 get most, maybe not all, but a good portion of those
 3 sales back because not — essentially if Apple is not
 4 selling a phone on Verizon or Samsung is not selling
 5 a phone on Verizon, then somebody else will and
 6 therefore that means, in a sense, they can recapture
 7 them because, in a sense, if you have 100% market share,
 8 then they are the only people that could make this
 9 chipset that will go into a phone that will work on the
 10 Verizon network.
 11 MR RIDYARD: You are assuming there is a kind of zero sum
 12 game there and if Apple stopped making phones, someone
 13 else would?
 14 MR NOBLE: Well, it is not — the model does not require
 15 zero sum.
 16 MR RIDYARD: No, but a substantial mitigation of the cost.
 17 MR NOBLE: Yes, the model needs there to be material levels
 18 of recapture so that that attenuates this threat. So
 19 essentially it makes the reverse leverage argument not
 20 very credible. It may have some impact, but it will not
 21 have a lot of impact because if Apple does not buy those
 22 chipsets, somebody else does is essentially the logic.
 23 MR RIDYARD: Effectively, the scenario is Apple stops
 24 making — is stopped from making phones by Qualcomm
 25 carrying out —

1 MR NOBLE: Precisely. So that 30 million phones that we
 2 talked about in 2015, the kind of scenario I have in
 3 mind there is, well, Qualcomm refused to give 30 million
 4 chipsets to Apple. That means it cannot sell those
 5 30 million phones on Verizon and the other CDMA
 6 networks, but there are still those on those networks
 7 because they account for about 50% of the market in the
 8 US and so those people may have switched to an Android
 9 phone or some other handset and that means Samsung would
 10 have — sorry, Qualcomm would have still made most of
 11 those sales.
 12 MR RIDYARD: You have not carried out any sort of analysis
 13 of that; it is — I mean, it is an argument of logic?
 14 MR NOBLE: Yes, it is an argument of logic.
 15 THE CHAIR: I think that is the point we discussed
 16 yesterday, was it not, about empirical analysis of the
 17 trade-offs, when we were talking about CDMA?
 18 MR NOBLE: Yes, but I think you can do some quick maths to
 19 essentially work out that the sort of relative scale of
 20 overcharge that is alleged in this case is relatively
 21 small relative to the kinds of profit loss that OEMs
 22 might suffer.
 23 MR RIDYARD: I mean, I know you have views on that.
 24 DR PADILLA: I did not quite get the last point, but with
 25 respect to the previous ones I think that, you know, we

1 need to be precise, because otherwise I think that, you
 2 know, there are a number of jumps here that are
 3 difficult to understand.
 4 CDMA represents very small volumes for Apple. It is
 5 not --- it was mentioned like 50% of the market. No, we
 6 are talking about very small volumes. It is even
 7 unclear to me, for the reasons that we discussed
 8 yesterday, that the threat with respect to CDMA would
 9 have an impact in any way on the conduct of Apple. If
 10 you tell me the threat concerns UMTS, then I can see
 11 that that would carry much more weight, but if it is
 12 UMTS and Apple stops selling UMTS phones, who is going
 13 to replace Apple? When is that somebody going to
 14 replace Apple? At which chipset prices, by the way?
 15 Because Qualcomm now realises that, you know, it has
 16 different options. All that requires a lot of analysis.
 17 In principle, the direct effect of the threat is that
 18 you are losing the volume from Apple and from Samsung
 19 and then you have to hope that somebody is going to come
 20 and replace and the consumers are going to be willing to
 21 buy instead of waiting to see what happens next year.
 22 Also, you are also missing the point that of course
 23 Apple and Samsung are not going to sit idle. If we
 24 bring the dimension in time, then we need to factor in
 25 that those guys will then sponsor entrants in those

1 areas, especially in UMTS, and they will then find
 2 alternatives.
 3 So all that needs to be factored in and modelled and
 4 it cannot be presumed. I mean, we are talking about
 5 a serious allegation of abuse.
 6 MR RIDYARD: Yes, I think that is as far as it is useful to
 7 take that particular point.
 8 Sorry, let me just get my notes back in order.
 9 MR TURNER: Can I just ask a question? Mr Noble, in your
 10 model you consider the prospect of litigation, you talk
 11 about FRAND litigation, you consider it is relevant
 12 whether it is an option or not, you consider the costs
 13 of it. You do not, however, contemplate antitrust
 14 litigation. I was a little unclear why your model dealt
 15 with FRAND litigation, but does not deal with antitrust
 16 litigation. This would be on the assumption that at all
 17 times a company the size of Qualcomm is taking legal
 18 advice and will be appreciating that there may or may
 19 not be a risk associated with withdrawing chips from the
 20 market.
 21 Why are you including FRAND litigation and the risks
 22 of FRAND litigation but not including the risks of
 23 antitrust litigation and the consequences of that?
 24 MR NOBLE: It is a good question. I mean, I think, in
 25 essence, this is an example of the antitrust litigation.

1 I think there is a fundamental question that we are
 2 trying to answer which is: you know, do they have
 3 a dominant position and have they breached the antitrust
 4 rules? I think in a way it is almost to try and
 5 endogenise the case that you are answering in the model
 6 you have used to answer the case, I have struggled with
 7 how I would do that. This model is already complicated.
 8 MR TURNER: If one is trying to model these things, if
 9 Qualcomm is saying it would be a really cool idea to
 10 withdraw chips because they will have to pay us more
 11 royalties, and it has a whole legal team going, "whoa
 12 whoa whoa, just be cautious" I mean that is a factor in
 13 how the negotiations would proceed. I do not know what
 14 the answer to any of that legal advice would be, but
 15 just ignoring --- it just seems difficult. I think
 16 Dr Padilla made a reference to this in one of the
 17 answers he gave earlier.
 18 MR NOBLE: Well, I mean, I guess, for me as an economist it
 19 is difficult to sort of include the case that I am
 20 trying to answer in the analysis I think. I struggle
 21 with how I would do that.
 22 DR PADILLA: So if I may, I think that that goes --- I think
 23 that the point is important and it goes in or has two
 24 effects. One is the risk of antitrust litigation could
 25 have an effect on Qualcomm's conduct, but it is also

1 going to have an effect on whether or not Apple
 2 considers the threat credible. I think that, you know,
 3 this fact is not going to allow us to understand exactly
 4 the motivation behind, but we know actually that when
 5 Apple sued and instructed its CMs not to pay, there was
 6 no disruption of supply.
 7 Now, that does not say much in terms of the theory,
 8 but I think that what is important is to understand that
 9 the threat has to be credible and there are a number of
 10 reasons why it may not be credible, especially when you
 11 have a large counterparty.
 12 THE CHAIR: Can I ask a slightly different question about
 13 the bargaining model. So, as I understand it, the
 14 royalty effect on SEPs that is predicted by your
 15 bargaining model, Mr Noble, that ultimately emanates
 16 from chipset dominance and the leveraging theory that
 17 you employ to describe the interaction between the
 18 chipset market and the SEP market.
 19 Should that or could that simply be characterised as
 20 a straightforward monopoly chipset pricing effect, if
 21 you like, or, in other words, excessive pricing on the
 22 SEP market but arising from the interaction between the
 23 chipset and the SEP market?
 24 MR NOBLE: Well, I think this goes to the conversation we
 25 had yesterday about the barriers to entry, that for me,

1 as an economist, the logic of why you apply different
2 tests in an exclusionary versus an exploitative abuse
3 that is in the market --- that you have market power in
4 and, you know, the various tests that are used for
5 excessive pricing, for example, is because of this
6 expectation that there is a self-correcting feature in
7 most markets.

8 I mean people like JK Galbraith and many other
9 economists have talked about this. The nature of
10 markets are that they do tend to self-correct in lots of
11 circumstances and so the --- in a sense, I think that is
12 why one wants to apply quite a high hurdle to saying
13 that in a specific market there is excessive pricing and
14 exploitative conduct. In this context, I think there is
15 an important difference, which is that the rent, as we
16 talked about yesterday, is being taken in a different
17 market where there are these statutory barriers to
18 entry.

19 MR RIDYARD: But this is still an exploitative theory, is it
20 not?

21 MR NOBLE: Well, yes, they are exploiting the vulnerability
22 of their counterparty, yes. That is the primary logic
23 of this case.

24 MR RIDYARD: It results in high prices.

25 MR NOBLE: Yes.

1 MR RIDYARD: All the kinds of creative destruction--type
2 arguments, do they not just apply --- I mean, do they not
3 just apply just as much to this theory of harm as a pure
4 sort of vanilla excessive pricing case?

5 MR NOBLE: I do not think so because of the nature of the
6 statutory barrier to entry. I think that for me is ---
7 draws a sharp distinction between the two.

8 THE CHAIR: All right. Let me posit something else.
9 Supposing you did not have the FRAND framework and you
10 have a situation where you have a monopoly in the SEP
11 market and a monopolist then charges an excessive price.
12 You would analyse that under the standard excessive
13 pricing framework. In that --- just straightforward SEP
14 monopolist, you have a load of SEP patents, you have
15 100%, everyone needs them, so you charge an excessive
16 price. You would analyse that under excessive pricing,
17 I assume.

18 DR PADILLA: I would agree.

19 THE CHAIR: You would.

20 Mr Noble, I am struggling why you do not accept the
21 proposition.

22 MR NOBLE: The reason I am pausing is --- I mean, I think
23 there is a case to do that, yes. I certainly agree with
24 that, if there is a case. If there is not a regulatory
25 solution in the way that you have with the FRAND regime,

1 then I think there is a case to, in a sense, treat it,
2 because the market power is in the SEP market. It is
3 seeking to take the rent in the SEP market.

4 THE CHAIR: I am not talking about this situation. I am
5 just starting ---

6 MR NOBLE: In theory, yes.

7 THE CHAIR: In a vanilla situation, you have a monopoly in
8 the SEP market. Let us say you do not have FRAND. The
9 monopolist charges an excessive price. You analyse
10 that. In this court you would analyse it as an
11 excessive pricing case.

12 The situation we have here is a variant of that.
13 What is being said is you do have the FRAND safety
14 valve, but the chipset dominance, you say, disables that
15 safety valve. So is that not exactly the same as the
16 situation I have just described where you do not have
17 the safety valve at all? All you are describing is
18 a situation in which the safety valve has moved away so
19 you are back into the situation where you simply have an
20 unconstrained monopolist who is charging, you say, an
21 excessive price.

22 I do not understand the difference between this
23 situation on your theory and the hypothetical situation
24 I have just described.

25 MR NOBLE: But I think there are two versions --- well,

1 rather, there is a threshold question there, which is:
2 is the act of disablement of the safety valve in itself
3 problematic because, if it is, then in a sense the
4 outcome you are getting in the SEP market is
5 fundamentally different or at least on its face has the
6 potential to be fundamentally different than the one
7 that you would otherwise have.

8 MR RIDYARD: You could say the same about if I am just
9 a non-practising entity, I happen to own some SEPs and
10 I charge \$30 for something that ought to cost only \$10,
11 I mean, that act of charging \$30 is different from what
12 would otherwise happen.

13 MR NOBLE: But what that non-practising entity has not done
14 is taken steps to disable the ability of the
15 counterparty to access the safety valve.

16 MR RIDYARD: I know, but that is the point, is it not? It
17 is the same evil we are looking at in both cases so why
18 should it be assessed against different criteria?

19 MR NOBLE: But I think it depends what you think the evil
20 is. Is the evil the price or is the evil the
21 disablement of the FRAND safety valve?

22 MR RIDYARD: Well, it does not matter if you disable the
23 FRAND safety valve, if it has no effect on price, does
24 it?

25 MR NOBLE: But I think if you think that it had --- well,

1 I mean, this comes into the debate about whether if it
 2 is within the FRAND range --- let us assume that in this
 3 scenario it is above the FRAND range. Then I think you
 4 do have a different situation. You have a situation
 5 where it is clear that the disablement of the safety
 6 valve has had an effect, in that the amount more than
 7 that is the effect of that.

8 THE CHAIR: But why would you judge the two differently? I
 9 am also like Mr Ridyard struggling to understand why the
 10 conceptual framework for the assessment of the abuse is
 11 different where in one case you look at whether the
 12 price is excessive and in the other case when, again,
 13 the ultimate evil is the charging of the excessive price
 14 through the ability to do that, through disabling the
 15 valve, why do you not also look at whether the price is
 16 excessive on the standard test of excessive pricing?

17 MR NOBLE: I think you could do that. I think there is
 18 a question about whether you need to do that and I think
 19 the distinction that I am seeking to draw is that, that
 20 the difference is that there is that threshold question.
 21 One could take the view that you also need to do
 22 that, but at some level that starts to become a question
 23 of law and policy.

24 MR TURNER: What happens if Qualcomm says: right, we do not
 25 want a FRAND determination. They are expensive. They

1 take too long. We do not like them. All our agreements
 2 get paraded around in court and it is all very
 3 unpleasant. So we will give you a 20% reduction off
 4 what we consider the FRAND rate, just to get rid of this
 5 matter. So they have disabled the FRAND valve, but they
 6 have actually reduced the price. Would that be --- how
 7 would that end up in your analysis?

8 MR NOBLE: But I think my answer to that would be it is not
 9 obvious that they have disabled the FRAND safety valve.
 10 The safety valve remains active, because I, as the OEM,
 11 could, if I did not like that number, activate the
 12 safety valve. It is just I have been given a very
 13 attractive royalty rate and so I might accept it and
 14 therefore not activate the safety a valve.

15 THE CHAIR: I think we should give Dr Padilla a chance to
 16 come back on that whole discussion.

17 DR PADILLA: Let me say to start by saying that I agree that
 18 ultimately you need to prove the evil and therefore to
 19 show excessiveness.
 20 I understand what Mr Noble is saying, like if the
 21 action disables the FRAND commitment, that is distortion
 22 of the competitive process. That is not competition on
 23 the merits, but, still, that is only one of the two
 24 legs. Even in an exclusionary case, that is only one of
 25 the two legs in order to prove an abuse. You still need

1 to show that that departure from competition on the
 2 merits generates an evil, which means that eventually
 3 you need to prove that the resulting prices are going to
 4 be excessive.

5 I am not a lawyer, but I believe that that is
 6 consistent with the case law.

7 MR RIDYARD: Okay.

8 THE CHAIR: Thank you.

9 MR RIDYARD: That is helpful.

10 I am going to go back to the model and its workings.
 11 I was going to say "predictions". What I am interested
 12 in is whether there are some predictions from the model.
 13 It seems to me that obviously the thinking behind the
 14 model, Mr Noble, is that, you know, this --- or the
 15 outside positions of various parties to these various
 16 possible negotiations fluctuate over time, depending on
 17 circumstances. So --- and we --- and we know in the case
 18 of, take Apple, you know, there was a period when they
 19 were not dependent on Qualcomm and periods when in your
 20 view they were.
 21 So --- and, equally, there are differences between
 22 one OEM and another for various reasons.
 23 I am interested in knowing whether those differences
 24 should throw up different predictions from your model
 25 and whether --- what can we do to use that fact to assess

1 the model's ability to explain the world?

2 MR NOBLE: Yes. So, I mean, I think you said in the agenda
 3 it was about what sort of testable propositions that it
 4 might throw up.

5 MR RIDYARD: If you like.

6 MR NOBLE: So I think the first one I touched on earlier,
 7 which is this question about what one might expect to
 8 see from --- in the evidence and is it important, is it
 9 necessary on the logic of this model to see explicit
 10 threats? I think that is quite a useful insight, in
 11 that the model says you do not need to see explicit
 12 threats. As long as all the players of the game, the
 13 parties, understand the consequences of the actions,
 14 then they ---

15 MR RIDYARD: Okay. That is kind of a nice argument or
 16 clever argument, you might even say, but it means that
 17 we cannot tell by looking at things whether it is
 18 happening or not. I want to know what testable
 19 propositions arise from the model.

20 MR NOBLE: Yes. So I think this --- the one you were
 21 alluding to, so the second one is then this point about
 22 the --- well, sorry, before I move off that first point,
 23 there is the converse of that, that I do think
 24 a testable proposition is you should see evidence of
 25 parties understanding and considering the credibility of

1 the threats from the other parties in ---
 2 MR RIDYARD: That is very hard to observe too, is it not,
 3 because all sorts of positions are taken in
 4 negotiations?
 5 MR NOBLE: Yes, although we do have the luxury here of
 6 seeing behind the veils of those because we see inside
 7 of one company, inside of another and the interactions
 8 so I think that ---
 9 MR RIDYARD: Okay. I will look obviously at all the
 10 evidence.
 11 MR NOBLE: I think the next point is then this point about
 12 equilibrium shift as you refer to. It is essentially do
 13 you sort of move the legs of the bargaining model and
 14 I think, for me, the Apple litigation, the whole swathe
 15 of litigation, is consistent with the model because at
 16 the moment that it felt possible --- that these outside
 17 options, in a sense, the pay-offs in those boxes had
 18 switched around, it then moved and it took the action to
 19 try and seek a FRAND determination. It tried lots of
 20 other things too. Whether or not they are legitimate is
 21 sort of to one side, but they acted upon the incentives
 22 as outlined in the bargaining model. That is my
 23 proposition, that it is consistent with the model and of
 24 course one can then consider the model and the facts and
 25 see, well, do we consider that their behaviour fits the

1 kind of predictions that this model makes or does it
 2 not?
 3 So I think that is a testable proposition.
 4 MR RIDYARD: But if that had resulted in a 30% reduction in
 5 royalty rates in 2018, that would have been a nice box
 6 to tick in your case, but it did not so we are still ---
 7 I mean, I understand what you are saying, but we are
 8 still sort of frustrated without having a test.
 9 So are there any other places to look at? Should we
 10 be expecting any other OEMs to have achieved some
 11 benefit or some reduction in royalties, because that is
 12 what this is all about, is it not, ultimately?
 13 MR NOBLE: Yes. I think, frustratingly, I do not think the
 14 model gives you those kinds of predictions beyond that.
 15 The third one, which you may or may not like, is the
 16 point about the court rates because the model also makes
 17 an assumption about the fact that there is the indirect
 18 effect that because you have a lot of agreements that
 19 you have --- on the theory of harm --- leveraged and
 20 therefore achieved higher rates, that you might then
 21 affect the attractiveness of the outside option itself,
 22 even if you do feel able to forego the chipsets.
 23 So if that is right, you should expect to see that
 24 the players of the game are concerned about that and
 25 took that into account when they were considering

1 whether or not to go down arbitration, litigation, etc,
 2 routes and, again, I do think you do see evidence of
 3 that.
 4 (Redacted --- confidential information)
 5 MR NOBLE: No, and I think that links back almost to what is
 6 the status of the model as a whole. It is
 7 a mathematical version of the narrative theory of harm
 8 and the benefit of those mathematical versions is that
 9 it helps you test the robustness of a theory of harm and
 10 then, potentially, pull out ---
 11 MR RIDYARD: That is not entirely right, because I might
 12 have a theory that cartels raise prices, quite
 13 plausible, good sort of economics behind that, but
 14 I then also might go out and say here is a cartel and it
 15 happened between these two years and in these two years
 16 prices were higher and that makes it more impressive,
 17 you know, my theory.
 18 MR NOBLE: But to continue the example, the status, I think,
 19 of the bargaining model is that you think and you write
 20 "cartels raise prices" and then you write down "here is
 21 how they do it". The bargaining model is a bit like
 22 doing a mathematical version of the interaction of the
 23 different entities in the cartel and considering, well,
 24 it is plausible that they would find it attractive to do
 25 this and the kind of testable proposition you then get

1 out is, well, we then need to go and test empirically is
 2 the price higher than it otherwise would have been and
 3 that is what cartel overcharge analysis is doing.
 4 DR PADILLA: If I may, I think there is a testable
 5 proposition emerging from the model, which is if the
 6 counterparty, if the implementer is not exposed to the
 7 threat, then there should be --- they should be paying
 8 lower royalties. So I think that what the model tells
 9 us is that there is a threat and that the threat is the
 10 discontinuations of supply. If you do not depend on
 11 that supply, then your royalty should be lower,
 12 according to the model and the more dependent you are,
 13 the higher the royalty should be.
 14 So I think that that is, as far as I can see, the
 15 only testable proposition.
 16 MR RIDYARD: Which is --- well, we will come on to that in
 17 another section. That is what you have sought to do
 18 with your leverage analysis of course.
 19 I just want to jump back to something which is, I am
 20 afraid, completely out of context but I have just been
 21 thinking about it in the background. Dr Padilla, your
 22 example of the ultimatum game, I just want to clarify
 23 what I think is a very small point on that. When you
 24 explained the ultimatum game, if that --- when that is
 25 done as a sort of one-off experiment with college

1 students, or whoever, they ought to accept the \$1, but
 2 they do not and that is the kind of behaviour —
 3 characterised as a sort of behavioural bias, these
 4 people are acting irrationally, but if — but when you
 5 went on to explain the relevance of that to the case,
 6 I think you were saying that it is not that you were
 7 expecting Apple to be irrational here, it is that it is
 8 not a one-off game, there are reputational effects and
 9 you made some other points about other considerations in
 10 the real context Apple would take into account before —
 11 and therefore be more rational, as it were, in rejecting
 12 the \$1 offer.

13 So your way of looking at this thing is you are not
 14 positing irrational behaviour by the parties; you are
 15 positing that it could be perfectly rational for Apple
 16 to say "no" to the \$1 because of the further
 17 consequences?

18 DR PADILLA: Right. This is very much my — let me put it
 19 that way. I think that as an economist I am always very
 20 nervous about explaining things on the basis of
 21 irrationality, because irrationality can help you
 22 explain almost everything. At the same time, I
 23 recognise that most of the bargaining literature comes
 24 from business schools and it actually is based on
 25 heuristics, biases, etc and I cannot rule out that some

1 of the Silicon Valley moguls have funny psychologies.
 2 So I am always looking for a rational explanation.
 3 When economists have looked at the ultimatum game
 4 and those that are not satisfied with the irrationality
 5 explanation, they have said: okay, why is it that people
 6 are behaving in this particular way? Is there
 7 a rational explanation? Typically, it is repeated
 8 games, it is that this kind of behaviour tries to
 9 enforce co-operation going forward or good behaviour on
 10 the part of the other player and that is what
 11 I extrapolated to the case of Apple.

12 MR RIDYARD: Yes, okay. I do not want to go any further on
 13 that, but that was something in the back of my mind.

14 There was one other specific question I wanted to
 15 ask and that was — in some ways, it is related to that
 16 ultimatum game illustration. Can you just help me,
 17 Mr Noble, just to take us through briefly the — your
 18 take on this Nash equilibrium point, about if there is
 19 a bargaining model where there is some rent, as it were,
 20 between the two parties, I mean, how in your model —
 21 can you just summarise how in your model how that
 22 resolution is made, what the outcome is when you have
 23 this situation such as, you know, in principle both
 24 parties might be satisfied either with \$1 or \$99 but
 25 where that ends up?

1 MR NOBLE: So the bargaining model that I have tried to
 2 build is I have tried not to be conditional on one
 3 specific equilibrium concept because I think Dr Padilla
 4 is right that there is a lot of debate in the economic
 5 literature about which of the range of equilibrium
 6 concepts is most useful in which contexts. So what
 7 I have tried to do is to present a model that is
 8 consistent with, in a sense, the majority of these
 9 models, that they show you that both sides' outside
 10 options matter and I used the term "outside option" in
 11 a broad sense. Some of the literature uses it in quite
 12 a narrow sense. I am using it in a broad sense to
 13 capture things like discount rates; the fact that the
 14 longer you take to reach an agreement, the more costly
 15 it is for both parties. What you find in the literature
 16 is that outcome, there is then a possible agreement, the
 17 Nash equilibrium, depending which model you are talking
 18 about, they use different language, is influenced by
 19 both of those outcomes essentially and it is influenced
 20 because each party, they may not have perfect
 21 information, but they have some information about the
 22 quality and the realism of those outside options and
 23 that causes them to adjust their own position and it
 24 is particularly relevant in these contexts where you are
 25 talking here about parties that are even within the same

1 negotiation trading information. They are gradually
 2 moving towards each other sometimes or they are
 3 articulating more clearly what their position is so that
 4 the other party can understand it and the
 5 rationalisation of that is that that is parties trying
 6 to narrow the gap between them. That is essentially the
 7 bargaining model in real life, people homing in on
 8 a final outcome.

9 DR PADILLA: My point is the point that I made before.
 10 I think that the literature says "may" in certain
 11 circumstances. So let me illustrate this.

12 Let us suppose that Spain's Prime Minister, who is
 13 our Prime Minister who is not in a good relationship
 14 with President Trump, says, "Look, I have acquired a new
 15 couple of drones, the US should surrender". Okay, the
 16 fact that now we have two drones that we did not have
 17 before has strengthened our position, definitely. Do
 18 you think that President Trump is going to move? No.
 19 It depends on lots of things and I think that we agree
 20 that the threat can move things in one direction — may
 21 move things in one direction and there are a number of
 22 assumptions, but does it move things? That's the
 23 question. That is why the model is not helping us and
 24 that is why we need to look at testable propositions and
 25 engage in factual analysis.

1 MR TURNER: In this example, has your Prime Minister read
 2 "The Art of the Deal"?
 3 DR PADILLA: He is more likely to lose his job actually as
 4 result of that than impress President Trump.
 5 THE CHAIR: If I can summarise what I think your position
 6 is, Dr Padilla. You do not disagree with the theory,
 7 but you say that the insight that it yields is a trite
 8 one, one that is self-evident and, ultimately, it comes
 9 down to an analysis of the facts concerning the outside
 10 options, among other things?
 11 DR PADILLA: Yes.
 12 THE CHAIR: Also you can then go back to the effect on
 13 Qualcomm, which is -- I mean, that is part of the
 14 analysis of market power as well.
 15 DR PADILLA: Ultimately it is a question to see whether
 16 there is a corpse or not.
 17 MR RIDYARD: I think the most productive place to go now is
 18 to go on to talk about Dr Padilla's leverage analysis,
 19 you know, very much with this sort of predictable
 20 testable propositions notion in mind.
 21 Dr Padilla, my first question to you is: when you
 22 sort of engaged in this analysis, I am just interested
 23 to know whether -- how you took into account the
 24 evidence on the file, which is cited in Mr Noble's
 25 report, about the internal documents of Qualcomm, the

1 assessment of Mr Altman and Mr Wise, one of whom said,
 2 you know, there is a high correlation between licensing
 3 royalties and our position as a chipset supplier.
 4 I mean, what -- in a way, your analysis says there is
 5 not any correlation so what do we -- we are going to
 6 have to sort of wrestle with those two factors so how
 7 did you take that into account when you --
 8 DR PADILLA: I did not. I ignored all documents in that
 9 regard and I was looking at the facts following this
 10 very old dictum that in God we trust and from everyone
 11 else we want data.
 12 MR RIDYARD: So you think the best way to deal with that is
 13 just to ignore it and look at the --
 14 DR PADILLA: I am not good at interpreting documents. It is
 15 not my specialty so I was looking the facts to the
 16 extent that I could collect facts and with, you know,
 17 a number of measurement issues that we will discuss in
 18 due course.
 19 MR RIDYARD: Okay. That is a fair position to take.
 20 Mr Noble, do you have any points on that before we
 21 move into the nuts and bolts?
 22 MR NOBLE: I think there is a question of how one interprets
 23 those statements. I think Qualcomm took issue with my
 24 interpretation of them so, in a sense, that is
 25 a determination that will have to be made about what did

1 those mean? What was meant by those statements?
 2 I would say that if we are looking for empirical
 3 evidence, I think there was quite an interesting
 4 exchange, I forget which witness, about this -- the
 5 stick in China that talked about non-compliance, and
 6 I did, after that, notice an interesting document which
 7 is {POF/629/7}, which I think in a sense provides
 8 a different kind of empirical evidence, because it is in
 9 the field as opposed to looking across the royalty
 10 rates.
 11 So what this does not show you is differences in
 12 royalty rates, but what it does show you is the extent
 13 to which compliance is high or low depending on
 14 Qualcomm's share.
 15 When I looked at that, I noticed that in those top
 16 two rows, "Premium" and "High", you have QCT's share
 17 being high and in the "Mid" and "Low" entry you have
 18 slightly lower shares and then you see seeming effect on
 19 compliance rates which appeared to be consistent with --
 20 MR RIDYARD: What is "compliance"? What does that mean?
 21 MR NOBLE: Well, I understand in the context of the
 22 witness -- I forget which witness it was. One of the
 23 other slides near here talks about the "stick" that they
 24 referred to.
 25 MR RIDYARD: Probably Mr Rogers.

1 MR NOBLE: So my understanding of that was it is compliance
 2 with reporting and so it is essentially -- are they
 3 reporting all the units that they are paying? So -- it
 4 is a weak indicator, but I did think it was consistent
 5 with the notion of what was being talked about in those
 6 Project Berlin statements which said: when we do not
 7 have a high share, then people in a sense do not -- they
 8 might challenge us in some way and of course what we are
 9 talking about here are legitimate challenges via FRAND,
 10 what here is being talked about is, arguably,
 11 illegitimate challenges by not paying, but it did strike
 12 me that it is a useful slide to have in mind in your
 13 search for empirical tests.
 14 DR PADILLA: Just one quick comment on this. Just I am not
 15 able to interpret this chart, but based on something
 16 that Mr Noble has said, I think that it is important to
 17 understand that in this business, this business of
 18 licensing, one of the problems that licensors find
 19 typically is verifying units. I think that either
 20 because you charge per unit rates or even ad valorem
 21 rates, identifying units is important and if that means
 22 that when you are selling chipsets you are in a better
 23 position to identify units, that is a question to
 24 disentangle as well.
 25 MR RIDYARD: So, in that case, let me ask a different kind

1 of question then, Dr Padilla, which fits in with what
 2 you actually did and how you did it, and that is: when
 3 you embarked on your analysis, what would you have
 4 expected to observe, if the theory of harm was indeed
 5 valid? What is it that ---
 6 DR PADILLA: What I would have expected to find is
 7 a correlation between the degree of dependency and
 8 royalty rates. I would have expected that at times in
 9 which Apple and Samsung were more dependent on Qualcomm
 10 and they would be, you know, more exposed to this threat
 11 and therefore they would agree royalties that were
 12 higher. That was a testable proposition that I was ---
 13 the null hypothesis, should I say.
 14 MR RIDYARD: So your explanatory variable there is the ---
 15 I know you try a few, but the main one is at any point
 16 in time what proportion of my chipsets do I buy from
 17 Qualcomm?
 18 DR PADILLA: Right, and I was looking at three measures,
 19 including one that is forward-looking.
 20 MR RIDYARD: Sure. But that does not correspond to how you
 21 look at market shares, does it, because your market ---
 22 your market share analysis --- your market definition is
 23 not --- is not --- even though you go for OEM-specific
 24 markets, the market share in that market is not Apple or
 25 Samsung's purchases from Qualcomm, it is a different

1 calculation, is it not? So is that the right
 2 explanatory variable to be looking at?
 3 DR PADILLA: I also looked at that. So in the appendices
 4 I looked at not the share that Qualcomm had vis-à-vis
 5 Apple and Samsung, but also the market share that it had
 6 in the market that they had defined.
 7 MR RIDYARD: You found the same results?
 8 DR PADILLA: No correlation.
 9 MR RIDYARD: Okay. Mr Noble, do you have any comments on
 10 that aspect?
 11 MR NOBLE: For me, the main question here really is about
 12 the extent to which the null hypothesis tallies up with
 13 the theory of harm as articulated by the Class
 14 Representative, because the point that I set out in
 15 I think the seventh report is that there are two aspects
 16 to the theory of harm. There is the direct effect,
 17 which is the notion that the ability to leverage an
 18 individual affects their rate, which I think is, as
 19 Dr Padilla outlined, I think that is at the heart of his
 20 expectation that there would be a slope. Whatever this
 21 measure of dependence is, whether it is market share or
 22 individual OEM supply, you would have those that are
 23 very dependent, high rate; those that are not very
 24 dependent, low rate, and some line in between, but the
 25 theory of harm has the two elements which is that ---

1 which I think means that these observations are not
 2 independent.
 3 There is the indirect effect, which is that Qualcomm
 4 agrees rates with people and then uses those previously
 5 agreed rates in the negotiations with the new people
 6 and, as we see, it is clear that those previously agreed
 7 rates are at least one of the feedstocks that go into
 8 any external dispute resolution process and so it means
 9 that there are essentially two mechanisms by which the
 10 theory of harm can impact these rates. So it is not
 11 obvious that not observing a slope is --- can show you
 12 that the theory of harm is not valid. It could in fact
 13 be consistent that the theory of harm is valid, because
 14 actually if Qualcomm is successful it has pushed all of
 15 the rates up.
 16 MR RIDYARD: Yes, I see the point that the observations are
 17 not completely independent and, obviously, if you were
 18 able to do a laboratory-controlled experiment, you would
 19 obviously make sure that was not the case and that is
 20 a problem in many exercises of this kind. Maybe it is
 21 more of a problem here, given the emphasis which is
 22 placed on MFN clauses and FRAND and comparability, but
 23 is that not a factor that would maybe muddy the waters,
 24 rather than make the exercise sort of invalid?
 25 MR NOBLE: Well, I guess the question is how muddy do the

1 waters become? You know, I think there is a question
 2 that they can become sufficiently muddied that you would
 3 not expect there to be an effect that is observable.
 4 You might also expect that Qualcomm itself does not,
 5 in a sense, that it is content with a particular level
 6 of royalty, that it might self-restrain, that it might
 7 have the ability with certain OEMs to achieve even
 8 higher royalty rates, but it does not do that because
 9 what it wants to achieve is a uniform or a more uniform
 10 royalty rate because there is a risk to this whole
 11 edifice, as I think we talked about yesterday, that it
 12 might only take a few OEMs to launch successful
 13 publicly-known FRAND challenges to bring the whole thing
 14 crashing down. If that is a realistic threat or at
 15 least it is a threat that is always there in the
 16 background, then that will be a rational expectation
 17 why, in a sense, that would pull down the top of that
 18 slope that Dr Padilla is trying to identify because
 19 Qualcomm itself is restricting itself. It is not
 20 seeking the highest possible royalty rate that it could
 21 have achieved.
 22 MR RIDYARD: But there is a big variation in the rates.
 23 Obviously we are not going to talk about the numbers in
 24 detail, but when you look at the charts across the OEMs,
 25 I mean, there is --- there is a nice big variation in

1 outcomes in terms of royalty rates. So does that not
2 sort of --- does that in any way undermine your concern
3 here?

4 MR NOBLE: Well, I think this comes back to what is it that
5 we are looking at in those charts? We are looking at
6 net rates for a start. These are not just the one-way
7 rate being paid by the OEM to Qualcomm. Lots of the
8 rates have cross-licences in them and so, in a sense,
9 you are looking at the net position that exists under
10 that rate, where there has been a trade, a value between
11 two parties, and so that adds further noise into the
12 data.

13 I think another point that is actually very
14 important in --- and I looked at that in my ninth report
15 or maybe in one of my appendices --- is the China rates.
16 You have a mix effect and so even though we might think
17 that the China rates and the non-China rates are in the
18 same relevant market, that does not mean that they are
19 not different things and they have different prices. It
20 is a bit like looking at SoC and thin modems. They
21 might compete with one another, but they are different
22 things and so you have to be careful if you smooch
23 together the prices of both of them and I think
24 I highlighted that if you adjusted --- if you corrected
25 that China rate factor, it moved some of the rates very,

1 very substantially into different places.

2 So I think there is a lot of mud going into this
3 water is my overall concern.

4 THE CHAIR: I thought it would be a good point to take
5 a break now for five minutes and then we will come back
6 and to remind everyone that we are going through until
7 12.30 today.

8 MR SAUNDERS: Could we turn the heating up?

9 THE CHAIR: It does seem to veer wildly from Arctic to
10 tropical. I felt yesterday it was a bit too hot in the
11 afternoon. I will ask. Thank you.

12 (10.59 am)

(Short Break)

14 (11.11 am)

15 MR RIDYARD: I would like to just pick up from where we left
16 off. Mr Noble, I think you were just making some --- you
17 had just made some comments about one particular aspect,
18 which was the China/non-China distinction. Dr Padilla,
19 I mean, I will give you a chance to respond to that, but
20 it seems to me it is part of a wider issue, which is if
21 I go back to my cartel analogy, if you do a cartel
22 analysis, you would obviously want to know when the
23 cartel happened and when it did not happen and you might
24 want to do a comparison between those two times, but you
25 would not simply look at price during and after the

1 cartel; you would also want to control for as many other
2 factors as possible. You know better than me how one
3 goes about doing that, but, I mean, in your analysis you
4 have not --- you have not done the econometric analysis.
5 I am not criticising you for that. But, nevertheless,
6 the sort of substantive concern is still there that
7 maybe there is a failure to account for all the other
8 influences and that is why we are not seeing the
9 correlation that we might have seen from the theory of
10 harm.

11 How do you respond to that as a general issue?

12 DR PADILLA: As a general proposition, it is a fair
13 criticism. I think I have tried to deal with it in
14 a number of ways, given the information available. So,
15 for example, with respect to cross-licensing, first,
16 I have noted that cross-licensing in the case of the
17 value of cross-licences for Qualcomm is limited. This
18 is actually consistent with the CR's case in terms of
19 dominance in the assessment of dominance. Then I have
20 looked at, you know, not for Apple and Samsung, but when
21 looking more generally, I have looked at restricted
22 attention to contracts without cross-licences and there
23 are a few and that is why I cannot do econometrics, but
24 the pattern is not fundamentally different.

25 Focusing attention on Apple and Samsung, the

1 cross-licensing position of Apple and Samsung over
2 the years has not changed that much. Apple has been
3 relatively weak in patent portfolio until very recently
4 and Samsung, on the contrary, has had a patent portfolio
5 that was much more significant over time. So the
6 comparisons over time for Apple and Samsung in a sense
7 control for differences in cross-licensing.

8 In addition, whether I have thought is --- I have
9 done is the following: I have said, okay, if there was
10 cross-licensing, when would that be the value of
11 cross-licensing in which way it could affect my results?
12 If I am finding no relationship, when would it do this?
13 Okay. When would it generate a positive correlation
14 between chipset dependency and royalties?

15 Then I look at and find that actually the evidence
16 suggests that cross-licensing agreements are more
17 common --- let me just look at my notes to make sure that
18 I do not mislead you. Cross-licensing agreements are
19 more common for those that have low dependency, which
20 means that, if anything, had I controlled for
21 cross-licensing, when I find that there is no
22 relationship would have become a negative relationship.

23 So cross-licensing as a confounding factor does not
24 pose problems in my analysis.

25 Then other factors. China. Well, China is an issue

1 fundamentally before 2015–2018. I have looked at what
2 happens after that and, again, you find no correlation .
3 So that is indirect evidence that the China effect
4 cannot be a confounding factor that corrupts the
5 results .

6 In general, as we all know, confounding factors
7 matter if you can prove that that confounding factor is
8 in a sense correlated with a variable that you are
9 trying to investigate . You know, there are many factors
10 that would imply changes in the level of royalties , but
11 I am not going to change or I am not going to generate
12 a correlation or high correlation between dependency and
13 prices . Mr Noble can correct me, but I do not think
14 that he has identified or discussed the correlations
15 between the alleged confounding factors and dependency.

16 To the extent that I have been able to do so, I have
17 tried to look at that guided by superiors, looking
18 before 2015 and after 2015 and so on.

19 So am I telling you that this is perfect evidence of
20 no correlation in the sense that you can attribute
21 probability 1 to that? No. But at the very, very least
22 what I am telling you is that, you know, the allegation
23 that there is a tiger , that tiger is not — that tiger
24 is not in India . The allegation is about a tiger in
25 Hyde Park. So that the only testable proposition is one

1 for which there is no evidence with the data available
2 and, you know, trying to exploit that data to the best
3 possible way and to, you know, given the data
4 limitations .

5 MR RIDYARD: Mr Noble, your reaction to that?

6 MR NOBLE: Well, I guess the first reaction is that
7 a reminder about the direct and the indirect theories of
8 harm, that in a sense it is not obvious to me one would
9 expect to see a slope in the first place. So that is
10 the first point.

11 I think in terms of the empirical application point,
12 I mean, on the cross–licences, it is not just the
13 cross–licences that are the issue. There are transfers
14 in and there are kind — and there is marketing
15 incentives and so on and some of these royalty
16 agreements are quite complicated as well so there is
17 a bit of a debate about exactly what is the number.
18 I do not think I can say the names or the numbers, but
19 there is an appendix in my report that talks about one
20 of those numbers and how it can move by a factor of 3
21 depending on, you know, the actual outturn performance
22 of that particular entity .

23 So, in a sense, there is a question mark about
24 almost like the vertical position of various dots
25 because of that.

1 On the China rates, I think my appendix in my
2 seventh report showed that I think there is — I do not
3 have the number to hand unfortunately, but there are
4 quite a number of observations that moved by a couple of
5 percentage points, which, given the base that they are
6 starting from, is significant movement for those
7 specific observations and so I think when you take all
8 of those factors into account, you have a lot of
9 uncertainty about where are these dots meant to be and
10 you then have a question mark about, well, am I even
11 expecting to see a slope?

12 So for me, taken in the round, I think it means that
13 unfortunately I do not think this leveraging correlation
14 analysis really answers the question that we want to
15 know the answer to.

16 DR PADILLA: Two comments. On the second comment, what you
17 have said is incredibly unfair and it is incredibly
18 unfair for the following reason: there is no allegation
19 that you have been able to make that generates
20 a positive correlation . You may move one point or
21 another, but there is no one — no notice adjustments
22 would generate a positive correlation . So raising
23 doubts about one point or two points does not change the
24 picture. So that is terribly unfair .

25 With respect to the indirect effect , the indirect

1 effect is a double–edged sword for the CR, because the
2 indirect effect could apply in one direction or the
3 other. The indirect effect could be saying there is
4 somebody that pays a higher royalty, therefore everybody
5 is going to pay a higher royalty because of ND, but it
6 could be the other way around because there is somebody
7 that is not exposed and does not pay a higher royalty.
8 Everybody pays a low royalty. In fact, it is much more
9 likely to militate in that second direction than in the
10 first direction . If you see the logic of MFNs and, as
11 you know and I do not want to, you know, disclose
12 confidential information, some of these royalty
13 agreements have MFNs. The MFNs tend to equalise in the
14 downward direction, not in the upward direction, so the
15 indirect effect , I think that is highly overstated,
16 speculative, even the variation that you observe in
17 royalty rates. I think that in the record — and
18 correct me, Mr Noble, if I am wrong — there is no
19 evidence that you have presented of a positive
20 correlation after having made any change to the data.

21 MR NOBLE: I mean, I think from my perspective it is —
22 I mean, this is why, the first comment that I made in
23 the seventh report was to really call into question what
24 is the null hypothesis because it was not made clear in
25 Dr Padilla's leveraging report. He has very helpfully

1 articulated that and for me, you know, as I understand
2 the Class Representative's theory of harm, it does not
3 rely on there being a slope and so not observing a slope
4 simply does not answer the question for us.

5 In terms of the --- I think there was one point we
6 have not covered, which I think is quite important,
7 which we touched on yesterday, which was the role of
8 non--asserts, because we have talked about the sort of
9 position of the dots, as it were, but it is also
10 important to know what is this measure of leverage. Of
11 course I think, Mr Ridyard, as you outlined yesterday,
12 there is a threshold question of those, about should
13 they be taken into account or should they not, because
14 there is a question mark about the linkage to dominance
15 and how they fit in with the theory of harm, but
16 assuming that they should be taken into account, that
17 would shift some of the dots very substantially to the
18 left and to the right and so I highlighted --- it is in
19 {EAOE/17/17}. I do not think I can read out these
20 numbers, but I give three examples. So it is page 17 of
21 this one. (Pause)

22 MR RIDYARD: While we are waiting for that, maybe just to
23 clarify the point about why in the first place you do
24 not necessarily expect there to be a correlation and
25 that is because of the lack of independence of the

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1 observations primarily, is it?

2 MR NOBLE: Yes. It is because there are two aspects to the
3 theory of harm. It is the --- you know, plus the
4 non--independence of the observations in the MFNs and so
5 on that one observation can only influence another.

6 MR RIDYARD: So what is the other aspect?

7 MR NOBLE: The other aspect is the indirect effect of the
8 theory of harm, which is the idea that you pull up the
9 rates. I mean, essentially they are two sides of the
10 same coin, but you are pulling up --- so imagine that you
11 start with --- there is one agreement. You are
12 successful in leveraging that agreement. You achieve
13 rate X. In the second agreement rate X is then either
14 via MFN, via negotiation or via the fact that it would
15 in all likelihood be used as a benchmark in a FRAND
16 litigation. Any of those might influence the rate that
17 is agreed in negotiation two and so that might pull that
18 observations towards rate X.

19 THE CHAIR: It is your tainted counterfactual point?

20 MR NOBLE: Exactly. The historic agreements can then
21 influence the future agreements and essentially pull
22 them together.

23 MR RIDYARD: Maybe this is just the way it is, but it is
24 kind of a little frustrating that, you know, on the one
25 hand we have your bargaining model, which does not yield

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1 sort of testable propositions of what really ultimately
2 matters, and then you are saying that Dr Padilla's
3 attempt to do it also cannot yield testable
4 propositions. We sort of have a double --- you know,
5 two --- two sort of untestable areas and it is not
6 obvious what we --- how we wrestle with that. I know
7 that is not an easy problem to solve in this or any
8 other forum, but there is a certain amount of
9 frustration. I understand Dr Padilla makes that
10 argument --- he obviously interprets that negatively for
11 your case, as you would expect, and we are just trying
12 to struggle with ways through that problem.

13 MR NOBLE: I agree, it is a challenge, and we keep coming
14 back to the point that I think ultimately there is no
15 getting away from the fact that one needs to look in
16 detail at whether or not, in a sense, the story that has
17 been set out by the Class Representative better fits the
18 facts.

19 MR RIDYARD: Yes.

20 DR PADILLA: Can I take you for a second to figure 4 in JP3
21 and I don't know the reference.

22 MR RIDYARD: You should finish, Mr Noble, this point, which
23 we were waiting on the system.

24 MR NOBLE: Yes. So the point that I am making here is that
25 the non--assert agreements, and we have, I think, I do

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1 not know whether I can say that name --- can I say that
2 name?

3 MR RIDYARD: Do not, because ---

4 MR NOBLE: So there is a chipset supplier in paragraph 2.35.
5 They have a non--assert agreement in place and assuming
6 that one should take that into account that it might
7 mean that Qualcomm has some control or ability to
8 restrict or stop that chipset supplier from supplying
9 some of the OEMs that they are being supplied, then if
10 that is true, then one should consider putting that into
11 the measure of dependence that you use in this
12 correlation analysis.

13 The point that I highlight here is --- and I give
14 three specific examples --- that there are three OEMs
15 that are then named where you see one of them here, and
16 what I am saying is the left number is the number of the
17 dependence number that you would use or, rather, is used
18 in Dr Padilla's analysis and the right--hand number is
19 then the dependence number that you would use if you
20 took account of this specific non--assert agreement.

21 If you go over the page, you see the same point
22 repeated twice for two further OEMs {EAOE/17/18}.

23 So I have just given an illustration here of the
24 fact that for these three OEMs, for this one non--assert
25 agreement, with this one chipset supplier, you can move

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1 the dial on very substantially on three dots. There are
2 several other non--assert agreements. It is quite
3 difficult to pass all of those agreements but, for
4 example, there is one with VIA that I do understand is
5 valid for potentially similar years to the years that we
6 are talking about here and that was talked about quite
7 extensively in the evidence about the fact that they
8 might supply chipsets for Samsung mobile phones.

9 So again, one is faced with the same question about,
10 well, if it is true that these non--assert agreements
11 could affect the reliability of that supply, then it is
12 something that you should consider putting into the
13 dependence measure of this analysis. So what that would
14 tend to do is, you know, as you see here, it can move
15 some of these dots very, very substantially.

16 DR PADILLA: May I take you to figure 4 and then I will take
17 you to figure 5 in my third report. While we do that,
18 let me say that all these points about the non--asserts,
19 about VIA, etc, responded in JP4, I think that to some
20 extent these are somewhat arcane points that I do not
21 think that, you know, are easy to discuss here, but
22 I think that you can read how I responded to all those
23 points.

24 I want to focus on two issues that are, you know,
25 high level and I think that are important by reference

1 to these figures.
2 MR SAUNDERS: I am obviously in your hands but, as you know,
3 these figures are ---

4 MR RIDYARD: Clearly the numbers here, we are just talking
5 about the dots on the page.

6 DR PADILLA: So maybe we do not need to present it. The
7 points I am going to make, I am not going to name
8 companies or mention rates.

9 If you are in figure 4, which is on page 23 of my
10 report, you can see that --- I do not know whether that
11 is available to you?

12 MR RIDYARD: I have that, yes.

13 DR PADILLA: Yes.

14 So an illustration. Take, for example ---

15 THE CHAIR: I do not think that is up on the screen yet.

16 MR SAUNDERS: {EAOE/12/23}.

17 DR PADILLA: Yes, that is figure 4.

18 So if you look at --- let us look at years that are
19 after 2015. In fact, let us look at 2018, for example,
20 or around 2018 because I think that at that point there
21 would be no disputes about Chinese rates or non--asserts,
22 etc., etc.

23 All that I want to say, take any year and look
24 vertically. Do not look at these dots in a horizontal
25 fashion. Just look at them vertically. There is a lot

1 of variation for each year in terms of royalty rates.
2 So I do not think that that squares well with the
3 indirect effect.

4 If I take you to figure 5, there it changes a little
5 bit that figure, because now in the horizontal axis what
6 you have is dependency, you know, percentage of
7 purchases from Qualcomm's chipsets, and in the vertical
8 axis you have royalties.

9 Let me look at the lower picture, the one that is
10 2015 onwards because, again, that deals with some of
11 these confounding factors. Take any particular degree
12 of dependency. 45%. 35%, whatever number, and take
13 a vertical line. You see a lot of variation. That does
14 not square with the indirect effect.

15 MR RIDYARD: I can see that. You have taken us to two
16 figures there. One was expressed in the royalties per
17 unit and these are ad valorem. I was going to ask
18 you --- they yield quite different pictures.

19 DR PADILLA: Yes, we can go to figure 6 which is ---

20 MR RIDYARD: No. I just wanted your views on whether you
21 thought one was superior to the other, because they tell
22 quite different pictures, do they not, from one another,
23 for reasons which are kind of quite easy to understand?

24 DR PADILLA: Yes. We have --- I have been doing the analysis
25 both in per units and ad valorems to make sure that the

1 absence or presence of correlation was not a factor or
2 was not affected by the royalty base.

3 In the case of Qualcomm, and given that it tends to
4 deal on ad valorem basis, I think that it is preferable
5 to look on ad valorem basis, with one caveat, which is
6 that there are royalty caps that are per unit and that
7 is something that needs to be factored in in the
8 calculation of the ad valorem.

9 But I think the results are consistent whether you
10 look ad valorem or per unit in the sense that there is
11 no observable correlation.

12 MR RIDYARD: I understand that your results apply on either,
13 but I just wondered whether there was one --- maybe it
14 does not matter I suppose, but I just wondered whether
15 you thought one was better than the other?

16 DR PADILLA: I did not have a view and the reason why I now
17 selected figure 5 for illustration is because there are
18 more points and there are more points because there are
19 a number of contracts for which I do not have
20 observations on units and therefore I cannot calculate
21 per unit. So you have 47 observations with ad valorems
22 and 33 with per units. So it was for illustrative
23 purposes, but the picture is the same qualitatively.

24 MR RIDYARD: It does --- this is a sort of incidental
25 observation, but it does highlight that, you know, the

1 difference between chipset level licensing and
 2 end—device level licensing . The end—device level
 3 licensing allows a certain amount of differentiation on
 4 the royalty rates. I am sure — well, I am not sure,
 5 but I can speculate that that could be one of the
 6 reasons why — one of a number of reasons why end—device
 7 licensing might be considered preferable in some ways.
 8 DR PADILLA: That is one of the reasons. Another reason is
 9 that not all SEPs read on the chipset and therefore
 10 one —
 11 MR RIDYARD: I have that argument too, yes.
 12 DR PADILLA: — of the problems is that you would have
 13 licensing at two levels and possible double—dipping
 14 concerns.
 15 MR RIDYARD: Yes. Mr Noble, is that — I mean, there is
 16 a — I think it is a point I made before the break
 17 actually, there is a large amount of variation in these
 18 rates, but do you have any points on that?
 19 MR NOBLE: Well, I think it is useful to start with the
 20 ad valorem rate, because I think, to my eye, what you do
 21 observe here is you do see quite a lot of clustering
 22 around similar rates. I shall not say what they are,
 23 but in the top half of this chart you see a lot of
 24 numbers that are the same and in the bottom chart you
 25 also find the clustering, it is a couple of percentage

1 points different from that, but, again, I think to my
 2 eye I do observe a degree of clustering and I think, in
 3 a sense, I do not think that these indirect mechanisms,
 4 these observations have to mean that they are identical
 5 to one another because there may — there are
 6 OEM—specific factors that I think both Dr Padilla and
 7 I accept may well influence the specificities of that
 8 rate. There are also issues about risk sharing and so
 9 on that, this means that people are — you know, in
 10 a sense, there might be a way to express them on the
 11 same basis, but have we definitely found what that is?
 12 I do not know.
 13 I think for me there is a sort of primary question
 14 about, does one observe in this data — is the position
 15 of the dots consistent with the fact that these indirect
 16 mechanisms via MFNs, via expectations of what might be
 17 taken into cannot in a FRAND challenge, via the way in
 18 which the parties negotiate by referencing past
 19 agreements, and indeed we have not talked about the
 20 NDRC. There is also reference to the fact that I think
 21 Qualcomm itself says that the NDRC rate acted as a kind
 22 of focal point for a lot of negotiations in the
 23 later years.
 24 So, for me, in a sense, there is a question, just
 25 sort of zooming right out, how much information or value

1 can you extract from these dots? Because if what you
 2 are trying to find is a slope, we keep coming back to
 3 that fundamental question of do we even expect there to
 4 be a slope? I think I have a question about whether we
 5 really do.
 6 DR PADILLA: Can I answer to some of this very briefly?
 7 The clustering. The clustering happens pre— 2015.
 8 The clustering happens with respect to, as you look at
 9 the names of the companies, companies that are very,
 10 very identical, very similar. I think that we are
 11 talking the CMs. So I do not think that that is a good
 12 counter—example.
 13 MFNs. MFNs would imply clustering at low level, not
 14 clustering at a high level, because MFNs are equalising
 15 with better terms and conditions.
 16 I really do not see the objection. I mean, let me
 17 clarify what I am saying. I am aware of the limitations
 18 in the data. That is always the case in every single
 19 empirical analysis. Unfortunately, in economics, rarely
 20 we can conduct controlled experiments.
 21 MR RIDYARD: We are familiar with that problem, but, I mean,
 22 arguably there is a lot — this is a very difficult task
 23 to achieve, you know, given the data that we have here.
 24 I mean sometimes those constraints are more problematic
 25 than others.

1 DR PADILLA: Yes, but the question is what inference you
 2 draw from all these criticisms?
 3 MR RIDYARD: Yes.
 4 DR PADILLA: You need to think about what is the inference.
 5 Let me put it this way: suppose that we had done the
 6 analysis with all these limitations and there was
 7 a positive correlation, what would you expect Mr Noble
 8 to say? That that was consistent with the theory of
 9 harm? Then I would say —
 10 MR RIDYARD: I think he would probably put it a bit stronger
 11 than that.
 12 DR PADILLA: Yes, possibly. Then I would try to find
 13 obstacles and I would, well, there are limitations but
 14 I would be in a much more difficult position because
 15 I would have to rebut and one of the things that he
 16 would ask me to do is to show that any of these
 17 confounding factors that you have identified would
 18 generate no correlation or the opposite correlation.
 19 What we find here, doing, with limited data, many,
 20 many robustness tests is always no correlation. He is
 21 fundamentally saying, you know, I do not trust it, but
 22 the fact is that there is no positive correlation and
 23 that has inferential value, especially given that it is
 24 the only testable proposition that emerges from his
 25 models.

1 MR RIDYARD: I understand what you are saying and we will
2 have to think about it.

3 DR PADILLA: It is for you to decide.

4 MR RIDYARD: As with all these things.

5 Just to run through some other possible sort of
6 angles on this. There are the control groups that you
7 use, Dr Padilla. Can you just talk us through what is
8 in those control groups and why you think they are
9 control groups.

10 DR PADILLA: So there are two control groups and, frankly,
11 I think that that is much less important in terms of my
12 evidence than the analysis for Apple and for Samsung.
13 So I want to emphasise this, that the core part of my
14 analysis is the evolution over time for Qualcomm —
15 sorry, for Apple and Samsung. So we are talking about
16 a robustness test in which I am trying to see whether
17 the correlation would emerge when you look at other
18 OEMs.

19 What I thought is, well, let us try to identify two
20 groups that would be not affected or less affected by
21 these threats. One are people that have never
22 purchased; okay? There are very few of them. So then
23 I was looking at the CMs, at the Contract Manufacturers.

24 Now, the Contract Manufacturers, in principle, are
25 less affected than any other OEM because a very

1 significant chunk of their business, if not most of
2 their business, is with licensed OEMs. There is
3 a second reason to think that they are less affected and
4 this is that when they enter into the agreements with
5 Qualcomm, they enter, as you can see in the figure that
6 we have before us, enter into those agreements early
7 on — sorry, I think it is figure 4, not figure 5
8 {EAOE/12/23}. They enter into agreements that were very
9 forward-looking into forward-looking technologies, at
10 points in time which they could not fathom — know what
11 was going to be the position of Qualcomm in the relevant
12 chipset markets.

13 Now, having participated in the debate with Mr Noble
14 over the months now, would I say that the CMs are
15 completely unaffected? I think that at this point in
16 time — not at the time — I would say, well, no, they
17 are less affected and significantly less affected but
18 I don't know — I cannot tell you that they would not be
19 affected at all. But, again, it is just a robustness
20 test, a control analysis that is seeking to verify the
21 robustness of my findings, not the main test.

22 THE CHAIR: Can you explain a little bit more your response
23 to Mr Noble's criticism that the CMs needed to have
24 Qualcomm in their portfolios so that they could provide
25 the relevant chipsets to the OEMs.

1 DR PADILLA: So they would be exposed — the CMs would be
2 exposed if they intend to supply to an unlicensed OEM.
3 Then they would be exposed because, at that point in
4 time, they would need the chipsets and they would need
5 to be licensed. To that extent, they are exposed.

6 Now, given when they signed those agreements, that
7 hypothetical scenario — that scenario is extremely
8 unlikely to have affected the negotiations because they
9 were entering into these agreements relatively early on
10 and therefore the probability which they could have
11 attributed to that scenario, one of facing an unlicensed
12 OEM, in a situation in which, on top of that, that OEM
13 was, you know, intending to develop a product for which
14 the only chipset available would be a Qualcomm, is
15 extremely unlikely.

16 THE CHAIR: So is this a point about when they entered the
17 agreements, that it was far too early in the lifecycle
18 of the products for them to have known that they would
19 need to incorporate a Qualcomm chip? Is that what you
20 are saying?

21 DR PADILLA: Yes, but, in addition, taking into account that
22 they will need to think that there is a scenario in
23 which, with certain probability, they are facing an OEM
24 that is unlicensed from Qualcomm, but dependent on its
25 chipsets.

1 THE CHAIR: Yes.

2 DR PADILLA: If we look at figure 3, where you have
3 precisely the timing, if you look at the relevant
4 agreements in figure 3 {EAOE/12/22}, all of those
5 agreements are, I think, identified in red in this
6 picture and that is why I was telling you that they were
7 very early on in the process.

8 THE CHAIR: So are you saying that in order for them to have
9 a dependency relationship, that would have — they would
10 have had to know that there would be a future dependence
11 of the OEM — of their OEM customer and, also, that that
12 OEM customer would not themselves be licensed, those two
13 things?

14 DR PADILLA: Right.

15 THE CHAIR: That would have then fed back into the
16 relationship of dependence of that CM when they entered
17 into the agreement?

18 DR PADILLA: Correct.

19 THE CHAIR: You are saying that would have been
20 impossible at the time?

21 DR PADILLA: Impossible, but I cannot rule it out. I
22 corrected myself as saying I cannot say "impossible" but
23 I think that it is a probabilistic relationship which is
24 highly doubtful that, for example, in year 2004,
25 somebody would have anticipated that, in year 2019 there

1 would be a dispute between Apple and Qualcomm or
 2 a negotiation between Apple and Qualcomm in which Apple
 3 at that point was still not licensed. I think there is
 4 a disagreement about whether it was licensed or not
 5 through the CMs, but they would have anticipated
 6 15 years ahead and that seems to me highly unlikely.

7 MR RIDYARD: Mr Noble, do you want to comment back on that?

8 MR NOBLE: I mean, I think the way I think about the CMs is,
 9 I think, as I explained in my reports, I do not see them
 10 as really being that fundamentally different from the
 11 OEMs themselves. If you do not need a licence, why go
 12 to the trouble of getting one, because it is not free to
 13 go through the process of acquiring one?

14 We see that CMs generally have gone and got licences
 15 so we do not have a lot of evidence about why did they
 16 go and do that? Then there is a question mark about
 17 what information or value do those CM licences give us?
 18 On the one hand, we could have a situation in which they
 19 are — they need these licences. You know, they
 20 desperately need them, in the same way as an OEM needs
 21 them, so if they desperately need them, they are not
 22 very different from an OEM. So they are not really
 23 independent. They are not unaffected because, you know,
 24 perhaps they do want to sell to lots of unlicensed OEMs
 25 and that means that in order to be an attractive CM they

1 need a licence in order to be able to do that.

2 So there is that question about are they really that
 3 different anyway?

4 You might say, well, maybe they are. Maybe these
 5 are free agents and they could do with or without
 6 a licence and therefore they can behave in
 7 a fundamentally different way. If that is true, then in
 8 a sense this looks a little bit like the bypass option
 9 that I was talking about on RTL, that CMs could act as
 10 this sort of safety valve. You do not need to go and
 11 have a dispute with Qualcomm yourself, you can get a CM
 12 to do it on your behalf, but I think the question mark
 13 here is whether we really have any evidence that that is
 14 really what CMs were doing, or is it, alternatively, the
 15 situation that CMs, you know, licences are — maybe it
 16 is a nice-to-have and if it is a nice-to-have, then I do
 17 think that second leg of the theory of harm really
 18 matters because, particularly in this chart, you see
 19 that it is a very straight line of dots.

20 If this is a nice-to-have, as a CM you do not have
 21 a lot of incentive to go and spend lots of money on
 22 expensive, uncertain litigation and so maybe you just
 23 take the standard terms.

24 MR RIDYARD: When you say it is "a nice-to-have," you think
 25 it is just an insurance policy, a back-up?

1 MR NOBLE: It could be an insurance policy. It could be
 2 that most of your customers are licensed but there might
 3 be a couple that are not. You do not want to be exposed
 4 on this and so it is a fairly cheap thing to do. I do
 5 not know enough about all of the facts to be able to
 6 distinguish which of those it is, but all of those
 7 scenarios in my mind lead to the conclusion that there
 8 is a very large question mark about how independent
 9 these CMs are in that regard.

10 Maybe — there was the second point. I do not know
 11 whether Dr Padilla should respond and then I can come
 12 back to that.

13 DR PADILLA: Just on this point, very, very quickly.
 14 I think that, okay, let us assume that all that is true.
 15 So that means that this prospective market theory that
 16 we will discuss at one point works over periods of
 17 15 years. So in 2004, when the company that entered
 18 into their agreement, is thinking that in 2019 there may
 19 be a threat because there is going to be an unlicensed
 20 OEM, whose identity I do not know in 2004, who may need
 21 then — and somebody that is going to be dependent on
 22 Qualcomm's chipsets at that point in time and here,
 23 in 2004, I anticipate all that and therefore I am
 24 willing to pay a lot because I am concerned that maybe
 25 then I am going not going to be able, if I do not enter

1 the agreement now, to have the chipsets that I need to
 2 supply to that unlicensed OEM.

3 Is that the theory, if I understood it correctly,
 4 because if I understood it correctly, it is not very
 5 plausible?

6 MR NOBLE: But the question is: does the CM really pay this
 7 anyway, because the CM makes phones when it is told to
 8 make them by somebody else? So if it has 100%
 9 passthrough, it may not have a very strong incentive to
 10 care very much what this royalty rate is. If it feels
 11 as though it has the going rate, whatever that going
 12 rate is and it has some sense and it possibly gets that
 13 from negotiation with Qualcomm, this is the rate that
 14 everyone else is paying, that may be good enough for it,
 15 because it does not give it any competitive advantage or
 16 disadvantage relative to anyone else. It is not coming
 17 out of its own cheque-book, because it makes phones for
 18 OEMs and OEMs reimburse CMs for the components, the
 19 manufacture —

20 MR RIDYARD: This attractiveness as a partner to an OEM — I
 21 mean, if I can get a low royalty rate and go to an OEM,
 22 then I would be a more attractive partner to the OEM
 23 than if I had a high royalty rate, would I not?

24 MR NOBLE: Yes, there is a possibility that a CM could do
 25 that, but I think we have not seen any CMs behave in

1 that particular way.
 2 DR PADILLA: There is competition between CMs.
 3 MR RIDYARD: I was not saying that is how they behave. I
 4 was just saying they are not indifferent. If there is
 5 choice of royalty rates, then the CM is not indifferent
 6 and it is not saying someone else is paying the bills,
 7 I do not need to worry. It is fundamentally affecting
 8 how attractive they would be as a maker.
 9 MR NOBLE: Only for the unlicensed OEMs, because the
 10 licensed OEMs in a sense actually the same licence
 11 almost becomes irrelevant because it is the licensed OEM
 12 rate and so if this is an insurance policy, then
 13 potentially it is quite an expensive insurance policy to
 14 go and buy if you are trying ---
 15 MR RIDYARD: I can see that point.
 16 DR PADILLA: I would like to remark that there is
 17 competition between CMs and that is relevant.
 18 MR RIDYARD: Yes.
 19 MR TURNER: Sorry, it is probably a very basic question.
 20 The ad valorem rate that the Contract Manufacturer's pay
 21 is based on the OEM's price, or the Contract
 22 Manufacturer's price?
 23 DR PADILLA: So the ad valorem is a percentage and it will
 24 be calculated on the basis of the NSP, the Net Selling
 25 Price.

1 MR TURNER: For the OEM?
 2 DR PADILLA: For the OEM.
 3 MR TURNER: Those are the figures you have used here?
 4 DR PADILLA: Yes.
 5 MR NOBLE: There was a second point.
 6 MR RIDYARD: Yes.
 7 MR NOBLE: So that was, in a sense, what one could term sort
 8 of the Garden of Eden point, which is this idea that in
 9 a sense an OEM, if you observe their first ever licence
 10 rate, because they were not buying --- definitionally, if
 11 the chipset supply practice has been applied, that
 12 arguably applies to all first ever licences and I think
 13 that is a bit of a threshold question because if these
 14 Garden of Eden rates are really clean, then the whole
 15 theory of harm does not work because, of course, all
 16 OEMs could threaten not to use Qualcomm at the very
 17 first negotiation that they ever had and not to use them
 18 and seek to try and give a very attractive rate and have
 19 a FRAND determination, whatever route they might take at
 20 that point, but I think the issue here is that ---
 21 MR RIDYARD: I do not think I understand that. If I am an
 22 OEM, I cannot threaten not to use Qualcomm if I am
 23 dependent on Qualcomm.
 24 MR NOBLE: But I think that the rationalisation that
 25 Dr Padilla has outlined is that there are certain OEMs

1 that prior to signing the licence were not using
 2 Qualcomm and of course that is definitionally true
 3 because for your first ever licence Qualcomm will not
 4 sell you anything until you sign the licence.
 5 The reason that I reject that as a benchmark is
 6 because, in a sense, if that were true, then in a sense
 7 all licences cannot be affected. It is just --- the
 8 chipset supply practice, almost like this whole theory
 9 of harm, is not internally consistent.
 10 So the logic here is that you could be sat there,
 11 readily anticipating in the relatively near future,
 12 I will need these chipsets, hence why I need to pay that
 13 high licence rate.
 14 DR PADILLA: I think we are in agreement that the theory of
 15 harm is not internally consistent. With that I agree
 16 and I actually think that you made a point that is very,
 17 very useful, but it is not in the Garden of Eden, it is
 18 East of Eden and the point is the existence of the CMs
 19 and the fact that they are licensed actually undermines
 20 the theory of harm in a very significant way. I know
 21 that there is a point that maybe you want to discuss
 22 later, but otherwise I can take the position now.
 23 That is simply that if I am Apple and I can be
 24 supplied by a CM, which is licensed, irrespective of how
 25 dependent I am on Qualcomm's chipsets, I always have the

1 option to go to the CM. The CM may be paying a high
 2 royalty or a low royalty, but then the cost of the
 3 threat --- the importance of the threat is fundamentally
 4 different, because it is no longer that I am not going
 5 to be able to sell phones.
 6 MR RIDYARD: It is not an injunction threat, it is simply
 7 a higher licence fee.
 8 DR PADILLA: It is a higher licence fee that I may be able
 9 to recoup when I litigate. So actually the CMs from the
 10 perspective of the CR are East of Eden.
 11 MR RIDYARD: As that point has come up, Mr Noble, what is
 12 your response to that?
 13 MR NOBLE: Well, I think there is a factual question about,
 14 you know, the extent to which people could do that.
 15 MR RIDYARD: Yes.
 16 MR NOBLE: There is also a question mark about the extent to
 17 which different OEMs do in fact use CMs. Not all OEMs
 18 use ---
 19 MR RIDYARD: But if they could --- I mean, we know at least
 20 one does.
 21 MR NOBLE: Yes.
 22 MR RIDYARD: If they could --- if that was available to them,
 23 if it was plainly a matter of paying a higher rate,
 24 going back to your bargaining model now I suppose, that
 25 would be quite --- that would be a much less --- it would

1 mean the cost of going to FRAND would be much less,
 2 would it not?
 3 MR NOBLE: Yes. If the following things are true, then
 4 I would agree with that statement. So as an OEM, you
 5 need to be using and be comfortable to use CMs. We know
 6 that there is at least one that ticks that box. The
 7 second thing that needs to be true is that you — that
 8 CM needs to be licensed. Again, I think it is true that
 9 we tick that box. But the third thing that needs to be
 10 true is that you need to be sufficiently confident that
 11 you can go and have a dispute over a licence rate and
 12 that there is not going to be some problem with that
 13 supply from your CM. I think that is really a factual
 14 question about whether that is true or not.
 15 MR RIDYARD: Yes.
 16 MR NOBLE: Because if there is high degree of uncertainty
 17 about that, then you are potentially back to square one,
 18 because actually you do not feel very confident of
 19 taking that route.
 20 MR RIDYARD: But if you were confident of that, then game
 21 over?
 22 MR NOBLE: If you are confident of that route, if there is
 23 zero or very low infinitesimally small probability that
 24 there will be disruption via that route, then I think,
 25 yes, it does change the outcome. It does make having a

1 dispute costly, more costly, because during the interim
 2 you are having to pay a higher rate.
 3 MR RIDYARD: That is a financing problem. I mean, that
 4 is — I am sure the numbers are big and everything,
 5 because all the numbers are big in this industry, but it
 6 is not — it is quite different from the injunction
 7 threat, is it not?
 8 MR NOBLE: Yes, it is definitely different from the
 9 injunction threat.
 10 THE CHAIR: Because at that point it is essentially
 11 a cashflow point, is it not, because you pay the higher
 12 rate in the interim, you are not going to get your
 13 rebate.
 14 MR NOBLE: Well, I guess it depends on do you pay the higher
 15 rate and then you go to a lower rate once you get your
 16 FRAND determination or is it that once you get your
 17 FRAND determination you then sort of — it is as if you
 18 always paid that rate? There is a difference between
 19 those two scenarios. In a sense, if you are paying
 20 a premium for two or three years whilst you have your
 21 dispute, then obviously that is a significant cost to
 22 you potentially in hundreds of millions, but I do not
 23 know the answer about quite what that FRAND dispute
 24 would mean; would you then get a refund for that or
 25 would you not?

1 THE CHAIR: Your modelling does not assume one or other
 2 outcome of that?
 3 MR NOBLE: No. So my modelling is focused on the idea that
 4 there is a credible threat of some kind of disruption.
 5 MR RIDYARD: It is the injunction, is it not? In your model
 6 the threat is you cannot make phones unless you have —
 7 MR NOBLE: Yes, or there is a realistic prospect that you
 8 cannot make phones, yes.
 9 DR PADILLA: If I may, just one point. Actually here if we
 10 were to take seriously the indirect effect that Mr Noble
 11 has been defending, once again, you do not need that
 12 every single OEM has access to the CMs. It is enough
 13 that one has access to the CMs.
 14 MR RIDYARD: Because of the — because of the sort of —
 15 DR PADILLA: Unfairness and all that stuff.
 16 MR RIDYARD: Okay, yes.
 17 DR PADILLA: So here the indirect effect would actually, as
 18 I mentioned before, unravel the argument.
 19 MR RIDYARD: I see that argument.
 20 MR NOBLE: Can I just clarify. I am just trying to find the
 21 reference for you so you have it to hand.
 22 My model does not require that you cannot make
 23 phones. I should just make that very clear. What it
 24 does focus on — I am just trying to find you the
 25 reference because I underlined it. Where is it? It is

1 {POE/21/87}.
 2 So this paragraph sets out what the model is based
 3 on. So it is saying the first feature of the model is
 4 based on the notion that the use of Qualcomm chipsets is
 5 associated with higher pay-offs to OEMs relative to
 6 using third-party chipsets. So what it is based on is
 7 the notion you can stop them using the Qualcomm chipsets
 8 and then if we jump one sentence, it says:
 9 "This payoff may consist of higher profit per
 10 handset profits or, higher total handset sales volumes
 11 (or a combination [of the two])."
 12 So one mechanism by which this could work is that
 13 you cannot sell, for example, the CDMA phones that we
 14 talked about, 30 million phones, they are gone. You do
 15 not really recoup those at all. Another option might be
 16 you have to come up with a lesser solution that means
 17 that you do sell phones but you make less money on those
 18 phones and that is still —
 19 THE CHAIR: You cannot charge a premium price —
 20 MR NOBLE: Exactly, because they are less premium phones
 21 than you would have otherwise —
 22 DR PADILLA: Except that this does not deal with the concern
 23 of the CMs, because the CMs are using the same chipsets.
 24 THE CHAIR: Can I go back to your point, Dr Padilla, just
 25 the last point that you made, which I took a note? You

1 said if you are taking seriously the indirect effect in
2 the theory of harm, it is enough that one OEM has access
3 to the CM. So are you saying in that case that one OEM
4 would create that positive halo effect which would then
5 correct the horns effect that you might have from
6 everyone else? Is that right?

7 DR PADILLA: Even if there is somebody that is dependent and
8 has no access to the CMs, that person would be
9 protected. But I want to emphasise point 6.20 does not
10 help address the East of Eden problem that I mentioned,
11 because that means — that is saying Qualcomm either
12 stops producing or goes to an inferior alternative, but
13 with the CMs, the alternative is not inferior, still it
14 is the same chipset, this Qualcomm chipset.

15 MR RIDYARD: I just wanted to go to one other aspect of the
16 licensing data and, again, without obviously talking
17 about specifics, is there any significance or anything
18 of interest to us in looking at the path over time of
19 the royalty rates that we observed in those charts?

20 DR PADILLA: The path — I do not think so. I tried to look
21 at this by looking at segmenting various different
22 periods, because I was worried when I observed the fact
23 that it was kind of a downward trend, whether that
24 downward trend over time could be explained by changes
25 in dependency or other confounding factors.

1 So I have looked at three periods, for example
2 changes in the quality of Qualcomm's portfolio, and the
3 lack of correlation is still there. So I am not able to
4 explain to you why there is a downward trend. I think
5 that to some extent responds to the NDRC pressure.
6 There may be changes in the quality of the portfolio
7 etc. So this model does not explain why that is the
8 case, but what I think you can rest assured is that
9 trend is in no way related to the dependency of the OEM
10 on Qualcomm's chipsets. So that, I think, is
11 comfortable, given that that is the proposition that we
12 were trying to test.

13 MR RIDYARD: Mr Noble.

14 MR NOBLE: I mean, I tend to agree with Dr Padilla. I do
15 not think there is a lot to be gained over time.
16 I think we are going to come on to it, but I think in
17 the early years there is a lot of question marks about
18 how reliable the dependency measure is because of the
19 RTL non—assert issue and in later years there is then
20 the question about the NDRC and whether that has
21 impacted the rates.

22 MR RIDYARD: Let us talk about the NDRC intervention. Can
23 you just summarise your concern or — and how that
24 impacts this analysis.

25 MR NOBLE: Yes. So, in a sense, if we step back, what is

1 the analysis trying to do? It is trying to say we have
2 a variety of bilateral negotiations between different
3 OEMs that achieve royalty rates and the way I understand
4 Dr Padilla has operationalised is the notion that we can
5 observe some features of those negotiations, which is
6 the chipset dependence, for better or worse, and then we
7 try and identify correlation associated with that.

8 That, of course, requires that it is an independent
9 bilateral negotiation. There is the time dependency
10 issue which we have talked about, that past negotiations
11 affect current negotiations. So that calls that into
12 question for one reason.

13 Then we have a second reason to question that
14 assumption, which is because we have a regulator that
15 expressed some concerns on an antitrust basis about
16 Qualcomm's behaviour. There was then a resolution which
17 I understand then does not admit liability or there is
18 no clear finding from that that somebody did something
19 right or did something wrong, but then what you have is
20 essentially an outcome — essentially a regulated price
21 that has emerged that in a sense then clearly impacts
22 the rates that are then agreed between different
23 parties.

24 So, in a sense, one can call into question, well,
25 really what information or value is contained in these,

1 because if this becomes a sort of benchmark rate for
2 better or worse, then, you know, how does one interpret
3 that in the correlation analysis?

4 MR RIDYARD: Do you need to take a view about whether the
5 NDRC resolution or the royalty rate that came out of
6 NDRC intervention, whether that took the price, you
7 know, below the competitive level or below the FRAND
8 level or was it still above it? Do we need to take view
9 on that here?

10 MR NOBLE: I mean, I think purely in the context of the
11 leveraging analysis, I think the leveraging analysis is
12 almost agnostic to some of those things and it is really
13 saying — it is a correlation detector and I think my
14 question really with it is what is the information or
15 value or those later data points, because if they are
16 not based on bilateral negotiation between an OEM and
17 Qualcomm and instead they are based on a recommended
18 price from a regulator, then I have a question mark,
19 well, what does that tell us? It tells us that some of
20 these negotiations were based on the recommended price
21 from a regulator and that is what it tells us. It does
22 not tell us about the theory of harm, which the theory
23 of harm is — that there is an effect of the leveraging
24 that made these rates high in the first place.

25 MR RIDYARD: So even though some OEMs might have more

1 leverage over Qualcomm or be more dependent on Qualcomm
 2 than others post the NDRC event, you therefore would not
 3 expect to see a differentiation between what they
 4 managed to achieve?
 5 MR NOBLE: You might do, but I think there is a prospect
 6 that it will pull --- it sort of --- the observations lose
 7 their independence and that really matters when you are
 8 doing a correlation analysis. You know, it is like an
 9 uncontrolled progression analysis. If those
 10 observations are not independent, we then have to think
 11 very hard what information or value are they bringing to
 12 the table.
 13 DR PADILLA: If I may, I think what you are basically saying
 14 is that the theory of harm collapses following the
 15 implementation of NDRC, because then what you are saying
 16 is that there is no bilateral bargaining so your model
 17 just collapses. The threats are irrelevant because the
 18 rate is determined by NDRC and the NDRC was not
 19 particularly affected by any threat. Therefore, the
 20 theory of harm collapses.
 21 MR RIDYARD: Mr Noble ---
 22 MR NOBLE: I do not --- I mean ---
 23 DR PADILLA: But it follows from what you are saying.
 24 MR NOBLE: I do not think it does, because if you think the
 25 theory of harm is right, then you would anticipate that

1 it is --- there is a reasonable prospect that the rates
 2 are high --- are too high. The NDRC expresses a concern
 3 that it thinks the rates are too high. It indicates
 4 that it prefers a lower rate. Some negotiations are
 5 influenced by that, but there is still a question mark
 6 about whether or not those rates are at the correct
 7 level that they would have been if this whole process
 8 had not happened at all. So I do not see how the NDRC
 9 resolution fundamentally undermines the outcome.
 10 MR RIDYARD: Sorry, I do not see why that --- I can see how
 11 it creates a possible step change in royalty rates, but
 12 I cannot see how --- if you think the theory of harm
 13 works before the NDRC resolution, I mean, it ought to
 14 carry on working afterwards, if it has validity. So you
 15 would still see --- expect to observe differences in
 16 royalty rates depending on how much leverage Qualcomm
 17 had over the ---
 18 MR NOBLE: I mean, this goes straight back to the point
 19 about it is not obvious to me that you would have
 20 expected to see a slope in the first place.
 21 MR RIDYARD: In that case, there is not much point in any of
 22 this conversation, is there?
 23 MR NOBLE: Yes, but I think there are already a variety of
 24 mechanisms which would mean you potentially do not see
 25 a slope. This is yet a further one.

1 MR RIDYARD: I am not sure I follow why --- I can see why the
 2 slope might be in a different place or it may be if the
 3 NDRC took rates below the FRAND rates, then I can see it
 4 would have any impact because you do not care about
 5 going to FRAND if you are already below FRAND, but
 6 elsewhere it seems to me that if there is --- if there is
 7 something to observe here, then we should observe it
 8 before and after the NDRC.
 9 MR NOBLE: I mean, yes. You might take the view --- in
 10 a sense, let us put to one side my sort of indirect
 11 theory of harm. If you think it is just about the
 12 direct theory of harm, then in a sense it applies at all
 13 time periods, yes, I would agree with that.
 14 MR RIDYARD: Okay.
 15 DR PADILLA: I was going to make the same point.
 16 MR NOBLE: Yes. The other points I have made about, you
 17 know, in a sense the accuracy with which you can observe
 18 the vertical or the horizontal to any particular dot,
 19 those apply, you know, at the various time periods too.
 20 So ...
 21 MR RIDYARD: Anything else on this aspect?
 22 DR PADILLA: Can I just make one quick comment and it is
 23 that you acknowledge, Mr Noble, your bargaining model
 24 does not include the NDRC?
 25 MR NOBLE: It does not explicitly include the NDRC, no, but

1 it does --- it does include the impact that
 2 a non-competitive royalty rate might have via the
 3 indirect mechanism. So if this is similar to that, then
 4 it does include that. So it does not exclude it
 5 explicitly, but you could think of the model as
 6 including it implicitly via that mechanism.
 7 MR RIDYARD: One moment while I just check through my list
 8 of questions. (Pause)
 9 One thing which we have not talked about --- we have
 10 talked about, you know, the main mechanism in the theory
 11 of harm being the actual or implied threat of
 12 withdrawing chipsets. We have not talked about the
 13 alleged withdrawing of technical support and back-up.
 14 I mean, how --- maybe it is not a question that you can
 15 really answer, but do you have a view on how important
 16 that might be in the scheme of things?
 17 MR NOBLE: Well, there are two ways that that can matter.
 18 One is that in order to use someone's chipsets, I think
 19 it is uncontroversial that you need to integrate it with
 20 your handset and so --- we know that that takes one, two,
 21 possibly longer years in order to build the handset and
 22 calibrate it and so on. There are two reasons why that
 23 matters. One is that the technical support comes before
 24 the commercial supply of the chipsets. So if you
 25 withdraw --- if you withhold the technical support, it is

1 almost the precursor to then withholding the commercial
2 supplies, because if you have not been able to integrate
3 it in your handset, you cannot — there is no point
4 buying them because you cannot use them.

5 MR RIDYARD: If you depend on Qualcomm for that support?

6 MR NOBLE: Yes, yes, quite. You know, these are their
7 chipsets and so it seems plausible that you may need
8 some assistance from them, as opposed to doing it all
9 in-house.

10 The second aspect is one can think of the technical
11 support as more of a signalling mechanism. So — sorry,
12 maybe I finish on the first point.

13 The first point is the technical support comes
14 before the commercial supplies and so if you cut off the
15 commercial support, in a sense, it is almost extending
16 the lead time. So what we observe in the data is: are
17 you acquiring commercial supplies because most of the
18 data we have only relates to commercial supplies. It
19 does not relate to engineering test samples and so on
20 which you might get earlier. So, in a sense, we have
21 a kind of greyness in our ability to observe when people
22 actually use Qualcomm, but we know that the technical
23 support comes before that so it is a sort of precursor
24 point. So that is the first point.

25 The second point is then really about a signalling

1 mechanism, that one does not actually have to cut off
2 the commercial supplies of chipsets. One can take
3 a first step down the road of doing that by — there can
4 be a delay in your technical support. So you are
5 sending a signal to your counterparty in a negotiation,
6 take me seriously because, "Oh dear, the engineers did
7 not turn up". It is a small threat that you might be
8 going through with — I mean, that is, in a sense, how
9 one can think of those kinds of behaviours.

10 DR PADILLA: I do not have much to offer there. I think
11 that as a matter of the economic analysis that we have
12 performed there is not much that we have done there.

13 The only thing I would mention is that the
14 leveraging analysis looks at, you know, the position not
15 just at the time in which the agreement was entered
16 into, but one year before. So that may cover something,
17 but, as I said, this seems to me like a set of factual
18 allegations that the economic analysis has not really
19 dealt with.

20 MR RIDYARD: Okay. I think that is probably all we had on
21 your leveraging analysis.

22 I am just looking through my list. I must say there
23 is not a great deal left on the list. One thing which
24 I did want to just run through, just going through how
25 we interpret the evidence from Apple's dispute with

1 Qualcomm in 2016 to 2018, the big one where the
2 dependence was not there and it did seek to renegotiate
3 the royalty rate.

4 Mr Noble, can you just talk us through how the facts
5 of that incident, how they sort of, you know — what
6 they mean for your theory of harm? What lessons can we
7 draw from it?

8 MR NOBLE: So the logical flow is that prior to that, Apple
9 was dependent on Qualcomm's chipsets. It did not feel
10 able to use its outside option and then, if you think of
11 it through the lens of the bargaining model, you can
12 think of it — that pay-offs gradually shift and once
13 Intel becomes a credible supplier, because they are
14 initially brought on board to provide UMTS chipsets,
15 once they become credible to provide the CDMA chipset as
16 well, that is the moment at which Apple can then
17 essentially — the pay-offs have changed in the
18 bargaining model. It now finds a different leg of the
19 bargaining model attractive to access, it goes and
20 accesses it, because there may have been a cost
21 associated with using Intel chipsets, because I think
22 there are some media reports that suggest people did
23 perceive them as maybe not being as good as the Qualcomm
24 ones, but that difference does not appear to be very
25 large at that point. So that is consistent with the

1 idea that Intel has caught up enough that Apple is then
2 willing to flip to a different leg of the bargaining
3 tree. It goes — the evidence is then it appears to go
4 all in on fighting Qualcomm and then that continues. It
5 takes a period of time obviously for those actions to
6 happen.

7 Essentially then 5G comes along.
8 (Redacted — confidential information)

9 But I understand the evidence of Heather Mewes —
10 how we interpret that and the alternative explanations
11 is a factual question — but my interpretation of that
12 is the — you can read that as Apple essentially feeling
13 as though we have run out of time. We need 5G. We need
14 it now and there is a significant lead time to getting
15 that into our phones. We do need to launch a 5G phone.
16 Essentially they flip back to a different leg of the
17 bargaining tree because they ran out of time. That is
18 essentially the logical flow of the —

19 MR RIDYARD: So to observe an actual — to observe the
20 effect of the theory of harm in real life, we would need
21 a four-year window of non-dependence and this was only
22 a two-and-a-half or three-year one and it was not enough
23 time.

24 MR NOBLE: Yes, essentially, that for whatever reason they
25 ran out of time and they felt compelled to reach

1 a negotiated settlement, rather than continuing with the
 2 outside option.
 3 MR RIDYARD: Which just underlines how unlikely it is we are
 4 going to observe the counterfactual, even when we see
 5 non-dependence.
 6 Dr Padilla.
 7 DR PADILLA: Look, I mean, I think I cannot interpret the
 8 facts. I do not know. I think that two observations.
 9 One is that my experience in this industry, Apple one
 10 way or another has been trying to lower royalty rates
 11 for as long as I can remember sometimes through
 12 antitrust actions, sometimes through regulatory actions,
 13 sometimes through lobbying, but that's neither here nor
 14 there.
 15 I think that the important point that I wanted to
 16 make is that when I heard Mr Noble explaining the
 17 narrative around this litigation, I was thinking that
 18 those statements are in contradiction with the existence
 19 of OEM-agnostic markets and fundamentally in
 20 contradiction with the indirect effect that he has
 21 mentioned and, in addition, suggest that there should be
 22 a correlation between dependency and royalty rates, if
 23 you take a sufficiently long period.
 24 MR RIDYARD: The last point again, sorry?
 25 DR PADILLA: That there should be a correlation --- I think

1 that he is going to say that you did not observe it
 2 because they were only able to litigate for two or
 3 three years, but I think implicit in his statement is
 4 had they been able to litigate for a longer period of
 5 time, in other words, had they not been dependent, there
 6 should have been a lower royalty, which I think
 7 contradicts the claims made or the allegations made
 8 contrary to the leveraging analysis.
 9 MR RIDYARD: How does it do that?
 10 DR PADILLA: Yes, because I think that he said before, when
 11 discussing the leveraging analysis, that there is no
 12 reason why we should observe a relationship between
 13 royalties and dependency and when reporting on this
 14 story about Apple, he is basically saying at that point
 15 Apple was seeking to obtain a lower royalty because now
 16 they were less dependent.
 17 MR RIDYARD: Yes.
 18 DR PADILLA: So there is a fundamental contradiction there.
 19 MR NOBLE: Well, I do not think there is a fundamental
 20 contradiction.
 21 DR PADILLA: Maybe there is a contradiction, even if it is
 22 not fundamental.
 23 MR NOBLE: I think, as I said, the bargaining model
 24 indicates that it is analysing a specific negotiation
 25 about a royalty between an OEM and Qualcomm and so

1 I think the question that you, Mr Ridyard, put to me was
 2 about how does that narrative then line up with, you
 3 know, facts and, as I have outlined, I think it is
 4 consistent with the facts that in a sense it takes
 5 a period of time for someone to exercise this outside
 6 option. Apple appears to have sought to do that and
 7 then, essentially, ran out of time.
 8 Obviously Qualcomm advances an alternative
 9 explanation that it was a great deal anyway and they
 10 realised that, but, you know, in a sense that is
 11 really --- one has to then judge that against the full
 12 set of facts of the case.
 13 MR RIDYARD: Yes.
 14 I think that that pretty much takes us to the end of
 15 our list. Unless ---
 16 MR NOBLE: I did have one point because, Mr Ridyard, you
 17 asked yesterday about market definition and you were
 18 pointing to, I think, one of my charts, which, for
 19 reference, was {POE/21/20}. It is figure 2.3. So that
 20 top right.
 21 MR RIDYARD: Yes.
 22 MR NOBLE: I think you were wondering out loud is there
 23 a way we could use this as a natural experiment and
 24 I think the conversation we had at the time, Dr Padilla
 25 kindly reminded us, at least when we are talking about

1 Apple, there is not a lot of --- this would not work
 2 because, on his market definition, Apple is only a 5G
 3 market at that point.
 4 I did go and check that actually last night and
 5 I realised that on Samsung, Dr Padilla does include 4G
 6 and 5G right the way through here and we are helped out
 7 because figure 2.3 is --- we have sought to control for
 8 the mix effects by only focusing here on system on
 9 a chipset.
 10 Now, that happens to be the kind of chipset that
 11 Samsung tends to buy and so it might be useful, because
 12 if we have this in mind --- this is obviously a very
 13 large price shift, but I do not know if we could turn up
 14 Dr Padilla's helpful chart that showed us the
 15 percentages of volume of 5G chipsets that Samsung was
 16 buying? I do not actually have that reference
 17 unfortunately. I did look for it.
 18 MR RIDYARD: Page 57 of the fourth report, figure 4
 19 {POE/22/57}.
 20 MR NOBLE: Yes, I think that sounds right. So it is the
 21 bottom chart there. I just wondered that visually one
 22 might then essentially perform that sort of simple
 23 correlation analysis just to see, you know, does it look
 24 as though there is some material change in the take-up
 25 rate associated with 5G by Samsung at that point?

1 To my eye, you know, just doing that late last
 2 night, it did not seem that there was one, but I thought
 3 I would just highlight that because I think you were ---
 4 MR RIDYARD: I did raise it, yes.
 5 DR PADILLA: The only point I would make is that you are not
 6 controlling for a number of confounding factors here.
 7 MR NOBLE: Touché.
 8 MR RIDYARD: Thank you for pointing that out.
 9 I think we should give counsel a chance to ask any
 10 clarifying questions they may have at this point.
 11 MR JOWELL: May I ask one, and I appreciate of course it is
 12 not an invitation for cross-examination, but I do
 13 have ---
 14 MR RIDYARD: The microphone.
 15 MR JOWELL: The microphone. I do have one point of pure
 16 clarification where I am just not entirely clear in
 17 particular on one aspect of the bargaining model what
 18 Mr Noble's position is and I would just like --- I think
 19 it would save time in cross-examination if we could
 20 clarify it.
 21 So, as I understand the position, one of the
 22 assumptions of the bargaining model is that in order for
 23 there to be a credible threat, the relative cost to
 24 Qualcomm of foregoing chipset sales has to be less than
 25 the relative cost to the OEM of disruption of handset

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1 sales. So that, I think, is --- I think I understand
 2 that correctly.
 3 My question is really, I noticed that when
 4 discussing that issue, Dr Padilla emphasised, say, the
 5 proportion of Apple's profits that, say, CDMA phones
 6 would represent, whereas Mr Noble was talking about the
 7 absolute amounts. So my question is really to the
 8 experts, and in particular to Mr Noble because it is his
 9 model: is that relative cost to be measured in absolute
 10 terms or relative to the size of the total respective
 11 businesses? So, in other words, are we interested in
 12 the lost profits to Qualcomm as a proportion of total
 13 chipset sale profits --- of its chipset sale profits
 14 versus the lost profits to Apple as a proportion of its
 15 total handset sale profits, on the one hand, or are we,
 16 instead, interested in the absolute lost profits to
 17 Qualcomm in dollars and cents versus the absolute level
 18 of lost profits to Apple in dollars and cents?
 19 MR NOBLE: When we are deciding whether there is a credible
 20 threat ---
 21 MR WILLIAMS: Madam, I endeavoured to ask a clarificatory
 22 question to tease out something from Mr Noble yesterday
 23 and you asked me was there anything about Mr Noble's
 24 evidence I did not understand and I said I did
 25 understand his evidence, I just wanted to tease a point

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1 out ---
 2 THE CHAIR: But Mr Jowell is actually saying that there is
 3 something he does not understand, as I understand it.
 4 MR JOWELL: Yes, I genuinely do not know what the answer is.
 5 THE CHAIR: I did ask you whether you were asking a point of
 6 clarification on something you did not understand and
 7 you said "no" and Mr Jowell introduced his comment by
 8 saying he is not trying to tease any particular point
 9 out effectively, he just wants to know --- understand
 10 what their position on this is because he did not
 11 understand from their comments. I think that is a fair
 12 point. I do not think he is going anywhere particularly
 13 with his question.
 14 MR JOWELL: I may go ---
 15 THE CHAIR: He may then take that somewhere in
 16 cross-examination.
 17 MR NOBLE: So the way the maths works in the model is that
 18 this should really be seen as absolute amounts. That is
 19 how it is set up.
 20 MR JOWELL: Absolute amounts.
 21 MR NOBLE: Absolute amounts, yes.
 22 MR RIDYARD: Cash amounts?
 23 MR NOBLE: Cash amounts yes. I have tried to set out --- if
 24 you look at table A5.2, which is at {POE/21/30}, that
 25 sets out the various equations and so it is not

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1 relativistic to the size of the business, in part
 2 because these are businesses that do other things too,
 3 and so I am trying to focus here just on the royalty and
 4 the chipset activities.
 5 THE CHAIR: Dr Padilla, do you have any comment on that?
 6 DR PADILLA: No.
 7 THE CHAIR: Thank you.
 8 Mr Williams, or indeed Mr Moser or Mr Armitage, did
 9 you have any points of clarification?
 10 MR MOSER: I do not.
 11 THE CHAIR: Thank you. Well, then that, I think, concludes
 12 the hot-tub. Thank you very much, Mr Noble, Dr Padilla.
 13 We found it a very helpful session. Thank you for the
 14 courteous and co-operative way in which you answered the
 15 questions. You are released from the hot-tub. You can
 16 now speak to your legal team and anyone else as much as
 17 you like until you come to your cross-examination next
 18 week.
 19 MR NOBLE: That is very helpful.
 20 Can I just say that I am a convert to page limits.
 21 I was not at the beginning of this case but I am now.
 22 THE CHAIR: That is very helpful.
 23 DR PADILLA: Super helpful, yes.
 24 THE CHAIR: Thank you both.
 25 Now, are there any housekeeping points that we can

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1 usefully deal with just before we actually conclude
 2 today's proceedings?
 3 Housekeeping
 4 MR MOSER: There was the update on the 1782 material you had
 5 asked me for at the end of the week. I think it is
 6 de facto the end of the week. We expect to send
 7 a draft, or further draft — I am not sure — of the
 8 proposed joint notice that the parties want to send to
 9 Apple and Samsung, to propose to have that with the
 10 other side by today. Subject to their comments, we will
 11 then send that off to Apple and Samsung tomorrow, either
 12 on a joint basis or not, if it cannot be agreed on
 13 a joint basis.
 14 THE CHAIR: This is an attempt to cut through some of the
 15 confidentiality issues?
 16 MR MOSER: Yes, exactly.
 17 THE CHAIR: All right.
 18 MR MOSER: Then there was the suggestion that perhaps, if
 19 the parties reach an impasse, one might have to ask the
 20 court in the US. We have been looking into that. That
 21 is a possibility .
 22 THE CHAIR: Yes.
 23 MR MOSER: As we expected, it will take time. So it would
 24 probably take several weeks, at least , so beyond the
 25 trial , but I expect before judgment, unless you give it

1 instantly .
 2 THE CHAIR: Well, that is obviously not going to happen.
 3 MR MOSER: So we would then hope that it could be concluded
 4 before.
 5 THE CHAIR: That was my hope in raising the issue, that we
 6 had the debate now. If we cannot get an immediate
 7 answer and you do have to go to the court in the US,
 8 then hopefully that can be resolved so that by the time
 9 we get to judgment, as much as possible of that can be
 10 published in unredacted form.
 11 That is very helpful. I am grateful to you for
 12 dealing with that.
 13 MR MOSER: I do have one last point on this —
 14 THE CHAIR: Yes.
 15 MR MOSER: — which is that our US colleagues have said it
 16 might be helpful — it would likely be helpful if there
 17 were a letter from this Tribunal that could be shown to
 18 the US District Court, if necessary, but I leave that as
 19 a thought for now. I do not ask for anything on that
 20 now.
 21 THE CHAIR: I think if you need us to write, you will need
 22 to let us know and indicate what it is they would find
 23 helpful to know from us.
 24 MR MOSER: We would happily suggest a draft.
 25 THE CHAIR: Yes, all right. Thank you very much.

1 So we will re-group on Monday. I understand —
 2 I think Mr Noble will be going first in the witness box,
 3 is that right?
 4 MR MOSER: Yes.
 5 THE CHAIR: So we will have Monday morning with Mr Noble and
 6 Monday afternoon with Dr Padilla.
 7 I am not sure if any one of you are turning up to
 8 this afternoon's or this evening's lectures. I expect
 9 you will have much better things to do. All right .
 10 MR WILLIAMS: Certainly other things to do, madam, yes.
 11 THE CHAIR: Other things to do. All right.
 12 So I probably will not be seeing you all back here
 13 this afternoon, but we will look forward to seeing you
 14 on Monday.
 15 (12.34 pm)
 16 (The court adjourned until 10.30 am
 17 on Monday, 20 October 2025)
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